A MOTHER EARTH NEWS E-book exclusive

Gardening A-Z

With this handy, informative guide, you can choose the right varieties for your particular garden and discover new options you've never considered before.



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Cover photo by Walter Chandoha.

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Gardening A-Z

Gardening A-Z brings you the best in vegetable gardening tips and instructions. With this handy, informative guide, you can choose the right varieties for your particular garden and discover new options you've never considered before. Our expert and time-tested advice will help you grow healthy, beautiful vegetables — from asparagus to zucchini. You'll also learn to control pests naturally, plant to improve your soil, and find out when and how to harvest for the best flavor. Also check out seed sources, preservation methods and seed saving techniques. Whether this is your first foray into gardening or you have decades of experience, you're sure to find helpful tips and instructions in these pages. Happy gardening!

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ASPARAGUS

Seven steps to growing superior spears, year after year.

By Vicki Mattern


DAVID CAVAGNARO

Fresh from the garden, asparagus is the very essence of spring. The sweet, slender spears are at their best lightly steamed and topped with a bit of butter and maybe a drop of lemon juice. Of course, you can enjoy your bountiful crop in plenty of other ways, too: sautéed, roasted, grilled, in sauce or microwaved, alone or with other veggies in soups, stir-fries and salads. Any way you slice it, asparagus is one of the most delicious vegetables you can grow.

But the beauty of asparagus is more than skin deep. One of the few perennial vegetable crops, asparagus comes back year after year, producing pounds of succulent spears for 15 to 20 years or more. In fact, when it comes to productivity, asparagus is difficult to top. A modest planting of 25 all-male crowns (dormant roots) will yield up to 20 pounds of edible spears per year — that's 400 pounds or more over a 20-year period! And it's simple to store your bounty of spring asparagus in the freezer — just blanch it in boiling water, then chill in ice water before you pop it in the freezer.

Asparagus is not difficult to grow, either. While it takes some time to get a crop started, if you choose your variety and site wisely, then provide basic care as outlined here, you're on your way to decades of good eating.

1. For highest yields, choose "all-male" varieties. Until about 20 years ago, all asparagus varieties were a mixture of male and female plants. But Rutgers University researchers developed a method for propagating only the male plants (the female plants produce seeds). These "all-male" asparagus varieties — including 'Jersey Giant,' 'Jersey Supreme' and 'Jersey Knight' — produce up to three times more than older, open-pollinated male/female varieties, such as 'Mary Washington.' That's because they put all of their energy into producing spears rather than seeds, according to Chee-kok Chin, a professor of plant biology and pathology at Rutgers. That also means male plants do not produce volunteer seedlings, which compete against the established plants and reduce yields. All-male hybrids also are more disease resistant than older varieties. In fact, one of the best ways to avoid asparagus rust, a fungal disease that reduces yields, is to plant rust-resistant varieties.

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2. Take time to make a cozy bed. Remember that your asparagus will call this site "home" for many years to come, so it's best to choose a good location and prepare it carefully, says Mathieu Ngouajio, assistant professor of horticulture at Michigan State University.

"To avoid disease problems, choose a site where corn or asparagus did not grow the year before," Ngouajio says. If you can plant a cover crop, such as sorghum or rye, in the area where you plan to plant asparagus, you're in luck. "A cover crop [turned into the soil before planting] will increase the soil's organic matter, which is very beneficial to asparagus," he says.

Native to warm climates, such as Asia Minor and the Mediterranean region, asparagus thrives in full sun and rich, well-drained soil. Incorporate plenty of high-quality, aged compost into your asparagus site to improve drainage, boost soil fertility and reduce the chance of soil-borne fungal diseases, such as fusarium crown and root rot. If you don't have compost, add grass clippings or shredded leaves. Planting in raised beds also will improve drainage.


CHEE-KOK CHIN/RUTGERS UNIVERSITY

You may want to test your soil to be sure the pH level is in the neutral range of 6.5 to 7.5. Plant pathologists have found that lower pH values may promote fusarium disease in asparagus. If the tests show a low pH, the testing lab can tell you how much limestone to add to your soil in order to neutralize the acidity.

3. Get a jump on weeds. They can be one of the biggest challenges for organic asparagus growers. To reduce perennial weed problems, be sure to eliminate them from the site before planting, and be vigilant about routing them out in years to come.

"Before we planted our new asparagus bed, we prepared the soil carefully," says Charlotte Johnson, co-owner with her husband, Glen, of Mother Flight Farm in Mt. Vernon, Wash. The Johnsons decided to start a new asparagus patch after their previous, 15-year-old patch became hopelessly invaded by quack grass and thistles, possibly brought in with some straw mulch.

"After tilling the area, we allowed the dormant weed seeds to germinate, then burned them off with a flame weeder before we planted the asparagus." Now that their patch is becoming established, the Johnsons stay on top of any new weeds by flaming the entire bed in late fall to winter, after the asparagus has gone dormant.

Other growers find that a combination of cultivation and mulching does the trick. In a five-year trial of organic versus conventional asparagus culture, conducted by Mark Hutton, extension vegetable specialist at the University of Maine, weeds were kept at bay by applying a thin layer of bark mulch around plants and cultivating between rows. "After the final harvest this year, we also did a shallow (1½-inch deep) cultivation with a tiller over the entire area to eliminate grasses," he says.

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In cold locales, such as Gene Thiel's Prairie Creek Farm in Joseph, Ore. (elevation 4,150 feet), black plastic mulch not only stops weeds, but also warms soil and conserves moisture. Thiel says the 4-foot-wide perforated plastic, used between rows, warms the soil enough to allow him to harvest spears two weeks earlier than usual in the spring.

4. Plant in trenches. After the days have warmed to about 50 degrees, plant asparagus crowns in trenches, 6 to 12 inches deep, and about 12 inches wide. (Use the shallower depth for heavy clay soils, Ngouajio says.) By starting your asparagus crop with crowns, you'll be able to harvest them a year earlier than if you plant seeds. Spread finished compost in the bottom of the trench, then space the crowns about 12 to 18 inches apart inside the trench, mounding the soil a bit beneath each crown. Cover the crowns with about 2 inches of soil. Gradually add more soil (mixed with compost, if available) over the next four to six weeks as the plants grow, until the trench is level with the surrounding soil.

5. Resist the temptation to harvest spears the first season! For the best future harvests, allow the underground crowns to become well-established during the first year or two after planting. If you do not harvest the spears (which are actually the plants' newly emerging shoots), they will develop into tall, attractive plants with lacy leaves.

"The vegetative part of asparagus — the tall, leafy growth sometimes called 'ferns' — is the part that captures sunlight and energy, which is stored in the crowns. The more energy stored in the crowns, the better your crop will be the following year," explains Thomas Orton, extension vegetable specialist with Rutgers Cooperative Extension in New Brunswick, N.J.

"It's important that a gardener look at their asparagus plants and not push them before they are ready," says Robert Dufault, professor of horticulture and vegetable physiology at Clemson University. For instance, if the plants' ferns grew lush and tall (about shoulder-height) the first year, it's OK to harvest the spears for about two weeks the second spring (instead of the usual six to eight weeks), Dufault says. He also recommends waiting one more year before harvesting if the spears did not grow that tall, or if new emerging spears look spindly, to ensure robust plants the following year.

6. Stop picking when spears grow spindly. By the crop's third season, you should be able to pick a full harvest — that means you can pick all the spears that emerge over six to eight weeks. (To extend your harvest by a couple of weeks, see "Stalking Summer Asparagus.") To harvest asparagus spears, simply snap them off by hand where they naturally bend; a knife is not necessary, and can actually spread disease from one plant to another. Plus, by snapping off only the tender stalks in the garden, you'll save a step in the kitchen by avoiding the need to remove the fibrous stems.



Jeff Cantara of New Roots Farm in Newmarket, N.H., uses chickens to control asparagus beetles in his garden.

Be sure to harvest the spears before their tips begin to open, however. Once the tips open, the spears become tough. Warm temperatures encourage tips to open faster, so you may need to harvest daily if your area experiences a sudden warm spell. In cool, spring weather expect to harvest taller spears a couple of times each week. As soon as you see most of the spears coming up spindly — about the diameter of a pencil or less — stop harvesting. Spindly spears are a sign that the plants are stressed, says Dufault.

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7. Take good care of your "ferns." Keep in mind that your asparagus plants will continue to grow after you finish harvesting the spears in spring. And it's that tall ferny growth that the plants produce from June through September that is most critical to the success of next year's crop. Pamper your ferns by ensuring that they receive adequate nutrients and water (at least a half inch per week). Orton advises applying compost on top of the bed right after harvest is completed.

And again, stay on top of competing weeds and insect pests. Jeff Cantara, owner of New Roots Farm in Newmarket, N.H., uses a homemade portable chicken pen to fertilize his asparagus crop, while controlling asparagus beetles — the quarter-inch long, black or red-spotted insects that sometimes damage ferns. After he's finished harvesting his spears for the season, Cantara moves the 5-by-12-foot wooden frame covered with poultry netting to the asparagus bed (with young laying hens inside), then moves the enclosure to a different location in his patch every three or four days.

"I add a little grain to the soil to encourage them to scratch," he says. "We had some asparagus beetles before, but not since the chickens have been cleaning up the beds. They don't hurt the asparagus ferns, and the chicken manure gets incorporated into the soil."

Although asparagus aficionados sometimes differ when it comes to the finer points of planting and care, all agree on the fundamentals: Give your asparagus plants a little bit of love and they'll reward you richly for many years to come!

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BEETS

Sweet Beets

Enjoy one of the sweetest and most nutritious of all vegetables.

By John Navazio

The humble beet has provided earthy subsistence to cottagers and kings since prehistoric times, and many gardeners and cooks today remain passionate about the crop because of its easy culture, unique flavor and exceptional nutrition.

Baby leaves of beets make a scrumptious addition to your salad mix soon after they sprout in spring. As winter approaches, their hefty roots are one of the last crops to come out of the garden, and they are easy to store through the cold season. And amazingly, beets have twice as much natural sugar as corn, carrots or tomatoes.

This vegetable is widely adapted to most of North America; deep sandy or loamy soil, free of stones and with good drainage, produces the most uniformly shaped beets.

A crop will grow best under cool, moist conditions but, once well-established, will tolerate hot summer weather well — as long as the soil has sufficient moisture for even, steady growth. Beets are quite cold-hardy. They can go into the ground during your first early spring plantings, and the plants can remain in the garden until after fall freezes. Beets remain undamaged even when temperatures drop into the mid-20s.



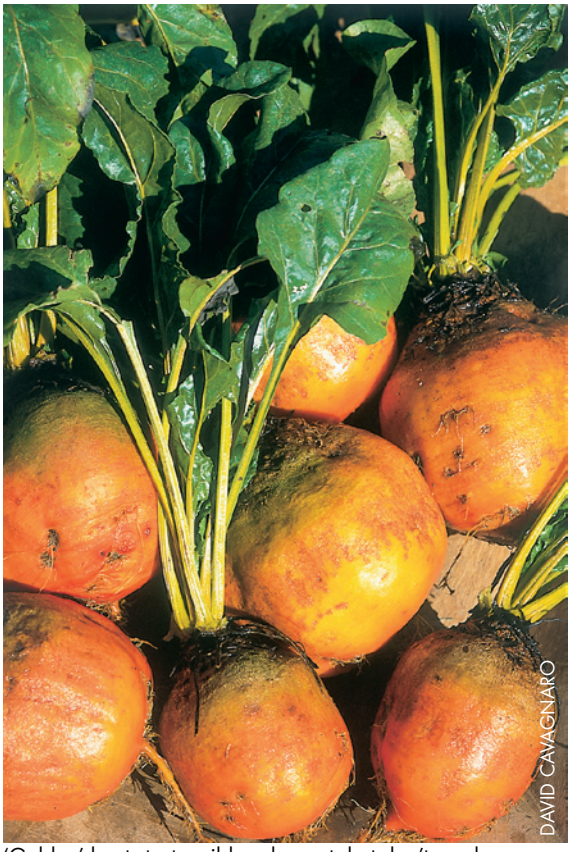
With their unique bulls-eye pattern, 'Chioggia' beets look great on the plate.

Another convincing reason to grow beets, in contrast to such root vegetables as carrots or potatoes, is the speed at which they produce a crop. Within three weeks of sowing, you can have young plants cranking out leaves for salads; certainly within five weeks, you can harvest succulent baby beets to cook whole for gourmet fare; and within eight weeks (depending on the variety), you can harvest market-sized beets and lots of leaves for steamed greens.

A SUPER-NUTRITIOUS CHOICE

Nutritionally speaking, beets are exceptional sources of essential vitamins and minerals. They are rich in calcium, iron, magnesium, potassium, vitamin C, thiamin, riboflavin, vitamin A and vitamin K. Beets store most of these nutrients in their leaves — which beet-eaters sometimes neglect — but recent investigations into their

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'Golden' beets taste mild and sweet, but don't produce as well as red varieties.

nutritional make-up bode well for the roots as well. Irwin Goldman, a beet geneticist at the University of Wisconsin-Madison, has shown that beet greens and beet roots are one of the best dietary sources of folate, which is one of the B vitamins.

FROM THE TOPS DOWN

Beet leaves, also called "tops" or "greens" in gardening parlance, have been highly praised for their taste and high nutritional content since humans first cultivated this vegetable in pre-Roman times. Goldman says that during the time of the Romans, people selected the progenitor of the modern beet from a wild plant in the Mediterranean region to use as a leaf vegetable. The plant probably resembled the Swiss chard of today, which may be a bridge crop between the original leafy beet cultivated from the wild and today's modern table beets.

The practice of eating fully grown beet greens as a cooked vegetable is not nearly as widespread as it was a couple of generations ago, but it still has devotees. Mary Ballon of West Coast Seeds in British Columbia is a true lover of old-fashioned cooked beet greens. "I'd grow a crop of beets just to harvest their greens," she says. "We sometimes pull plants as thinnings when the leaves are about 5 inches tall, and steam the little root and the leaves all at once." Ballon also says steamed beet greens surpass their close relative, Swiss chard, in flavor. For beet varieties with excellent greens for cooking, she recommends 'Early Wonder Tall Top' and 'Lutz Greenleaf,' also called 'Winterkeeper.'

A NEW LOOK FOR AN OLD CROP

Since growers for farmer's markets and natural food stores began selling pre-made salads in the last 10 to 15 years, the search has been on for crops that grow quickly and produce large quantities of succulent, tasty leaves that don't wilt too fast. Young beet leaves turned out to be perfect. They are juicy and tender with a piquant flavor and have great eye-appeal: Their green leaves contrast nicely with their red stems and leaf veins. Best when harvested at no more than $3^1/_2$ inches long and 2 inches wide, they stand up well to repeated cuts over a long period of time.

Lots of market farmers rely on 'Red Ace' as their main beet variety for salad mixes, as many of the traits that make it popular with commercial growers — bright green leaves with brilliant red stems on upright, vigorous-growing plants — also make it a good choice for home gardeners. Another good choice for home gardeners is 'Pronto,' which sprouts erect tops with good color and makes a beautiful baby-style beet root for a true dual-purpose crop.

If you think you don't like the taste of red beets, you might want to try 'Golden' beets. They make an attractive addition to the table and their flavor can be quite mild and sweet. But, their seed often germinates poorly and seedlings grow slowly, so if you grow 'Golden' beets, you should plant them more thickly and give them a little more attention throughout the season. If you want to add some color to your salad mixes, be sure to try the `Bull's Blood' beet, a British heirloom grown almost exclusively for its intensely maroon-red leaves. While most beet varieties exhibit some red pigmentation in their foliage, 'Bull's Blood' stands out for its unique, solid, blood-red leaf color.

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Market farmer Eliot Coleman, author of "Four-Season Harvest," has pioneered the use of cold-hardy crops to produce vegetables in cold frames and walk-in tunnel greenhouses throughout the winter at his Four Season Farm in Harborside, Maine. He has found 'Bull's Blood' to be one of the most cold-hardy of his crops. Coleman says he loves 'Bull's Blood' for two reasons. First, he praises the color it adds to the salad mix he sells. "It has the most magnificent deep-maroon color that I've ever seen," he says, "and can survive and produce in unheated cold frames and walk-in tunnel greenhouses throughout the harsh Maine winters." It survives when the weather dips well below freezing, and when temperatures climb above freezing, 'Bull's Blood' is among the first crops to produce. "As long as it stays above 32 degrees, it produces enough to allow us to harvest every three weeks," Coleman says.

CULTIVATING BEETS

Growing beets successfully depends on following a few simple rules. Firstly, sow beets as soon as spring weather becomes "settled" in your area. Home gardeners should plant 12 to 15 seeds per foot. Thin to about one plant every 2 to 3 inches after all of the seedlings emerge. Even if your beet plants seem like they're a little crowded as they grow, don't worry—they will push each other apart in the row as their roots expand in size. Diseases aren't usually a problem in the home garden, but to help prevent them, plant your beets in an airy, exposed section of your garden with lots of well-aged compost worked into the soil. At harvest, pull beets on a dry day and cut off the tops near the crown. Don't wash or rinse off the roots. Put them into a plastic bag with a number of small holes, and put these in a cold root cellar or in the crisper of the refrigerator. You'll be amazed at how long they'll last!

One of the secrets of growing great-tasting beets is to choose a naturally sweet variety and subject it to as little water stress as possible. Beets grown with uneven watering may become stronger flavored and almost bitter, and can develop white rings in the flesh. Geosmin, a naturally occurring flavor compound in beets, gives the vegetable its characteristic flavor. Geosmin is more prominent in some varieties and can become more noticeable after a beet crop is environmentally stressed. Food scientists at Washington State University say beet varieties that get high marks for flavor have a good sugar/geosmin balance and better-than-average stress tolerance.

Gardeners who take beets seriously always name the same favorite varieties: 'Red Ace,' 'Chioggia' and 'Lutz Greenleaf' get the most praise for pure eating pleasure. Steve Bellavia, trial manager at Johnny's Selected Seeds in Maine, is especially fond of 'Red Ace.' He says, "It's our all-around favorite. It's flavorful, productive, dependable and attractive."

Many gardeners also grow the Italian heirloom 'Chioggia' for the beautiful bull's-eye circular pattern in its flesh (see p. 5). Its flavor is mild and quite sweet, making it especially popular at farmer's markets — people who try it for its exceptional looks keep coming back for more once they've tasted it.


Red beets ready for market.

'Lutz Greenleaf' is truly unique in appearance: It has heart-shaped roots and large green leaves with little or no red coloring. Not only does 'Lutz Greenleaf' win praise for its exceptionally tender and tasty beet greens, it also is a top choice for great-tasting roots. Steve Peters, commercial seed manager for Seeds of Change in New

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Mexico and a self-avowed beet lover, sums it up best: "'Lutz' is consistently the best-tasting beet in our trials. It has the right balance between earthy and sweet, and a rich, complex, satisfying flavor that lingers in your mouth well after the initial burst of sweetness."

Whether you prefer your beets as a root vegetable, a cooked green vegetable, or as an attractive addition to your salad mix, it's time to explore this nutritious, delicious and versatile crop.

John Navazio, Ph.D., is the owner of Seed Movement, an organic seed company in Port Townsend, Washington. He also is director of education and research at the Organic Seed Alliance in Port Townsend.

BAKED BEET SALAD

4 medium-sized beets
4 handfuls salad greens, such as mache spinach, lettuce, tatsoi, mustard or baby beet leaves
1/4 pound feta cheese, crumbled

Vinaigrette Dressing
1 tablespoon rice wine vinegar
1/2 teaspoon Dijon-style mustard
4 tablespoons extra-virgin olive oil
2 tablespoons finely chopped fresh chervil or 1 tablespoon tarragon
Salt and freshly ground black pepper

Remove the tops of the beets and set aside to use in another dish. Wash the roots and put them in a casserole dish with a lid. Bake at 300 degrees for about 1 1/2 hours, or until tender. (If you are baking different-colored beets, cook them in separate casserole dishes, or the colors will bleed.) Remove the dish from the oven, let the beets cool, then peel and thinly slice them into Julienne. Refrigerate until ready to use. Toss the greens with three-quarters of the vinaigrette and arrange them on a serving plate. Put the beets in a small bowl, pour the rest of the dressing over them and stir to coat the beets. Arrange the beets over the greens, and sprinkle feta cheese over the beets. Serves 4 to 6.

About Beets

Sweet, wine-red wonders.

By Sara Pacher

The perfect crop for a black-thumbed gardener is easy-to-grow beets (Beta vulgaris). This pretty, versatile vegetable thrives with a minimum of care in almost any soil and climate and is practically pest and disease free. Its tasty roots (which can be baked, boiled, steamed or pickled for use in side dishes, soups and salads) and its colorful, leafy tops (which, in my opinion, are the most delicious of cooked greens) are extremely low in fat and calories. The roots are also rich in potassium and contain small amounts of protein, fiber, iron, calcium, phosphorus, niacin and vitamins A and C. The red-veined, dark green leaves, when eaten raw, provide huge amounts of potassium, twice the recommended daily allowance of vitamin A, half the RDA of vitamin C, goodly portions of calcium, protein, phosphorus and iron and small amounts of niacin and riboflavin. On top of all that, successive plantings and root cellaring (not to mention freezing, canning and drying) make it possible to enjoy a homegrown beet crop all year long.

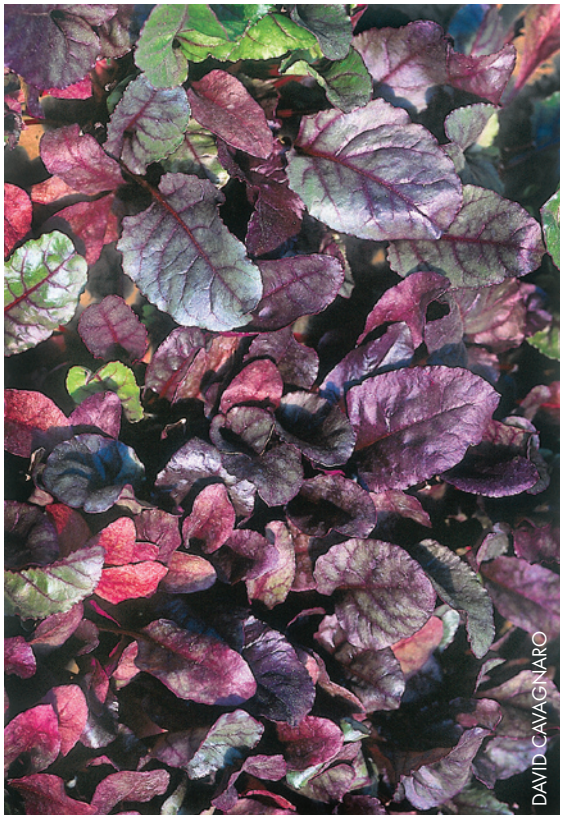
Beets are a basic part of the world's diet, but the vegetable as we now know it is relatively new to agriculture. The beet originated in southern Europe as a leafy plant with nonfleshy roots. It was cultivated in this form

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by the Greeks and Romans—the latter used it to restore flavor to wine that had deteriorated in the vat—and by Europeans of the Middle Ages. Swiss chard, a "bottomless" beet, is an improved version of those early leafy types, and it wasn't until the 16th century that a large-rooted beet began to be cultivated. This carrot-shaped version, still available today, is slow to mature, but it keeps so well that it's used widely for winter storage. Today's more popular round beet was developed just over a half-century ago. In between the long and the round types is an oval-shaped beet, known as the "intermediate," "tankard" or "canister" beet.

WHAT TO GROW

When selecting a beet variety, you should consider the crop's intended use. Red and purple roots are the most popular, but you can also opt for white and gold varieties, which won't "bleed" when cut. Some people like the long beets—such as Denmark's tender Cylindra, also called Tender Sweet (55 to 60 days to maturity)—which in addition to storing well are easier to slice.



Beautiful 'Bull's Blood' beet leaves give salads a splash of color and a nutritional boost.

If you'll be growing beets in heavy soil, under cloches, in frames or in a container, choose a round variety. (Beets make very pretty patio plants and are decorative enough to be planted with flowers.) You might also select a type grown mainly for its leaves. (Try the tender and sweet 'Lutz Green Leaf.' The roots take 80 days to develop to full size, but in the meantime you can feast on its pink-ribbed, glossy green leaves, which don't grow bitter as they get bigger.) As yet another option, you can choose between quickly maturing types for early spring planting and late or main-crop types, which take longer to mature but which keep well through the winter. For example, the early-maturing 'Ruby Queen' (52 to 55 days) is excellent for pickling and canning; 'Early Wonder' (48 to 55 days) transplants well and produces especially good greens; and orange-skinned 'Golden Beet' (50 to 55 days) has yellow flesh that remains tender and sweet as it matures, and yields greens that taste delicious whether fresh or cooked. 'Golden Beet' does, however, germinate more slowly than most other varieties.

One main-crop type is the ever-popular 'Detroit Dark Red' (60 days), which adapts well to various regions and is great for freezing, canning or storing. (Many of the new hybrids are improved 'Detroit' types.) 'Long Season' (78 to 80 days) has very tasty leaves and rough-looking but tender, sweet roots, which are excellent for storage. Then there are baby beets, developed especially for canning whole, such as 'Little Ball' (56 days), whose roots stay small (about one and a half inches) even as they age.

WHEN AND HOW TO PLANT

Beta vulgaris is a biennial that's grown as an annual. Classed as a cool-weather crop, beets obtain their greatest growth when temperatures average around 60 to 65 degrees. Yet, they are fairly heat tolerant. However, if you live where summers are extremely hot, use beets as a spring, fall or winter crop, timing your plantings so they don't mature during the hottest weather.

In most parts of the country, sow the seeds outdoors from two to four weeks before the average date of the last frost, but not before the soil has warmed above 40 degrees. (Beets are quite hardy and can withstand frosts

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but not heavy freezes.) To extend the beet season, make successive plantings every three weeks until midsummer. For an autumn crop, plant about 10 weeks before the first fall frost. Beets transplant well, so in areas with short growing seasons you can start seeds indoors about four weeks before it's time to set them out in the garden.

While beets will tolerate partial shade, they prefer a location with full sun, and, like any other root crop, beets need a loose, well-worked, well-drained soil free of rocks and clods and rich in well-rotted organic matter. Be sure, also, to supply plenty of potassium by working in wood ashes. Don't, however, plant in any area that's been freshly manured, as this can produce forked roots. Ideally, the pH should be 6.5. A too-acid soil will stunt the crop's growth and can also prevent beets from absorbing boron—a deficiency that will show up as black, bitter-tasting spots, brown hearts or lack of growth. Have the soil tested for both its pH and trace minerals, and if it's too acidic, add lime. If your plot is deficient in boron, sprinkle one to one and a half tablespoons of household borax per 100 feet of row.

Before planting, particularly in warm weather, soak the seeds for 12 hours to encourage germination, which generally takes from seven to 14 days unless the weather turns cold. Each seed is actually a small ball of seeds, or "fruit," that will produce four to six seedlings. (A few varieties now come in a fragmented seed, known as a monogerm, which produces only one seedling instead of a cluster, thus eliminating a lot of thinning.)

Sow the seeds one-half inch deep and 2 to 6 inches apart with one foot between rows. Raised-bed spacing should be around six inches. When the seedlings are from 2 to 4 inches tall, thin to stand $1^1/_2$ inches apart, and use the thinnings in salads or cook them like spinach. When the beet roots reach about one inch in diameter, pull every other one to allow space for further growth.

Beets don't compete well with weeds, so be diligent about getting rid of these intruders. However, you must also be very gentle and hand-pull any weeds close to the roots, since careless hoeing could easily damage the delicate beet roots, making them bleed and increasing their susceptibility to diseases. As beet leaves grow, they can usually smother out competing weeds, but it's still advisable after thinning to put down a mulch to conserve moisture. Just be sure the soil is damp before applying it, since a lack of moisture will cause the plants to bolt and the roots to crack or become stringy or tough. In hot, dry weather, supplement any rainfall to give the plants about two gallons of water per square yard on a weekly basis—but no more than this unless you're raising the crop primarily for greens, because excess water will create leaf growth at the expense of the roots.



These hefty 'Red Ace' beets provide delicious roots and highly nutritious greens.

HOW TO HARVEST AND STORE

Generally speaking, beet roots are most tender and tasty when one and a half to three inches in diameter, and most will begin to deteriorate when left in the ground much longer than 10 days after reaching full size. Distinct white rings in the flesh when the roots are cut are a sign of old age (except in

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some varieties, such as 'Chioggia,' which naturally have these rings), and such beets won't keep well. Fresh, prime beets can be refrigerated for one to three weeks.

On a dry day in midautumn, harvest the main crop for storing, gently pulling the roots by hand and being careful not to bruise them with careless handling. Shake off any adhering dirt, and twist off the tops, leaving an inch or two of stems. (Cutting the leaves will cause the roots to bleed, resulting in their having less color and flavor.) After discarding, or immediately using, any bruised or damaged roots, layer the others (don't let them touch) in sand, peat or sawdust in boxes (wood is best, but plastic will do). Store the boxes in a cool place, such as a tool shed, garage or cellar. If kept at a temperature of between 40 to 50 degrees, the beets will remain in good condition for up to six months. In warmer climates, the crop can be left in the ground during winter if protected from frost with a covering of straw or leaves. The roots then can be harvested as needed until the ground freezes. Any remaining beets can be dug up the following spring when the earth thaws.

Canning Beets

Cook roots for 15-25 minutes, until skins slip off easily. (Uncooked beets will bleed when cut; cooked ones won't.) Slice or cube the vegetable as desired, and pack the pieces into jars to within one inch of the tops. Add boiling water to within one inch of jar tops, making sure water covers the beets during processing. If desired, add a half teaspoon salt per pint and 1 teaspoon per quart. Put on lids and screw bands as manufacturer directs. Process jars at 10 pounds of pressure for 30 minutes for pints and 35 minutes for quarts.

Pickling Beets

Cook and remove skins from 4 dozen small beets. Combine 2 cups sugar, $3^1/_2$ cups vinegar, $1^1/_2$ cups water and 1 tablespoon salt in a saucepan. Tie up 2 sticks cinnamon, 1 teaspoon whole cloves, 1 teaspoon allspice and 1 thinly sliced lemon in a cheesecloth bag, and add to saucepan. Heat to boiling, and boil 5 minutes. Pack beets into jars to within one-fourth inch of tops, and cover with the boiling syrup. Put on lids and screw bands according to directions, and process in a boiling water bath for 30 minutes. Makes about 6 pints.

Freezing Beets

Cook beets in boiling water to cover (25-30 minutes for small beets; 45-50 minutes for large ones). Peel and cool promptly, and slice if necessary. Pack into containers, seal, label and freeze.

Canning Beet Greens

Select leaves from young plants and rinse well. Discard insect-eaten or injured leaves, and trim off stems and large midribs. Place about $2^1/_2$ pounds of greens in a cheesecloth bag and steam until well wilted. Pack in jars to within a half inch of tops. Add one half teaspoon salt for pints and 1 teaspoon for quarts. Cover with boiling water, and process at 10 pounds of pressure for 45 minutes for pints and 70 minutes for quarts.

Freezing Beet Greens

Select and prepare leaves as above, and blanch 2 minutes in boiling water or 3 minutes in steam, stirring to prevent leaves from matting together. Cool, pat dry and freeze. One to $1^1/_2$ pounds of fresh leaves.

BEETS IN MUSTARD SAUCE

4 cups cooked beets, cut into $^1/_2$-inch matchsticks
1 tablespoon white cider vinegar
2 tablespoons lemon juice
2 teaspoons sugar
$^1/_4$ cup Dijon mustard

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1/3 cup olive oil
1 tablespoon finely chopped parsley
3 tablespoons finely chopped dill
Salt and pepper to taste
2 hard-boiled egg yolks, finely minced
Parsley or dill sprigs

Place beets in a salad bowl. In another small bowl combine vinegar, lemon juice and sugar, and stir until sugar is dissolved. Add mustard and olive oil, and whisk until creamy. Add parsley and dill, and mix well. Pour over beets, and season with salt and pepper. Cover, and refrigerate at least 4 hours. Serve on a bed of lettuce, garnishing with minced egg yolks and sprigs of parsley or dill just before serving. Serves 6-8.

BEET AND YOGURT SALAD

2 cups sliced cooked beets
1 celery stalk, thinly sliced
1 apple, cored and chopped
Grated rind and juice of 1/2 lemon
2 2/3 cup plain yogurt
Salt and pepper to taste

Mix together beets, celery and apple. To make a dressing, combine lemon juice and rind with yogurt. Season with salt and pepper. Pour over beet mixture, and toss lightly. This is particularly good as a side dish to cold meats. Serves 4.

BLENDER-STYLE RUSSIAN BORSCHT

1 quart beef, chicken or vegetable stock
1 cup beet juice
1 cup cooked and cubed beets
Juice and rind of 1 lemon
1 cup plain yogurt or sour cream
1 teaspoon flour
1 teaspoon salt
1 sprig parsley
1/2 teaspoon tarragon

Blend all ingredients until smooth. Chill. Garnish with minced chives and a dollop of sour cream, if desired. Serves 6.

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BROCCOLI

Beautiful and bountiful

By Chris Blanchard



Fresh from the garden, broccoli has an unbeatable, sweet, gourmet flavor. "It's like eating green!" according to my young son Zane. Plus broccoli is the most nutritious of the commonly eaten vegetables, loaded with vitamin A, vitamin C, riboflavin, calcium, potassium, iron and fiber.

Although broccoli is closely related to cauliflower, brussels sprouts and cabbage, it is easier to grow and less susceptible to insect damage than any of those crops. Even the novice gardener can harvest a bountiful crop of broccoli for an extended time with a few simple tips. You can freeze any extra harvest for winter soups, quiches and casseroles.

Broccoli thrives in cool weather and grows best when daytime temperatures are between 70 and 80 degrees. Where summer temperatures rarely top 80 degrees, you can grow broccoli all summer. Here in northeast Iowa, we plant in spring and again in late summer to avoid having broccoli mature during the hottest part of the summer. In hot, southern locations, a winter crop may be your only option.

To beat the heat and get a jump on spring weeds, we start our spring crop in soil blocks or individual plant cells around March 7, a little more than five weeks before the last hard frost here in our valley (USDA Zone 4). In coastal regions of the Southeast and Southwest, where winters are mild and summers are hot, growers start transplants in early January for transplanting in mid-February. Organic farmer Andres Mejides of Elfin Acres in southern Florida starts his broccoli transplants around Sept. 1 for a winter crop that matures in the coolest part of their season. Whether you plant your seeds indoors or out, cover the seeds with a quarter inch of soil or finished compost, and keep the soil moist for the best germination.

In general, hybrid varieties provide the best production of central heads and better performance in hot weather. But the plants of a single hybrid variety tend to mature over a short period of time. To keep the broccoli coming, plant more than one variety at a time. For spring crops we plant 'Signal' for early harvest, along with 'Arcadia,' which matures about 13 days later.

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Fast-growing, vigorous plants produce the best crops, and dodge or outgrow many of the pest problems that can plague broccoli. Prepare the soil well, adding about 5 gallons of finished compost for every 100 square feet.

Space transplants or thin seedlings 10 to 24 inches between plants in 30-inch rows. In beds set plants 18 to 24 inches apart in every direction. Use dose spacing for early, small varieties, and wider spacing for later, larger varieties. Widely spaced plants tend to produce more side shoots for an extended harvest. Set the transplants just slightly deeper than they were originally growing to encourage upright growth and a sturdy stem.

Broccoli likes plenty of water, but not wet feet. If you get less than 1 inch of rain each week, irrigate deeply to make up the difference. Mulching with straw helps retain moisture and keep the soil cool. Mulch and irrigation both help to counteract the effects of hot weather, which can cause early bolting and misshapen head development, and even cause the head to rot.

Our first broccoli harvests come in late June, a good time to sow more seed for a fall crop. Final planting of a cold-hardy, long-season variety like 'Marathon' in early July (or about 90 days before your first hard fall frost) ensures an extended fall harvest. Our children love to run down the rows looking for the first broccoli heads. About seven days after they find the first silver dollar-size button, the main head will be ready to harvest.

The nubs on the broccoli are actually tightly clustered flower buds. Harvest the head after the flower buds begin to swell, but before they actually open. Once you have begun to harvest a given variety, keep picking every three or four days to avoid letting any heads go past. Commercial growers cut low on the stem to get the maximum weight on each head, but they typically harvest just once. To encourage the growth of side shoots, harvest 6 inches or less of stem with the large central head, cutting with a sharp knife at a 45 degree angle.

Shortly after harvesting the central head, the side shoots will begin to develop, eventually resulting in a multiple harvest of 1- to 2-inch heads. To promote the best side shoot production, side dress with fertilizer just as the central head is beginning to form and provide consistent, deep watering.

Cut the regrowth close to the main stem to encourage the continued production of larger, tastier shoots. Harvest regularly for maximum yields and be certain to keep the shoots from flowering. Once a broccoli plant succeeds in producing flowers, it puts all of its energy into seed production and stops growing delicious things to eat. As long as you keep on cutting, you'll be amazed at how productive your plants will be.

IN THE KITCHEN

Because broccoli is actually an immature flower, it is tender and cooks quickly. When people say they dislike broccoli, it's usually because the broccoli they tried was past its peak of freshness or overcooked—both bring out unpleasant-tasting sulfurous compounds. If there is a chance cabbageworms have invaded the heads, soak them in strong salt water for 15 minutes.

The most basic preparation for broccoli is to separate the head into florets—the small flower clusters—and steam for eight to 10 minutes, until just cooked through. The color should be an even brighter green than you started out with, not gray and dingy. Open the lid just slightly to let the sulfur compounds escape.

Don't overlook the stems when you are cooking with broccoli. Stripped of their tough skins with a vegetable peeler or paring knife, broccoli stems make a delicious, slightly crunchy addition to any broccoli dish. Add them to soups or stir-fry, either as matchsticks or sliced into rounds.

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We serve broccoli stems and florets steamed and tossed with a vinaigrette salad dressing just as you would a salad. Our favorite vinaigrette uses one part rice vinegar, two parts toasted sesame oil, a little garlic and a pinch of salt, shaken well. With a seared chicken breast and a loaf of good bread, this can be a quick and delicious supper, on the table in half an hour.

Broccoli goes quite well with spicy and salty flavors, so we often add ingredients like hot pepper flakes, chopped raw garlic or Parmesan cheese to steamed or sauteed broccoli. With parsley, dill or oregano, broccoli makes an excellent ingredient in a fresh garden egg scramble.

For a new twist on broccoli, finely chop the broccoli stalks and florets. Steam lightly until almost tender, and season with olive oil, lemon juice, and salt and pepper. Prepared this way, broccoli takes on a completely new flavor and texture. Preserve any excess broccoli by splitting it lengthwise into pieces no more than $1^1/_2$ inches across. Blanch in boiling water for two to four minutes or steam for three to five minutes, depending on the size. Pack into containers and freeze at once.

BROCCOLI VARIATIONS

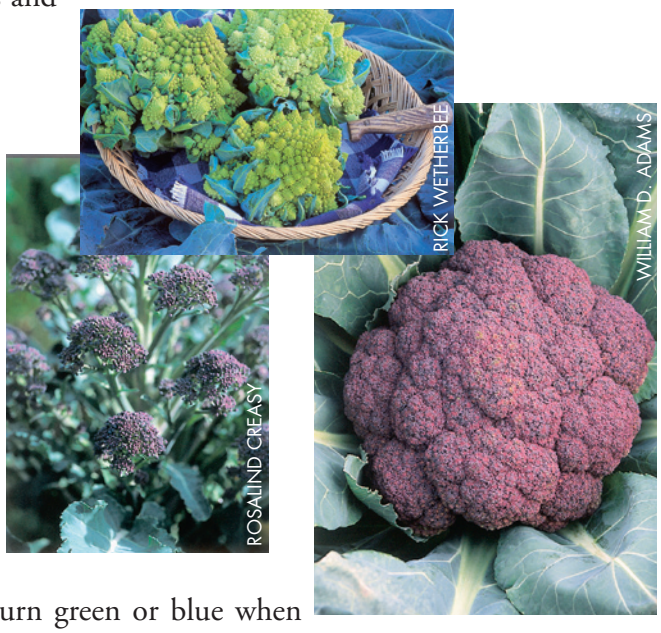
Broccoli is part of a highly variable plant family and is available in many permutations, in addition to the common green heading type.

Romanesco

The chartreuse, spiraled clusters of romanesco broccoli look more like a magical medieval structure than a vegetable. The nutty, textured heads are nice steamed or served raw, and may be listed as both broccoli and cauliflower in seed catalogs. Less heat tolerant than standard broccoli varieties, romanesco broccoli is best suited to long, cool growing seasons.

Broccoli Raab

Combining the flavors of mustard greens and broccoli, this zesty cooking green is topped with small, broccoli-like florets. Direct sow in the early spring or late summer, and harvest after just 35 to 40 days, when yellow flowers have just begun to show. The leaves, stems and florets are all used together.



Sprouting or Asparagus Broccoli

Rather than producing one main head, sprouting broccoli develops a number of smaller sprouts and stems, and produces over a longer period of time than regular broccoli. Commonly overwintered in mild regions, this type is somewhat hardier than standard broccoli.

Purple Broccoli

Many of the purple "broccoli" on the market are actually more closely related to cauliflower than broccoli, but they are typically less fickle and don't require the blanching necessary for fine cauliflower. The purple heads are beautiful when used raw, but universally turn green or blue when cooked.

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CARROTS

Nutritious and infinitely snackable, carrots are an easy vegetable to like.

By Barbara Pleasant



Carrots are such a popular vegetable that you probably have some chilling in your refrigerator right now — but have you tried growing them in your garden? Growing carrots is easy as long as you understand what the plants need; once you do, you'll have the pleasure of eating better-tasting carrots than you can buy at the supermarket. Some of the highest-quality carrots have delicate tops and roots that make them unsuitable for mechanical harvesting and shipping. Plus, they're so easy to store that you can eat homegrown carrots year-round.

A VARIETY OF CHOICES

One of your first decisions will be which varieties to plant, and choosing is an adventure in itself. Carrots come in a range of shapes and sizes, and you can try a variety of colors: orange, yellow, white, red or purple. There are strong links between the color of carrots and their nutritional content. Five hundred years ago most carrots were white. Sixteenth-century Dutch breeders created the orange version, quadrupling the vegetable's beta carotene, which the human body converts to vitamin A. More recently, carrot breeders have increased lycopene content, which is tied to a red root color. Like the lycopene compounds in 'Nutri-Red' and other red carrots, the anthocyanin pigments in 'Dragon,' 'Purple Haze' and other purple carrots do double duty as antioxidants, which help prevent cancer and slow the effects of aging. White 'Kuttiger' and yellow 'Yellowstone' carrots look stunning when combined with orange, red or purple carrots, but nutritionally they rank far below their more colorful counterparts.

Light-colored carrots tend to have a crisp, juicy texture, whereas red carrots taste slightly starchy. Purple carrots often are surprisingly spicy, and both red and purple carrots contain fewer natural sugars than orange carrots, which are the second sweetest of all vegetables, surpassed only by beets.

Many gardeners are learning about these flavor differences firsthand. "There is definitely a trend toward colorful carrots," says Josh Kirschenbaum, product developer at Territorial Seed Co. in Cottage Grove, Ore.

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"They look beautiful on a plate, and you get nutritional variation as well."

John Navazio, the director of research and education at Organic Seed Alliance, enjoys using white carrots in soups and stews, because "they are stronger-tasting and impart a wonderful, spicy, salsify-like flavor." Navazio — who holds a doctorate in plant breeding and genetics — regards 'Red Core Chantenay' as one of his favorites, because it is a "full-flavored variety with true carrot flavor, or a balance of sweet and savory." Navazio also recommends 'Scarlet Nantes,' a "good, sweet carrot with lots of character and enough flavor complexity to taste like a carrot," and he thinks the best seed stock for these varieties is from Wood Prairie Farm.

In addition to the benefits of varied color and nutrition, most gardeners agree the best-tasting carrots are the ones you pull, wash and eat straight from the garden.


LYNN KARLIN

By planting several varieties of carrots, you'll enjoy a multicolored harvest and benefit from each variety's different nutrients.

THE CARROT GROWER'S ART

If you want your garden to produce the best carrots you've ever eaten, don't be so taken by unusual colors that you overlook a more important issue — matching your variety choice to the season and to the soil type in your garden. Cool soil temperatures bring out the best in any carrot's flavor and texture, so the best strategy is to begin the spring planting season with a variety that matures quickly — before hot summer weather arrives — such as a variety from the Nantes group (see p. 19). Then sow a slower-growing Chantenay type in summer to harvest after soil temperatures have cooled in the fall.

To grow great carrots you'll need great soil. The best soil for carrots has fine particles with a porous, loamy texture. To cultivate your carrot bed, remove any rocks and sticky clods of dirt. (In order to safeguard the soil's structure, always do this when the soil is dry.)

Carrots need a nice balance of nutrients, yet when you give them too much nitrogen — particularly not-quite-decomposed manure — the roots are more likely to fork, crack or grow too slowly. Ideally, you should prepare your carrot bed in the fall by mixing in plenty of your best compost, along with some lime if you need to lower your soil's acidity to the near-neutral range. Another way to prepare your carrot bed is to lace it with earthworm castings. Numerous backyard experiments have demonstrated dramatic improvements in carrot growth when the soil contains 10 percent to 20 percent worm castings. Compost from heaps heavily populated by earthworms is ideal, or you can purchase worm castings in products labeled as vermicompost.

SUCCESSFUL SOWING

Carrot seeds have a well-deserved reputation for being slow sprouters. Compared to other vegetable seeds, the embryos within carrot seeds are quite tiny. Before a carrot seed can sprout, it must soak up water so the embryo can grow. Chemicals in the seed coat delay germination, giving the embryo adequate time for growth, and even under perfect conditions (soil temperatures from 60 to 70 degrees and constant light moisture), carrot seeds seldom sprout in less than seven days. Don't rush to plant carrots too early in spring, because exposure to temperatures below 50 degrees slows germination and increases the likelihood that the plants will develop a flower stalk. Once this happens, the root rapidly becomes tough and woody.

Many weeds germinate faster than carrots. In order to prevent weeds from taking over the carrot bed,

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some gardeners cover carrot seeds with weed-free potting soil rather than garden soil. Additionally, potting soil will not form a dry crust over the germinating seeds. Another trick that's especially useful in spring is to stud the carrot row with radishes, which sprout quickly and help shade the soil over germinating carrot seeds.



As long as the soil is kept moist, spring sowings usually sprout within 10 days, but in summer you probably will need a shade cover to keep the sun from drying out the soil. An old blanket, a double thickness of burlap or a cardboard box held in place with bricks will work. Check beneath the shade cover daily to see if you need to sprinkle on a bit more water, and remove it altogether after five or six days. Many market gardeners, such as Charlotte Swancy of Riverview Farms in Ranger, Ga., find that pelleted seeds, which are coated with fine clay, are easier to coax out of the ground in summer, making them worth their extra cost.

Swancy uses drip irrigation to keep her summer-to-fall carrots from going thirsty, and any type of watering is more effective when carrots are mulched. Besides helping to retain soil moisture, several thin layers of fine-textured grass clippings or a 1-inch-deep blanket of composted leaves (or other weed-free mulch) will deter weeds, help cool the soil and keep growing carrots from getting green shoulders — a common side effect seen when the roots swell and push up toward the sun. Carrots exposed to significant fluctuations in soil moisture also tend to crack, and cracked carrots don't store as well as perfect ones.

AN IDEAL HARVEST

If you dream of perfect rows of evenly spaced carrots, begin by sorting through your seeds and picking out the largest ones (large seeds produce big, sturdy sprouts). Then lay a piece of chicken wire on the ground to use as a grid, and place seeds exactly where you want them to grow. If you want both baby carrots and heavy-rooted mature specimens, space seeds 2 inches apart, and pull every other one when a few samples show roots with good color that are wider than a pencil — that's your baby carrot crop. Then pull or dig the mature carrots when they are ready. Carrots often are less uniform in size and color than other vegetables, so it's best to start harvesting them based on what you see (and taste) when you pull a few samples.

It's fun to use a carrot's feathery leaves as a handle while you're munching it, but it's best to cut them off as soon as you harvest your carrots. If you don't, the leaves will draw moisture away from the roots. Even under refrigeration, carrots that hold their tops quickly become limp. Carrot bunches at the supermarket have trimmed tops, so that only enough leaves remain to hold the bunch together.

Some lucky gardeners are able to leave their mature carrots in the ground and harvest them as needed. But for most of us, the safest place to store carrots is in the refrigerator. Critters roaming through your garden often stop to take a few bites from overwintering carrots, and several weevils and other insects can sabotage crops that are left in the soil too long. Carrots that are dug, trimmed of their tops, washed and patted dry before being placed in plastic bags in the refrigerator will keep for several months. When they begin to shrivel or sprout, you have a great excuse for making a delicious cinnamon-spiced carrot cake.

THE BABY CARROT BOOM

"Baby-cut" carrots were invented 20 years ago as a way to use broken carrot pieces. Their introduction helped double carrot consumption during the 1990s, and baby-cut carrots are so popular that breeders have

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developed varieties designed to be sculpted into three perfect pieces. Baby-cut carrots taste sweet in part because they are made from mature carrots.

True baby carrots — or immature carrots — have a delicate texture, but because carrot flavor reaches its peak just as the roots reach full size, immature carrots often taste bland or slightly bitter. To grow the best-tasting baby carrots in your garden, stick with the miniature varieties or try varieties that develop good flavor while they are still small, such as the hybrid 'Little Finger.'

SAVING CARROT SEEDS

"Carrots are really easy to save seeds from," says Betsy Bruneau, co-manager at Bountiful Gardens in Willits, Calif. Carrots are biennials, which means they flower and produce seed in their second year. "In mild winter areas you can leave carrots in the ground over the winter and they will flower the following spring," Bruneau says. "In other areas, dig the carrots up before the first hard freeze and keep them in the refrigerator until early spring. Then replant them; they will go to seed in the summer. If you buy some nonhybrid carrots at the farmer's market that you really like, you can stick them in the ground and save seeds from them, too."

Bruneau cautions against allowing 'Queen Anne's Lace' (wild carrot) to bloom within a half mile of carrots being grown for seed, because bees and other flying insects will eagerly spread pollen between the cultivated and wild forms, rendering the carrot seeds worthless. Different cultivated carrot varieties also cross-pollinate. Plan to save the seeds borne by the first big umbel — the stalk and cluster of flowers in the shape of an umbrella — that appears on each plant, because the primary umbel will produce bigger seeds than flower clusters that appear later. Allow the seed-bearing umbel to ripen on the plant until the outermost seeds turn brown, then cut it off close to the ground and hang it upside down in a dry, well-ventilated room for two weeks. Collect the ripe seeds by crushing the dried umbel inside a paper bag. Discard the smallest seeds and save the biggest ones for replanting. Meanwhile, any flowers not collected for seed will serve as nectar sources for beneficial insects, or you can enjoy them as cut flowers indoors.

EAT FRESH CARROTS ALL YEAR

By choosing the right varieties and making spring and summer sowings, you can eat fresh carrots year-round. You'll be able to harvest carrots as you need them, let some overwinter in the ground and always have some in the refrigerator that are washed and ready to eat.

PICKLED CARROTS WITH GINGER

For an interesting mix of flavors, try using different colors and varieties of carrots in this recipe. And once you've eaten all the carrots, you can use the pickling liquid as a salad dressing or marinade.

1/3 cup sugar
1/2 cup rice vinegar
1/2 cup water
1/4 teaspoon salt
3 cups carrots, peeled and cut into bite-sized pieces
One 2-inch piece of fresh ginger, sliced into 1/4-inch-thick pieces


BARBARA PLEASANT

In a medium saucepan, bring the sugar, vinegar, water and salt to a slow boil. Add the carrots and ginger, cover and simmer until crisp-tender, about 4 minutes. Transfer to a container with a lid and chill at least 2 hours. The pickled carrots will keep for up to a week.

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CHIVES

Fine-flavored, crispy green chive leaves are a colorful garnish that punches your taste buds.

Story and Photos by Barbara Pleasant



Snip fine-flavored, crispy green chive leaves over a salad or a baked potato, or into a bowl of piping hot soup for a colorful garnish that punches up the taste a delicious notch, or maybe two.

The most delicately flavored member of the onion family, chives have been hardy garden plants and tasty kitchen staples for more than 5,000 years. Regular (or "fine") chives (Allium schoenoprasum), are native to northern Europe, Asia and North America. The leaves are shaped like tiny tubes that taper to a point. They grow in clumps and emerge in early spring from winter dormancy, followed quickly by the lilac-to-rosy pink, clover-like blooms on 12- to 24-inch long stems.

Both leaves and flowers are edible; the fresh blooms may be served whole or separated into petals; they can be added to vinegar, to which they impart a lovely pink hue; and they make nice cut flowers, too. When in full bloom, a mature clump is so pretty that you may be reluctant to gather the flowers, yet removing them often prolongs the bloom time while encouraging the plant to expend more energy producing new leaves.

Garlic chives (A. tuberosum) are the other common garden chives and are similar in height to regular chives. Also known as Chinese chives or gow choy, garlic chives are native to eastern Asia and are as hardy and easy to grow as regular chives. The plants have flat, strap-like leaves with a distinct hint of garlic rather than onion, and the delicate, white blooms grow in clusters that appear in late summer after many other flowers have come and gone.

Both leaves and blooms of garlic chives are edible, too, but do not be misled by the tuberosum species name; the roots are knobby but hardly bulbous, and not at all tasty. In this part of the world, garlic chive blossoms are not nearly as popular for eating as those of regular chives. But garlic chives are so pretty and long-lasting that they're often grown as garden ornamentals or for cut flowers rather than as a culinary ingredient. Many beneficial insects also feed on nectar found in the flowers. Garlic chives bloom all at once and seldom complain, even if you gather almost every stem to enjoy indoors.

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GROW YOUR OWN

In the garden, let chives help bring out your painterly side. They're pretty enough to include among your flowers, and they may be good companion plants in both the flower and vegetable gardens, too. According to a 1999 report in the Journal of Chemical Ecology, interplanting garlic chives with tomatoes helps suppress bacterial wilt, a real challenge for tomato growers in the Southeast.

Sun-loving, extremely cold-hardy (Zone 3) perennials, chives ask only for regular water and reasonably fertile soil to be contented garden residents. Early spring is the best season to start a new planting of either regular or garlic chives. Both are easy to grow from seed, but be sure it's fresh because germination rates can fall below 50 percent after only one year. Also, be aware that seedlings are apt to remain small through their first year, so if you want good-sized clumps in short order, purchase the plants or trade with a friend for some pass-alongs; chives multiply by bunching as well as by seed, so digging and dividing established clumps every few years is good for the plants, too.

The grassy texture of chive leaves also makes them a welcome addition to container plantings of herbs, where they do exceedingly well. If you live far enough south to leave a planted container outdoors all winter, try this: Bring one inside in late winter, while the weather is still cold and the plants are dormant. Within a few days, a tuft of green chive shoots will spurt up, their growth triggered by the warmer temperatures. Chives forced to grow early indoors often do not bloom as enthusiastically after they go back outside as those allowed to follow their natural rhythms, but you need not worry about killing them. Whether forced indoors or grown outside, clumps will continue to produce nonstop all summer and into fall. As the growing season progresses, a mulch of nitrogen-rich grass clippings will help the plants continue to flourish, especially those in containers.

In very hot weather, the leaves of regular chives may wither, but after a short rest, heat-stressed plants that are given regular water usually rebound and produce a new crop of tender young leaves in the fall. Garlic chives hold their strappy green leaves well through summer's heat, though the leaves often become tough and fibrous. The best-quality garlic chive leaves are gathered in late spring; by the time they bloom in late summer, these plants are best appreciated as a lovely perennial. Both species die back to the ground when freezing weather comes but need no special protection to insure their winter survival.

Mashed Potatoes and Parsnips with Chives

Here's a tasty and healthful side dish that combines an old winter favorite, parsnips, with potatoes and chives. Any leftovers can be used as a flavorful thickening for a hearty winter soup.



2 cups potatoes, cubed and peeled (about 3 medium potatoes)
1 cup parsnips, cubed and peeled (about 2 medium parsnips)
1 large clove garlic, quartered cup low fat milk
1 tablespoon fresh parsley, minced
2 tablespoons fresh chives, finely chopped
1 teaspoon salt
1 teaspoon pepper

Place potatoes, parsnips and garlic in a large saucepan and add water to barely cover. Bring to a boil, then lower heat to medium and cook until tender, about 14 minutes. Drain off water. Add remaining ingredients and mash with a fork, potato masher, or mixer to desired consistency. Serves 4.

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COOKING WITH CHIVES

Snip chives into little pieces using scissors or mince them on a cutting board with a sharp knife. Many people enjoy loading up baked potatoes with fixin's that include mounds of chive greens. The combination makes a delicious culinary partnership, but it marks only the beginning of this herb's tasty uses. The mild flavor of chives makes them acceptable to most palates, even raw—a claim that cannot be made for other onions. Both regular and garlic chives are rich in vitamins A and C, calcium and phosphorous and, as members of the Allium family, they may help prevent such diseases as cancer, and lower blood pressure and control bleeding, too.

You can add chives to such naturally mild-flavored cooked dishes as omelets and cream sauces with good effect. For a beautiful presentation of long, cylindrical vegetables such as asparagus, carrots or green beans, tie the vegetables into small bundles using chive leaves as strings. Then, steam the tied bundles until the vegetables are tender. For a tasty herbed spread, mix 2 tablespoons of chopped fresh chives into half a cup of softened butter, reduced-fat cream cheese or a mixture of both.

To make a delicately flavored and colored vinegar with regular chive blossoms, begin with 2 cups of mild, white vinegar such as white rice vinegar, and add 2 cups (packed) fresh blossoms. Let stand at least a week; then strain, discarding the faded blooms, and transfer the flavored vinegar to storage bottles. Add a few fresh blossoms on their stems for a decorative look.

To preserve your garden chives for winter cooking, chop and freeze the leaves in ice cube trays. Home-dried chives usually lack flavor; the commercial, freeze-dried product is better tasting.

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CORN

Pop and Parch Heirloom Corn

Grow these rare varieties and enjoy healthy, flavorful snacks.

Story and Photos by Scott Vlaun


'Hopi Pink'

Corn (Zea mays), or maize, as it is called in many parts of the world, is one of the most diverse treasures bestowed upon us by our farming ancestors. Over the centuries Mesoamerican farmers, beginning in the Oaxaca Valley of Mexico, slowly created the plant we now recognize as corn — starting from a short, nondescript grass called teosinte, which bears just a few seeds surrounded by extremely hard shells. Corn has been grown extensively in North America for more than a millennium and has since spread throughout the world, becoming one of the most widely grown crops on the planet, second only to wheat.

Given the productive nature of corn, which is capable of providing hundreds or even thousands of edible kernels from a single seed, it's no wonder that the crop found a place in the cultural and spiritual traditions of many indigenous peoples. But heirloom corn varieties are endangered today. U.S. agribusiness produces more than 12 billion bushels of corn per year on 80 million acres of land to supply our industrialized food system with inexpensive animal feeds, sweeteners and other products. Most of the corn used for these purposes comes from modern hybrid and genetically engineered varieties that have been bred for maximum yields rather than flavor or nutrition, and that are dependent on environmentally damaging synthetic fertilizers and toxic pesticides.

The corn I am in love with is the traditional kind of corn; the sacred corn of ancient farmers; the corn that is adapted to grow with low inputs and in difficult conditions; the corn that comes in a spectacular rainbow of colors and various sizes and shapes, each representing the work of hundreds of unsung farmer-breeders. These rare heirloom corns offer home gardeners history, beauty and outstanding flavor. Two great ways to enjoy these delicious flavors are by traditional cooking methods — popping (roasting in oil) and parching (dry roasting).

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POPCORN

Popcorn is one of the most ancient forms of corn — ears more than 5,000 years old have been discovered in New Mexico caves. Popcorn varieties are flint corns, which have a hard shell that protects the starchy, slightly moist embryo inside. When the kernel is heated above 400 degrees, the moisture inside expands, causing an explosion that pops it.

If you're looking for movie theater-quality popcorn, grow 'Robust 128YH,' which is a high-yielding, gourmet corn with glossy yellow kernels. For a denser and chewier, though slightly less productive variety, try 'Japanese Hulless,' an open-pollinated (OP) type that, as the name implies, leaves little of the hulls attached after popping.



The 'Dakota Black' corn variety pops to a bright white with dark markings. Its nearly black, pointed seeds grow on 4- to 6-inch ears.

The benefit of growing an OP variety is that you can save your own seeds for planting the following year, and they will reproduce true to type, unlike a hybrid. Recent research suggests the many-hued traditional corns pack additional nutritional properties. For the adventurous, there are dozens of interesting popcorn varieties available in a broad array of colors and sizes, from 4- to 6-inch 'Dakota Black' to 2-inch 'Strawberry.'

PARCHING CORN

Although popcorn is one of America's favorite snack foods, most of us have never tasted parched corn. Instead of the hard-shelled flint types used for popping corn, parched corn is usually made from the softer-shelled flour varieties. These corns open more gently when heated, slightly enlarging and softening, while becoming chewy and crunchy, with a rich corn flavor. Native Americans parched dried ears on sticks or in clay pots over hot coals. They used the parched corn as trail rations and pounded it into meal for use in bread and soups. When European settlers came to America, they adopted the practice and added parched corn as a staple to their diet.

Any flour corn can be ground to make corn meal, or parched by heating the kernels over medium-low heat in a dry skillet, without oil. Within about five minutes, the kernels should start to swell and split. To avoid burning, be sure to keep them moving by stirring or shaking the pan. It's always wise to hold a lid or screen over the kernels to keep them from popping out.

To parch corn in a microwave, put about a quarter cup of corn on a paper plate, cover with another paper plate and cook on high for two to three minutes, until most of the popping stops.

The best corns for parching cook quickly and completely, expand more, have thinner skins, are more resistant to burning and have distinctive, delicious flavors. Two varieties known for their excellent parching qualities are 'Supai Red,' which has its origins with the Havasupai tribe of the Grand Canyon, and 'Magenta,' a selection from a Hopi variety. 'Sahuarita' and 'Hopi Pink' are also reported to be good for parching.

THE BEAUTY OF PARCHED CORN

My own introduction to parching corn came when I met Emigdio Ballon, a native of Bolivia, as I was photographing seed varieties in southern New Mexico. Emigdio pulled a small bag of corn from his pocket, popped a

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'Supai Red'

few corn kernels into his mouth and held out the bag in his weathered hand. I gratefully took a few and placed them in my mouth expecting something salty and hard like a corn nut. What I experienced was more chewy than crunchy. The parched corn released a rich and slightly sweet corn flavor. After proudly explaining that this type of corn was indigenous to his people of the high Andes Mountains, Emigdio insisted that I take a handful with me. I found the parched corn quite satisfying and sustaining as the day progressed; I was hooked. I'd always loved corn, but this was different; parched corn is somehow more about the essence of corn itself.

After I discovered parched corn, I met plant breeder Carol Deppe, author of "Breed Your Own Vegetable Varieties," who, with Alan Kapuler of Peace Seeds in Corvallis, Ore., has done the most extensive research on parching corn. Deppe tested more than 200 varieties of corn in the mid-1990s to find those varieties most suitable for parching, and to identify varieties suitable for reintroduction. She found the best parching corns were the flour varieties that are usually red, red-striped, lavender, pink or purple, though not all corns of these colors are necessarily good parching corns. Working with Kapuler, Mark Millard, who is the U.S. Department of Agriculture's corn curator, and five cooperating seed companies, Deppe identified and reintroduced a number of good parching corn varieties. Additionally, Deppe, Kapuler and Seeds of Change reselected 'Supai Red' and 'Magenta' specifically for excellence as parching corns, as well as for their ear size and hand-shelling ease

GROWING TIPS

While many modern corns are bred specifically for popping, there is much we can all do to identify the best flour corns for parching and resurrect this venerable and delicious tradition. Although some of these native corns may be regionally adapted to the southwestern United States and Mexico, I've had good luck with many Hopi and other varieties in my garden in Maine. Use these tips to grow and harvest your own heirloom corn:

Planting. For the best pollination and fullest ears, plant corn in blocks, spirals or clusters on hills, rather than in long rows. Be sure to keep at least 1 foot between plants.

Three Sisters. Try planting a "Three Sisters" garden of corn, beans and squash. First plant the corn seeds, then sow a few pole beans among your corn once it reaches 8 inches tall. The corn provides a trellis for the beans, while the bean vines prevent the corn plants from falling over and add nitrogen to the soil. Plant squash or pumpkins around the corn patch to shade the soil from sun and suppress weeds. A thick mat of squash vines also can deter raccoons and other animals from entering your garden.

Growing. Some popping and parching varieties require a long season to mature. In short-season areas, choose varieties that require fewer days to mature. Or try starting plants in the greenhouse three weeks before your last frost, then transplant them when the danger of frost has passed and the soil has warmed.

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Water. To develop strong root systems, irrigate deeply about once a week.

Weed. Control weeds and conserve soil moisture with deep mulching.

Feed. When plants are 6 inches tall, apply rotted manure, grass clippings or a liquid fish fertilizer to provide nitrogen. Repeat the process when they reach about knee high. Experiment with traditional varieties to learn their needs in your climate and soil.

Pests. If earworms are eating more than their share, wait until the silks begin to turn brown and try applying a few drops of mineral oil where the silks emerge from the husk. Under extreme pest pressure, Bt (Bacillus thuringensis) is a useful organic control.

Drying. If possible, allow the ears to dry on the plants until the husks become brown. If this is not possible because of wet weather or impending frost, harvest the ears and dry indoors by spreading them out at room temperature in a place with good air circulation. Don't apply excess heat as it can cause uneven drying or overdrying, which will affect the corn's "pop-ability." Flour corns are very susceptible to molding after harvest, so be sure to dry the ears immediately after harvesting. If the moisture content of the kernels is too high, they won't parch properly. You'll be able to tell that the ears aren't dry enough if the kernels don't come off easily when you try to shell them, or if the bases of the kernels break off and remain on the ear.

Husking. Separate the kernels from the cobs and remove any remaining material (chaff) by winnowing with a fan or in the wind. Pour the kernels from one bowl to another until the chaff has blown away and the seeds are clean.

Storing. Store the cleaned seeds in a tightly sealed jar or other container, and keep it in a cool, dark place. Whole parched corn should keep for at least a month at room temperature. If your corn is not popping well after it's been stored for a while, try adding a tablespoon of water to a loosely filled jar of corn and shaking it every day for a week to add moisture.

Eating. For a fresh taste and healthy snack, once your corn is popped or parched, try adding brewer's yeast, herbs or chili powder instead of butter and salt.

Succulent Sweet Corn

Grow your own and harvest ears with the freshest flavor.

By Barbara Pleasant

Fresh sweet corn is one of summer's culinary treats, whether it's sautéed, soufflèed or boiled on the cob. It's not difficult to grow, provided you have a block of fertile soil at least 10 feet long and 6 feet wide. Or you can buy fresh-picked ears from small growers at your local farmer's markets.

Zea mays var. rugosa, which is what we call "sweet corn," was enjoyed by many Native American tribes as "green corn." The earliest versions were immature grain corns, picked before the sugars in the kernels converted to starch. Newer varieties were selected for sweetness, and by the beginning of the 20th century, sweet corn had become a distinct and beloved vegetable. You can still grow trail-blazing heirloom varieties such as 'Country Gentleman' (1891), and 'Golden Bantam' (1902), or you can opt for modern hybrids that hold their sugars for weeks instead of days.

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Sweet corn varies in color less than grain corn, and though there are a few brightly colored exceptions — 'Ruby Queen' is red! — most sweet corn varieties have white or yellow kernels, or a combination of both. And, if you have the space, you can enjoy fresh corn on the cob for more than a month by growing early, midseason and late-maturing varieties.


DAVID CAVAGNARO

Growing terrific sweet corn requires a little advance planning. For starters, corn produces best when it is planted in rectangular blocks rather than straight rows, because the best pollination occurs when the wind blows pollen from the tassels at the tops of the plants over the silks that emerge from the tips of the ears. You can hand-pollinate corn by sprinkling pinches of pollen onto the silks, but letting nature handle this task is far simpler, and it's easily accomplished by planting at least three closely spaced rows. Five rows or more is even better.

Then there is the challenge of providing sufficient fertilizer. "The plants are heavy feeders. They take a lot out of the soil, so you need the means to put that fertility back," says Henry Brockman, who grows 10 acres of organic vegetables in Congerville, Ill. He prepares soil for sweet corn with a cover crop of hairy vetch, but you can use any nitrogen-fixing legume. You also can amend the soil with manure, or use compost (for micronutrients) and an organic fertilizer such as Sustane 4-6-4, Harmony 5-5-3 or a similar locally available product.

Years ago, a gardener told me how he grew "no work" sweet corn by cultivating the soil in the fall and then covering it with a 3-inch layer of chicken manure. By spring, the manure had weathered into a weed-deterring crust, and the soil was rich with nitrogen. All he had to do was poke corn kernels into it and stand back. I tried his method and found that it worked, though I suggest planning a short fall vacation to escape the manure smell.

Organic fertilizers are a great match for corn because they become more available to roots as soil temperatures rise, and corn needs more nitrogen as summer progresses. Recent research at Michigan State University showed that corn uses only about 6 percent of its total nitrogen in its first month, 25 percent as it grows from knee-high to tassel, 25 percent during the pollination period and a whopping 39 percent as the ears are developing. Young plants that are not getting enough nitrogen are pale and spindly; older nutrient-starved plants produce small, sparse ears with lots of shriveled kernels near the tips.

If you're worried about your crop's nutritional status, hoe early and often to reduce competition from weeds, and top-dress the rows with a half-ration of any good organic fertilizer as soon as the tassels appear. A thorough drench with a foliar fertilizer, such as one made from fish byproducts and kelp, can help your corn get adequate nutrients, too.

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Finally, corn requires a steady supply of water, so plan from the outset to provide water if needed. "In most soils, maturing sweet corn needs one to 1½ inches of water per week," says Jeanine Davis, Extension horticulture specialist at North Carolina State University. Davis says the timing of moisture is crucial for sweet corn during the critical period between tasseling and maturity.

CLIMATE-FRIENDLY SWEET CORN

With site, soil and water considerations nailed down, it's time to choose your varieties. Historic open-pollinated (OP) varieties — and new ones, such as bicolored 'Double Standard' — tend to be big, robust plants with ears that won't ripen all at once. You'll need to check almost-ripe ears daily, and harvest and cook them the same day you pick them, because OP corns quickly convert their sugars to starch. "These days growers are getting into hot debates about OP versus hybrid sweet corn," Davis says, "and many say that OP is not an issue when corn is being eaten fast." Still, the vast majority of gardeners — and organic farmers — choose hybrids because of their earliness, vigor and, most of all, their ability to hold sugars for several days after they reach perfect ripeness.



Harvesting ears as soon as they are ripe is the best way to enjoy their natural sweetness.

You'll find plenty of sweet corn choices in any seed catalog. Hybrid varieties offer three different levels of sweetness. "Normal sugary" (su) varieties include yellow 'Early Sunglow' and white 'Silver Queen.' "Sugary enhanced" (se) varieties include yellow 'Incredible' (a top producer in Oklahoma State University trials), bicolored 'Ambrosia' (a top producer in Ohio State University trials) and white 'Argent,' which has tight husks that help it resist earworms (keep reading), and which many folks say tastes as good as 'Silver Queen.' "Super sweet" (sh2) varieties include 'Frontier' and 'Even Sweeter,' but the super sweets have some drawbacks: The seeds are harder to handle (they tend to rot unless soil conditions are perfect), the planting must be isolated from other types of corn to prevent cross-pollination and many people find their flavor too sweet, with so much sugar you can hardly taste the corn.

During the 20 years or so these hybrids have been available, the se varieties have won the most fans. "They're sweet, but they still taste like corn," Brockman says. Se hybrids stay in good condition on or off the plants for several days, or more than a week if the weather's not too hot. There are dozens of varieties, varying in color and time to maturity. If you live in a cool climate, you'll need a fast-maturing variety such as 65-day yellow 'Sugar Buns' or 'Kandy Kwik,' which tend to be small plants that can be grown at tight, 6-inch spacing. Midseason varieties such as 'Luscious' bicolor (and the se varieties named above) mature in 75 to 85 days; most midseason varieties will produce two ears per plant when thinned to 8 to 10 inches apart. Late-maturing 90-day sweet corns such as 'Silver Queen' and most heirloom varieties need 14-inch spacing. These late varieties develop big ears studded with wonderfully flavorful kernels, but you are likely to see quite a few corn earworms in the tips of any corn that matures in August.

AN EARWORM EDUCATION

Earworms are the larvae of a night-flying moth that lays its eggs in corn silks. When the eggs hatch, the

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larvae squirm to the tip of the ear, where they begin feeding on the tip kernels. Corn varieties with tight husks that extend past the tip offer some protection, or you can take some advice from the University of Vermont's Extension Service and pop a clothespin onto the tips of ears as soon as the silks begin to brown.

SWEET CORN PUDDING

This old-time pudding with sweet corn kernels enveloped in rich custard is as big a treat today as it must have been years ago. To remove kernels from a cob: Cut a small amount off the cob's blunt end to make it straight across; place the squared-off blunt end down on a cutting board and then use a sharp knife to cut downward, removing the kernels. Serve as a side dish with red meat or poultry, or as a hearty lunch with a salad.



1 tablespoon butter
1 medium onion, finely chopped
3 cups of fresh sweet corn kernels (7 to 8 plump ears)
2 cups whole milk
6 large eggs, slightly beaten
Dash nutmeg
Optional: 1 teaspoon sugar

Heat oven to 350 degrees. In a small nonstick pan, melt the butter over medium heat. Sauté the onion until it is translucent, about 7 minutes. In a large bowl add the onion, corn, milk, eggs, nutmeg (and sugar if using) and mix well. Pour the mixture into a 9-inch casserole or small pottery pie dish. Bake for 1 hour, or until lightly browned and a knife inserted halfway into the center comes out clean. Serves 6 as a side dish.

— From "The Edible Heirloom Garden," by Rosalind Creasy

Ruth Hazzard, a vegetable entomologist at the University of Massachusetts, leads an Extension vegetable program that has perfected another earworm-prevention technique — applying oil mixed with the bacterium Bacillus thuringiensis, or Bt, to corn silks. A handy pump applicator called the Zea-later also was invented to speed the process. (The scientific name for corn earworms is Helicoverpa zea.) Or, you can go low tech and use an eye-dropper, oil can or detergent spray bottle to squirt a mixture of corn oil and Bt mixed with water and a little soap into the tip of each ear about five days after the silks emerge, just as they have begun to detach from the kernels.

The oil or oil/Bt treatment will smother or kill young earworms, but it's time-consuming and it won't give you great control if you have a serious earworm infestation on your hands.

Many gardeners prefer to coexist peaceably with the little critters, while large-scale growers often resort to heavy spraying with pesticides or growing genetically modified (GM) varieties of corn. These are varieties that have been "engineered" with genes that kill corn earworms by placing Bt toxin directly into the plants' tissues and with other genes that make sweet corn tolerate herbicides.

GM sweet corn varieties are starting to make their way into grocery stores, and, unfortunately, federal law does not yet require GM foods to be labeled. Scientists at Pennsylvania State University estimate that GM

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varieties account for about 3 percent of sweet corn, while the U.S. Department of Agriculture reports that about 45 percent of grain corn grown in the United States is from GM varieties. All this effort is being expended to get rid of a few earworms, which are easy to remove simply by breaking off the tips of the corn as you shuck the ears. Organic market growers who sell directly to corn lovers typically educate their customers to the fact that earworms are part of the package with organically grown sweet corn. If you're concerned about pesticide and genetic engineering issues, finding a few earworms in your purchased sweet corn is a reassuring sign.

TASTES OF SUMMER

Sweet corn is ready to pick when the kernels become plump and glossy; the best way to gauge ripeness is to taste a sample ear. If you open one too soon and want to give it a few more days, pull the shucks back on and secure them with a rubber band, or cover the ear with a paper bag. Either method will safeguard the maturing ear from hot sun and provide protection from birds that may be waiting to take a share of your crop.

Purists love boiled corn on the cob with a little butter and salt, but grilled corn seasoned with cumin, chili powder and a light slather of sour cream tastes great, too. Sweet corn freezes like a dream, either on or off the cob, and it's the best way to preserve the sweetness of the ears if you aren't able to eat them right away. "I think my favorite way to eat sweet corn is in the winter," Brockman says. "Frozen corn still tastes like summer."

Folks often check for earworms and then bag up unshucked ears and throw them in the freezer, but cutting the kernels from the cobs saves lots of freezer space. Always blanch the ears before you cut off the kernels. If you want your kernels to be packed loose like supermarket corn, spread out the kernels on a cookie sheet and pop it into the freezer. Then pack frozen kernels into freezer bags. For a creamier version, cut the kernels off raw, and then use a spoon to scrape the "milk" off the cobs. Heat the mixture barely to a boil, let it cool and freeze it fast for a great taste of summer that will keep for a year.

Uncommon Corn

Grow colorful whole-grain corn for improved nutrition and great taste.

By Barbara Pleasant



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We may live in the "corncrib of the world," with annual U.S. production of more than 500 billion pounds of corn — grown mostly for livestock — but we have lost our appreciation for corn as a whole grain to cook and eat ourselves. Today, we think of corn mostly as a sweet vegetable, but — not to take away from sweet corn — many varieties of unsweet grain corn deserve much wider use in our gardens and kitchens than they receive.

Corn was developed about 6,000 years ago in the Oaxaca Valley of Mexico. Eventually, many American Indian tribes came to depend upon this easy-to-grow, protein-rich grain. Modern, commercial grain corn products commonly are degermed to lengthen their shelf life, but degerming takes flavor and nutrition out of the corn. So, if you want to enjoy the most flavorful and nutritious corn possible, you have to do what the Oaxacans did — grow and grind your own.

"The flavors of Indian corn range from a perfumey, aromatic taste to a deep corn flavor," says Walter Goldstein, research director at the Michael Fields Agricultural Institute in East Troy, Wis. Carol Deppe, a grain-corn hybridizer in Corvallis, Ore., and author of "Breed Your Own Vegetable Varieties" adds, "Good corn products are not found in unrefrigerated boxes at the supermarket."
Processed cornmeal, grits, polenta and other corn products have had their skins and germs removed, both of which carry much of the flavor. The germ is removed because it's high in natural fats, which turn rancid quickly after the corn is ground if it's not refrigerated. Removing the germ from the corn dramatically reduces several vitamins and minerals.

And there's another problem: Mass-market corn products, including most organic ones, are made from high-yield hybrids rather than from high-flavor corns. "Agribusiness corn doesn't taste good, even when ground into whole-grain products and handled properly," Deppe says. "The optimal corns for people-food come from heirloom or specialty varieties."

Some small companies are producing exceptional freshly ground, whole-grain heirloom corn products for people-food. *Mother Earth News* editors tried cornmeal and grits from Anson Mills in Charleston, S.C., and found the flavor and texture to be exceptional.

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WHOLE GRAIN IS WAY HEALTHIER

This table shows the dramatic nutritional difference between 1 cup of whole-grain yellow cornmeal and 1 cup of degermed yellow cornmeal.

Nutrient	Whole Grain	Degermed
Iron	4.2 mg	1.5 mg
Magnesium	155 mg	55.2 mg
Phosphorus	294 mg	116 mg
Potassium	350 mg2	24 mg
Zinc	2.2 mg	1 mg
Copper	0.2 mg	0.1 mg
Manganese	0.6 mg	0.2 mg
Selenium	19 mcg	11 mcg
Thiamin	0.5 mg	0.2 mg
Riboflavin	0.3 mg	0.1 mg
Niacin	4.4 mg	1.4 mg
Vitamin E	0.5 mg	0.2 mg

Source: USDA Nutrient Data Laboratory

BETTER CORN COMING

The main reason companies grow hybrid corn rather than open-pollinated (OP) corn is productivity. Some hybrids are more productive, disease tolerant and resistant to falling over (called "lodging") than OP varieties. But on the downside, they don't taste very good, they are bred to be grown with heavy fertilizer applications and many now contain genetically modified (GM) genes.

OP corn varieties selected for flavor taste better, cost less, need less fertilizer and are less likely to have been bred to carry GM transgenes. And by saving the seeds from your own crops, you can develop a variety well adapted to your climate, site and soil. Some agricultural researchers point out that the money saved on seed and fertilizer with OP varieties can offset the productivity edge offered by hybrids.

There also may be important nutritional differences between modern hybrids and many varieties of OP corn. For example, according to research geneticist Linda Pollak of the USDA Agricultural Research Service at Iowa State University, protein is often higher in OP corn, though the amino acid balance in all corn needs some fine-tuning to make the proteins more usable. Pollak is pursuing this goal with ongoing plant breeding; she also is working to develop OP corns with more stable and healthful fats. "We think we can improve the ratios of fatty acids so the corn does not go rancid so quickly, and we can also improve the healthfulness of the fat so it is comparable to olive oil."

Pollak says she also sees a promising future for farmers who want to grow their own high-protein corn for livestock feed: "By having corn with a better amino acid balance, farmers wouldn't have to supplement corn with more costly soybean feeds." Within two years, Pollak says, she hopes to release OP corn varieties that set new health and nutrition standards.

Then there is the spiritual side of hand-tending a plot of corn. Carl L. Barnes, an American Indian corn expert who lives in Turpin, Okla., says, "There are three types of poverty: physical, mental and spiritual. When you turn to the soil and raise corn, all of these poverties disappear."

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WHOLE CORN COOKERY

If you start with a good-tasting variety, handle it properly and cook it with care, whole-grain corn can be the basis for some of the most satisfying food on earth. Glenn Roberts, founder and owner of Anson Mills, speaks of heirloom corn the way vintners speak of wine, describing blue corn grits as having "flavor nuances that start out mineral and then blossom into citrus peel" as they slowly cook at temperatures of less than 180 degrees. Anson Mills, which was named "Agricultural Business of the Year" for 2002 by the Carolina Farm Stewardship Association, sells cornmeal, polenta and grits to top chefs and, by mail order, to other consumers, and works to preserve 20 types of heirloom corn.

To get the full flavor from any type of culinary grain corn, Roberts says, it's essential for the corn to ripen and dry on the stalks. Slow drying, low-temperature milling and immediate refrigeration of freshly ground corn keep the flavors alive.

Because whole-grain cornmeal retains its natural oils, you often don't need to add butter or other fats when baking with it. "I never add fat to corn bread, since the (corn) meal already has fat in it," says Zoe Caywood, owner of War Eagle Mill in Rogers, Ark. The mill grinds and sells organic corn and other grains, and Caywood's War Eagle Wholegrain Cookbook III (available at www.wareaglemill.com) includes dozens of recipes using whole-ground corn. "To retain flavor and nutrients, it's important that the grain never becomes heated in the grinding process," Caywood says.

You don't have to be hungry to be tempted by hot, whole-grain corn bread, but what about mush? Would you like it better if we called it polenta? Either way, mush or polenta is made by cooking 1 part cornmeal in 3 parts lightly salted water until the mixture thickens. Then, it is poured into a pan to cool into a smooth cake that can be cut into pieces. So-called "instant" polenta is dehulled, degerminated, cooked, dried, very finely ground and devoid of a rich corn flavor. In contrast, fresh, coarsely ground mush is renowned among knowledgeable corn cooks for the fantastic flavor it retains. A similar comfort food from corn is spoon bread, which is warm mush mixed with eggs and milk, and baked into a fluffy casserole.

You can make grits from coarsely ground whole corn, too. In Wilsonville, Ala., Frank McEwen uses a small burr mill to grind blue, yellow and white corn into grits, which he sells out of a refrigerator case in his farm supply store. "My blue corn has a richer, cornier taste than white corn," he says, "but putting cheese into blue grits will turn them pink." Cooking times for whole-grain corn grits range from 20 minutes to more than an hour, depending on the corn variety and coarseness of the grind. If you're pressed for time, try making a big batch and refrigerating the leftovers; Roberts of Anson Mills says chefs do this all the time.

Parched corn offers yet another scrumptious way to eat unsweet grain corn. Corn-breeder Deppe and Alan Kapuler, president of Peace Seeds in Corvallis, Ore., developed two OP varieties that make superior parched corn — 'Magenta Parch' and 'Supai Red Parch.' Both can be ground into wonderful-tasting cornmeal, too. "Parched corn starts out as a dry, crunchy morsel with a soft middle, with flavor that becomes sweeter as you chew," Deppe says. "The flavors are like nothing you've experienced."

Best of all, it is cooked in a dry pan without oil or other fat, or in a microwave oven. In about five minutes at medium-low heat, the toasting kernels start to swell and split, releasing a wonderful aroma. The best parching corns are slow to burn, though it's important to keep them moving by stirring or shaking the pan. You also need to hold a lid or screen over the pan to keep the kernels from popping out.

You can keep uncooked parching corn kernels indefinitely in an airtight container, or cook up batches and have them ready to munch in zip-top bags. Deppe says she likes to add nuts to her parched corn snacks, too,

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noting the oil and moisture of the nuts combine delightfully with the flavors and dryness of the corn.

GROWING FOOD CORN

In the centuries before Columbus arrived in the Americas, indigenous peoples from Alberta to Peru saved their most flavorful corns for seed. Many of these strains are extinct, but some of the flavors remain intact in Indian corn strains still grown in Mexico and the southwestern United States. These corns evolved in dry soil conditions, so they often grow poorly in cold or wet climates where microorganisms in the soil might cause root rot. Unlike hybrid corn, most old OP varieties stop growing new roots as they mature, so root rot is a serious threat.

The solution is to pick varieties adapted to your climate, which is what you will find among the offerings of regional seed companies such as Southern Exposure Seed Exchange (in the South), Baker Creek Heirloom Seeds (Midwest), Territorial Seed Company (Northwest), Turtle Tree Seeds (Northeast) and Seeds of Change (Southwest).

There are three main types of grain corn to choose from: flour, flint and dent, differentiated by kernel characteristics. The following descriptions will help you make sense of variety information in seed catalogs.

Flour corns have starchy endosperms (the central, fleshy part of each kernel), so they are the best type of corn for grinding into fine cornmeal, often called corn flour. Most can be eaten fresh — roasted or boiled on the cob, but only for a day or two because sugars quickly convert to starch as the kernels mature. Some flour corns are good for parching, too. Regional adaptations vary with variety; Southwestern ancestral strains are the most common.

Flint corns, sometimes called hard corns, have a lot of "flinty" endosperm and only a little "flour" endosperm. Flints are the most flavorful corn for grinding into grits or polenta.

Dent corns have a central flour endosperm surrounded by a flinty endosperm that shrink at different rates as kernels dry, causing a dent to form in the top of each kernel. Almost all hybrid field corns are dents, as are the most productive OP varieties. Dents make good animal feed and also can be ground into flour, grits and masa, and added to other foods such as soups.

Carl Barnes says if you're just beginning to experiment with grain corn, start with a small plot of a single variety. Also, keep in mind that grain-corn pollen can cause sweet corn to go starchy, so it's important to separate the two by at least 100 feet. And, because grain corn is wind-pollinated, it should be planted in blocks rather than single rows to get well-filled ears.

Barnes boosts the fertility of his soil with compost or worm castings. You can plant corn after a nitrogen-fixing cover crop such as alfalfa, or spread a mulch of nitrogen-rich grass clippings. Goldstein adds a word of caution: Be sure to wait until the soil is warm before planting untreated corn. A cold, wet seedbed can decrease seedling survival and encourage root rot.

The ideal spacing between plants varies with variety. A Northern flint, which grows less than 8 feet tall, should do well with plants grown 8 inches apart; varieties more than 8 feet tall need 18 to 24 inches between plants. With the tall corns, lodging is a big concern but open spacing still is needed to provide enough light so the plants grow stiff and strong.

As the corn grows, use a rototiller or hoe to control weeds while hilling up soil around the base of the

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plants. Never remove the side branches, called tillers. Some varieties actually produce ears on the tillers, and tillers are often an important pollen source.

Hybrid corn usually sheds pollen all at once, but OP varieties that form tillers have a longer pollination period involving both the primary tassel and tassels growing from tiller tips.

If strong winds knock your corn over when the ears are ripening, don't worry. "Give it a few days and it will stand back up," Barnes says. If three days pass and the corn is still lying low, he suggests tamping soil around the base of the plant with the heel of your shoe to provide extra support.

Dry weather is a big plus when the ears are drying, but if wet weather strikes and the ears are not quite dry, go ahead and harvest and shuck them (remove the husks). Then dry them indoors, using a fan to help complete the drying process. In naturally dry climates, you can store your corn on the cob in a cool, pest-proof place where temperatures are less than 55 degrees. In humid locales, it's best to store the dried ears or shelled corn in airtight bins, cans or pails. Never store damp corn because the molds that form are toxic to people and animals. No matter where you live, check stored corn often, because stowaway meal moths and weevils can do a lot of damage if not detected early. If you do find these pests, put your corn in a freezer for three or four days to kill them.

Growing your own corn gives you better-tasting and more nutritious cornmeal, and it's an excellent, high-yielding crop for anyone who wants to be more self-sufficient. A small patch can be easily harvested by hand and stored for year-round use. You can also feed this protein-rich grain, along with the corn stalks, to your animals. Sheep will eat the leaves; cows and goats will eat the leaves and stalks.



FOR FRESHEST FLAVOR, GRIND YOUR OWN

So, let's say you grow a great crop of grain corn or buy some from someone else. How do you grind it? You can either use manual power or electricity, depending upon your needs, budget and muscle.

When corn aficionado Carl L. Barnes wants to just crack corn, he uses an old coffee mill. For flour, he uses a Vita-Mix blender, passing the meal through two or three times if he wants a fine grind. (Don't try this with ordinary blenders.)

Walter Goldstein also uses an old coffee mill to grind corn at his workplace, the Michael Fields Agricultural Institute in East Troy, Wis.; at home, he uses a Champion Juicer with a milling attachment.

For grinding nixtamal (see recipe on p. 36) into masa, a manual Corona Mill, which also grinds dry corn into coarse grits, works well — if you have a well-muscled arm to keep the handle turning.

Grinding cornmeal with a manual grinder is slow going (it takes five minutes of steady muscle work to produce 2 cups of coarse meal). Carol Deppe, a grain-corn hybridizer in Corvallis, Ore., says she has tried sev-

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eral electric grain mills and thinks the Whisper Mill is best for fine grinding. "It has a better feed design, and it's not nearly as loud as others." The Whisper Mill and another popular model, the Nutrimill, are "impact" mills that shatter grain as it is ground. All impact-type electric grain mills are noisy, but they produce very fine flours. Burr-type mills are slower and quieter, and give a coarser grind. Both types, whether manual or electric, do not overheat the grain. Prices start at $35 for a simple manual mill; a good electric mill or juicer with mill attachment costs about $250.

MAKE MASA: 'NIXTAMALIZE' YOUR CORN

About 1,500 B.C., cooks in coastal Guatemala figured out that cooking dried corn in alkali water removed the kernels' skins and produced a softer dough than unprocessed ground corn.

More recently, food scientists have found that this process, called nixtamalization, increases the bioavailability of both protein and niacin, and radically reduces the toxins often found in moldy corn. The resulting dough, called masa, is the basis for corn tortillas, chips, tamales and other specialty corn foods. Whole corn that has been nixtamalized is called hominy or posole, while the ground form is called masa.

Whether ground or whole, nixtamalized corn "has a taste and aroma like no other food on Earth — a delicately nutty quality combined with something almost chalky and minerallike," says Zarela Martinez, owner of Zarela restaurant in New York City and author of "The Food and Life of Oaxaca." She shared the following recipe for nixtamalizing your own corn:

NIXTAMALIZED CORN

2 pounds clean, dried flour-corn kernels (about 1 quart)
¼ cup pickling lime (food-grade calcium hydroxide)
3 quarts water



Rinse the corn in a colander and set aside. In a large, stainless steel (nonreactive) pot, dissolve the lime in the water. Immediately wash off any lime that gets on your hands. Add the corn and discard any floating kernels. Bring to a boil over high heat. Reduce the heat to low, and cook uncovered for 15 minutes. Turn off the heat, cool the pot and let it sit, uncovered, for 4 hours at room temperature or overnight in the refrigerator. Pour the corn into a colander in the sink. With the cold water running, rub the kernels between your hands to rub away the softened hulls (they will have a gelatinous texture). Rinse thoroughly (some old recipes say to wash between 4 and 11 times). Drain well. Use the whole, moist kernels in soups or stews. Or, grind them through a food mill able to handle moist kernels to make masa, to which you can add enough water to make a slightly sticky dough for making tamales or, using a tortilla press, tortillas. Promptly refrigerate any unused masa, and use it within 3 days.

GETTING TO KNOW CULINARY CORN

Here are five highly regarded open-pollinated grain corns. Use your climate as a starting point for selecting one to grow. Days to maturity (shown in parentheses) are estimates for dry ears.

'Magenta Parch' (105 to 115 days). A refinement of Southwestern Indian flour corns, 'Magenta' is a good parching corn that also grinds into a fluffy, fine-textured meal. Adapted to both cool and warm climates, each 5- foot-tall plant produces 2 to 3 small (6- to 8-inch) ears. Source: Seeds of Change.

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'Hickory King' (105 to 115 days). A dent corn descended from 'Hickory Cane,' an ancestral corn of the Southeast, 'Hickory King' grows to 12 feet tall and typically produces two ears per stalk. Big ears with large white kernels can be roasted at the milk stage. When dry, the King is good for hominy and grits, too. Sources: Southern Exposure, Baker Creek.

'Supai Red Parch' (100 to 110 days). A flour-type parching corn developed from Hopi varieties, 'Supai Red Parch' grows to 7 feet and produces 10-inch ears with rows of red, orange and white kernels. Source: Seeds of Change.

'Nokomis Gold' (100 to 110 days). Bred in Wisconsin, 'Nokomis Gold' is a cross between Northern Indian flints and Corn Belt dents. It is yellow with a few purple kernels, and it grinds into a quality yellow cornmeal. In the upper Midwest and New York, it is more productive than other OP grain corns, with a high protein content, too. Source: Turtle Tree.

'Painted Mountain' (85 to 95 days). Developed in Montana from Northern flint and flour corns, this cold-climate corn grows 5 feet tall and produces ears on the main stalk and on tillers (side stalks). Small ears feature red, yellow and purple kernels (see photos above) with a high protein content. It can be eaten as sweet corn at the milk stage, or dried and used for parching or meal. Sources: Baker Creek, Territorial Seed.

About Corn

Nothing else says "garden fresh" quite so sweetly.

By Sara Pacher



Corn (Zea mays) is more American than apple pie. It's believed that an early type of this member of the grass family was grown in South America at least 4,000 years ago, and it's known that corn was cultivated throughout much of North America long before the time of Christopher Columbus. He and his explorers are credited with introducing corn to Europe, where it spread throughout the continent and to Asia and Africa. Europeans still use it primarily as a food for livestock. In the United States, however—though 80 percent of our corn is fed to animals—even growers with small gardens are likely to plant this space-consuming vegetable, and for a very valid reason: The sugar in most corn varieties starts changing to starch as soon as it's picked, so ears that go straight from the stalk to the pot or freezer offer a succulent taste that corn purchased from a market, or even a roadside stand, can never match.

WHAT TO PLANT

There are literally hundreds of cultivated varieties of corn, but they fall into four classes: popcorn (Z. mays praecox), a low-calorie, nutritional snack; dent, or field, corn (Z. m. indentata), used mostly for animal feed but also popular in the South as a fried dish, and the source of cornmeal; Indian, or flint, corn (Z. m. indurata), with color-

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ful ears that are used for ornamental purposes (the inner pan of the grain that remains once the hull is removed is called hominy, which, ground up, becomes grits); and sweet corn (Z. m. rugosa), the popular choice for most home gardens.

Though sweet corn as we know it wasn't developed until just over a century ago (and the now-popular hybrids began appearing 30 years later), today's gardeners can choose from early, midseason or late varieties that sport either yellow or white kernels or a mixture of both. There are also dwarf types as well as "skyscraper" varieties that reach heights of 12 feet, and new offerings come on the market every year.

Some popular early varieties of sweet corn, which take 58 to 70 days to mature, are 'Spring Gold' (withstands cold and damp soil and produces large ears), 'Seneca Explorer' (also popular in cold-weather areas), 'Silver Sweet' (a white type similar to the late-season 'Silver Queen' but which matures in 66 days), 'Butter Vee' (ready in only 58 days with a high sugar content) and 'Aztec' (resists some strains of wilt and tolerates smut).

Midseason varieties, maturing about a week later than early types, include the open-pollinated, low-starch 'Early Gold Bantam,' which retains its sweetness for a long time; 'Gold Rush,' a tender, sweet, yellow corn that adapts to most climates; 'Mellow Yellow,' which freezes well; 'Kandy Korn EH,' as sweet as its name and whose kernels can retain their quality for up to two weeks on the stalk; 'Aristogold,' which grows well in dry conditions; 'Honey and Cream,' a bicolor with a tight husk that discourages earworms and other insects and 'Platinum Lady,' a delicious white variety.

PLAN ON A MINIMUM OF 10 TO 15 PLANTS PER PERSON

Of the late season types, 'Country Gentleman' and 'Golden Bantam'—both open-pollinated—have been favorites since they were developed many decades ago. 'Seneca Pinto,' 'Sugar Dots' and 'Silver-N-Gold' are all sweet, bicolored cultivars, and the very late and very popular 'Silver Queen' is a white corn that takes 92 days to mature but is well worth waiting for.

Among the dwarfs, 'Golden Midget' (58 days) grows on stalks only 2½ inches tall, and its 4-inch long ears freeze well; 'Honey and Cream,' with 6 to 7 inch ears, is another good choice for a small garden.



Eating fresh corn – blanched ears of 'Golden Bantam' corn, ready for freezing.

For popcorn, try 'White Cloud' or 'Japanese Hulless.' Both pop big and have no hulls. Then there's the unique 'Indian Ornamental Pop' that's both tasty and decorative. Ornamental corn, however, requires hot weather and a long growing season. 'Indian Ornamental,' for example, takes 110 days to mature, producing large ears in an endless array of colors. Field corn, called "roasting ears" by those southern gardeners who relish them, has to be picked early before it becomes too tough to eat. 'Hickory King,' which comes in both yellow and white versions, is a popular field variety.

WHEN TO PLANT

Gardeners who are impatient for the first possible taste of homegrown corn sometimes take the risk of planting two weeks before the last frost date. Should you do this, be prepared to risk losing your crop since corn is very susceptible to frost. Other eager growers, particularly those with short gardening seasons, start the seeds indoors. Corn, however, doesn't transplant well, so it should be started in peat pots in order to disturb the roots as little as possible when moving it to the garden. It's usually better to wait until all danger of frost is past, and then, in order to have a long harvest, plant early, midseason and later varieties at the same time—or plant an early

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variety every two weeks for six weeks or when the preceding crop is 3 inches tall. A scarecrow might help keep birds from stealing the seeds before they can sprout and from eating the small shoots. Some people say a string stretched a few inches above the row, especially if hung with foil pie pans, will also discourage these thieves.

HOW TO PLANT

Plant corn in a sunny but wind-protected spot. While it will grow in almost any soil, the vegetable does best in well-worked, fertile soil with good drainage and a pH of 6.0 to 6.8. Because it's a heavy feeder, especially on nitrogen, it's best to plant corn where beans were raised the previous season or in an area where other legume crops, such as alfalfa or clover, have been cultivated recently. (Some Native Americans bury a fish under each hill of corn to help provide needed nutrients.) Work in generous amounts of compost or aged manure, along with bone meal and wood ashes, to a depth of 6 inches. If the soil is not very fertile, you should probably side-dress the crop when it's about 6" tall and again at about knee-height. Blood meal or a diluted fish-based fertilizer are good for this purpose.

For best germination, the temperature of the earth should be approximately 60 degrees. If the weather stays unseasonably cool, you can hurry the warming process by covering your future corn patch with black plastic. Since a stalk of corn typically produces only two ears per plant (except for some dwarf varieties, which have four), plan on a minimum of 10 to 15 plants per person.

Corn is wind-pollinated (each silk on the ears must receive pollen from the tassels on top in order to produce a kernel), so it generally does better planted in blocks rather than rows. You can also put five seeds to a hill and then thin to the three strongest plants.

Since corn has a 75 percent germination rate, plant the seeds 2 inches deep, placing three kernels every 8 to 12 inches, and thin the stalks to 10 to 12 inches apart. (Dwarf varieties are generally planted 1 inch deep and thinned to an 8 inch spacing.) Rows should be 3 feet apart (2 feet for dwarfs). Use care when thinning plants so as not to disturb the roots of those you keep. The seeds should germinate in seven to ten days, and you'll need to keep the weeds away, since this grasslike plant doesn't compete well. Mulching with straw, leaves or grass clippings can solve this problem and will also conserve moisture. And corn does require a lot of water, especially when the tops begin to tassel. (Don't wet down flowering tops, though, since that could wash off the pollen.) Stop weeding at tasseling time to avoid damaging the surface roots.

As the plants grow, they will put out side shoots, or "suckers." These don't harm production, however, and cutting them off might damage the roots.

Since corn takes up a considerable amount of space in the garden, it only makes sense to intersperse it with another crop. With medium-size varieties, you might want to plant half-runner beans. With tall varieties, pole beans can twine up the stalks. Pumpkins and squash are other good choices.

WHAT TO WATCH FOR

Stewart's disease, a bacterial wilt that causes the plants to become dwarfed and dried-up, can attack any type of sweet corn but seems to favor yellow varieties. If you've had this problem, choose a corn that's resistant to the malady. Because the ailment is spread by flea beetles and cucumber beetles, which thrive in plant refuse, keep your garden clean and burn infected plants.

Corn smut looks worse than wilt, but it's usually less damaging. It appears on the ear as a pale, shining, swollen area that darkens and bursts, releasing powdery black spores. It can be prevented with crop rotation and good garden sanitation. Should it strike, cut off and dispose of the galls before they open, and—if necessary—de-

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stroy the infected ears or stalks to keep smut from spreading to other plants. Once in the soil, it can remain viable for five to seven years.



The corny sweetness of the 1891 heirloom 'Country Gentleman' has stood the test of time.

Corn earworms, which also attack tomato plants, can damage the stalks but usually do the most harm to the ears themselves, starting their mischief when the corn begins to silk and continuing their destruction until harvest. Earworms are striped, yellow-headed, about 2-inch long when full-grown, and vary in color from yellow to green to brown. You may first become aware of their moist castings on the silks. Generally, they confine their damage to the tips of the ears, which can be cut off when harvested. Attack heavy infestations with Bacillus thuringiensis, garlic/onion spray, rotenone or pyrethrum, but be aware that such remedies are effective only if applied as soon as you notice the castings and before the worms have crawled too far inside the ear. Another remedy is to put a few drops of mineral oil right down into the top of each ear after the pollinated silks have wilted and begun to turn brown. You can also use this method to cope with 1/8"-long, black sap beetles—which drill into ears.

European corn borers—one-inch long, flesh-colored worms, marked with fine black dots—overwinter as full-grown larvae in the stems of weeds and cornstalks, pupating in late spring. They emerge as yellowish-brown moths between June and August and lay eggs on the undersides of the plants' leaves. When hatched, the larvae bore into the leaves, stalks and ears of corn. To break this cycle, destroy all cornstalks and weeds in the fall. Lady-bugs, Bacillus thuringiensis, rotenone and hand-picking of the pests are often effective against a corn borer infestation.

Cutworms can be discouraged by putting paper collars around the young shoots. Flea beetles can be fought with hard hose sprays, sticky traps, garlic sprays, garden-quality diatomaceous earth or wood ashes. Seed-corn maggots—yellowish-white, quarter-inch long burrowers with pointed heads—are most likely to trouble deeply sown kernels in cool soil. If these maggots are a problem, plant more corn at a shallower level in warmer weather.

To foil raccoons, paint a mixture of bacon grease and cayenne pepper on the husks just before they mature. If birds try to harvest the crop, protect the ears with paper bags.

HOW TO HARVEST AND STORE

About three weeks after the corn silks appear, it's time to start checking the ears for ripeness—and with this crop, picking at the peak makes all the difference. When the kernels are growing, the silks will be moist and green. Once they turn dark but remain damp, it's time to harvest. (An ear with a completely dry silk has been left on the stalk too long.) The sheath should also be green and never be allowed to turn yellow or a faded brown. The ultimate ripeness test, however, is to pierce one of the kernels with a thumbnail. If "milk" spurts out, you're going to have a delightful dish. Ears on the same plant will ripen a few days apart.

There's an old saying that "the pot should be boiling before the corn is picked," so don't harvest your crop until just before it's needed in the kitchen. Should there be any delay between harvesting and eating or preserving, leave the husks on, refrigerate the ears and use them in no more than two days. (Some extra-sweet varieties

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actually improve rather than deteriorate for the first few hours, and these must never be grown near other types, as cross-pollination will affect their flavor.) The exceptions to this rule, of course, are the field and ornamental varieties and popcorns, which should be left on the stalks to dry until the first hard frost, or—in poor weather—the stalks can be cut and stacked in a sheltered, airy spot.

Corn contains vitamins A and B and a number of minerals, and to get its full nutritional value, it should really be eaten raw. With many of the very sweet varieties, that may be the best way to savor it, but don't overdo, because raw corn is a laxative.

To prepare corn on the cob, put the husked ears in rapidly boiling water, cover tightly and cook for five minutes or until it's barely tender. Be careful not to overcook.

To roast corn, put the ears, with the husks still intact, on the middle rack of a 300 degrees oven and cook for 30 minutes. Then strip off the husks, brush the ears with butter, sprinkle them with salt and serve immediately. It takes a bushel of ears to yield only a few quarts of kernels, but come next winter you'll be delighted with yourself if you take the trouble now to preserve some of your crop. To freeze corn whole, husk the ears, clean off the silks, wash the ears thoroughly, then blanch them for six to eight minutes. Cool the ears, wrap them in foil or plastic and freeze them. Follow the same procedure to freeze kernels, cutting them off with a sharp knife (for creamed corn, cut only halfway through the kernels and press out the extra milk), before packing and storing them.

When canning kernels, use only pint jars. Corn is so low in acid that authorities don't recommend canning it in quarts. After cleaning and cutting (but not blanching) the corn, process it in sterile jars at 10 pounds of pressure for 55 minutes. Don't pick your corn till the pot boils.

CORN RELISH

2 quarts whole kernel corn, fresh (16-20 medium ears) or frozen (6 10-ounce packages)
5 sweet red peppers, diced
5 green peppers, diced
1 bunch celery, chopped
1½ cups chopped onions
1½ cups sugar
1 quart white vinegar
2 tablespoons salt
2 teaspoons celery seed
2 tablespoons dry mustard
1 teaspoon turmeric

Defrost frozen corn if used. Mix peppers, celery, onions, sugar, vinegar, salt and celery seed in 6-8-quart nonaluminum pan. Boil uncovered for 5 minutes, stirring occasionally. Combine mustard and turmeric and blend with some liquid from boiling mixture; add, with corn, to boiling mixture. Return to boiling and cook 5 minutes, stirring occasionally. Pack into pint jars, seal and process in a boiling water bath for 15 minutes. Makes 7 pints.

Note: If desired, relish may be thickened by blending ¼ cup flour with ½ cup water and adding the mixture with the corn; stir frequently.

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CROSNES

Tiny, twisted tubers show market potential

By Doreen Howard



A potted planting of crosnes shows the spearmintlike foliage.

They're about the size of a chess piece, and they look like micromini Michelin men. Their French name, crosnes, is pronounced "crones," which brings an image of gnarly, old women to mind. Why should you care? Crosnes (Stachys affinis), also known as Chinese artichokes or chorogi, are a gourmet sensation at upscale restaurants and green grocers, and they're not to be missed by adventurous eaters and market gardeners alike. The crisp, juicy little tubers bring up to $40 a pound, retail, and enhance any salad, stir-fry or saute. Market potential abounds, as food magazines and television cooking shows tout the tuber's tasty trendiness. Plus, the little delights are easy to grow and fun to eat.

A perennial root vegetable and member of the mint family, crosnes can be planted in a flower bed, around a landscape shrub or as a field crop. Plants form a mat of attractive, spearmint-like leaves during the summer. When the foliage turns brown in autumn, the tiny tubers are harvested in the same manner as potatoes.

Cooking is optional with crosnes, as they are crunchy and full of juice right out of the ground. Wipe them clean or briefly soak them in water to remove any dirt. They are too tiny to peel, and much of their flavor is in the skin anyway.

Eat crosnes raw as a snack. Throw them in a salad for a radishlike crunch. Or pickle them for a real conversation piece. They shine in stir-fried dishes as a crispy alternative to water chestnuts. A piece of fish with crosnes and asparagus tips sauteed in garlic and olive oil makes for a fast, attractive gourmet entree, or serve them like the French—steamed and dressed with butter sauce.

Odessa Piper, chef-owner of an upscale Madison, Wisconsin, restaurant called L'Etoile, first sampled

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crosnes more than five years ago in Paris. "All the knots and ridges catch and hold sauces perfectly," she says. To put them on the menu of her own eatery, she turned to organic growers Richard de Wilde and Linda Halley, owners of Harmony Valley Farm in Viroqua, Wisconsin. De Wilde and Halley already were selling organic produce to Piper, who is a member of the Chefs Collaborative, a group that promotes local chef/organic grower relationships, so the market gardeners soon were turning out crosnes, too. The couple also sells organic produce to other area restaurants, at the Dane County, Wisconsin, Farmer's Market and through the Harmony Valley Farm CSA (Community Supported Agriculture) produce subscription program.

CULTURE

"You can plant the tubers in fall or early spring, in full sun and in any soil that drains reasonably well," says de Wilde. Once planted, the tubers need a steady supply of moisture until harvest to make a crop. "It is easy to detect when they start to produce," he says. "The plants grow very shallowly, so you can see the ground crack and heave when the tubers start to swell." Two to three weeks later, they're ready to eat, cook or pickle, as Halley often does.

Spacing can make or break production, according to another crosnes fan, William Woys Weaver. He's been growing the little tubers for more than 20 years in the gardens surrounding his historic 1805 home, formerly the Lamb Tavern, in Devon, Pennsylvania. A food historian, seed collector and author of numerous books—including "Heirloom Vegetable Gardening" and, most recently, "Country Scrapple, An American Tradition" (Stackpole Books)—Weaver says to plant crosnes 3 inches deep and at least 12 inches apart for a harvest of big tubers. When the tubers are dug, he adds, it's impossible to find them all, but the ones that are missed will sprout the following spring; those volunteers should be thinned in the spring to 12 inches apart, too.

Cropping, or shearing the foliage back, also is important with crosnes, Weaver says, noting the plants should never be allowed to flower. When his crosnes' foliage reaches a foot in height, he shears it back to 6 inches or less. "Cropping directs growth into the roots, resulting in larger crosnes and at least five or six crosnes from each plant. The big ones go to market, and the little ones go back in the ground. The French are meticulous gardeners and crop regularly, knowing they will get premium tubers."

If conditions are perfect, each plant can produce up to a dozen big tubers, he adds, noting such conditions are warm days; cool nights; rich, sandy ground and plenty of water. "Crosnes grow in the wild on stream banks and near them," he says. "They are very sensitive to drought and will die from lack of water." Weaver lost his entire crop during the drought of 2002, but replanted a 16-by-16-foot bed last spring. The only pest problems he has encountered are moles and voles. "They will eat them," he says.

Purchased or pot-started plants can be set out in the spring to get a head start on tuber production. Several mail-order companies sell crosne plants as ornamentals for about $4 each; large-scale plantings of the tubers are more cost effective, but a single plant or two will supply enough tubers for tasting and future home-use.

Store crosnes in plastic bags at a temperature of 35 to 40 degrees over the winter for spring planting, or plant them in the fall, before the ground freezes solidly, and the tubers will sprout the following spring. Don't forget to thin them.

HARVEST & CLEANING

Carol Deppe, a Corvallis, Oregon, plant breeder and author of "Breed Your Own Vegetable Varieties: The Farmer's and Gardener's Guide to Plant Breeding and Seed Saving," grew crosnes in pure compost several years ago to help a local farmer develop new specialty crops. They planted a 4-by-20-foot bed in a field that had an 8-inch layer of compost spread on top of tilled soil, and got a generous harvest, although they didn't document the increase.

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LINDA HALLEY

Pickling crosnes with spicy chili peppers make for a tasty, out-of-the-ordinary condiment.

In terms of commercial viability, though, Deppe says, the real issue is the hand labor needed to harvest the tiny crosnes. Weaver, whose Pennsylvania ground doesn't freeze hard in winter, hand-harvests crosnes year-round from his garden bed. De Wilde harvests by hand, too, in season in Wisconsin, from his 500-foot field rows. "You turn over the plant with a spading fork and pick the little things by hand," he says. "Crosnes are not conducive to any mechanical means of harvest."

Anticipating handling commercial volumes in Oregon, Deppe experimented successfully with a harvest screen. She attached a piece of half-inch galvanized mesh between two 8-foot-long bamboo poles to form an 8-by-3-foot frame for screening. "We propped up one end of the screen on a wheelbarrow and spaded the plants, compost and all, up onto the frame," she says. "With a little pushing around, the tubers were screened free of the compost and other debris, which fell back into the bed. Hand sorting is still necessary, but it's easier with most of the debris gone. In addition, you can raise the frame and work standing or sitting comfortably instead of crouching."

Cleaning dirt and other debris from lots of tiny, twisted tubers can be a bit of a challenge, too. Adding sand to the growing medium helps, Deppe and Weaver say, and Weaver soaks his crosnes in a bucket of water, too. "Then I scrub each one with a veterinarian's horse toothbrush," he says. (A vegetable brush or toothbrush would work well, too, if you don't have a horse toothbrush handy.) De Wilde soaks his crosnes as well, and then dumps them on mesh trays to be scrubbed clean by high-pressure water jets.

CROSNES, PEAR & HAZELNUT SALAD


MATTHEW STALLBAUMER

1 cup raw crosnes
3 cups water
2 cloves garlic, crushed
Juice of 1 lemon
4 cups assorted salad greens
2 ripe Anjou or Bosc pears, halved, cored and sliced into thin wedges
1/2 cup toasted hazelnuts, chopped coarsely

Dressing:
3 tablespoons hazelnut oil or a mild oil such as canola
5 tablespoons apple cider or pear vinegar, or a mild vinegar such as rice or champagne
Salt and pepper to taste

Clean crosnes and remove any brown tips. Bring water to boil in a large saucepan; add crosnes, garlic and lemon juice. Reduce heat and simmer for 2 minutes. Remove pan from heat and let crosnes sit in water for another 5 minutes. Drain and pat dry on paper towels. Prepare dressing by combining all ingredients and whisking until well-blended. Divide salad greens among 4 plates. Arrange sliced pears and crosnes on top. Sprinkle with chopped nuts. Drizzle with dressing and serve immediately.

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EGGPLANT

Give this colorful, versatile vegetable a chance in your garden and kitchen

By Barbara Pleasant
Photos by Davic Cavagnaro

It started with eggplant parmigiana. My daughter, never much of a meat eater but a huge fan of Italian food, discovered that Italian restaurants everywhere offered this vegetarian dish, in which slices of breaded eggplant are layered with cheese and marinara sauce, and then baked until bubbly. If eggplant tastes good that way, why not try it in some other recipes? This we did, and eggplant is now a staple in our kitchen and garden.



"I think eggplants are beautiful and they are very productive in the garden," says Renee Shepherd, owner of Renee's Garden and author of two cookbooks on garden cookery. "And they're wonderful in a lot of dishes that are good the next day — and the next and the next."

To convert an eggplant skeptic into an eggplant fan, Shepherd suggests trying broiled eggplant dipped in a Thai-type garlic sauce, stir-fried eggplant with ginger, eggplant lasagna, the French vegetable stew known as ratatouille, the layered Greek casserole called moussaka, or eggplant stuffed with mushrooms, onions or shrimp. "Most people think eggplant needs a lot of fat or that it's a lot of trouble to cook," Shepherd says, "but neither are true."

CROSS-CULTURAL CUISINE

In terms of eggplant's culinary appeal, half of the world can't be wrong. Eggplant probably originated in India, though the first written records of its cultivation have been traced to China, in about 500 B.C. For centuries, early gardeners in warm regions of Asia saved and replanted seeds from the least-bitter fruits, and by the time the Moors invaded Spain in the eighth century, bringing eggplant with them, the once-bitter, egg-shaped fruits had become quite palatable. Europeans then spent the next thousand years resisting eggplant, which at various times and places was thought to cause epilepsy, psychosis — and irrepressible sexual energy.

While Europeans stuck with their superstitions, eggplant steadily gained ground in warm regions of the world. Buddhist monks discovered eggplant's value in their vegetarian diets, and the Turks, for whom delicious food was an accepted spiritual experience, elevated eggplant cuisine to new heights with an ancient recipe of

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stuffed eggplant called Imam Bayildi, which literally translates as "the imam fainted." In one legend, the imam, a Muslim cleric, fainted when he learned his wife had run out of olive oil and was unable to prepare his favorite eggplant dish. In another version of the same legend, he fainted, overcome with delight at the taste of eggplant stuffed with tomatoes and caramelized onions.

From Bangkok to Brazil, eggplant still is prized for its ability to pair well with flavors such as Turkish olive oil, Italian basil, Chinese ginger or Greek oregano.

PREPARATION TIPS

You can be endlessly creative with eggplant in the kitchen as long as you follow a few important guidelines. First, move quickly, because eggplant discolors as soon as you cut it open. Use a stainless steel knife, and have your pan or grill hot before you start slicing and dicing. Some people routinely peel eggplant, but this is only necessary if the eggplant has a very tough skin.

The two types of eggplant you are most likely to find in North American stores — purple-skinned, bulb-shaped Italian types or longer, dark-skinned Japanese types — taste great and provide more dietary fiber when the skin is left intact or used as an edible shell for various stuffings.



'Morella,' a long, black eggplant; 'Asian Bride,' a skinny, white type; and 'Purple Blush' are among more than two dozen eggplant varieties available to gardeners.

Many recipes begin by telling you to cut and salt eggplant, rest it in a colander for 30 minutes, and then rinse and pat it dry with paper towels. Supposedly, this rids eggplant of bitterness and makes it less likely to absorb moisture, but I think it's a waste of time and paper towels. Properly grown and harvested eggplant is not bitter, and cooking methods that help eggplant release rather than absorb moisture reduce its tendency to turn to mush.

You will get bland mush if you boil or steam eggplant, but it will retain its shape and flavor quite nicely when braised, grilled, broiled or baked. You can bake eggplant whole, but be sure to prick the skin with a fork first because eggplants can explode if interior steam cannot escape. Cool a baked eggplant, scoop out the pulp and use it to make dips such as salty Italian caponata or tahini-flavored Middle Eastern baba ghanoush. Gourmet food shops get $6 a jar for eggplant butter, a purée of eggplant with olive oil and garlic. If you don't want to heat up your oven, you can make these and many other dishes with cubes of eggplant sautéed in a nonstick skillet coated with cooking spray.

Keep a container in the fridge filled with eggplant "medallions." To make "medallions," preheat a large nonstick skillet over medium-high heat and quickly braise one-fourth-inch-thick slices of eggplant in a scant teaspoon of canola oil. Turn them with a fork after two minutes, add a little salt and pepper, maybe a sprinkle of paprika or thyme, and remove them from the pan when they are thoroughly soft — about two minutes after turning. Promptly refrigerated (or frozen between pieces of plastic wrap), eggplant medallions are ready to slap on a sandwich, layer into a casserole or eggplant parmigiana, or toss into hot pasta. You can make breaded eggplant slices by dipping slices in beaten egg and then breadcrumbs or cornmeal before cooking them like hamburger

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patties in a lightly oiled nonstick pan. Breaded eggplant slices freeze well as long as they are cooked first.

When cooking eggplant be sure to use as little oil as possible because it soaks up oil like a sponge. When measured by Australian researchers, a single serving of deep-fried eggplant absorbed 83 grams of fat in a little over a minute. On its own, eggplant is virtually fat free (0.2 grams per 1 cup serving), a good source of fiber (3 grams per 1 cup serving), and it offers moderate amounts of calcium, magnesium and potassium.

Whether you braise, broil, grill or sauté eggplant, make sure it is cooked through before you eat it. Raw eggplant tastes like cardboard, and cooking destroys any bitterness that may be present just below the fruit's skin. If you happen to have a bumper crop, freeze as much as you can, dry oven-blanched slices in a food dehydrator if you have one, or make chutney. Eggplant's pH of 6.5 is too high for it to be canned without the use of a pressure canner, but when combined with vinegar, sugar and tomatoes as it is in chutney, it can be safely processed in sterile jars in a water-bath canner.

THE EGGPLANT GROWER'S ART

Like its nightshade cousins tomatoes and peppers, eggplant is a warm-season vegetable. Make no attempt to plant it outdoors until after the last frost. Choose a site that gets plenty of sun; in cool climates, black plastic containers or black plastic mulch help keep eggplant roots warm on sunny days. The seeds need warmth, too, and germinate best when temperatures hover at about 80 degrees. Set seedling containers atop an old cookie sheet with a heating pad beneath it or use a heating cable designed for plants.

SEED SOURCES

Nichols Garden Nursery
(800) 422-3985
www.nicholsgardennursery.com

Park Seed
(800) 213-0076
www.parkseed.com

Renee's Garden
(888) 880-7228
www.reneesgarden.com

Southern Exposure Seed Exchange
(540) 894-9480
www.southernexposure.com

Territorial Seed Co.
(541) 942-9547
www.territorial-seed.com


Black plastic mulch keeps young eggplant roots warmer.

Soon after 8- to 10-week-old seedlings are transplanted to warm, fertile soil, they probably will be discovered by eggplant flea beetles — tiny, black jumping beetles that riddle the leaves with shot holes. Lightweight, floating fabric row covers usually will keep them out, and neem-based sprays or yellow sticky traps can suppress their numbers. Last year, a scary-looking, red-and-black bug appeared among my eggplants' leaves, and soon

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thereafter the flea beetles were gone. I have yet to identify this ally, but I must conclude that natural predators of eggplant flea beetles do exist.



Eggplant also can fall prey to verticillium wilt, a soil-borne fungus that causes leaves to turn brown and wither away. Genetic resistance is not available, but you can minimize this disease by enriching your soil with compost, or by growing eggplant in containers filled with sterilized (or solarized) soil. If you're comfortable grafting, you can even try grafting eggplant onto verticillium-resistant tomatoes. It really works.

Beautiful lavender eggplant flowers quickly give way to fruits, which grow fastest in warm weather. Very young, immature fruits can be bitter, as can those left on the plants until they become dull and wrinkled. When perfect for eating, the eggplants will have glossy-yet-firm skin, and an indentation will remain when you push on the skin with your thumbnail. Inside, seeds will have just begun to form. Always use pruning shears or a knife to cut eggplants still wearing their caps from a plant because they cannot be pulled or twisted free.

At least two dozen eggplant varieties are available to gardeners, including a number of high-quality, open-pollinated (OP) varieties. 'Rosa Bianca' (OP) is a favorite among market gardeners for its pretty pink-striped, oval fruits. 'Rosa' needs a long, warm growing season of 75 to 90 days from transplanting, as do most large-fruited varieties. If your summers are short and cool, try green-skinned 'Applegreen' (OP) or 'Green Goddess' (F1 hybrid), which can be expected to bear only 63 days after transplanting. 'Applegreen' was released by the New Hampshire Agricultural Extension Service in 1964; it is only rivaled in earliness by 'Pingtung' (OP), a long-fruited oriental type with glowing medium-purple skin, and 'Fairy Tale' (F1), a 2005 All-America Selections winner that produces violet-striped, small fruits only 50 days after the plants go in the ground.

Beyond skin color and maturity rates, you can choose varieties by shape. Egg-shaped varieties and elongated ovals are great for stuffing, slicing into sandwich-sized rounds, or for dishes that use cooked eggplant pulp. For grilling, the long, narrow oriental types cook fast and don't slip through the grate.

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KALE

The Best Kales

Start this cold-hardy crop now for sweet soups and salads this winter.

By Scott Vlaun
Photos by David Cavagnaro



'Vates' is one of the most winter-hardy kales you can grow.

Count kale as one of the true treasures of the fall garden, with its sweetness revealed only after old Jack Frost has kissed its leaves a time or two. This ultra-cold-hardy, leafy green vegetable is a reliable, deeply satisfying addition to any cool-weather garden. Some types have tender leaves perfect for salads. Some are great steamed or in stews, and some are so hardy you can harvest them even in the dead of winter almost everywhere. And, they're beautiful, too.

Many of the folks who buy their produce in season from local farmers have learned to love this unusual, old-fashioned fall and winter vegetable — even though they may not have grown up eating it. Kale is a little-known relative of broccoli and cabbage, with a taste that appeals to both adults and children. During my years as a kale lover, I've run into a number of kale-eating families with young children who relish the vegetable steamed and served simply with butter or perhaps vinegar, with salt and pepper to taste. Deb Kaldahl of the Abundant Life Seed Foundation in Pots Townsend, Washington, says steamed kale is one of the few cooked vegetables her children will eat.

An elite member of a highly nutritious family of foods called the "dark-green leafy vegetables," kale is kin to broccoli and collards, which are its closest relatives; spinach: Swiss chard; and beet, mustard and turnip greens. All are good sources of vitamin K, the B-vitamin folic acid, and beta carotene, which is converted to vitamin A in the liver. Darkgreen leafy vegetables also are exceptionally high in other carotenoids, including zeaxanthin and lutein, which are powerful antioxidants that protect us from degenerative illnesses like cancer, cardiovascular disease and age-related macular degeneration (the leading cause of blindness among the elderly).

For years, kale also has been touted as one of the best vegetable sources of calcium — which is especially important for vegans and others who don't consume dairy products. The newest research on calcium's role in human nutrition sheds even more light of how important kale, collards and broccoli can be: It shows that, in order for the body to assimilate dietary calcium, magnesium also must be present in a meal. Dairy products are rich in calcium but have relatively little magnesium. Kale and its relatives have substantial amounts of both nutrients.

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THE TALE OF TWO KALES

Kale thrives in cold weather and has a venerable history of nourishing people in the cold, dark months of the year, when few other green vegetables are to be had. The most common kale, the so-called Scotch or Scotch Curled (Brassica oleracea, Acephala group), is a primitive cabbage.

The other kind of kale, the Siberian or Napus type (Brassica napus), actually is more closely related to rutabagas. With its tender leaves, it has become popular in recent years as an ingredient in many of the imaginative salad mixes being grown by home gardeners and market farmers. Thanks to the introduction of new colors and forms in the last few years, an excellent selection of both the Scotch Curled and Napus types are available commercially.

Kale is most often grown north of the Mason-Dixon Line; Scotch kale's botanical sister, collards, fills the same dietary niche in the South. This is due, in part, to the fact that collards taste better than kale in warm Southern summers. In fact, both greens benefit from cold temperatures that turn starches to sugars in their stems and leaves; with kale, the kind of cold that seems to really transport it from mediocre to divine is several nights of 20-degree temperatures. That means it can be a great winter crop for the South, where a few frosty nights can bring out its flavor peak by midwinter.

Over the years I've heard many claims as to just how cold hardy kale can be. To find out which kale could best stand up to the vagaries of short fall days and cold conditions, I enlisted the help of several kale connoisseurs from across the country: gardener and photographer David Cavagnaro in Decorah, Iowa; plant breeder and seed grower Frank Morton of Wild Garden Seed in Philomath, Oregon; and Micaela Colley, farm manager at Seeds of Change in Santa Fe, New Mexico. We also had a test site for a cold showdown in Maine, where kale often can be counted on until Christmas, but an early, very cold fall laid the crop to waste before we could get any results.

To find which varieties we could rely on for flavor, productivity and cold-hardiness in our respective parts of the country, we selected eight to test — five Scotch Curled and three Napus types, all held in high regard by kale lovers. The Scotch Curled types included a couple of reliable old workhorses, 'Vates Blue' (sometimes listed as 'Dwarf Blue Vates') and 'Winterbor,' as well as two varieties relatively new to the U.S. gardening scene: the striking, bright-red 'Redbor' hybrid and the Italian heirloom 'Lacinato.' For 'Lacinato' (sometimes called black kale because the leaves are such a dark green), we used an Americanized selection and its Italian counterpart, 'Nero Di Toscana.' From the Napus group, we tried the beautiful 'White Russian,' 'Red Ursa' and the feisty, cold-hardy 'Winter Red,' which was reported to be more resistant to cold than its progenitor, 'Russian Red.'

RESULTS OF THE TRIALS

Recognizing that kale's flavor doesn't really develop until the first fall cold snap, many experienced growers wait until July to sow the seeds in flats for late July transplanting to the field or garden. We had ours planted out by July 10, and by late September, all three plots were producing enough for the testers to start harvesting, assessing and enjoying.

By this time of year, testers could tell why the Scotch Curled types retain such a loyal following. As a cooked vegetable alone or in soups and stews, this kale offers a sweet, full-bodied flavor. Cavagnaro, an independent spirit, stood alone in his disdain for the Scotch Curled kales. "I don't like working with the "potscrubber" kales in the kitchen," he says. "I like the broader, smoother leaves of the Russian or Napus types." (He is, however, fond of Scotch Curled kale when it's transformed into "Krispy Kale," a snack created by Kim Blanchard of Rock Spring Farm in Highlandville, Iowa. Here's how to make it: Stem one bunch fresh kale and chop into 2-inch pieces. Toss with olive oil and salt, and place on a jellyroll pan. Crisp in a 375-degree oven for about 10 minutes. We tried it here at MOTHER and it was delicious!)

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Kale is known for its ability to withstand winter storms.

In keeping with their identity as salad greens, the Napus types were faster growing and more robust than the Scotch Curled types, which grew more slowly and deliberately. For vigor and ability to produce a steady harvest, the Napus variety 'White Russian' was tops, followed by another Napus, 'Winter Red.'

The third variety to really shine in terms of productivity, though, was the Scotch Curled type 'Winterbor,' which even edged out 'White Russian' and 'Winter Red' in the harsh mountain climate at the Seeds of Change farm. Also showing respectable yields in this category was 'Lacinato,' which did significantly better than its Italian look-alike, 'Nero Di Toscana.' 'Vates' also had a good showing for yield.

In the end, cold temperatures proved the great equalizer between the two types of kale. In Oregon, for example, a sudden, unusually frigid blast of cold, dry weather sent temperatures plummeting on three consecutive nights to 24, then 20 and 15 degrees — the coldest readings all winter. "That definitely hurt the Napus types here," says Morton, who watched as the 'Red Ursa' and then the 'Winter Red' got pretty badly beaten up. His 'White Russian' only sustained moderate damage; the 'Winterbor' and especially the 'Vates' held their own.

At Cavagnaro's in Iowa, two weeks of cold, mid-November nights with temperatures dipping into the teens seriously damaged his kales by Thanksgiving Day, when the morning low hit 14 degrees. 'Vates' was the clear winner with the least amount of frost damage, while 'Winterbor' came in a close second. A big surprise under these conditions was how well 'White Russian' held up, still retaining a number of its youngest leaves in a harvestable state despite the cold.

Colley's New Mexico plots, with cold, dry winter weather at 5,000 feet in the Rockies, yielded similar results, with 'Vates,' 'Winterbor' and 'White Russian' topping the field. According to Colley, 'Vates' is the most reliable variety for living straight through the winter in New Mexico. In all three locations, 'Lacinato' proved significantly more cold-hardy than 'Nero Di Toscana.'

FLAVOR'S THE THING

When it comes to kale flavor, which should be sweet and robust, folks who know their kales are quite passionate about their favorites. Anyone who has had the good fortune of dining on high quality, cold-weather kale from market farmers probably has tasted 'Winterbor,' the standard for 20 years. It is so delicious, it sets the bar.

'Vates,' in our taste tests, seems quite comparable to 'Winterbor,' but 'Redbor,' despite its brilliant red color and market appeal, fell sadly short.

The best bet for improving kale's popularity among those yet unacquainted with its charms appears to be

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'Lacinato,' however. Morton, with his years of experience growing and selling kales, says of this old Italian variety now gaining popularity in the United States, "It is not the most productive, the most cold hardy or the most uniform, but 'Lacinato' is the most sought-after by customers — and by the farm crew, too."

If you want kale for cool-weather salads, try the beautiful 'White Russian' or `Winter Red.' If you live where it gets cold and you want to stretch your season, be sure to grow 'Winterbor F1' and 'Vates.' If you love the flavor of cooked kale, be sure to try 'Lacinato.' If you're really adventurous, try a little of each and enjoy kale throughout the year!

John Navazio, Ph.D., is director of seed grower development at the Abundant Life Seed Foundation in Port Townsend, Washington, and owner of the organic seed company, Seed Movement, in Bellingham, Washington.

GROW YOUR OWN KALE

Experienced kale growers, knowing the crop's preference for cool weather, sow seeds of their favorite varieties in flats in midsummer for late-midsummer transplanting to the garden. It's often too hot at that time of year to start seeds in a greenhouse, so try the trick of starting them in the partial shade of large trees. Be sure to keep the flats well watered.

For transplanting, choose a sunny, fertile spot with lots of compost in the soil. If possible, plant your kale on a high spot that is well-drained but still out of the wind. This will help to extend the bounty of the crop into the winter time. Space the seedlings 14 inches apart in all directions, or 12 inches apart in rows 2 feet apart.

Aphids can get established early and persist on your kale if you don't have enough insect predators in the vicinity of your garden. Ned Herbert, farm manager of the Abundant Life Seed Foundation, says he tries to always have flowering members of the Umbel family, which includes dill, coriander and bronze fennel, in the garden to attract parasitic wasps that prey on aphids.

You also can remove aphids with a strong spray from your hose. As for cabbageworms, the easiest organic answer is to spray Bacillus thuringiensis (Bt). Be sure to use the version of Bt that is labeled for caterpillars. Plants mature for harvest in 50 to 80 days. To freeze your bounty, treat it just like spinach: Blanch in boiling water, plunge into iced water to stop the cooking, package in freezer bags and label.

BLACK KALE SALAD

1 cup cooked cannellini, navy or gigantes (lima) beans
Sea salt and freshly ground pepper
1 large onion, finely diced
2 leeks, white parts only, diced
1 bunch 'Lacinato' kale, leaves stripped from stems and slivered
1 small savoy cabbage, quartered, cored and chopped
2 plump garlic cloves, minced or pounded with a pinch of salt
½ cup chopped parsley
1 tablespoon olive oil, plus extra to finish



Chop all the vegetables (rinse the leeks, kale and cabbage but don't dry them). Warm 2 tablespoons of the oil in a heavy, wide skillet. Add the onions and leeks, and cook over medium-low heat until the onion is soft but not browned, about 12 minutes. Add

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the kale, cabbage, garlic, parsley and salt. Cook with the heat on low and the pan covered until the vegetables are soft and the volume greatly reduced, about 30 minutes.Add the beans, along with a cup or two of their cooking liquid. Simmer until the greens are completely tender, and season with salt and pepper. Serve with, or over, garlic-rubbed toast, drizzled with olive oil.

Kale and Flower Kale

Decorative plants for the home garden

By Kate Rogers Gessert



'Lacinato' kale is the best-tasting cooked variety.

For some years now I've been experimenting with the use of food plant varieties as decorative additions to my garden. My ideal dual-purpose fruit or vegetable would be attractive in leaf, in flower and in fruit. It would also be tasty and have a long harvest season. Furthermore, this versatile "dream" variety could be grown in combination with strictly ornamental trees and shrubs or in a largely edible landscape composed primarily of flowers, vegetables, fruits and nuts.

As you'd imagine, few food plants meet all these criteria. However, kale is one vegetable that does satisfy a good many of them. In fact, this hardy and healthful green can be either an ornamental food plant or a valuable contribution to a nondecorative vegetable garden.

WINTER GREENS

Kale (Brassica oleracea acephala), a full-leaved member of the cabbage family, is similar to broccoli in growing habit and culinary use. And, since kale is quite winter-hardy, it can withstand temperatures below freezing (some varieties to as low as negative 10 degrees!), and, if lightly protected, will continue to thrive during the cold season in many parts of the country.

Dwarf varieties grow in neat compact clusters that can reach $1^1/_2$ feet tall and 2 feet wide. Their finely curled leaves are usually bluish green in color, and make for tasty garden greens when harvested. In cold climates, the plants often stop growing in late fall and resume in early spring.

Nondwarf varieties have loose, tall growth. Their leaves are less ornate than are those of dwarf kale, and they tend to be a duller green. Because the plants are tall and lanky, however, with their leaves held well above the soil, they're better protected from intense groundlevel freezes than are the dwarfs.

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PLANTING AND CULTIVATION

Kale grows best in a rich soil that's been well fertilized. The seed can be sown from early spring to late summer, but July or August plantings (for fall and winter harvesting) are especially popular, since kale's flavor improves when the leaves are exposed to relatively mild (above 20 degrees) frosts. (This vegetable can tolerate hot weather, too, but its leaves may become tough.) It likes full sun, but will also manage fairly well in partial shade.



Kale breeder Frank Morgan tends his flowering kale plants in Oregon.

You can plant your own leafy greens, using seeds or starts, as soon as the ground can be worked. Either way, choose a sunny spot for them and water the patch well. Sow the curly-leaved types thinly in a seedbed and then transplant the little shoots when the danger of frost is past, setting them 18 inches apart. You'll find that plain-leaved varieties do best if they are not transplanted, and such seeds should be sown directly in the ground in early spring.

PEST CONTROL

Even though kale is extremely hardy and has a built-in resistance to clubroot—one of the cabbage clan's most unpleasant ailments — the leafy vegetable can be overrun with pests. Cabbageworms and aphids are its two most common attackers. Fortunately, the cab worms' holes will be fairly inconspicuous in the frilly rosettes of dwarf kale. So if you grow the plants strictly for ornamental use, it's best to keep in mind that the curly leaves will show damage less than plain ones.

But what about the gardener who — because he or she is concerned with food value as well as beauty — wants to keep plant damage a minimum? Well, there are a few steps such a grower can take to prevent a heavy infestation.

First of all, try to raise your own plants from seed, or at least buy them from a local farm or nursery. If you do so, you can be reasonably sure your seedlings won't be infected before you plant them. Then see that your kale patch is rich in humus and properly drained. A healthy plant will have the best chance of defeating pests and diseases. Furthermore, you can protect your seedlings from birds by covering the patch with a fine nylon netting or mesh. This won't harm our feathered friends, but it will keep them away from the new greenery. Finally, practice yearly crop rotation to help insure that a pest or disease doesn't return more often than once in several years. [EDITOR'S NOTE. Bacillus thuringiensis is, of course, effective against cabbageworms.]

LET THEM STRUT THEIR STUFF

Dwarf kale plants look great when used to line a path or provide a border for a flowerbed. If you plan to harvest winter greens, planting your kale alongside a path makes picking an easy job in bad weather. You might also want to experiment with growing kale near other frilly or fine-textured foliage. The dense heads will easily hold their own against big, bold plants. They combine nicely with almost any shade of green, and will complement the colors of your favorite flowers, as well.

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In the fall, kale can serve as a mild-colored background for a bright display of asters and chrysanthemums or its own flashier relative, flower kale. In spring, it will look good as a decorative companion for flowering bulbs (such as tall snowdrop, crocus, star-of-the-snow, daffodil and hyacinth), as well as for early-blooming shrubs (including cornelian cherry, winter jasmine, forsythia, star magnolia and quince). You can also plant kale around the base of deciduous trees that hold their fruit in winter or bloom in early spring (some crab apples do both), or place them in front of evergreens as a lighter-shaded contrast to the conifers' deep blues and greens.

A HEALTHFUL HARVEST

Chopped curly kale leaves can be used as a garnish for vegetable platters or mixed salads. And, as a more substantial food in its own right, the versatile vegetable can be served uncooked, steamed, stewed, creamed, baked or even stir-fried.

The leaves aren't the only edible part of this wonder plant, either. Young kale flowers can be eaten raw or cooked for an additional dining treat. And remember, when you include this Brassica in your menu, you'll be adding impressive amounts of iron and vitamins!

A WEALTH OF VARIETIES

There are many fine varieties of kale to choose from. 'Dwarf Blue Scotch' (also called 'Dwarf Blue Curled Vates') is a beautiful cold-hardy plant with tasty, deep blue gray leaves. 'Green Curled Scotch' looks similar except that its gray green color isn't quite as interesting (in my opinion), and the plant is somewhat less cold-hardy than 'Dwarf Blue.'

The taller varieties — including 'Pentland Brigg,' 'Siberian,' 'Westland,' 'Winter' and 'Tall Green Curled' — have a more open growth habit than the dwarf kale species. These will reach 2 feet or more in height and form longstemmed, loose rosettes of gray green leaves. I've found that 'Pentland Brigg' has the best cold-hardiness, but 'Westland Winter' (whose leaves are also especially mild and tender) is the most attractive in fact, it's the only tall variety really recommended for oriental use. As the nondwarf plants lengthen during the winter, though, they can become awkward-looking and will sometimes even fall over.

Finally, two European hybrids, 'Fribor' and 'Arpad Royal Sluis,' could be said to bridge the gap between the tall kales and the dwarf curly types. They are tall and curly, erect, dense-growing, and very uniform and the 'Fribor' variety is available in the U.S. for the first time this year.

FLOWER KALE AND FLOWER CABBAGE

The leaves of flower kale varieties (which are also edible) can range in shape from plain cabbage-like fronds to frilly foliage. These ornamentals form tight clusters up to 1 foot tall and 2 feet wide. The outer leaves range in color from gray green to blue green, overlaid with creamy white, pink, purple or deep rose. The most intense colors can be found toward the center of each plant, with bright veins running through the outermost leaves. The colorful kales are striking when set against a somber background of evergreen bushes and gray walls. And for the four-season garden, asters, chrysanthemums, leeks, cabbage and kale make attractive frost-hardy companions.

If you're concerned about having very uniform beds, plant a double row to disguise the irregularities of size and shape common to flower kale. Or sow the seed in an inconspicuous area, and later transplant the best specimens to a prominent place for fall and/or winter display.

The best time to start flowering kale will vary with regional summer weather conditions. In cool climates,

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spring-planted kale will last into the fall. In warmer areas, however, it may be best to sow the seed in midsummer to avoid the plants' bolting, but still allow them enough time to reach a good size by autumn. Many flower kale varieties will remain undamaged down to about 20 degrees, and as the weather cools, their leaf colors typically become even more intense.

It's fairly easy to find both flower kale and flower cabbage seeds listed in seed catalogs. In general, you'll discover that seeds labeled "flower kale" will produce plants with frilly foliage, while "flower cabbage" seeds tend to become plants with plainer leaves. It's rare, though, to find a specific variety of one color and form offered by American firms (they usually sell mixed seeds), but Japanese companies often list packets containing a single variety.

Only two of these Oriental types — 'Feather-Leaved Coral Queen' and F'eather-Leaved Coral Prince' — are currently available in the United States. Both have deeply cut leaves that form broad, flat-topped rosettes and are fairly uniform in size. Coral Queen plants are rose purple and blue gray, while 'Coral Prince' will be white and blue gray. The growth pattern of these two varieties is a little different from that of other kales: When they're mass-planted, their response to crowding is not to stay small, but — instead — to angle themselves outward to make room for one another.

There are, of course, a great number of varieties other than those I've described here. In fact, you may find it difficult to narrow down your selections. After all, you could choose kale that lends itself to colorful ornamental plantings, or you could simply plant a hardy year-round food crop. But whether you sow plain or pretty kale — in your vegetable garden or along a walkway — the versatile plants will provide you with beauty and nutrition.

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LETTUCE

About Lettuce

Crispy and flavorful, and offering choices galore.

By Sara Pacher



Lettuce are easy to grow. There are dozens and dozens of varieties to choose from, and, with proper planning, this traditionally cool-weather crop can be cultivated almost year-round in much of the country. When served straight from the garden, lettuce, like freshly picked corn, has a sweet flavor and crispy texture that can't be matched by store-bought versions.

Considering all this, I'm always astounded at the prices shoppers seem willing to pay for the very limited lettuce choices offered by most supermarkets. With a little effort, almost anyone—even city dwellers—can enjoy home-grown salad, since this compact vegetable can be raised in pots, window boxes, flower beds or tiny plots of earth.

The word lettuce (and the French for lettuce, laitue) comes from the Old French laitues, meaning "milky," which refers to the white sap that is particularly evident as the plant passes its prime. The generic name for lettuce, Lactuca sativa, reflects this, too (lac being the Latin for "milk"). Lettuce is thought to have originated in the Middle East, and it owes its ease of cultivation to an Asian ancestor common to all Lactucas, the weed known as prickly lettuce (L. Serriola). As early as 550 B.C., this vegetable, then known as kahn, adorned the tables of Persian monarchs, and King Nebuchadnezzar grew it in his famous hanging gardens of Babylon. The Chinese and the Greeks (including Aristotle) lauded its virtues, and the Romans liked it served as the first course of their sumptuous meals. (They considered it both an aphrodisiac and a sedative.) Centuries later, Columbus took lettuce seeds with him to the Bahamas, and the plants were also grown at Henry VIII's Hampton Court, though his sixth wife, Catherine Parr, had her lettuce shipped in from Holland.

WHAT TO GROW

Over the hundreds of years that lettuce has been cultivated, several distinct types have evolved. With the exception of crisphead (often called iceberg) lettuce, this favorite ingredient of many salads contains high amounts of vitamin A, more B vitamins than most vegetables and a little vitamin C.

Cabbage-like crisp-head lettuce is the kind most often found in supermarkets. Though it's the least nutritious, the ability of some cultivars to stand up to hot weather and to keep and ship well has led to their being preferred by commercial growers. 'Great Lakes' (matures in 90 days), in particular, is tolerant of hot weather, and

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'Premier Great Lakes' is resistant to both heat and tip burn.

Romaine, or cos, lettuce—whose tall, crunchy, spoon-shaped leaves allow in enough light to boost its nutritional value—was developed in Italy and introduced to France by Rabelais. Heat-tolerant and easy to grow, the very big-leaved types produce crisp, white hearts that can be substituted for celery. 'Paris White' (80 days), which has a flavor like Brussels chicory, is a favorite and very reliable cos variety. Other popular romaines are 'Dark Green Cos,' 'Parris Island Cos' and an early dwarf with a sweet taste called 'Little Gem.'

Butterhead, or Boston, lettuce has soft, tender, rich green outer leaves and white to yellowish hearts. Aside from being nutritious, it's considered by many people to be the best lettuce in taste and texture. Small, fast-maturing types (60 to 75 days)—such as 'Buttercrunch,' 'Bibb' and 'Tom Thumb'—need cool, springlike weather and excellent soil to produce well, but 'Deer Tongue' (also called 'Matchless') is more heat-resistant. Other butterhead favorites are 'Dark Green Boston,' 'Fordhook' (both take 80 days to mature) and 'Summer Bibb' (62 days).

Loose-leaf lettuce can tolerate much warmer temperatures than heading lettuce, and because it's also nutritious and fast-growing, and comes in so many different varieties, it's ideal for home gardens. Some types form fairly compact heads, but most are characterized by loose, open growth habits and colorful leaves that range from frilly to smooth. For example, 'Salad Bowl' (heat resistant, 45 days), 'Black-Seeded Simpson' (crispy, delicately flavored, 45 days) and 'Grand Rapids' (45 days) all have dense clumps of crinkled, light green leaves, while the heat-resistant 'Oakleaf' (40 days) and 'Ruby' (45 days) have bronze or reddish foliage. There's another advantage to looseleaf types: You can harvest the outer leaves, and the plants will keep producing new leaves to be picked later.



There are also numerous dwarf varieties suitable for containers, small gardens and one-or two-person households.

Stem lettuce, or celtuce (80 days), is cultivated like other types, but while bolting (going to seed) makes other lettuces bitter, it's encouraged with this variety. Though the leaves of celtuce can be used in salads, it's grown primarily for its stem; it has a crunchy taste similar to hearts of palm and can act as a celery substitute.

HOW TO GROW

As mentioned before, lettuce prefers cool temperatures and is considered to be a spring crop. However, unless your summers are extremely hot or your winters incredibly cold, there are fairly simple ways to extend the lettuce season.

For very early spring lettuce, sow heading types outdoors in midautumn in cold frames or under hot caps. (Try cutting out the bottoms of one-gallon plastic milk jugs, and set these, with the caps removed, over the young plants.) In mild climates, a very heavy mulch might be adequate to protect the plants from the cold.

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You can start head or cos lettuce indoors four to six weeks before the last frost date; try three small sowings at weekly intervals, and set out the seedling batches successively as soon as the ground is workable. At that time, sow some seeds of the same varieties directly in the garden. The soil must be at least 35 degrees for germination, which should occur in six to 12 days.

This is the time, too, to plant quick-growing leaf-lettuce seeds—either repeating the procedure at 10-day to two-week intervals, or sowing all your leaf lettuce at once and harvesting the outside leaves as the plants grow.

As the weather warms up, make new lettuce plantings in shadier locations (shade cloth can work wonders), and utilize some of the newer heat-resistant summer varieties that are less likely to bolt—particularly if given plenty of water.

For an autumn harvest, switch, in midsummer, back to the heading or cos types, making successive sowings. (Again, shade cloth helps seeds germinate and keeps the soil moist.) Harvest those that mature before the first frost, and—in milder climates—protect immature lettuce heads under glass or plastic for winter harvesting. In colder areas, move immature plants to a greenhouse or to sunny windows for winter and early spring eating, or sow fresh seeds in indoor containers.

When garden space is limited, lettuce can be intercropped with slower-growing vegetables, such as beets, carrots, cabbage or, for shade, corn. Or use it as a "catch crop," planting in areas that are temporarily available before sowing or after harvesting other vegetables.

Wherever lettuce is grown, it needs a humus-rich, moisture-holding, but well-drained, soil abundant in leaf-producing nitrogen. In the fall, many gardeners spade in a pound of fresh manure per square foot, letting it age over winter for spring planting. Some merely mix in aged manure and compost just before sowing their seeds. (Blood meal is another favorite fertilizer.) The pH content should be 6.5 to 7.0, so work in lime if necessary.

Indoors or out, sow the tiny seeds only quarter-inch deep and as thinly as possible. Leave 18 inches between rows. Since lettuce needs a little light to germinate, some gardeners broadcast the seeds and rake over enough soil to barely cover them.

A small seed packet generally plants a 100-foot row, which will produce approximately 80 heads, or about 50 pounds of leaf lettuce. Germination rate is more than 80%, and seeds remain viable for five to six years. Lettuce, however, needs cool temperatures to germinate. Therefore, if the earth is very warm, presprout the seeds for five days in the refrigerator on wet blotting paper, or mix them with a little moist peat moss and perlite.

Transplant seedlings to the outdoors when they are no more than two inches high. Handle them very carefully, since a damaged seedling is vulnerable to the disease gray mold. Do this in late afternoon (and water immediately), or else provide these young, wilt-prone plants with some kind of temporary shading.

In the garden, thin seedlings when they have four leaves. Head or romaine lettuce should stand 12 to 16 inches apart (nine inches for dwarf types). The same applies for leaf lettuce if you intend to pick the outer leaves over a long period, but if you'll be harvesting whole plants, four-inch spacing is adequate. In fact, many leaf lettuces are planted in thick rows or patches and not thinned at all. Thin butterhead lettuce until the plants are three to five inches apart.

Because lettuce has shallow roots, keep the surface soil moist but not soggy. Lettuce is 90 percent water,

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however, so try to give the plants three to four gallons of water per square yard weekly in dry weather. To prevent diseases, water in the mornings on sunny days, so that the leaves are dry by evening. In hot weather, the best way to assure surface moisture—and clean leaves—is with a mulch of grass clippings, hay, straw or the like—especially if applied just after a good rain. Lettuce beds are great places to use soaker hoses or watering wands. Lettuce doesn't compete well with weeds, but its surface roots are easily damaged by hoeing; again, weed-suffocating mulch is the answer.

WHAT TO WATCH FOR

There are a number of insects and diseases that can attack lettuce, but if you plant in a rich, well-drained soil and keep your lettuce weed-free, you'll seldom encounter serious problems in the lettuce patch. Among the most common pests are cutworms, which chew through the stalks of the main plants. To prevent them altogether, put paper, plastic, cardboard or metal collars around the plants. Lettuce-loving slugs, which nibble on leaf ribs during the night, are best caught and disposed of at that time. If you lay out boards, the slugs will hide under them during the day and can be collected, or you can put out saucers of beer to attract and drown them. Limestone or wood ashes sprinkled over the soil around the plants will also discourage slugs. If aphids become a problem, attack them with hose or garlic sprays, diatomaceous earth, wood ashes or ladybugs.



About the only disease you're likely to see is rot, which turns a plant black and foul smelling. Soggy soil and crowded plants are usually the culprits. Crop rotation is a preventive measure. Gray mold turns areas on lower leaves grayish green or dark brown and is usually caused by damp, overcast weather. The only solution here is to pull up the infected plants and dispose of them well outside of the garden area.

HOW TO HARVEST AND USE

The quality of mature plants deteriorates quickly if lettuce is not used at its prime, so make extra plantings rather than trying to extend a harvest. To test the firmness of heading types, press down gently on the heart of the lettuce with the back of your hand. Don't pinch it, as this can bruise the heart. Picking lettuce in the early morning preserves the crispness it acquires overnight. Use a sharp knife to cut the heads just below the lowest leaves, or pull the plants out by the roots. For the best flavor and nutrition, use lettuce immediately. If that's not possible, wash it thoroughly but briefly in cold water, and drain it well. Refrigerated, most lettuce will keep for up to two weeks.

As mentioned, loose-leaf lettuce can be harvested many times if only the lower leaves are picked, and pinching off the top center of the plant will discourage it from bolting. There will be a subtle elongation of the plant just as it begins to bolt. At that point, it will start to form a bitter white sap. Should any plants start to go to seed, pull up and discard them—unless, of course, you're a seed saver. In that case, choose the last plants to bolt, as quickness to bolt is a bad trait. Also remember that any lettuce can cross with other varieties as well as with wild lettuce.

And don't think of lettuce as just a salad ingredient. It can be lightly steamed, and, as the accompanying

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recipes demonstrate, you can bake it or use it in soups.

LETTUCE AND PEAS FRENCH STYLE

1 head Boston lettuce
2 pounds unshelled peas
4 scallions, chopped
1 small bunch mint
½ teaspoon salt
¼ teaspoon pepper
6 tablespoons water

Wash lettuce, but don't drain. Strip off large outer leaves, and put in saucepan. Shell peas, and mix with scallions, 1 tablespoon chopped mint, salt and pepper. Put on top of lettuce. Shred remaining lettuce, and put on top of pea mixture. Add water, cover pan, bring slowly to a boil, then reduce heat and simmer gently for 15 minutes or until peas are tender. Transfer to serving bowl, and garnish with mint sprigs. Serves 4.

SPICED LETTUCE SOUP

1 large head lettuce, washed and shredded
1 medium-sized onion, grated
½ lemon
1 teaspoon grated nutmeg
2½ cups chicken stock
½ teaspoon salt
¼ teaspoon pepper
1 cup undiluted evaporated milk
2 tablespoons margarine
2 tablespoons flour

Mix lettuce and onion together in saucepan. Grate in the rind of ½ lemon, and squeeze in juice. Add nutmeg, chicken stock, salt and pepper. Bring to a boil, cover pan, and simmer for 15 minutes. Sieve or blend soup, return to pan, and stir in evaporated milk. Reheat to a simmer, and thicken with blended margarine and flour.

Fall Planting For Spring Salads

By acting now, you can get the jump on next year's growing season!

By Betty Ann Laws

Along about March—when your tastebuds are a tad tired of canned goods and you'd almost be willing to swap a week's work for a fresh-from-the-garden salad—it seems like it'll be an eternity before the too-wet-to-till growing ground will be able to produce crispy greens. Well, take heart, because I'm going to tell you about a group of saladmakers that can be planted in the fall, wintered-over beneath a layer of mulch and harvested long before the spring-planted vegetables are ready. And—to top things off—I'm going to give you a list of perennial herbs that can add beauty to your garden while they're contributing color, texture and flavor to your dinner plate.

LETTUCE BEGIN

Of course, lettuce is traditionally considered the basic salad ingredient, and there are—fortunately—several varieties of the leafy vegetable that can be sown in the fall for early spring picking. 'Arctic King' (J.L. Hudson), for instance, produces large heads with crisp, crinkly leaves, while 'All Year Round' (Unwins, Redwood City) yields

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compact heads and can be sown again in the spring for an early summer crop, and 'Imperial Winter' (Unwins, Redwood City) is a fine loose-head variety.



SNOW JOB

I recall my father's telling me about an old-timer who always sowed his leaf lettuce on top of a late spring snow. As the drifts melted, the seed sank into the soft, moist earth and germinated, so every year this clever gardener had lettuce weeks before anyone else did! You can also plant hardy lettuce (except in the very coldest parts of the country) in November. The seeds will overwinter nicely, and then sprout at the first hint of spring!

FROZEN FOODS

Fall planting isn't limited to lettuce, of course. Such superhardy spinach varieties as 'Winter Bloomsdale' (Burpee) and 'Cold Resistant Savoy' (Stokes) can be sown in the autumn and harvested all spring long. The succulent dark green leaves are delicious raw (in salads) or cooked.

You may also be interested to know that Unwins offers some remarkable new Japanese onions that are intended for autumn sowing only. The crop matures by mid-June and nicely fills the gap between the time when most folks run out of winterstorage onions and the day when the first of the new year's planting can be eaten. Order 'Express Yellow O-X,' 'Imai Yellow,' or 'Senshyu' from the fine old seed house.

For those who like 'em slim and spicy, bunching onions—or scallions—are the answer. Try 'Japanese Bunching' (Harris), 'Hardy White Bunching' (Stokes), or 'Evergreen Long White Bunching' (Burpee, Park), they're all delicious!

When it comes to decorating a plate—and adding superior flavor to many dishes—parsley can't be beat. Both the curled and the flat-leaf forms are slow to germinate, but—if they're planted just before the first frost—the chill winter weather will help break the seeds' dormancy. 'Darki' and 'Bravour' (both available from Stokes) exhibit good cold-weather tolerance.

And, while you're planting parsley, scatter a few 'Dill Bouquet' seeds (Park) in the winter garden, too. This shorter, bushier form of the tasty herb won't topple over when the spring breezes roar.

PERENNIAL FAVORITES

Ornamental perennial herbs can supply flavor to your spring salads and add beauty to your garden plots, and many of the tasty plants will grow well in partial shade. Lovage, for example, needs screening from the sun, as well as a moist, rich soil. The leaves, stems and seeds of this plant (which resembles a giant flat-leaved parsley) taste like celery, and can all be used, fresh or dried, in cooked foods or salads.

Hyssop is an undemanding herb, growing contentedly in sun or shade and in any well-drained soil. The

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leaves add a taste of mint to meals, and the plants can be used to form a decorative two-foot hedge that's covered with blossoms all summer long.

The foliage of lemon balm, on the other hand, adds a citrus-like tang to food, and the plant stays green until hard frost. Light shade is preferred, and a poor, dry soil will concentrate the herb's lemony flavor. (I've found that clipping the flower stalks prevents self-seeding and keeps the herb from spreading out of control.)

Sweet cicely—another lover of shade—does best when grown in moist, slightly acid soil. The fragrant, fernlike herb provides anise-flavored seeds (used fresh or dried for baking) and leaves (snipped fresh into salads or onto fish).

French cuisine would be immeasurably poorer without sorrel. The tart, tangy foliage enhances salads, seafoods and even cottage cheese, while the steamed greens blend well with spinach or Swiss chard, and make a superior creamed soup. (As with lemon balm, it's best to prune the flower stalks to keep sorrel in bounds and stimulate the growth of succulent new leaves.) A moist, rich soil—with some afternoon shade—will provide ideal growing conditions.

Burnet is an essential ingredient in both French and Italian salads. The leaves impart a cucumber-like flavor, and they're ready for eating long before the heat-loving picklemakers have grown to fruiting size, and long after the elongated taste alikes are cut down by frost. Plant the seeds in rich, moist soil where they'll get full sun to raise clumps of burnet a foot and a half high. (As with many other perennials, occasional pruning stimulates new growth.)

If you want a splash of color in your garden and salads, borage can do the job since the herb's bright blossoms are edible! Plant the seeds in any well-drained soil that receives sun for at least part of the day, and you'll be rewarded by two-foot plants that spread to a width of four feet and are covered with blue, starshaped flowers. 'Borage'—unlike the other ornamental varieties listed here—is an annual, but it self-seeds so prolifically that you'll never have to sow it again!

Of course, by doing your salad planting in the fall, you'll free up flats for the vegetables that must be started in the spring, such as tomatoes, peppers, eggplant and squash. And—while your neighbors are looking longingly at the dollar-a-head lettuce in the supermarket's produce bins—you'll be able to celebrate the vernal equinox with a big bowl of crisp, tasty, homegrown greens!

Mâches

This nutty-flavored fresh green is a great choice for winter salads.

By William Woys Weaver



Corn salads — also known as mâches — are unusual salad crops because they are very cold hardy and grow best during the fall and winter. Two features of golden corn salad elevate it above the common mâche now sold in many supermarkets: its intensely nutty flavor and its ornamental possibilities for edible landscaping. The nutty flavor suggests a hint of toasted peanuts or even tahini; some people detect a trace of walnuts or hazelnuts.

The first time I saw this intriguing plant was in a southern England garden on a frosty January morning. There it was

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carpeting the border of a pathway, intermingled with variegated winter cress and Viola labradorica. The contrast between the brilliant chartreuse-green of the corn salad and the dusty purple leaves of the viola was stunning, more so since the viola was in full bloom. Better yet, both were edible — a winter salad waiting to happen.

Golden corn salad is a plant indigenous to much of the Mediterranean, and it can be found in the wild even in Switzerland. Botanically speaking, golden corn salad (Valerianella eriocarpa) is a "first cousin" of common green corn salad (V. locusta or V. olitoria).

In France, the golden type is generally referred to as mâche d'Italie (Italian corn salad). It was not until the early 1800s that people began to cultivate it in gardens. We call it corn salad not because it is related to American corn, but because in England long ago, wheat fields were called "corn fields," and that is where the plant often grew.

In the 1920s, French horticulturist Desiré Bois was one of the first to give this plant more than passing attention, recommending it highly and noting that there is a subvariety called "lettuce-leaved" golden corn salad because it resembles a dwarf head of lettuce.

Unfortunately, I do not think this lettuce-leaved golden corn salad is available in the United States. But you can push the more common golden corn salad to grow larger. If individual plants are placed about 6 inches apart, rather than planting them by broadcasting the seed, you will get nice, large and bushy salad greens of the most succulent texture.

The leaves of golden corn salad are much longer and larger than the common mâche leaves, so when the two are side by side, there is no mistaking one for the other. Because of the greens' nutty flavor, I recommend using cold-pressed peanut oil or a sesame oil, or even pricey hazelnut oil in any dressing you prepare.

Growing it is fairly simple, although I would consider it a bit too tender for overwintering in any part of the United States colder than Zone 6. The most common method of cultivation is to broadcast the seed on a plot of well-prepared ground in mid-August or early September.

By October, young plants should be well established and able to survive the rigors of winter, which they do very well in my Zone 6 Pennsylvania garden. The salad then can be harvested all winter long. Late the following spring, the plants bolt and run to seed.

After the plants are mature and begin dropping their tiny white seeds, just pull them up and stuff them upside-down into brown paper bags. Label the bags and set them aside in a cool, dry place for a month or so — until the plants are brittle. Then shake the seeds loose into the bottom of the bag and put them away in envelopes in a tightly closed jar.

Date your seeds carefully — if you store them in a cool, dark closet, they should remain viable for up to three years. In early spring or fall, you can plant the seeds the same time you would plant spinach; make additional sowings every two to three weeks. Since it is more heat tolerant than common corn salad, the golden corn salad does not bolt as quickly either. Thus it can be planted later in the spring for a harvest of greens well into early summer.

Food historian William Woys Weaver features golden corn salad in his book "100 Vegetables and Where They Came From." Weaver also is a contributing editor to *Gourmet* magazine and a professor of culinary arts at Drexel University in Philadelphia.

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GOLDEN CORN SALAD WITH VINAIGRETTE DRESSING

The following recipe is intended to be adjustable to many tastes and preferences; the important thing is to use a dressing that accentuates the fresh ingredients you have selected. I prefer hazelnut oil, but that is only one of several good choices. Experiment with other nut oils to find your favorite. (By the way, the hazelnut dressing also is excellent over potato salad.) Keep in mind that all varieties of corn salad are delicate, so add the dressing just before you serve the greens; otherwise the vinegar may cause them to wilt. My list of optional ingredients is such that you can add one or two, or all of them, depending on how filling you want the salad to be.

6 ounces (about 8 cups) golden corn salad, or a mix of golden corn salad and chopped spinach
Optional ingredients:
1 to 2 cups diced croutons (plain, with no extra flavorings)
1/4 cup chopped toasted walnuts
Dressing (see recipe at below)
For garnish, 2 ounces thinly sliced ham or half a small Italian Sopressata sausage
Also, small pansies, violas or violets
Put the salad greens in a deep work bowl, add the croutons and toasted walnuts. Add the dressing and toss the ingredients gently but thoroughly. Put this in a serving bowl and garnish with bits of the paper-thin ham or Sopressata, and small, edible flowers from your garden.
I promise you, there will be no leftovers.

Dressing
1/4 teaspoon salt
Freshly ground pepper to taste, preferably coarse-ground
1 tablespoon white wine vinegar
5 tablespoons hazelnut, walnut, sesame or peanut oil
1 tablespoon chopped fresh herbs (a mix of chervil, chives and parsley works well)

Put the salt, pepper and vinegar in a mixing bowl. Whisk until the salt is dissolved. Add the oil and fresh herbs, and whisk again until all the ingredients are emulsified. Then pour over the salad and serve immediately. Serves 4 to 6.


ROB CARDILLO

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OKRA

Okra, The Pretty Plant

Not only good to eat, but pretty enough to display with flowers in the garden

By Brook Elliott



'Burgundy' okra has attractive red stems and pods and grows to 4 feet tall.

Wow!" a recent visitor exclaimed. "Those are pretty enough to grow in a flower garden." She was right. With its elegant hibiscus-like flowers and spiky pods, okra is as showy as any edible plant can be. The tall plants look great in the garden, and the dried seed pods are often used in floral arrangements. The young pods are the part you eat; they have a tender, chewy texture and earthy green taste.

Call it gumbo, bamya, lady's fingers, bhindi, quingombo or a half-dozen other names, okra is an annual vegetable usually thought of as a Southern plant. Reflecting its host of common names, okra even has two scientific names: Abelmoschus esculentus and Hibiscus esculentus.

A basic ingredient in the Cajun dish filé gumbo, okra is actually much more versatile. It can be breaded and fried, steamed, baked, grilled, stir-fried, pickled, or used in numerous soups and stews.

Originating in Africa, okra is thought to have been brought to America by slaves, along with that other Southern staple, cowpeas (aka black-eyed peas). In colonial days it was more universally popular than now and was being sold in Philadelphia markets as early as 1781. In his classic 1863 book, "Field and Garden Vegetables of America," Fearing Burr lists four varieties, which indicates okra was a widespread market crop by the middle of the 19th century. As recently as 1998, there were 43 varieties being offered by commercial seed houses, according to the Seed Savers Exchange's Garden Seed Inventory.

Depending on variety, okra grows from 2 feet to as much as 10 feet tall, and usually produces green pods and yellow flowers with purple centers. But there are many variations on this theme, including plants whose stems, foliage and pods range from burgundy to scarlet. My favorite is an heirloom variety called 'Betty's White,' which produces ivory flowers with claret centers and white to very pale-green pods.

As the plant matures, a single flower forms in the crotch between branches and the stems of leaves. These flowers last only one day and are immediately followed by pods. Unharvested, the pods can grow as long as 10 inches. Okra prefers hot weather, but it's a misconception that it requires a very long growing season. Some varieties will begin forming pods just 50 to 60 days after planting. If your hot summer season is short, be sure to use one of these early-yielding varieties, such as 'Annie Oakley,' 'Dwarf Green Long Pod,' 'Blondie,' 'Burgundy' or 'Clemson Spineless.' Once the plants start setting pods, they will continue doing so until frost.

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HOT PICKLED OKRA

3 1/2 pounds small okra pods
4 cloves garlic
2 small hot peppers, halved
3 cups water
3 cups vinegar
1/3 cup canning salt
2 teaspoons dill seed

Pack okra firmly into four clean pint jars. Put a garlic clove and half-pepper in each jar. Combine water, vinegar, salt and dill. Bring to a boil. Pour hot liquid over okra, leaving 1/4-inch head space. Remove air bubbles. Adjust caps. Process 15 minutes in water bath.

Okra will grow in any well-drained garden soil in full sun. The soil should be worked 8 to 10 inches deep to promote strong root growth, and compost or organic fertilizer should be worked in. Most okra growers sow seeds directly in the garden. Plant the seeds an inch deep and 2 inches apart, in rows 3 feet apart, a few weeks after all danger of frost has passed. Once sprouted, the plants should be thinned to about 15 inches. Alternatively, plant three to five seeds in hills 15 inches apart. When the plants are 3 or 4 inches tall, thin the hills to the single strongest plant in each hill.

Contrary to conventional wisdom, okra can be started indoors. I start it in flats, then repot the young shoots into newspaper pots. These in turn are transplanted after all frost danger has passed, being careful to not disturb the roots. Growers in short-season climes might consider this technique to assure a crop. Okra should be cultivated to keep weeds down. Hand pull any weeds very close to the stems to avoid damaging roots. The plants produce strong stems, and staking is usually not needed. Okra is fairly drought tolerant, and watering every seven to 10 days is more than adequate.


WILLIAM D. ADAMS

HARVESTING AND PRESERVING

Okra pods should be picked when they are 2 to 3 inches long. (Larger pods will be tough and fibrous.) Often this means harvesting every two days to assure tender pods. Some okra varieties have short, hairy bristles that can cause itchiness and a possible rash, so wear gloves when harvesting the pods. (These hairs lose their prickliness when cooked.) Pods keep well in the fridge for up to three days. After that they start to discolor and deteriorate rapidly.

Three to four plants produce more than enough okra for the average family. Excess pods can be frozen, or you can make okra pickles. (See "Hot Pickled Okra," above) To freeze, just blanch the whole pods in boiling water for three to four minutes, then immediately cool them in an ice water bath. Freeze them in plastic bags, squeezing out as much air as possible before sealing.

To save seed from okra, let a few pods on each plant go unharvested. They'll grow large, then start to dry.

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If possible, let them dry fully on the plants. If not, once the drying has started, take them indoors and let them dry thoroughly. Even fully mature green pods can be dried indoors. The seeds shell easily from the dried pods. Although okra flowers are perfect and self-pollinating, the showy blooms are very attractive to bees, and different varieties readily cross-pollinate. To guarantee seed purity, varieties should be separated by at least one mile, or other isolation techniques—such as bagging individual flowers—should be used. When stored under ideal conditions, okra seed will remain viable for about five years.

Okra: The Hibiscus You Can Eat

Add a little variety to your vegetable menu next season by growing some okra.

By Nancy Pierson Farris



'Star of David' okra has a distinctive, strong flavor and can grow 10 feet tall.

Southern cooks have long recognized okra (or "gumbo," as we also call it) as a staple in the kitchen, and there's hardly a summer garden in the Southeast that doesn't boast at least one planting of Hibiscus esculentus.

The notion that okra can (or should) be grown only in the South, however, is both incorrect and unfortunate. Incorrect, because okra can be cultivated successfully as far north as Michigan, and unfortunate, because a steaming-hot bowl of shrimp gumbo would taste as delightful in any northern home as it does in my South Carolina kitchen!

And—in addition to its value as a foodbearing plant—okra (like any other hibiscus) is also a beautiful ornamental. (Many folks who can't spare room in their gardens for the 5-feet tall standard varieties of okra make space in their flower borders for 3-feet tall dwarfs.) Few people suspect that the burgundy-throated yellow blossoms borne by this plant give rise to a steady harvest of edible pods throughout summer and into the fall frosts.

Why not add a little variety to your vegetable menu (and beauty to your garden) next season by growing some okra? Okra culture is neither difficult nor complicated, and the eventual rewards—in taste, nutrition and a prettier garden—are well worth the small amount of effort involved.

Your first consideration, of course, must be soil preparation. The fast-growing, woody plants of H. esculentus require rich soil, plenty of moisture and abundant sunlight. You'll want to work plenty of humus into the ground to ensure good drainage, since okra seeds tend to rot in mucky soil, and if the topsoil isn't fairly rich in nutrients, you'll want to dig manure into it, too. It isn't necessary to spade up a large area, one 15-foot row is enough to keep most families in okra for a summer.

Although you can prepare the soil any time during fall or spring, it's best not to plant okra (which is a heat-loving crop) until the soil is warm and all danger of frost has passed. Sow seed thinly in the row, or plant in hills 24 inches apart. When the seedlings are well along, thin them to stand 18 to 24 inches apart in the row (or

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one plant per hill). Afterwards, mulch the young plants heavily to conserve moisture and discourage the growth of nutrient-robbing weeds.

Okra requires little further attention until about two months after planting when blooms begin to appear. The spectacular yellow blossoms are quickly followed by small nubs which—in turn—grow rapidly into several-inch long pods, pods that are susceptible to attack by bollworms, corn earworms, cabbage loopers and stinkbugs. (Blister beetles and leaf beetles sometimes attack the plant's foliage, but seldom the pods.) These pests can usually be controlled by handpicking, but if insect infestation becomes heavy you may wish to dust with rotenone. (Before dusting, remove all pods, even the nubs.)



'Lee Dwarf' is a high-yeilding variety developed by the University of Arkansas.

To be truthful, though, garden pests don't really bother okra very often. In fact, okra that's been grown in rich soil and cared for by organic methods seldom attracts many harmful insects at all. A far bigger "problem" than insects is how to harvest and make use of the plants' prodigious yield of pods!

Because the nubs grow so rapidly—and because the pods quickly become woody if they're allowed to stay on the plant—okra must be harvested at least every other day. (Cut the pods free of the main plant with a sharp knife.) We harvest all pods every 48 hours, leaving only the nubs to develop further.

In the kitchen, okra pods require immediate attention, since they tend to become fibrous even after they've been picked. The first order of business then is to cut the stem off each pod, being careful not to slice into the pod itself and allow juice to escape. The small pods may be boiled whole, seasoned and served as a side dish. The larger pods (which can be stored in a moist, cool place for use the following day) can either be sliced and put into soup or stew, or sliced, breaded with cornmeal and fried till crisp.

If the crop gets ahead of you (and it probably will), there are several ways to preserve okra. The easiest way is simply to freeze it. Blanch the whole, small pods for about three minutes, then pack 'em into containers, seal the containers up, and store them in the freezer. (If you wind up with one partly filled container, set it in the freezer and finish filling it at the next picking.)

Another way to keep okra is to cook it up into a batch of "okra soup," a favorite Southern staple for the pantry. (This is an especially good way to dispose of large pods.) In a big kettle, combine tomatoes, thick slices of okra, and corn and/or baby lima beans, in whatever proportions you wish. Add a teaspoon of salt per quart of soup, and a few sliced onions if desired. Cook till the vegetables are tender, pour into sterilized jars and seal. This soup makes a tasty accompaniment to rice, and—with the addition of meat stock and potatoes, noodles or rice—it becomes a hearty main dish itself. (Serve the soup with plenty of unsweetened cornbread, if you wish to maintain the Southern tradition.)

A third way to deal with an okra surplus is to pickle the pods. Substitute okra for beans in your favorite

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"dilly bean" recipe, combine the pods with pickled hot peppers, or use the following recipe: Pack three and a half pounds of okra into hot, sterilized jars. Make a brine consisting of one pint of white distilled vinegar, one quart of water, one-third cup of salt, and two teaspoons of dill seed. Bring the brine to a boil, then pour the hot solution over the okra, leaving $1^1/_2$ inches of air space in the top of each jar. Finally, seal the jars, process them for 10 minutes in a boiling water bath, and store them for several weeks before opening.

Then too, you can always dry your okra. This method of preservation does cut okra's Vitamin A content in half, but it leaves intact appreciable amounts of calcium, phosphorus, and iron. Dried okra seeds can be shelled and cooked like dried beans or peas, or they can even be ground up and used as a coffee substitute.

Good flavor, good nutrition, tremendous yields and spectacular flowers—you get it all when you grow Hibiscus esculentus (plain ole okra), whether you live in Michigan or Louisiana, or somewhere in between!

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ONIONS

Pick the Perfect Onions

All onions are not alike. Discover which types are the best choices for your garden and kitchen.

By Barbara Pleasant

Onions occupy an important place in theculinary world due to their wide variety and vesatility. Sweet and mild onions can be enjoyed raw in salads or lightly cooked in summer salsas and stir-fries, while pungent varieties add body and flavor to meats, marinaras and winter soups. If bulb onions aren't near the top of your shopping or garden-planting list, they should be. Many varieties of onions make excellent storage crops, so put onions in your garden and reap a harvest of beautiful bulbs that will enliven your kitchen in any season.


Yellow 'Newburg'
SCOTT VLAUN

COOKING AND CUTTING TRICKS

"There are no bad onions; you just have to use them correctly," says Bill Randle, a professor of horticulture at the University of Georgia who specializes in onion flavor. The pungency of onions can be rated on a numeric scale based on the amount of pyruvic acid present in the bulbs. For example, 'Yellow Granex' — the type of onion often called a 'Vidalia' — is among the mildest onions and might rate between 1 and 4, while many other sweet onion varieties — such as the 'Texas Super Sweet' — have ratings between 3 and 5. Storage onions, often called dry onions, contain more pyruvic acid and often rate between 7 and 12.

Many storage onions are delicious when cooked, but almost inedible when raw. "Most people can't hold a raw 8 in their mouth," Randle says."But when I'm making chili, that's what I want." Cooking spicy storage onions not only adds flavor to food, but can make the onions quite sweet.

Onions are complex chemical powerhouses, but their fury is not unleashed until they are cut. As soon as the cells are opened, a cascade of eye-irritating sulfur compounds hits the air. Cooks have many methods for taking the tears out of chopping onions, but according to Randle, the best idea is to chill the onion first. "The irritating compounds volatize at 50 degrees, so if the onion temperature is lower than that, it won't make you cry," he says. The chef's trick of leaving the base of the onion intact can help, too, because pungency compounds are most concentrated in the base and center of the bulb.

Want to turn up the volume of onion flavor? Finely chopping onions increases the number of open cells, which delivers more flavor to cooked foods than leaving onions in larger pieces. When chopped onions are left to sit, their flavor compounds continue to change and rearrange themselves, which can lead to bitter off-flavors. "Cut or chop onions as close to the time you plan to use them as you can," Randle says.

HEART-HEALTHY PROPERTIES

Here's another reason to eat onions: The same sulfur compounds that can make you cry when chopping onions are good for your heart. Onions act as a natural blood thinner that can reduce your risk of heart attack and stroke.

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Cooking breaks down the heart-healthy sulfur compounds, so the solution is to find heartburn-free ways to consume raw onions. While mild onions have fewer of these health-enhancing compounds than pungent onions, they can be a better choice for heart health because people are more likely to eat them raw. "I call it the pungency paradox," says Irwin Goldman, a professor of horticulture at the University of Wisconsin.

Goldman suggests two additional ways to enjoy raw onions: onion sprouts, which are eaten like bean sprouts; and onion flowers. "Onions kick on their defensive machinery early, so the compounds are quite concentrated in sprouts. They have a wonderful, sharp flavor when added to salads or sandwiches. Onion flowers have higher levels of medicinal compounds than the bulbs, and they taste fabulous when used in place of raw, chopped onions."

CHOOSING VARIETIES

Each ring in an onion bulb is the swollen base of an aboveground leaf, so onion plants that have many big leaves when they form bulbs will produce the best and biggest onions. That means that providing onions with a long, stress-free growing season is the key to growing robust bulbs. "You'll get the best crop by fitting your climate with onion maturation, which gives the plants longer to grow before they bulb," says Chris Cramer, head of the onion breeding program at New Mexico State University.

Onions are extremely sensitive to day length, which signals them to begin bulbing. Because of this, you should look for onion varieties that are adapted not only for your climate, but also to your specific latitude, which is directly related to the hours of daylight your garden receives. Choosing a variety adapted for far north or far south of where you live often means that the onions you plant won't form bulbs at all.

In general, there are three different onion types:

- Short-day onions wait until days last 10 to 12 hours to begin forming bulbs. They are the best choices in the South where onions can be grown through winter or planted in early spring. Short-day onions that mature before hot weather begins often taste sweet, and many of the sweetest onions are short-day varieties. Most short-day varieties also are juicy and store well for only a few weeks, even when refrigerated. Popular varieties include 'Texas 1015' and 'Granex' hybrids.

- Intermediate-day onions start bulbing when days last 12 to 14 hours and usually do well in the middle of the United States. These onions are dense and pungent, and store better than short-day onions. Some intermediate-day varieties, such as 'Super Star' and 'Candy,' can mature into moderately sweet onions under perfect conditions, but most of these onions are pungent. Most are hybrids developed from a combination of short-day and long-day varieties.

- Long-day onions require 14- to 16-hour days to begin forming bulbs, so they grow best in Northern regions, where there are many hours of daylight during the summer months. Long-day onions are usually dense and pungent with thick, papery skins that protect them from moisture loss, so they often store well for many months. Most long-day onions sold as plants are hybrids, but if you're starting from seed you can grow outstanding open-pollinated varieties such as 'New York Early' or elongated 'Red Tropea.'

PLANTING ONIONS

Gardeners growing bulb onions have to choose among planting with seed, sets or seedlings. Onion sets are small bulbs stored from the previous year's crop; seedlings are young onion plants that haven't yet formed bulbs.

Starting from seed is inexpensive, but is the most challenging option. Properly stored fresh onion seed germinates well at 60 to 75 degrees, but if heavy rains cause a crust of soil to form over the seeds after they are planted, then emergence rates can be low. Onions compete poorly with weeds. When starting from seed, hand weeding is especially important to

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keep the skinny, upright plants from being smothered by pushy neighbors. Newly sprouted seedlings also need time to grow before bulbing, so starting from seed is most practical in the mild winters of Zones 8 and 9, where onions can be seeded in fall and grown through winter.

Both sets and seedlings are easy to handle, but fewer choices are available for sets. Starting with either gives onions a six-week head start and avoids one of the main pitfalls of growing onions: bolting, which is what happens when onions form flowers. Bolted onions do form bulbs, although they are small and don't store well. Some varieties are naturally bolt-resistant, but exposure to cold weather can trigger a flowering response in any onion variety. Be sure to wait until at least six weeks before your last spring frost to plant sets or seedlings. Even then, a late cold snap can cause your largest plants to bolt.

To help manage weeds, you can use corn gluten herbicides when growing onions from sets or seed-lings. (Don't use corn gluten if you're planting onion seeds because it will kill them.) In addition to slowing weed emergence, corn gluten herbicide raked into the planting row or bed provides a good dose of nitrogen as it decomposes. Another option is hand weeding, followed with a light mulch in late spring.


'Red' Onion
SCOTT VAUN

Bruce "Onion Man" Frasier, co-owner of Dixondale Farms in Texas, which produces 420 million onion seedlings each year, says the ideal planting size is an onion slightly smaller than a pencil. "Plants that are much larger have a tendency to bolt," he says. "Smaller plants will produce bulbs, but you can get two crops by planting the small ones 2 inches apart and pulling every other onion to use as scallions during the growing season. This will leave you with the 4-inch spacing you need to grow big bulbs."

The best soil for onions is fertile sandy loam, but any kind of soil that is rich enough to grow tomatoes is good enough for onions. Rotating your crops from year to year is the best way to prevent onion diseases such as pink root and others caused by soilborne fungi. Rotating also can help you escape problems with insect pests such as onion root maggots. Where this pest is widespread, the best defense is to start your crop beneath row covers.

FLAVOR AND STORAGE

If you prefer onions with sweet and mild flavors, several techniques can help lower the pungency of your onions. If you need to enrich your garden soil, one possibility is to mix an organic fertilizer into the soil beneath the planting row, rather than broadcasting it throughout the bed. This technique, called banding, has two advantages: The shallow onion roots are sure to find the fertilizer and will probably use up most of it by the time bulbing begins. Randle notes that onions that exhaust soilborne nutrients as they approach maturity — yet still receive ample water — often have a mild flavor because their ability to make sulfur compounds decreases as nutrient levels fall.

If sweet onions are your goal, a steady water supply also is important because stress from short-term drought causes onions to accumulate more of the compounds that cause pungency. It's best to use watering methods that keep the leaves dry, such as drip lines or soaker hoses. "Overhead watering encourages fungal diseases, which limit the leaves' ability to store carbohydrates for bulb formation," Frasier says.

Once onion bulbs begin to form, ample watering can help dilute the flavor compounds in the onions, resulting in a milder taste. The story changes as onion tops fall over, signaling maturity. Mature onions will store best if the bulbs are allowed

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to dry out during their last days in the ground. If rainy weather hits just as the tops fall over, it's best to pull up the bulbs and move them to cure in a warm, dry place. Take care to avoid bruising, which can lead to rotten spots, and either hang the bulbs or spread them out on newspapers to dry. In only four days or so at 85 degrees (or a few days longer at room temperature), the necks should tighten and close as the outer layers form papery scales. Cured sweet onions are so packed with water that they should be stored in the refrigerator. Harder, pungent onions can be kept in a cool, dry place with good air circulation between the bulbs.

The Other Onions

Most kitchen gardens contain at least one row of onions, usually planted in the spring. Less well-known are the fall-planted onions, including multiplying onions, shallots and bulbing leeks.

By Brook Elliott



Egyptian or walking onions produce bulblets at the tops of tall stems each spring.

They offer several advantages over their spring counterparts. Fall-planted onions need to go in the ground when few other garden chores demand to be done. They also tend to be more reliable and productive, less day-length sensitive and less subject to the depravations of pests and diseases than the more-familiar onions of spring.

Other than garlic, these autumn onions mostly fall into the Allium cepa var. aggregatum group, although notable exceptions include bulbing leeks (A. ampeloprasum) and the perennial Rakkyo (A. Chinese). By and large, all multiply primarily through the formation of new bulbs, which is called vegetative propagation. Most alliums do not produce seed.

Identifying autumn onions can be confusing because the same common name often is used to describe different plants. For instance, potato onions sometimes are called Egyptian onions, which actually are in the top-setting Proliferum group.

To help clear the fog, here's a rundown of various popular types:

TOP-SETTING MULTIPLYING ONIONS

Also known as Egyptian onions, tree onions, top onions and walking onions, these perennials set small bulblets on top of tall stems, instead of producing underground bulbs or making seed heads. The bulblets measure only $^1/_2$ to one inch in length and look like miniature purple-red onions. They often are used for pickling and in vinaigrettes or soups, and they will last several months in storage.

The weight of the bulblet cluster, if left alone, causes the stem to bend, dropping the cluster to the ground, where it roots and sends up new shoots — thus the "walking" sobriquet. To propagate them, simply remove some of the bulblets and plant them where you want new onions to grow.

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The 'Catawissa' onion is a variant of the Egyptian onion. Its bulblets actually can send out shoots before touching the ground, so that a second and sometimes even a third tier of bulblets are produced.

BULBING MULTIPLYING ONIONS

Most commonly known as potato onions, these multipliers also are called ground onions, inground onions and hill onions. Some carry descriptive or varietal names as well, such as 'Yellow,' 'Red,' 'Kentucky Hill' and 'Greeley's.'

To propagate, plant the bulbs in the fall. At maturity the next summer, a single bulb divides into as many as 14 new bulbs. Depending on the variety, the new bulbs can be full-sized singles (as much as 3 inches in diameter), a bunch of small bulbs, or a combination of large and small bulbs. As a general rule, the large onions are kept for the table and the small ones are used as sets for planting out again.

SHALLOTS

Botanically speaking, shallots don't exist; they are a form of bulbing multiplying onion, differentiated by their smaller size. Originally, they were named for a plant found by the Crusaders, but they bear no botanical relationship to that plant. Most shallots on the market today are not even the same shallot so beloved by the French. Instead, they are varieties developed by crossing common onions with Welsh onions or other multipliers — a primary aim of the plant breeders was to create varieties that could be reliably reproduced.

Some authorities differentiate shallots from other multipliers by the color of their skins. The Ontario Ministry of Agriculture and Food, for example, identifies shallots as those with red skins (or scales) and true multipliers as those with yellow or brown skins. Most shallots do not flower or produce seed, although breeders have developed some new varieties that can be grown from seed.

In practical terms, shallots are small, layered multipliers with a special taste that falls somewhere between onion and garlic. They are propagated in the ground the same as other bulbing multipliers, and each bulb produces from four to a dozen baby bulbs in a bunch, joined at the base by a membrane. In most varieties, each bulb is split into two large cloves that may or may not share a common wrapper.

BULBING LEEKS

Leeks usually are spring-planted from seed, but several types that are neither precisely bulb nor multiplier do bridge the botanical gap between seed-forming leeks and non-seed-forming garlics. Three are of particular interest to home gardeners.

The most familiar is elephant garlic, which forms huge heads differentiated into cloves, each of which can grow to the size of a big man's thumb. Occasionally, small, hard bulbets form outside the main head as well. Elephant garlic is propagated exactly like true garlic, by dividing and replanting the cloves.

'Perlzwiebel,' also known as Portuguese onion, is another bulbing leek. The head divides into small, round bulblets resembling pearl onions that range from pearl size to an inch in length, with the larger ones tending to be flattened.

The third is the 'Los Mol' wild leek, perhaps the least known of the three. Naturalized throughout Europe (primarily in Spain and the United Kingdom), each bulb divides into four bulbs that sometimes have hard bulblets attached, like elephant garlic. Either the full bulb or the bulblets can be used for propagation.

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'Los Mol' tastes like garlic, and those who know it say they like it best in omelettes and soups. This leek is not a truly wild plant; rather it once was widely cultivated, particularly in church gardens. Some of the naturalized European stands now are being rediscovered and harvested for commercial purposes because interest among gardeners is on the rise.

Except in the far north, standard leeks can be grown as a fall/winter crop, too, particularly if they are well mulched. To succeed, you should set seeds indoors in July or August, to protect the plants from extreme summer heat, and transplant them to the garden in September, when temperatures begin to fall. Before cold-weather threatens, make sure the plants are well mulched.

RAKKYO

This allium is very familiar to most gardeners, but they don't know it. If you've ever bought a jar of those tiny pickled onions, which you probably thought were pearl onions, chances are you bought Rakkyos. The Japanese pickle and export thousands of barrels of Rakkyo each year.

It is a multiplying perennial with a backwards-growing twist. Planted in late summer, Rakkyo grows new leaves and scapes, which are leafless stalks, at the same time.

In October, the scapes put out flower heads that do not produce seed. The plant then goes through the same winter dormancy as other autumn onions, producing bulbs in the late spring and early summer. Each bulb divides into from four to 14 new full-sized bulbs, each measuring roughly one-by-one-half inch.

By July, tile bulbing is complete; if not harvested (called "lifting" with bull crops) then, the plants go through a short summer dormancy. By August, they start their growing cycle again.



A harvest of Japanese multiplier 'Swensen's Small.'

ONION TIPS

Heirloom onion grower David Cavagnaro says a few small bulblets from walking onions or other autumn alliums easily can be potted up and kept on a windowsill for a steady supply of tender green onion tops in winter, Most of the multipliers grow better indoors than chives during the cold months of the year.

To make peeling small onions and shallots easier, some restaurant chefs cut off one tip, drop the bulb into hot oil briefly, drain and cool it, and squeeze out the softened insides. Baking the bulbs like garlic, says Cavagnaro, probably would work well, too.

CULTIVATION

Fall-planted onions can go into the ground at tulip-planting time (and easy way to remember when to plant them) and, in most cases, the onions should be cultivated just like garlic. Although they will grow in any soil, they prefer, a rich, light loam that allows them to "stretch their legs," or spread.

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Onions also are heavy feeders, so the soil should be amended (enriched) regularly. For a new planting, equal parts of dried blood, bone meal and hardwood ashes should be worked into the soil at the rate of one cup to every 10-foot row before planting takes place.

Established plantings should be fertilized with the same soil amendments and/or compost by side-dressing the plants, which means spreading the materials around their bases.

Planting can take place anytime the soil can be worked, as long as the plants' root structures have time to develop before the ground freezes. In most of the United States, October to December is prime fall-onion-planting time.

During warmer-than-normal winters, some sprouting may take place before the plants go completely dormant; in such a case, the tender sprout leaves may suffer frostbite over the winter but the plants themselves will not be harmed.

All fall onions but shallots should be planted from 2 to 4 inches deep and from 4 to 6 inches apart. Space the rows at least 8 inches apart, so you have room to hoe. In far northern areas, it's OK to mulch them in winter.

Shallots should be planted less deeply than the others — with their tops just under or level with the soil line, like spring-planted onion sets. This way, the shallots will grow on top of the soil, like common onions. In colder areas, shallots absolutely require mulching.

The tops of fall-planted onions will start to dry up and die back in mid-summer. When about half the leaves have died, the bulbs should be harvested. If the weather is fair, they can cure right on top of the soil. In wet weather, spread them out in a sheltered area that is warm but not subject to direct sunlight. In either case, after a few days, hang them in bunches to finish drying.

CHICKEN 'CHINENSE'

4 chicken breasts, skinned, deboned
1/2 cup Rakkyo onions (or shallots)
3 garlic cloves, minced
1 cup mayonnaise
Juice of 2 limes
1/4 teaspoon cayenne
Salt and pepper to taste
Paprika

Trim and peel the Rakkyo, and cut each bulb in half lengthwise. Combine the mayonnaise, onions, garlic, cayenne and lime juice. Slice the chicken breasts into strips about 1/2-inch thick, cutting across the grain. Lightly saute the strips, turning once, until they just turn opaque.
Combine the sauteed chicken with the mayonnaise mixture and refrigerate at least two hours. Transfer the ingredients to a baking dish, sprinkle with the paprika and bake at 350 degrees about 20 minutes.

MUSSELS WITH GARLIC & SHALLOTS

2 teaspoons olive oil
Generous pinch cayenne

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2/3 cup shallots, minced
3 garlic cloves, minced
2 cups semisweet white wine
24 mussels, cleaned and debearded
1 tablespoon fresh rosemary, chopped

Heat the oil in a heavy skillet. Add the cayenne and wait 30 seconds. Add the shallots and garlic; saute three to four minutes, stirring occasionally. Add the wine and bring to a simmer. Add the mussels. Cover and steam until the shells open, five to six minutes. Discard any mussels that do not open. Divide evenly between four shallow dishes, and sprinkle with rosemary.



BAKED GARLIC

Remove loose skins, slice off the top of each head (pointy end), arrange in a baking dish and drizzle with oil. Cover with foil and bake 45 minutes at 350 degrees; remove cover and bake another 15 minutes, until garlic is soft and golden. Cool. To serve, squeeze soft garlic out of skins and spread on meat or bread.

ONION PIE

1 cup fine cracker crumbs
1/2 stick plus 2 tablespoons butter
2 claps multiplying onions, thinly sliced
2 eggs, lightly beaten
3/4 cup milk
3/4 teaspoon salt
Dash pepper
1/4 cup sharp cheddar cheese, shredded
Paprika

Melt 1/2-stick of butter; stir in cracker crumbs and press the mixture into an 8-inch pie plate. In a skillet, saute the onion slices in 2 tablespoons of butter until they are transparent. Spoon them into the prepared pie plate. Combine the eggs, milk, salt and pepper; pour mixture over the onions. Sprinkle with shredded cheese and paprika, and bake at 350 degrees for about 30 minutes.

About Alliums

Pungent kings of the culinary world

By Sara Pacher



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How dull many of our meals would be without onions, leeks, shallots, chives and garlic! These edible alliums—members of the Liliaceae, or tile, family—pep up meat, and poultry, lend a crispy crunch to salads, give soul to soups, are essential to stir-fries and can be creamed, fried, baked or pickled standalone dishes. Besides being tasty and low in calories, onions are healthful, too. The vegetable's antiseptic quality makes it a valuable poultice for infections; onion juice sweetened with honey is good for cough and colds; and the fresh vegetable acts as a diuretic, improves low blood pressure and helps control vertigo. Additionally, when cultivated, harvested and stored properly, garden-grown alliums can be enjoyed year-round.

Fortunately, humans have seldom been without these verstile plants. Members of the onion family have flourished in cultivation so long that their origins are uncertain. Some think they were first grown in Mongolia; others opt for Asia Minor. Onions are mentioned in the Old Testament and were in the diets of those who built the Egyptian pyramids. Alliums helped sustain the ancient Greeks, and garlic was considered essential for empire-building Roman soldiers. On this continent, wild onions flavored the meals of American Indians for centuries before Europeans arrived. Happily, alliums are easy to grow—some easier than others. In fact, one member or another of the onion family will survive in almost any soil or climate, but different varieties do have specific requirements, so let's look at them separately.

ONIONS (ALLIUM CEPA)

Onions come in all shapes and sizes: round (including globe types, small pear or pickling onions and the large Spanish varieties); flat, flat-wide, flat-round and half-flat (the mild-flavored Bermuda onions); top-shaped or pear-shaped onions (Grano types); and the high-yield, spindle-shaped Red Torpedo, grown chiefly in California. Many also come in red, yellow or white versions, and new varieties are developed all the time. While most onions can be utilized as scallions when they're young, perennial bunching types (Allium perutile and Allium fisulosum) produce superior scallions and are also practically immune to pests and diseases. Another perennial— Allium cepa solanium, known as a multiplier or potato onion—is propagated by a division of underground bulbs, with each bulb multiplying into a bulb cluster. And we mustn't overlook the remarkable Egyptian onion (Allium cepa vivaparum), which produces a bulb cluster at the end of a long stem with a second cluster frequently forming on top of the first. Egyptian onions also have underground bulbs, but these are so strong that usually only the aboveground bulbs are used.

LEEK AND POTATO SOUP

4 medium potatoes, peeled and diced
2 cups cold water
4 large leeks, sliced, including some fine-sliced green tops
1 large onion, chopped
2 tablespoons margarine or vegetable oil
3 cups milk
Dash of cayenne pepper
Salt and pepper to taste
2 tablespoons fresh minced parsley
1 cup cream

Cook potatoes in water about 10 minutes. Saute leeks and onion in oil until golden. Add to potatoes and stir in milk and seasonings. Simmer until the flavors are blended (about 15 minutes). Add parsley and heat almost to boiling, stirring frequently. Enrich soup with cream and serve hot.

ONION VARIETIES

Your choice of allium variety will be determined by climate and by whether you prefer seeds, transplants

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or sets. For example, you should always check a cultivar's daylength requirement. Long-day varieties need the 13 to 16 hours of daylight of Northern summers to mature. Short-day types (such as 'Bermuda' and 'Sweet Spanish') thrive in milder climates with only 12 hours of daylight.

Seeds provide the greatest choice, but onions grown from seed often take five months to mature, and the plants they produce can be susceptible to diseases. Transplants, sold in bunches, are seedlings started in the current growing season. They usually form good bulbs. Sets, immature bulbs from the previous year, are the easiest to plant, the earliest to harvest and the least susceptible to diseases. Unfortunately, only a few varieties are available in this form, and not all will yield good bulbs. (Look for small-bulbed sets, as large ones may go to seed before producing a good-sized onion.) For the Middle or Northern sections of the country, try sets of 'Ebenezer' (early yellow) and 'Stuttgarter' (yellow, nonsprouting).

In the South, pick a firm, sweet, mild 'Granex' type. (The famous 'Sweet Vidalia,' grown in two Georgia counties, is yet another 'Granex.' The 'Walla Walla Sweet' is equally prized in the West.) 'Sweet Spanish' types, such as 'Fiesta,' generally taste better than yellows and store fairly well. 'Bermudas' are slicing favorites but aren't good keepers. Good white storage onions include 'White Ebenezer' in the North and 'Granex White' in the South. Red onions are normally very pungent—and, as a general rule, the stronger-flavored onions keep best of all. When planting bunching onions, you can't go wrong with the crisp flesh and mild flavor of 'White Lisbon.' Its dark green foliage is resistant to heat and cold, and it stays fresh long after being pulled. Once planted, winterhardy 'He-Shi-Ko'—a perennial with white, pungent flesh—will add flavor to meals for years, while 'Wonder of Pompeii's' small, round, early bulbs are great for pickling.

ONION CULTIVATION

The onion bed should be moist but well drained with a pH of 6 to 7. Sandy loam is ideal, but onions thrive in most any soil if large quantities of well-aged manure, wood ashes and bone meal in a 5:1:1 ratio are worked in to a depth of six inches. This vegetable likes cool weather (55 to 75 degrees) in its early stages. Therefore, plant seeds in the spring in the North and (depending on the variety) in the fall or winter in the South. Generally speaking, frost-hardy onions can be sown four to six weeks before the last frost date—or even earlier indoors or in a cold frame. (Mix in some quick-sprouting radish seeds to mark the onion bed and to lure any root maggots that might be lurking in the soil away from your allium crop.) Sow the seeds thickly about one-half inch deep.

Thin young sprouts to one inch apart. (When they're started under glass, transplant to the garden when two to three inches tall.) Thin again a month later to two or three inches apart, enjoying the tender rejects in salads and other dishes. At the same time, dig the soil back to expose the tops and sides of the bulbs to help stimulate bulb formation. Position plants or sets two inches deep and four to six inches apart, depending on whether you plan to harvest some as scallions. If planting in rows instead of raised beds, make the rows about two and a half feet apart. Keep well weeded, but—because onions have shallow roots—cut, don't pull, any wild intruders. Once the soil has warmed up, add a thick layer of mulch around and between the onions to discourage weeds and to hold moisture in the soil. (Transplants require more water than do sets.)

ONION ENEMIES

Onions are mostly disease- and insect-resistant, but keep an eye out for root maggots (small, white larvae that usually enter the base of the bulbs and burrow upwards to feed on the stems) and onion thrips (barely visible larvae that cause bleached, deformed plants with silvery blotches). There are, however, preventive measures that can be used to deter both pests. Root maggots; for example, travel in a line from one bulb to the next, so their threat will be reduced if you scatter-plant onions throughout the garden. (Keep in mind that alliums are good companion plants to roses, lettuce, carrots, beets, parsnips and members of the cabbage family, repelling such

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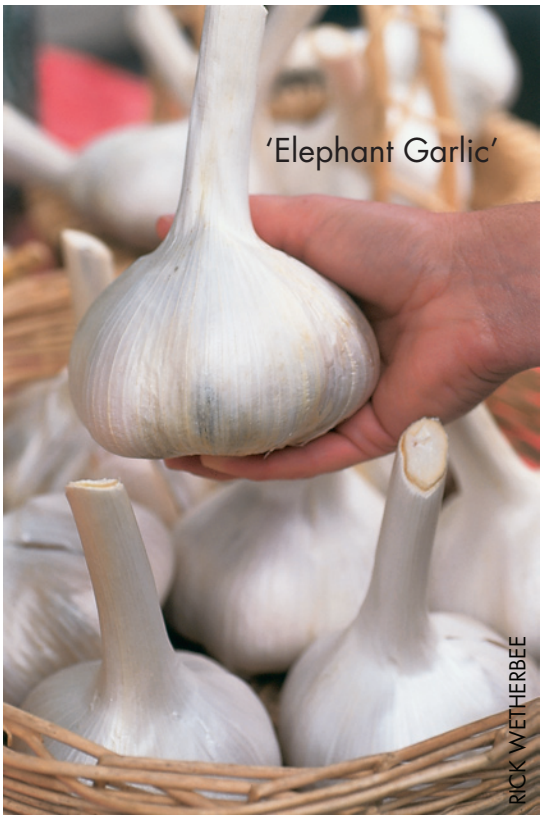
pests as aphids, Japanese beetles and carrot flies.) As mentioned, maggots can also be lured to radishes, which can be pulled up and destroyed if infested. Also add a thin layer of wood ashes or sand around the bulbs to discourage adult flies from laying their eggs at the base of the plants.

Use rotenone if all else fails. Thrips overwinter in weeds, so keep your onion patch clean. If that doesn't work, try an oil-and-water or tobacco spray, rotenone or pyrethrum. A cheesecloth cover placed over your crop during May and June will protect it from the lesser bulb fly, which enters through the top of the onion bulb. Garlic-and-water sprays also discourage this pest, along with the garden springtail, a tiny purple insect with yellow spots. Onion ailments are confined to smut (black leaves and pustule patches between bulbs), downy mildew (a purplish mold) and self-descriptive pink root and neck rot—all of which are caused by fungi in the soil. Avoid these infections by practicing crop rotation, providing good drainage and working a lot of humus into the onion bed.

ONION HARVEST

When onion tops turn yellow, bend them over horizontally with the back of a rake to stop the sap from flowing and divert growing energy into the maturing bulb. Once the tops turn brown, wait for a sunny period to pull or dig the crop, and dry the bulbs on the ground for a few days. (To prevent sunscald, "shingle" the onions by letting the tops of one row cover the bulbs of another.) When the outer skins are thoroughly dry, wipe off the dirt and dried roots, remove the tops (unless you plan to braid them), and store your harvest in a cool, dry, flat place. Hang braided onions or those kept in mesh bags in an airy spot.

With the exception of green onions, which won't keep long even when refrigerated, mature bulbs can last indefinitely. Therefore, onions aren't usually canned or frozen. Pickled onions, however, are a delightful treat. Just cover 10 pounds of small bulbs with boiling water and let them stand for 2 minutes, drain, dip into cold water, drain again, and peel. Soak overnight in lightly salted water. Then combine 3 cups of white vinegar, 3 cups of water, $1^1/_2$ cups of sugar, 2 cloves of garlic, 2 bay leaves, 2 cinnamon sticks and 5 whole cloves in a large pot and bring the mixture to a boil. Add the drained onions and bring to a boil again. Pack into sterilized jars and cover with the boiling liquid, leaving $^1/_4$ inch headspace. Adjust lids and process in a boiling-water bath for 10 minutes. Makes 10 pints.


'Elephant Garlic'
RICK WETHERBEE

GARLIC (ALLIUM SATIVUM)

This perennial is highly adaptable to most parts of the country, has similar soil requirements to those of onions and likes cool temperatures during its early growth. It also needs plenty of sun. If you want to grow garlic from seed, 'California White' is popular; 'Giant Cajun' garlic offers extra-large, mild bulbs; 'Mexican' garlic is pungent and hardy; and elephant garlic—Allium scorodoprasum—produces one-pound, milder than-average bulbs. Most people, however, use the cloves of store-bought white garlic bulbs. These can be planted about eight weeks before the last frost or in the fall if mulched heavily where winters are severe.

Separate each segment gently (the larger cloves usually produce the largest bulbs) and place them, plump side down, one to two inches deep and four to six inches apart. Rows should be at least one foot apart, but you'll

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probably want to scatter garlic throughout the garden for its insect repelling properties. Don't, however, plant it near your peas or beans, as legumes don't care for garlic companions. Once in the ground, garlic will care for itself if you keep weeds down and don't let the soil dry out.

To produce larger bulbs, remove the flowers that appear on the leaf stalks. Watch for signs of onion thrips, root maggots and downy mildew, though such problems are unusual. When garlic tops are about one foot tall, stop watering. Once the tops begin to droop, knock down the foliage to speed up the curing process and—a few days later—loosen the soil and pull out the entire plant. Dry in a cool location with low humidity to keep the bulbs from molding. Remove the tops and store like onions. The bulbs will last for several months—or up to a year if wrapped and refrigerated. Use generously in recipes, for garlic contains vitamins C and B, phosphorus, calcium and potassium, as well as allicin, a chemical with antibiotic properties that can minimize the effects of colds, aid the digestive tract, ward off traveler's dysentery, help control high blood pressure and reduce the risk of heart attacks and arteriosclerosis. Garlic sprays repel insects and can deter diseases such as downy mildew, cucumber and bean rust, bean anthracnose and early tomato blight.



Shallots, a form of multiplying onion, are flavored by chefs for their distinctive flavor, described as a blend of onion and garlic.

SHALLOTS (ALLIUM ASCALONICUM)

It's surprising that grocery-store shallots are so expensive, because the plants are very easy to grow. Extremely adaptable to practically any soil or climate, this allium is beautiful, with its graceful, bright blue-green stem, and its gray, angular, mild-flavored bulb (related to the multiplying onion), it's a favorite of French chefs. (A young scallion is eaten whole, while the mature bulb is used like a milder, superior-flavored garlic.) As with garlic, it's best to make your shallot sets by dividing bulb clusters purchased from a store's produce section. (The only true shallot seeds available are the 'Louisiana' variety.) Each shallot will multiply and produce four to eight new bulbs.

Shallots aren't particular about soil, disliking only very acid spots, but the earth must be well dug, because the plants send feeder roots down to a depth of eight inches. However, they have no lateral roots, so the cloves can be planted close together. Plant them about one inch deep (barely cover the tip of the clove) and two to three inches apart in February or March. Light feeders, shallots like a little phosphorus but don't require rich soil. They can also survive dry spells, but—for the best growth—keep the soil weed free and slightly moist. Around June, draw the soil away from the bulbs. Though growth stops with freezing temperatures, shallots are very hardy and also will tolerate both low and intense light conditions, flourishing best when temperatures are in the mid-70s and daylight hours are long. Shallots can be harvested as green onions at any time, and if the tops are cut off near the soil, they'll produce new ones.

In fact, cutting the tops and using them as you would chives will promote bulb production. Bulbs mature in about five months. At that time, pull them up, cut off the tops, dry, and store them in a cool place—saving the healthiest looking bulbs for next year's crop.

CHIVES (ALLIUM SCHOENOPRASUM)

The early-spring, grass-like chive has been enjoyed for centuries in Britain and Europe and for thousands of years in China. Though fairly tolerant of most soils and locations, it rewards the gardener who gives it a humus-rich, moisture-holding home with superior flavor and succulence. (Poor soil can even cause chive tips

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to yellow.) The germination of spring-sown seeds will be slow, and the first year is likely to be unproductive. Impatient gardeners should set out chive clumps, which will be ready to harvest two months later. Each clump should contain about six bulbs, and the clusters should be spaced eight inches apart. Every third year, dig up, divide and replant in another section of the garden. Chives are not evergreen and will die back, so—before the first frost—put a few clumps in pots, cut back the leaves to about two inches, and bring them indoors for use in winter dishes. Whether indoors or out, constant cutting is necessary to keep up an ongoing supply of leaves. Flowers, though attractive, also should be cut off.

LEEKS (ALLIUM PORRUM)

Switzerland, Algeria and the Eastern Mediterranean all claim to be the original home of the leek—and, indeed, any place would be proud to claim this wonderful allium. It's very easy to grow, is resistant to pests and diseases and can be harvested fresh from many gardens throughout the winter, so make sure to plant a large crop, because this is the sweetest and most delicate-flavored of all the onions. Though not very popular in this country, leeks have been prized in ancient civilizations for three or four thousand years.

Leeks thrive in temperate climates (growth will slow above 90 degrees) and will withstand temperatures several degrees below freezing. Though they prefer crumbly, rich loam, such as woodland humus, they will do well in most soils, if well-rotted manure or good compost is worked in deeply. However, they require a lot of moisture and dislike weeds.

Depending on the variety, leeks take from 70 to 110 days to mature but can be harvested as green onions some three weeks earlier. Their flavor is best, however, after the first frost. To get a head start, sow seeds indoors in flats two to three months before setting them out. At three inches, thin the seedlings to one inch apart; when five inches tall, thin to two inches apart. At about eight inches, transplant to the garden, placing seedlings in six-inch deep holes spaced six inches apart, and fill the hole with water to anchor the roots. When the plants are pencil-size, carefully bank up the soil around the lower two or three inches to blanch the leek, to improve both its appearance and its delicate flavor.

And how you'll love that flavor! Where temperatures seldom fall below 10 degrees, just pull leeks from the garden throughout the winter. In colder climates, ball them up and keep them in a box in a cool, dry place. Use them in any recipe that will be enhanced by a delicate onion flavor. (The long, white stem is most commonly eaten, though the sharper tasting green tops are good, too.) Serve them in wilted-spinach salad. (Saute chopped leeks and garlic in a little bacon grease, stir in spinach leaves until wilted, and serve topped with crumbled bacon.) If young and tender, leeks can be creamed and used as an excellent topping for toast. (Saute in butter, simmer, and add a cream sauce.)

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PARSNIPS

Parsnips Back on the Plate

Now is the time to experience parsnips, the ivory jewel of the root vegetables.

By Kris Wetherbee



GINGER-GLAZED PARSNIPS

1 tablespoon butter or margarine
½ tablespoon honey
1 pound parsnips (about 3 to 4), peeled and thinly sliced
¼ to ⅓, cup chicken broth
1 to 1½, teaspoon freshly grated ginger root
Salt and pepper to taste.

Melt butter in a medium saucepan. Add honey and ginger to the saucepan; then add parsnips and sauté for about five minutes or until lightly glazed. Stir in chicken broth. Bring to a low boil; reduce heat and simmer, covered, for about 10 to 15 minutes or until tender. Check parsnips after five minutes and add more chicken broth if needed. Season with salt and pepper to taste. Serves four.

A greatly misunderstood vegetable today was one of the most popular just two centuries ago. Parsnips (Pastinaca sativa) have a wonderfully sweet, nutty flavor that colder temperatures actually enhance. Their culinary versatility rivals potatoes and their overwintering ability surpasses carrots. If you have never eaten parsnips, you're missing out on a treasure.

Perhaps parsnips have fallen out of favor because many gardeners and cooks think they're persnickety to grow and mysterious to cook. Actually, this root vegetable can be grown anywhere, is relatively easy to grow and a natural for the winter vegetable garden. Always use fresh seed and keep the soil evenly moist until the seedlings have emerged. The best growing conditions include a well-drained and deeply dug soil free of stones, clods or pieces of organic matter that can hinder growth or cause the roots to fork.

The secret to parsnips' crisp, sweet and delicately nutty flavor? Timing. Exposure to cold temperatures (32 degrees to 40 degrees, by frost or cold storage) for two weeks or more sweetens its roots, turning starch into sugar. Parsnips require a long growing season (110 to 130 days), so sow the seeds early enough for the roots to be ready to harvest in autumn, preferably after the first frost.

Whether harvesting your own parsnips or buying them fresh from the supermarket, you'll find the younger roots the sweetest and most tender. (Very large parsnips are usually tough and often bitter.) Select parsnips that are firm and free of blemishes, showing no signs of wilting, shriveling or root hairs. Storing is easy. Homegrown roots can be left in cold gardens to overwinter under a 6- to 12-inch layer of mulch, then dug during winter thaws and in early spring. In areas where winters are mild or excessively rainy, dig roots in late fall and store in a cold room or root cellar (preferably at 32 degrees to 34 degrees and 98 percent to 100 percent humidity) as you would carrots. Of course, the vegetable bin in your refrigerator easily will keep roots handy and fresh for several weeks.

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Parsnips are high in fiber and a rich source of folate, potassium and vitamin C. Fresh roots add variety to meals in winter and early spring and often can be used in place of carrots or potatoes. Use fresh parsnips in salads or with dip. Cook them in soup or stews, mash them like potatoes, or include them in a medley of roasted root vegetables. This sweet root is compatible with just about any cooking method, whether baked, steamed, simmered, sautéed, or sliced and fried like chips.

The "Lowly" Garden Parsnip: Fit Fare For a King

By Jack Roland



"A rose may always be a rose." says Jack Roland Coggins, "but the common garden parsnip—once you get to know it—is actually in disguise."

"Parsnips ... ugh!"

There's something about the very word "parsnip" that can shrivel the taste buds of a generation raised on TV dinners. And I'll admit that the way in which this root vegetable is traditionally served (boiled and buttered) seems to please more adult than juvenile palates.

But parsnips can be so much more! Soups and stews, for instance. French fries. Pancakes. Pies. Even flaming desserts! As I'll prove before this article is finished.

BUT FIRST, LET'S GROW SOME PARSNIPS

Parsnips are a "full season" crop (the roots take about 130 days to reach full maturity) and do best when planted sometime between early spring and early summer. I like to put mine in my garden's border rows, where they're out of the way as my family harvests faster-growing produce in the rest of the vegetable patch and sows second crops in its place.

Sprinkle your parsnip seeds out very thinly and about one-half inch deep in rows spaced two feet apart. Then, when the plants are three inches tall, thin them until they stand five inches from each other in the rows. (These are average "common sense" distances that should guarantee success for almost any first-time parsnip grower. I have, however, grown superior parsnips spaced only three inches apart in rows separated by just eighteen inches.)

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The best parsnips are smooth-skinned and tender, and have a sweet flavor. And the keys to making yours grow up that way are [1] rich soil, and [2] ample and consistent moisture.

Parsnips require plenty of moisture all the time and the surest way to turn your roots into a woody, fibrous, malformed crop is by allowing the earth around them to become dry for even short periods of time.

But then, of course, there's no real need for your parsnip patch to dry out. Not when it's so easy to keep it consistently moist with a thick layer of leaves, weeds, grass cuttings, straw, hay or other organic mulch. Even a heavy carpet of newspapers or magazines weighted down between the rows with stones will do the trick.

HOW TO HARVEST AND STORE PARSNIPS

Your roots may be added to soups and stews as soon as they attain a reasonable size. Freezing, however, greatly improves both the flavor and texture of the vegetable and brings out its sweetness and aromatic characteristic.

Before the ground freezes, then, you should dig only as many parsnips as you'll want to use during the main part of the winter. When washed and wrapped whole in anything (say, waxed paper) that conserves their moisture, these roots will keep for weeks—even several months—in a refrigerator.

Whole washed and wrapped parsnips will also keep well in unheated garages, sheds and cellars during the very cool days of fall and on into the winter. Do not, though, allow such roots to alternately freeze and thaw. (One good continuous freeze is OK, but alternate freezes and thaws will cause the vegetable to rot.) Keep any parsnips stored this way cool—even cold—but unfrozen.

Parsnips are ideal candidates for pit storage, too. Just bury a big box or barrel in your garden or yard (I've sunk a number of nail kegs from the local lumberyard in mine), fill it with layers of parsnips surrounded and separated by layers of dry leaves or straw, fit the container with a tight lid, and cover it with a tall mound of soil. The idea, once again, is to keep the harvested roots from drying out, and [2] cool—even cold—but free from the danger of alternately freezing and thawing.

Of course, in most localities where parsnips are grown, there's no real need to go to even this amount of trouble. Here in Nebraska, for example, I usually just leave about half of each year's crop of the vegetable right in the ground and right in the rows in which they grew. All I do, in the fall before the first freeze, is cover the parsnips with four or five inches of dirt and then top that earth with another four or five inches of straw, leaves or other mulch. So protected, the roots slumber peacefully through the winter and are at their very best when dug fresh as desired from the garden early the following spring.

The general rule, by the way, that most folks follow when using this last method of storing parsnips is "the roots must be harvested in the spring before new growth begins." And it is true that the vegetables probably will be worthless for the table if they've started to grow again before you dig them. I have found, though, that the parsnips themselves are still quite palatable if dug after only a little new foliar growth has been sent out by the plants.

What this means in actual practice is that, as soon as I see the first signs of new green foliage popping up in my buried last-year's parsnip patch, I simply pile on more soil and mulch. By so doing, I've been able to inhibit any damaging second-year growth until as late as May 1.

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Still, the earlier you dig "wintered over" parsnips, the better. And, properly stored (washed and wrapped and placed in the refrigerator or a cool cellar), such spring-dug parsnips will keep and keep well until the new crop matures in the fall.

Finally, if you're a true child of the modern age, yes, you can store parsnips in your home freezer too. Wash each root thoroughly and slice it—either cross- or length-wise—into quarter-inch thick pieces. If the cores are woody, remove them with a sharp knife. Then water-scald the chunks of vegetable for three minutes or steam-scald them for four, and cool, bag and freeze the prepared parsnips.

COOK THOSE PARSNIPS!

Parsnips are rich in minerals and vitamins, especially vitamin C. The vegetable is also reputed to aid digestion. And, although I have no scientific or medical proof, I personally find that regular servings of the roots improve my circulation and alleviate pain in my joints, my hands, and my feet.

I'm sold, then, on the healthful benefits of eating parsnips. I'm also, after some experimentation, more than a little excited by the gastronomic potential of the vegetable, as I'm sure you will be too if you try the following recipes.

ROOT CHOWDER

Slice one medium parsnip (core it, if its center is woody), one small turnip, one medium carrot, one small onion, two golf ball-sized potatoes, and three medium salsify, and steam them all in a covered container until they're completely tender. Then mash or blend all the vegetables and combine them with four cups of milk. Bring the resulting solution to a near boil—but do not boil it—over a low flame.

Brighten the dish with pinches of garlic powder, red pepper flakes, parsley, oregano (go easy), or celery seasoning. Then pour the chowder into bowls, top with pats of butter, and season to taste with salt and black pepper.

FRENCH FRIED PARSNIPS

Cut very large parsnips crosswise into four-inch-long sections. Then quarter each section lengthwise and slice the resulting pieces lengthwise again into eighths. Remove all cores and continue slicing the pieces of parsnip lengthwise until each one is "french-fry" size.

Deep-fry the slivers of vegetable in oil, just the way you'd deep-fry potatoes, until they're golden brown. Salt and pepper to taste and serve as a supremely tasty snack, or side dish.

For tenderest fries, deep-fry the sliced root over a low flame in a covered pan until each sliver is half done. Then remove the cover and brown the pan's contents over a medium-high flame. You'll be surprised at how little oil the pieces of parsnip will absorb!

MILLION DOLLAR PARSNIP PANCAKES

Cut the upper halves of large parsnips into silver dollar-sized slices three-eighths of an inch thick. Then tenderize the slices by cooking them in a small amount of water in a covered skillet over a very low flame. Cook this way until the inner core, as well as the outer flesh, of each chunk of the root is tender.

Finally, remove the cover, add enough butter or margarine to brown the slices, and serve them with maple syrup, fruit syrup or honey. And that's all! This dish tastes better than "real" pancakes, and is certainly morehealthful.

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NOT-PUMPKIN PIE

Use your best pumpkin pie recipe, but substitute an equal amount of cooked and blended parsnips for the pumpkin. Serve cold with ice cream or whipped cream.

PARSNIP-PECAN DREAM

Add one-half to one cup of chopped or blended shelled pecans to the Not-Pumpkin Pie recipe (above). Fill individual baking dishes with the mixture and bake until it becomes firm (approximately 45 minutes at 350° F). Top with pecan halves and cherries. Chill. Serve with whipped cream topping.

PARSNIP ROYALE

Cook four cups of quarter-inch thick slices of parsnip in one-half cup of orange juice in a covered skillet, over a very low flame until the parsnips are half tender. Maintain enough liquid (orange juice or water) in the pan at all times to prevent burning.

When the slices of parsnip have softened but are still firm, add one-eighth pound of butter or margarine and simmer until the shortening is absorbed by the chunks of vegetable (about three minutes).

Then add one-half cup of honey and a dash of ginger. Cook everything over very low heat until the slices of parsnip are thoroughly tender and the syrup has thickened slightly. Do not overcook.

Serve this heavenly creation, piping hot, in very small dishes (it's rich). Top each portion with one tablespoon of honey-butter-orange juice syrup. For a really special occasion, you can pour a scant spoonful of brandy into each bowl, ignite it, and present this dessert au flambeau.

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PEAS

Palate-Pleasing Peas

Fresh peas from the garden are a sweet and nutritious treat.

By Barbara Pleasant


LYNN KARLIN

Fresh or frozen, peas are among the most versatile of all vegetables. They are naturals for Asian stir-fried dishes laced with ginger, garlic and sesame oil, and their vibrant green adds color to pasta dishes. Peas also can be used to make a delicious puréed soup, or you can enjoy them in fruit-and-vegetable salads composed of peas and pineapple or orange sections, dressed with a sesame-scented vinaigrette. And, of course, there are the classic veggie pairings: peas with carrots, peas with cauliflower, peas with pearl onions.

It is but a happy accident that peas' fine flavor and vibrant good looks are matched by great nutrition. All peas are a good source of calcium, iron and vitamins A and C, and those with edible pods provide plenty of dietary fiber and make terrific snack food.

The "homegrown" difference between fresh and not-so-fresh peas must be tasted to be believed. Only gardeners and their customers know the sweet, crisp flavor of fresh peas, be they shell peas, snow peas or plump snap peas. If you grow all three types or buy them from your local farmer's market, you'll have everything you need to explore pea cuisine — the source of several crazes in the history of food. In 1696, Madame de Maintenon, wife of French King Louis XIV, recorded that "Some ladies, even after having supped at the Royal Table, and well supped too, returning to their homes, at the risk of suffering from indigestion, will again eat peas before going to bed. It is both a fashion and a madness."

The peas she mentioned were early strains of English shell peas, so-named because English breeders developed many fine-flavored varieties in the centuries that followed. Today, in addition to shell peas, we can also enjoy the edible pods of snow and snap peas. Often associated with Asian food, snow peas have flat pods, while snap peas feature thicker pods that are more round than flat. Snap peas are now available in the frozen food section of every major supermarket, and because they produce more food per square foot than other peas and freeze beautifully, they are the favorite of many gardeners.

Market gardeners love them, too. "They sell very easily if you give people samples, and it's great to hear the crunch as they bite into them," says Kevin Wilson of Powell River, British Columbia, who harvested 27 pounds of snap peas from a 20-foot quadruple row last spring, and then sold them at a farmer's market by the

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pint. Snow peas yield lower because the pods are not as fat, but they, too, can make a profitable crop, and the young leaves of some snow peas are good to eat in salads. The pods of English peas are too tough to eat, so the harvest is limited to the plants' succulent immature seeds, which are so far superior to canned peas that there's hardly a way to compare them.

MORE PRODUCTIVE PEAS

Peas require cool temperatures, below 80 degrees, so they grow best in areas where cool spring weather lasts well into early summer. Maine, Wisconsin and the Pacific Northwest have the best climates for peas, but anyone who plants promptly in early spring can grow a good crop. To make sure peas mature before the weather turns hot, plant them three or more weeks before the last spring frost. Young pea plants have no trouble surviving late cold snaps, and the seeds often are willing to germinate under late snow.

Peas are nitrogen-fixing legumes, a miracle that involves an interaction between pea roots and several strains of soil-borne bacteria. As long as the soil is reasonably fertile and contains a little nitrogen left from the previous crop, no further feeding is normally needed. An appropriate soil pH of about 6.5 is important for smooth operation of the nitrogen-fixing process, and the bacteria need to be present, too. They usually are present in soil where peas have been grown previously, but it's cheap and easy to inoculate pea seed with N-fixing bacteria. You can buy the inoculant at garden centers (it works with beans, too). Just wet the seeds, then shake them in a jar with the powdered inoculant before planting. However, it's always wise to amend the soil with a half inch to 1 inch of compost before planting peas.

Peas benefit from dense planting, in which the plants are only 2 inches apart in the row. Wilson plants peas in quadruple rows, with two rows of peas on each side of a trellis in a 3-foot-wide bed. At Peregrine Farm in Alamance County, N.C., organic farmers Alex and Betsy Hitt use the quadruple-row strategy to grow big crops of snap peas; their approach will work with other types of peas, as well.

"Our standard pea-planting method is two rows of a tall pea, like 'Sugar Snap,' with rows of a shorter variety on either side," Alex Hitt says. "A trellis goes down the middle, between the two rows of 'Sugar Snaps.' This arrangement helps the tall variety stay upright until it begins to tendril and grab the trellis. Because the tall variety does not really produce any peas below 24 inches, this gives us production lower down, and a few days earlier, from the shorter variety." Hitt doesn't think much of short varieties in terms of flavor or productivity, but he believes they help tall varieties grow better.

The following seed companies offer large selections, including collections that let you sample several varieties in a season:

Johnny's Selected Seeds
955 Benton Ave.
Winslow, ME 04901
(877) 564-6697
www.johnnyseeds.com

Nichols Garden Nursery
1190 Old Salem Road N.E.
Albany, OR 97321
(800) 422-3985
www.nicholsgardennursery.com

Park Seed
1 Parkton Ave.
Greenwood, SC 29647
(800) 213-0076
www.parkseed.com

Territorial Seed
P.O. Box 158
Cottage Grove, OR 97424
(541) 942-9547
www.territorial-seed.com

Willhite Seed
P.O. Box 23
Poolville, TX 76487
(800) 828-1840
www.willhiteseed.com

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A pea trellis does not need to be fancy, but even short peas need something to grab onto with their curling tendrils. If you plan to follow peas with a nonvining crop, a simple string trellis attached to posts is great because you can cut it down and compost the string and spent vines together. Nylon or plastic net trellising (sold by garden supply companies for less than $10 for a 5-by-15-foot piece) attached to posts also works well. Many gardeners follow peas with cucumbers, pole beans or another vining crop, so they install a secure trellis made of wire mesh, and keep it in service all summer long.

A super low-maintenance trellising idea comes from David Fisher and Anna Maclay, owners of Natural Roots organic farm in Conway, Mass. They grow peas on upright oats: Using a walk-behind seeder, they plant one oat seed for every five or six peas. "The oats and peas grow at the same rate, and reach the same height of about 30 inches," Fisher says. The method works with shell, snow and snap peas, and later on, the farm's livestock get to clean up the row.

And then there's the old practice of supporting peas with small limbs gleaned from early spring fruit tree pruning. This type of twig trellis works fine with peas that grow less than 30 inches tall, but taller varieties require more substantial support.

HARVESTING PEAS

When planted in cool, rich soil and given something to climb on, peas pretty much grow themselves. Then comes the fun part, picking the peas — which is not without its challenges. The sugar content of peas increases as pods approach ripeness and quickly converts to starch as the seeds become mature. With snow peas and snap peas, overripe specimens also get tough and stringy, so check your peas daily when you think they're almost ripe.



Most pea varieties grow best on a trellis such as the one show here.

Harvest English peas before the pods become waxy and when the peas are plump and sweet. Pick snow peas when the little peas just begin to swell in the pods. With snap peas, do not be misled by the flat pods sometimes found in your supermarket. Young specimens store and ship well, but they do not have the high sugar content of perfectly ripe snap peas. "It's a mistake to harvest snap peas too early or too late," Hitt says. "Pick them when they have begun to show the individual swell of each pea in the pod. Before that, they have not produced the maximum amount of sugar, and after that, they become tough and pithy."

The dried peas used to make pea soup are grown just like other peas, and then allowed to mature until the pods begin to dry. A few seed companies still sell the 'Alaska' variety, but many more choices bear brown, yellow or green peas, and some bear pretty purple pods. Jason at Salt Spring Seeds on Salt Spring Island, British Columbia, keeps one of the best selections. Salt Spring's online catalog is available at www.saltspringseeds.com, or you can write to Salt Spring Seeds, Box 444, Ganges P.O., Salt Spring Island, BC, V8K 2W1 Canada. For more pea sources, see "Picking Pea Varietiesm," below.

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STORING PEAS

Peas cook so quickly that their flavor suffers when they are canned, but they are a cinch to freeze. If you grow a nice crop or find them at a farmer's market, freezing is a simple matter of dumping the cleaned peas or pods into boiling water for a minute, scooping them out and putting them into a bowl of ice water, and then packing them into containers. Fill freezer bags with blanched, cooled peas and then lay the filled bags flat on a cookie sheet in the freezer. When the bags are frozen hard, they can be neatly stacked into their permanent place in the freezer. When frozen, English peas and snap peas keep well for a year, but snow peas are best used within a few months.

EAT YOUR PEA GREENS

When Washington State University (WSU) Extension researchers noticed pea vines selling for several dollars a pound at Pike Place Market in Seattle, they launched a two-year study to evaluate the edibility of various types of pea foliage. After looking at a dozen varieties, including shell, snap, snow, split and marrowfat peas (the type of pea that is fried into snack food puffs), a tasting panel of chefs, farmers and Extension agents agreed that 4-inch long tops from young snow peas produced the best greens. "Pea shoots make a great addition to salad mix, which is the most popular way of eating shoots in the United States right now," says Dr. Carol Miles, the WSU agricultural systems specialist who directed the study. Miles says you can lightly cook pea shoots, too, or they can be used as an edible garnish.

PICKING PEA VARIETIES

There are a few things to look for as you shop for pea seed. If you live in a climate where spring is short, choose fast-maturing varieties such as 'Sugar Sprint' snap pea, 'Oregon Sugar Pod II' snow pea or 'Dakota' shell pea, all of which mature about 60 days after seeding. Powdery mildew resistance is easy to come by, but if you live in the Northwest also look for resistance to Pea Enation Mosaic Virus, available in 'Cascadia' snap pea, 'Oregon Giant' snow pea and many others. Small-space gardeners will get more peas per square foot with taller varieties such as 'Super Sugar Snap,' but shorter ones bear all at once, which is helpful if you plan to freeze your peas.

About Peas

These garden pearls are the sweet gift of spring.

By Sara Pacher

After a long winter without fresh homegrown produce, peas—traditionally among the first crops to be planted—reward a gardener's patience with a crisp, sweet taste that embodies springtime. And, like homegrown corn and tomatoes, peas straight from the garden are so superior in both taste and texture to anything found in stores that they're well worth the space a patch consumes and the time it takes to produce a bountiful harvest.

WHAT TO GROW

Pisum sativum is one of the world's oldest cultivated crops. Peas were foraged from the wild for thousands of years before they were domesticated; however, the large wildlings gathered by our cave-dwelling ancestors were probably roasted and peeled like chestnuts. Greeks and Romans thought green peas were poisonous unless they were dried to cure their "noxious and stomach-destroying canker."

It wasn't until the sixteenth century that a French gardener developed a hybrid green pea that much later became the rage in the court of Louis XIV. Madame de Maintenon wrote, "There are ladies here who, having supped with the King and supped well, retire to the privacy of their chambers, there to feast in secret on dishes

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of petits pois. This is both a fashion and a madness!"

Since those days of petit pois mania, many varieties of peas have been developed. They now come in early types (harvested in seven or eight weeks), midseason (ready in eight or nine weeks) and late varieties (requiring 10 weeks to maturity). Some peas produce tall vines that need supports, while dwarf types often can stand alone. Among English—or green—peas there are both smooth-seeded and wrinkle-seeded types, which must be removed from their fibrous shells. Snow or sugar peas are eaten pods and all, and sugar snaps can be eaten as young pods or allowed to mature into equally tasty shelled peas.

When selecting a variety, be aware that vining types usually produce a heavier crop than do most dwarfs, and wrinkle-seeded peas tend to be sweeter than the smooth ones. (For autumn and winter plantings, choose a hardier smooth variety.)

You can ensure a long harvest by sowing early, midseason and late varieties at the same time, making successive sowings about two weeks apart until the middle of May. As the weather warms, however, the roots should be kept cool with a heavy mulch; failure to do so could result in the peas not setting fruit, and already-formed pods not filling out. (Generally speaking, one pound of seeds will plant a 100-foot row, which should produce a bushel of green peas or two bushels of edible-podded peas.) Certain varieties are known for their disease resistance (early, 'Dwarf Maestro,' for example), wilt resistance ('Compact Oregon Sugar Pod'), fresh-eating quality (midseason 'Lincoln') or long productivity (late-season 'Parlay' or 'Mighty Midget').

HOW TO GROW

Peas are a cool-weather crop that can survive frosts (except when blossoming), but most varieties won't tolerate temperatures over 75 degrees. In southern climates, therefore, peas are often planted in the mid to late fall for a very early harvest the following spring. Elsewhere in the country, early, midseason and late varieties can all be sown four to six weeks before the last frost date in an open, sunny spot protected from high winds. The soil, however, must have warmed up to at least 40 degrees.

Peas prefer a sandy loam with a pH between 6.0 and 7.5 (the ideal is 7.0), but they can even be raised in heavy clay if enough organic matter is added to the soil to improve its texture and drainage. Phosphorus and potash should be worked into the plot in the autumn. Use phosphate rock, bone meal, granite dust and/or wood ashes. Remember, however, that peas make their own nitrogen and that too much of that fertilizer will result in a lot of foliage but few pods.

To insure a high germination rate, soak seeds for 24 hours and dust them with a legume inoculant (available at most garden supply stores) to help the young plants take nitrogen from the air and fix it in their roots. Then space the seeds of low-growing bush varieties at one-inch intervals in rows two feet apart. Cover with about an inch of heavy soil or two inches of light soil, and tamp down lightly. (Later plantings should be twice as deep.) As they grow, bush varieties will entwine and prop each other up. Plant vining types in the same manner in double rows six to eight inches apart on either side of five- or six-foot-tall wire or string mesh or brush supports. Leave three feet between each double row. Fill some of the space between rows with radishes, spinach, lettuce or other early greens. (Cucumbers and potatoes are good companion plants, but keep garlic and onions at a distance, since peas don't thrive when planted near alliums.)

Once the peas are in the ground, provide adequate moisture. Though the soil should never be waterlogged, don't allow it to dry out when the peas are in bloom or when the pods are swelling. On the other hand, adding too much water before the plants flower will reduce the yields.

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Since peas grown in good soil need no further fertilizer, the only other task will be weeding. Gently hand-pull any intruders growing near or between the vines to keep from damaging the peas' roots. A good organic mulch, such as straw or lawn clippings, placed around the base of the plants will virtually eliminate this task and will also help keep the soil moist.

WHAT TO WATCH FOR

Crop rotation is one of the best ways to protect peas from diseases. To avoid fungi which cause root rot, as well as wilt, bacterial blight and anthracnose, don't grow peas in the same spot more than once every five years. In the Southeast, fight fusarium wilt (or pea yellows)—which turns the plants yellow, then causes them to brown, shrivel and die—by planting a wilt-resistant variety.

Powdery mildew is likely to attack in warm weather, covering the plant with a downy white fungal coating that sucks out its nutrients through tiny tubes. If applied early, sulfur dust will kill the fungi. Avoid it by planting quick-maturing varieties.

The most common pests on developing vines are pea aphids, which can be defeated with sprays from the garden hose, garden-grade diatomaceous earth, wood ashes or sticky traps. The small, brownish white pea weevil bores into mature pods to lay its eggs. It can be discouraged by early planting, or by heating possibly infested seed to 120°F for five hours.

HOW TO HARVEST AND USE

The pods are usually ready to pick about three weeks after blossoming, but it's better to risk gathering too early than too late. If the peas are allowed to become ripe and hard, their sugar quickly turns to starch, and the vegetable loses much of its flavor. For the same reason, you'll enjoy the taste and texture of your peas much more if you prepare them immediately after harvesting.

The shelled varieties should be picked when plump and bright green. Edible pods should be flat—just barely showing their developing peas. Pick daily, both to catch the peas at their prime and to encourage the formation of new pods. Use scissors to cut the pods from the vines; otherwise, you may pull up the whole plant or shock it into nonproduction.

Once a vine has quit producing, cut it off and toss it in the compost pile. The nitrogen-rich root nodules remain in the ground as an aid to a following crop of brassicas. Carrots, beets or beans are also good follow-ups for peas.

Whether eaten or preserved, peas should be processed immediately after picking to best retain their flavor. To can peas, shell and pack them in boiling water and a half teaspoon of salt to within one-half inch of the top of pint jars, and then process them for 25 minutes at five pounds of pressure.

Freezing is probably the best way to preserve peas' fresh-from-the-garden flavor. Just shell and blanch for one and a half minutes, then cool, drain, pack and freeze. Snow peas, which are frozen whole, are treated in the same way. (Be sure to string the snow peas first.) Peas have a freezer life of about 12 months.

If you've allowed the peas to become overripe, it's best to shell them and spread them out on a flat surface to dry for three weeks, or until all the moisture has evaporated. Store in dry, airtight containers and use as you would any dried beans.

Peas are most tasty, though, when eaten fresh, and—like most vegetables—they are more nutritious

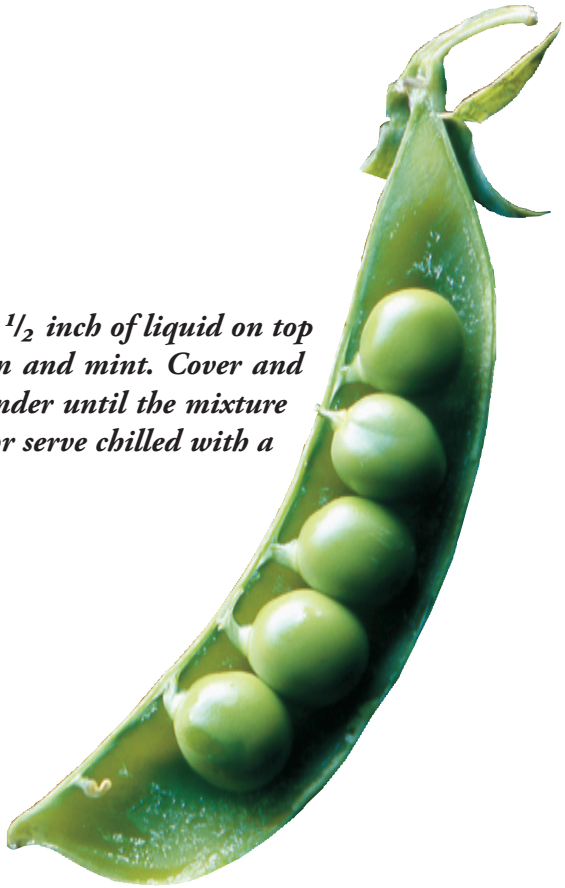
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when raw. Even when blanched, three-quarters of a cup of peas con tains around 84 calories, 316 milligrams of potassium, 27 units of vitamin C and 640 units of vitamin A. Snow peas are probably most commonly used as ingredients in stir- fries, but can also add color and crispness to numerous other dishes.

FRESH PEA SOUP

2 pounds fresh, shelled peas
Salt to taste
1 scallion, finely chopped
1 tablespoon chopped mint
1 1/2 cups heavy cream

In a saucepan, cover peas with water (there should be a 1/2 inch of liquid on top of the vegetables) and bring to a boil. Add salt, scallion and mint. Cover and simmer for 10 minutes or until tender. Process in a blender until the mixture is smooth. Add cream and blend again briefly. Reheat, or serve chilled with a garnish of minced chives. Serves 6.



PARTY PEAS

1 pound cooked peas, either English or snow
2 slices bacon, cut into 1/2-inch pieces
1 stalk celery, diced
1 medium onion, diced
1 cup spinach, finely shredded
1 teaspoon flour
1/3 cup beef or chicken broth
1/2 teaspoon salt
1/4 cup toasted slivered almonds

In a 9-inch skillet, cook bacon over medium heat until almost crisp. Add celery and onion and continue cooking until bacon is crisp. Add spinach, cover and simmer for 5 minutes. Stir in flour, add broth, and stir constantly until thick. Add peas, salt and almonds, and toss until heated. Serves 6.

For Healthy Peas in Hot Weather, Just Add Water!

Irrigating for successfully raising peas.

By Gordon Solberg

I well remember the April day back in Missouri when I was proudly showing my Ozark garden to a local vegetable grower of many years' experience. As we came to the peas, my friend took one look at the strong, green vines and shook his head. "Peas need cool, moist weather to survive," he told me. "Come June, these fine vines will be withered and brown, mark my words."

The man was absolutely right. Those plants fared well only until late May. After that, the scorching sun of summer proceeded—day after day—to parch and singe the peas unmercifully. Come harvest time, each scrawny vine seemed absolutely eager to give up its skimpy handful of pods so it could go ahead and die in peace before the weather got even hotter.

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DAVID CAVAGNARO

Edible-podded snow peas.

Soon thereafter, I moved to even drier and hotter New Mexico and—naturally—in the process gave up all hope of ever growing peas again. After all, if the delicate plants didn't do well in Missouri, how could they possibly thrive in New Mexico, where springtime temperatures often top 100 degrees?

It was my father's gardening success in the Southwest, however, that changed my thinking completely. Despite the Sahara-like weather, Dad seemed to grow magnificent crops of peas, on vines that stood up and bore heavily even when afternoon temperatures hovered around the century mark! His secret: Give the plants water, lots of water. With this in mind, I decided I'd try to grow peas after all.

First, however, I had to work on our soil. My garden is located on the Rio Grande flood plain, about 50 feet from the river itself. The water table—consequently—is only 24 inches below the surface, and the soil is so alkaline that I still don't know its pH. (The soil test kit I use only goes to pH 8.0.) When I first moved here, the only plant life in my proposed vegetable patch was some salt grass interspersed with a few mesquite bushes, hardly what you'd call a garden of Eden.

Fortunately, I had plenty of goat manure on hand and—by digging the wastes into the ground- I was able to both reduce the soil pH and loosen up the hard adobe clay. In addition, I gathered willow leaves from along the river and tilled them under with some spoiled hay. The garden—thus enriched—produced a fair crop of corn the first year. I figured by then that it was probably ready for peas, too.

Since I wanted to give my peas the best possible chance, though, I went a step further and re-applied goat manure to the soon-to-be-planted area. And I really spread it on and rototilled it in: four wheelbarrow-loads into a 10-by-12-foot patch, the equivalent of 20 tons per acre, which is plenty.

A month later—February 12, on a glorious, short-sleeve, late winter, desert afternoon—I planted my peas ('Little Marvel,' 'Blue Bantam,' 'Progress No. 9,' and 'Wando' varieties, all from Burpee). It seemed a bit early to sow seed—temperatures were still dipping into the teens at night—but I'd always heard you should "get your peas started early," so I took the plunge.

I sowed the seeds three inches apart and allowed a two-foot spacing between rows. In addition, I placed a three-foot-high wall of twigs along each row so the vines would have support later on. (I'll never space my rows

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that closely again. Trying to squeeze between them to pick peas did terrible things to my aching back, not to mention my claustrophobia. From now on, it's three-foot spacing for me!)

Next, I irrigated . . . and waited a week . . . irrigated again . . . and waited again . . . and—after a couple of weeks—I started to get antsy. Why weren't those peas up yet? What could possibly be wrong? After the third week, I was about ready to replant the patch, when the first seedlings (the Blue Bantam's) appeared. There'd been nothing wrong after all: The cold soil had merely slowed the plants' germination.

At this point, everything was fine, except that those little sprigs proceeded to just sit there—unchanged—week after week until I began to get impatient again. "Well," I sighed, "at least they're up now. They're probably just putting all their energies into root production now so they can really crank out the top growth when the weather turns warm." (Little did I realize how right I was!)

The vines grew slowly as spring advanced. They probably would've grown faster, except that the mercury often dipped below freezing at night. (Those April afternoons might be a balmy 70 degrees, but as long as it freezes at night the vines can't grow very rapidly.) I was amazed, however, at how frost-resistant the young plants were. I can say with certainty that they withstood temperatures as low as 20 degrees, perhaps even lower early in the season.

Then, when May came (and with it, 40-degree nights) that whole section of the garden suddenly skyrocketed like Jack's beanstalk! All I did during that period was water the pea patch religiously every week, flooding the plot with a good two inches of water each time. Soon, the area was dense with brawny vines that looked like they could take anything man or nature could give them: heat, drought, insects, you name it. (Of course, I watched carefully for insects—especially the dreaded pea aphid—but the vines were growing so rapidly, bugs didn't have a chance!)

We harvested our first peas May 17, ninety-five days after we'd put the seeds in the ground. The cropping season lasted almost a month, and during that period we harvested 60 pounds of pods, which shelled out to 31 pounds of peas—a quarter pound per square foot! (Not bad for a 10-by-12-foot patch of what most folks would call desert!) During the height of the season, we were picking and canning every third day. We were overwhelmed.

In self-defense, we finally learned the easy way to shell peas. All you do is hold the pod upside down (curved side up), blossom end away from your body, then squeeze the blossom end between thumb and first finger until the pod pops open and—in one quick motion—strip the peas out with your thumb. (Note: This method works well only if the pods have pointed ends, with a small air pocket at the tip. 'Blue Bantam' and 'Progress No. 9' both have pods that meet this description. We timed ourselves and found that 'Wando' and 'Little Marvel'—which have blunt-ended pods—take almost twice as long to shell.)

After a seemingly endless month of picking, shelling and canning, our once-healthy vines finally started to turn yellow at the bottom, while the topmost leaves succumbed to a powdery mildew. I picked the plants over one more time, then, with a sigh of relief, ripped 'em out of the ground and fed the foliage to the goats.

Peas have found a permanent place in our garden now. We've learned that if you give them well-fertilized soil and plenty of water—huge quantities of water—they'll outyield just about any crop you care to mention—even in hot weather!

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PEPPERS

Aji Limo

This fruity Peruvian pepper is the spicy salsa secret of the Andes.

By William Woys Weaver
Photos by Rob Cardillo



One of the most flavorful of the Andean peppers, 'Aji Límo' (pronounced ah-hee lee-mo) has survived from pre-Columbian times. Its name means "Lima pepper," in reference to the Peruvian city. Its distinctive citrus flavor and the bright yellow color of the ripe pods immediately bring to mind the crisp aromas of lemons and limes. A strong hint of citron (the less acidic cousin of lemons and limes) counterbalances the intense spiciness for which this pepper is well-known. The heat, fruitiness and floral quality contribute to the complexity of flavors achieved when the pepper is used in salsas.

GIFT OF THE ANDES

An heirloom with quite an impressive genealogy, 'Aji Límo' belongs to a large group of peppers that came under cultivation on the western slopes of the Andes by at least 400 B.C., and perhaps even earlier. Most of these peppers, 'Aji Límo' included, belong to the species Capsicum baccatum, which are first cousins to our common bell peppers and most of the subtropical peppers from Mexico. As a group, baccatums are noted for their distinctive flavors and tolerance of cold weather. This is one reason why they have become extremely popular in England, where cool nights can stunt the growth of many peppers. The baccatums also are extremely frost-tolerant, so it is easy to extend their growing season well beyond that of other peppers. In fact, the 'Aji Límo' plants in my garden grow well until the temperature drops to about 25 degrees, and even after that, their woody stems can be pruned, dug up and brought indoors for overwintering.

A number of books about peppers have created the misconception that aji is a specific type of pepper. "Aji" is a Spanish transliteration of axi, the Arawak (one of the indigenous languages in the greater Caribbean) word for pepper. "Aji" has become a general term throughout South America for peppers regardless of species or variety.

Several seed companies that sell 'Aji Límo' have renamed it. In fact, many years ago, when the pepper first came into circulation in the United States, its name was mistakenly written as aji limón ("lemon pepper"), which may be why its common commercial name is 'Lemon Drop.'

Commercial seed purity varies greatly, so it is possible to see wide variation not only in pod shape and

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size, but also in the all-important taste. The 'Aji Límo' seed I grow and offer through the Seed Savers Yearbook was collected by Texas pepper specialist Jean Andrews, who found a supply of the peppers at an open market in Arequipa, Peru.

The plants are low bushes, no more than 18 inches tall, and once they begin to produce peppers, their branches tend to droop in an attractive manner. From a landscaping standpoint, this pepper is ideal for borders, can be planted along the tops of retaining walls and will even thrive on balconies and in window boxes. Best of all, it's a heavy producer. One plant may yield up to 40 pods. Once the pods begin to ripen, they change from light green to a brilliant waxy yellow and they grow to about 3 inches long.



HOT HOT PERUVIAN HEAT

The heat of many Andean peppers puts the reputation of habaneros to shame. I describe 'Aji Límo' as a Peruvian hand grenade, and I will repeat that warning: This pepper is extremely spicy, but when it's tempered by cooking in sweet-flavored salsas, the lemony taste is dynamite.

You can use the salsa on just about anything. With grilled fish, the pepper has no equal; as an ingredient in ceviche (a cold dish of raw fish or shellfish "cooked" in lime juice), it is a natural match. When I have a group of South American friends over for a meal, they head straight for my salsa de 'Aji Límo.' It reminds them of home, and they beg me for jars of it.

I have been told I should patent the salsa recipe and sell it. But my basic recipe came from Peru, and how could I contemplate patenting one of their national treasures? 'Aji Límo' is a gift of the Andes.

PLANTING HINTS

Start 'Aji Límo' seeds indoors in flats, then move them outside after the threat of frost has passed (the seedlings are not as frost-tolerant as mature plants). Plant them about 12 inches apart in an area with full sun or partial shade. For seed-saving purposes, do not plant other Capsicum baccatums in your garden or they will cross with 'Aji Límo.' Remove seeds from ripe pods and dry them on paper towels out of direct sunlight for at least two or three weeks, or until the seeds seem brittle. Store seeds in airtight containers and set away in a cool, dark, dry closet until needed. If properly stored, the seeds will remain viable for at least five years. Always label your seed containers to keep track of seed harvest dates.

The Other Chile Peppers

Enjoy rare chile peppers and exotic flavors, with or without the heat.

By Brook Elliott



Tabasco peppers.

If you're looking for unexpected flavors, like lemon or apricot, or extra heat in your chile peppers, it's time to explore the "other peppers." Ninety percent of pepper varieties, from bells to jalapenos, are the same species — Capsicum annuum.

Among the rest are smoky, fruity habaneros (C. chinese), fiery 'Tabasco' peppers (C. frutescens), citrus-like baccatums (C. baccatum) and pear-shaped rocotos (C. pubescens). Although these peppers are usually smaller than bell peppers, they pack their own special punch in terms of flavor and heat. Whether you want really fiery peppers or great flavors without the heat, you'll find lots of favorites among these four lesser-known species.

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THE HABANEROS

According to pepper expert Dave DeWitt, co-author of "The Pepper Garden," "All the C. chinense species are often referred to as habanero, but that appellation is a misnomer because literally hundreds of pod types exist. The name habanero refers to a specific pod type from the Yucatan Peninsula of Mexico."

C. chinense, which usually produce pods 1 to 2 inches in diameter, are known for being fiery and flavorful, but describing that flavor is difficult. DeWitt, known affectionately as "The Pope of Peppers," has written more than 30 books about peppers and other spicy foods, so he's familiar with the dilemma. "All fresh, ripe chiles have fruity overtones," he says, "but there's a big problem trying to describe their flavor components. We don't have the descriptors to communicate what the actual flavors are."

Usually, C. chinense peppers are described as having a smoky, apricot-like flavor and a fresh, fruity smell that can't be missed. This base flavor is noticeable in a wide range of varieties, from such mild peppers as 'Aji Dulce' to such hellishly hot habaneros as 'Red Savina,' in which you can taste the smoky fruitiness right through the heat.

Because of their fruitiness, C. chinense peppers are often used in fresh salsas and in hot sauces based on carrots, onions and tropical fruits such as mangoes.

If you're looking for the hottest chiles around, you'll find them in the C. chinense group. Several methods exist for ranking chile heat, but the standard is the Scoville Heat Unit (SHU). C. chinense varieties range from 0 SHUs (the mildest) to 300,000 SHUs (the hottest). Among them are the hottest domesticated peppers ever measured, although most fall between 50,000 SHUs and 100,000 SHUs.

Comparatively, jalapenos (a C. annuum species) range from 5,000 SHUs to 15,000 SHUs.

'TABASCO' PEPPERS

The C. frutescens species includes the well-known 'Tabasco' variety used in the trademarked Tabasco hot sauce. 'Tabasco' originated in the Mexican state with the same name and isn't a particularly hot chile (30,000 SHUs to 50,000 SHUs), but some C. frutescens peppers are truly incendiary—particularly those from Africa, India and the Far East. Others, such as 'Guatemalan Dog's Tooth' and 'Aji Chinchu' taste mildly pungent, with a pronounced underlying flavor best described as "green," as in unripe bell peppers.

FRUITY BACCATUMS

C. baccatum peppers were practically unknown in North America until the early 1990s, when food products containing them as ingredients began appearing on store shelves. They have a fresh, tropical-fruit taste and an appealing aroma, but DeWitt says so many of them exist, with so many different flavor components, that it's difficult to categorize their tastes.

Beth Boyd owns Peppermania, a retail pepper seed and plant company in Stafford, Texas, that offers about 75 varieties each year. She describes the baccatum 'Aji Colorado' as having "a peppery, spicy flavor," and 'Lemon Drop' as having a "very fresh, lemony taste." The bright-yellow pods of 'Lemon Drop' average 2 inches long, have a distinct lemony aroma and taste, and enough heat to let you know they're present. Boyd says in the South, 'Lemon Drop' is the first to set fruit in the spring and continues setting well into cool fall weather.

Another Texas pepper authority, Jean Andrews, describes a favorite baccatum, 'Aji Flor,' also known as 'Aji Orchid,' as "crisp, sweet and flavorful." Because of their fruity, often citrus-like flavors, baccatums are great for fresh sauces made with herbs and onions, or mixed with lime juice to make ceviche: The acid in the lime juice "cooks" the fish.

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Some sources score baccatums as very hot while others score them more modestly—from 30,000 SHUs to 50,000 SHUs—because the heat of different pods from the same variety can vary widely. "Pepper breeders are just realizing how much effect year-to-year growing conditions can have on heat," DeWitt says. "There are indications that as much as half of the capsaicin levels result from growing conditions."

THE ROCOTOS

The rocotos (C. pubescens) are the least known of the chile peppers, and DeWitt says they are the only domesticated species with no remaining wild form. Archeological evidence indicates that rocotos may be one of the earliest domesticated New World crops: They are certainly the first pepper species to be domesticated.

Rocotos come in red, yellow and orange, but are not otherwise differentiated as varieties—except arbitrarily by some seed sup pliers who have assigned varietal names based on color. Examples include 'Manzano Amarillo' for the yellow and 'Manzano Rojo' for the red. Sometimes rocotos are called "apple" or "pear" peppers because of their shapes.

These one- to 2-inch pods are thick-walled and fleshy, with a pear-like aroma and taste. Rocotos add a special flavor to fresh salsas, especially fruit salsas, but they are also cooked in sauces and combined with potatoes, particularly in Peru. Andrews says that in parts of South America, they are often stuffed with cheese or sausage, and baked.

Rocotos contain a set of pungency compounds that cause them to taste hotter to some people than to others. They range in heat from 50,000 to 100,000 SHUs.

Experimenting with these "other" peppers is the key to accessing the exotic flavors they offer. Try growing some in your garden. Then, use them in your favorite dishes and allow your taste buds to experience a new world of pepper flavors from fruity to pungent, and from hellishly hot to refreshingly sweet.



A 'Bolivian Red' pepper pod.

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Grow Red Peppers

Here's how to enjoy the rich, sweet flavors of ripe red peppers.

By Doreen G. Howard



This spectacular pepper harvest was grown in Eugene, Oregon.

Raising ripe, red sweet peppers takes patience, period. That's why they cost up to five times as much as green peppers and why some gardeners think they can't grow them. Even when they're grown from transplants, thick-fleshed and flavorful red peppers such as 'Pimento' and 'Red Marconi' take up to 100 days to mature. But some varieties turn red much sooner — in as little as 65 days. If you use these fast-maturing varieties and a few tricks of the trade, you can easily produce sweet, meaty red peppers in almost any climate.

THE PEPPER RAINBOW

When it comes to peppers, bright red is not the only color that brings big prices at farmer's markets and adds variety to the dinner table. Certain peppers turn brilliant orange, yellow or purple before they ripen to their red finale. As with particular red peppers, some pepper varieties of other colors mature early too. 'Islander' turns violet in as few as 60 days. It holds that color for seven to 10 days, then develops yellow and orange streaks, and eventually turns dark red. Other purple peppers that mature fast and fetch premium prices at market include 'Tequila' (amethyst at 60 days) and 'Purple Beauty' (dark purple at 62 days).

'Gypsy' is another pepper that can be harvested and sold at various color stages. It starts pale yellow, turns lemon-yellow at about 70 days and then becomes a brassy orange-red fruit. 'Flamingo' goes through the same changes, but in a more flamboyant manner. At 55 days, it is chartreuse; at 65 days, it's a showy magenta. Finally the pepper turns a tropical-sunset red. In optimal conditions, 'Ariane,' a thick-walled, sweet and productive pepper, turns rich orange in as little as 70 days. Market gardener Tom Denison of Corvallis, Oregon, says his customers can't get enough of 'Ariane.' "It's our biggest orange-pepper seller."

QUICK TO COLOR

Most red peppers start out green. Some begin life yellow, purple or white. After reaching their maximum size, these peppers will develop red pigments in 10 to 28 days, if daytime temperatures are between 65 degrees and 75 degrees. In southern regions where temperatures exceed that range, peppers turn yellowish and may acquire an off-color pallor that is not attractive, a big consideration for market growers. Below the optimum temperature range, color development slows dramatically; below 55 degrees, it stops completely. If soil temperatures drop below 68 degrees, pigment production declines and eventually ceases.

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Sweet peppers are considered warm-season crops (they are more sensitive to cold than tomatoes), but they actually thrive in a temperature band of 60 degrees to 85 degrees. Within this range, some varieties develop red pigments faster than others do — in as little as 14 days in the case of 'King Arthur,' a 5-inch-long, disease-resistant variety that's popular with Wisconsin growers.

If you live in a cold climate or if your growing season is short due to the rapid onset of summer heat, choose early ripening varieties like 'King Arthur.' Oregon State University researchers have found that 'Lady Bell,' 'La Bamba,' 'Merlin,' 'Ace,' 'Bell Boy' and 'Red Knight' will color rapidly (in about two weeks) in almost every climate. 'Ace' is one of the most reliable varieties, setting fruit even when it's too hot or too cold for other varieties. "It's a remarkable variety," says pepper breeder Rob Johnston, owner of Johnny's Selected Seeds. "We discovered it in the 1970s and were blown away by its earliness and productivity. In the 25 years since, there have been contenders, but nothing beats 'Ace.'" It is the first pepper to turn red in any garden, about 65 days after transplanting. 'Jingle Bells,' a miniature bell pepper and a favorite at farmer's markets, produces an abundance of tiny, $1^1/_2$-inch-round fruits in 65 days, too.

Another early red pepper that Johnston likes is 'Round of Hungary.' "It's not large," he admits, "but it is distinctive-looking, with smooth ribs and a bright red like there's a light inside." Fully red about 75 days after transplanting, 'Round of Hungary' has great market potential, Johnston says. "Something this good should always bring more money than ordinary bell peppers." He also loves 'Lipstick,' a pimento-type pepper that is fully red at 73 days. "Both 'Round of Hungary' and 'Lipstick' are very sweet and tops in taste," he says.

Another big fan of 'Lipstick' is Tom Denison, a Corvallis, Oregon, market grower who devotes more than an acre of his fields solely to peppers. "'Lipstick' is an absolutely delicious pepper that is thick-walled, very early and open pollinated," he says. "I can get untreated seed, too, from Johnny's, which is important, because I am an organic grower." Denison finds that his customers — from farmer's markets to the local food co-op — prefer thick-walled peppers. He doesn't grow 'Ace,' which has relatively thin walls, for that reason. "In 1978, when we started bringing red peppers to farmer's markets, we gave away samples to get people to buy," says Denison. "They had never seen them, and we had to convince them that these red peppers were not hot." Since then, although regular red peppers are ubiquitous, Denison's special, sweeter and organically grown varieties still are preferred by his customers.

POTTED PEPPERS

'Blushing Beauty,' an All America Selection winner in 2000, produces very high yields, even in containers. I planted five of them in the porous, organic soil in my garden and set five in containers filled with potting mix. Both the garden and potted peppers were fed with gradual-release, fish-meal pellets, incorporated into the growing media when the peppers were planted. I caged all plants, and it's a good thing I did. The container peppers grew so big and set so many fruit that the stems would have snapped without support. By season's end, the garden peppers averaged 12 fruit per plant. Their potted cousins averaged 17. One plant produced 24 large, fully ripe red bells. Two additional seasons with similar results have convinced me that 'Blushing Beauty' is an excellent choice for containers.

A multicolored pepper that can be harvested at several stages for the table or market, 'Blushing Beauty' starts out a greenish-ivory color, turns yellow, changes to a pinky blush, then to apricot, deepens to vivid red-orange and finally blooms to scarlet after 90 days.

FAST TO GROW

Once you know the right varieties to grow, the key to getting lots of sweet red peppers is to 1) give them an early start indoors; 2) warm up the ground before you plant them outside; and 3) never give them any reason

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to stop growing. Start pepper seeds indoors at least eight to 10 weeks before nights remain above 50 degrees. If your indoor growing space is on the cool side (in a basement or other unheated room), start seeds two or three weeks sooner. "The idea is to have a transplant with some buds on it at planting time, but no open flowers," says Johnston. Harden off transplants for at least a week by leaving them outside for increasing amounts of time each day. "And, if you water them with a high-phosphorous fertilizer solution (compost or alfalfa-meal tea) at planting," he says, "they won't miss a beat and will set peppers rapidly."


COURTESY ALL AMERICA SELECTIONS

When nighttime air temperatures stay above 50 degrees, peppers can be transplanted. At soil temperatures above 65 degrees, pepper growth accelerates. Plants may become stunted and never recover if either the soil or air temperature is much below 55 degrees. To combat cool ground, cover your beds with plastic mulch as early in the spring as possible. (Clear plastic warms the soil more quickly, but black plastic controls weeds better.) Once the soil has warmed, remove the plastic or cover it with grass clippings or other mulch to prevent the plastic-covered soil from becoming too warm.

Another trick, recommended by MOTHER'S Almanac contributor and retired Texas extension agent Bill Adams, is to place wire cages around each pepper transplant, wrapping the cages with clear plastic. These mini-greenhouses trap heat and act as a physical barrier to fungal diseases. After the weather heats up, remove the plastic around cages or the plants will get too hot.

If your summers get really sultry, your peppers will appreciate a heavy mulch after the spring season. Several inches of straw or dried grass clippings will keep the soil cooler and reduce moisture evaporation. Continually moist ground is a necessity for peppers, as they suffer from blossom end rot, a physiological disease caused by a calcium deficiency. Most soils contain ample calcium, but the mineral relies on water to transport it to the plant's root system. When the soil lacks moisture, the calcium can't reach the plants and a tell-tale black leathery spot forms on the blossom end of developing fruit.

Big, sweet peppers require a continual source of nutrition. The easiest way to fertilize them is to incorporate gradual-release fertilizer in the ground at planting. Fish-meal pellets, alfalfa pellets or cottonseed meal are all good organic choices. You also can foliar-feed plants every week or two with a fish/seaweed soluble fertilizer, spraying the tops and bottoms of leaves, or water the ground with the same mixture.

Peppers need a good supply of magnesium, which may be deficient in some soils. If a soil test or your extension agent recommends magnesium, scratch a tablespoon of Epsom salts (magnesium sulfate) around the base of each pepper plant when they start flowering, or mix a tablespoon of salts per quart of warm water and foliar-feed them.

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About Peppers

Easy to raise and as versatile as they are various, peppers belong in everyone's kitchen garden.

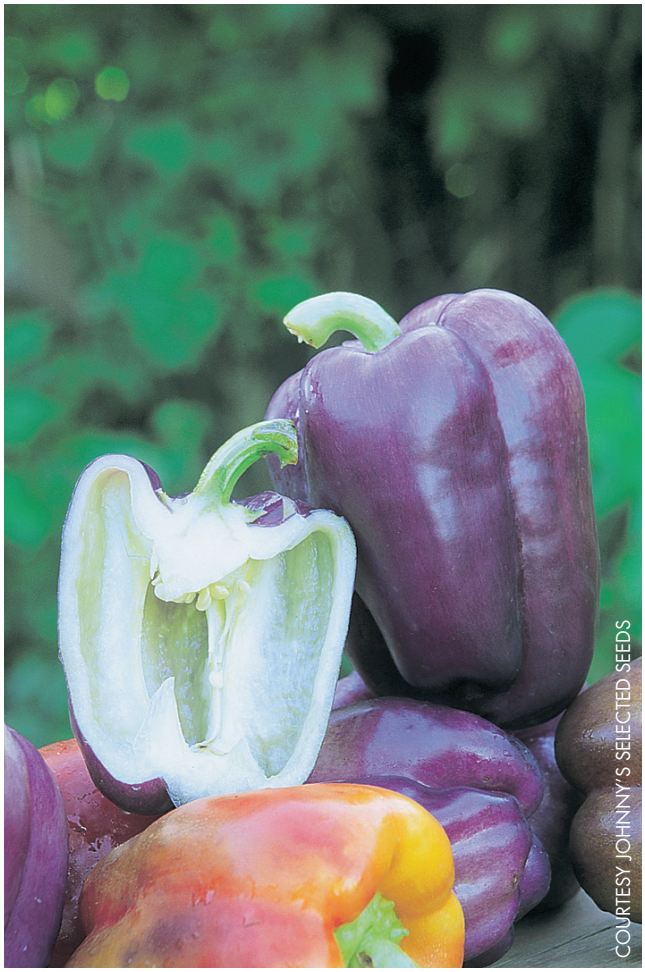
By Sara Pacher

If there's a taste that comes close to the freshness of the scent of newly cut grass or of a fern forest after rain, it's the cool, marvelous munch of a homegrown sweet pepper. And for those of us who've spent happy days sampling south-of-the-border cuisine, dining would be dull indeed without the pungent jolt of an occasional chili.

Peppers have been appreciated for a long time. Remains of these South American natives are found in Peru's prehistoric ruins, and by the time Christopher Columbus reached this continent, they were widely cultivated in both Central and South America and throughout the Caribbean. Though they are entirely different from the true spice pepper, Piper nigrum, which Columbus had expected to find in his search for a new route to the East Indies, he was delighted with these New World vegetables, and their use spread throughout Europe and India in the sixteenth and seventeenth centuries.

WHAT TO GROW

Most of the hot and sweet peppers grown in the United States belong to the species Capsicum annuum, with the sweet or bell peppers classed in the Grossum Group and the principal condiment peppers (cayenne, chili and paprika) belonging to the Longum Group. Though many sources consider hot peppers as members of C. frutescens, this species more correctly refers to the superhot Tabasco pepper, which in this country is grown only on the Gulf Coast. But whatever type you grow (and there are plenty of varieties to choose from), cultivation is approximately the same.



'Islander' turns violet in as few as 60 days. It holds that color for 7 to 10 days, then develops yellow and orange streaks, and eventually turns dark red.

Among earlier maturing sweet peppers, familiar standbys are 'Earliest Red Sweet' and 'Ace Hybrid,' though such newer hybrids as 'Early Prolific' and 'Early Thickset' quickly gained acceptance. 'Skipper' is a thick-walled type that's good for stuffing. A later-maturing pepper, also good for stuffing, is the popular 'Bell Boy.' 'Tasty Hybrid' is justly named, and a prolific producer, as well. And, though thin-walled, one of the best non-hybrids is mosaic-resistant 'Staddon's Select.' (Among others resistant to this disease are 'Keystone,' 'Belle' and 'Yolo Wonder.') There's also a wide variety of giant sweet peppers, including 'Green Boy,' 'Wonder Giant,' 'Big Bertha' and 'Big Stutter.'

Ornamental peppers tend toward the blazing hot, but 'Dutch Treat' is a mild-tasting exception. Anaheims are slightly pungent, while jalapeños sizzle on the tongue. Prolific and easy to grow are 'Hungarian Wax,' 'Hot Banana' and 'Goldspike.' Cayennes, such as the 'Long Red Cayenne,' are usually fiery, but the early-maturing

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'Zippy Hybrid' is a much milder version. And though we think of hot peppers as being small, 'Numex Big Jim,' though not overly spicy, has fruits as large as the sweet 'Big Bertha.' For gardeners in the Deep South, 'Dr. Greenleaf Red Hot Tabasco' is one of the best (and hottest) of that type. Remember, though, that different varieties will cross-pollinate, but that won't affect their taste the year they're planted. Therefore, if you don't save the seeds, you can plant hot and sweet peppers in the same bed.

HOW TO GROW

Peppers are a warm-weather crop. Even though they're perennials in their native habitats, they're grown as half-hardy annuals elsewhere, unless kept indoors. Yields are reduced when the temperature goes below 55 degrees. On the other hand, blossoms can drop if the thermometer reaches above 90 degrees. Peppers also require a long growing season and can be seeded directly in the ground only in the warmest climates. Most gardeners buy young plants instead of starting their own. However, though peppers are slightly more difficult to grow from seed than, say, tomatoes or even eggplants, cultivating seedlings offers a gardener a wide choice of varieties.

Even under warm indoor conditions, seeds can take up to two weeks to germinate, so plant them about eight weeks before the last expected spring frost. Use peat pellets, vermiculite or a finely screened mixture of equal parts of sand, loam and compost. (An inorganic planting medium isn't as likely to harbor the fungus that causes damping off. If you use garden soil, sterilize it first by baking it in a medium oven for at least 30 minutes.) Generally speaking, one 15-foot row of seven or eight plants, each of which can produce as many as 30 fruits, will provide enough peppers for a family of four. A packet of hybrid seed (many of which have a germination rate of about 75 percent) will grow a minimum of about 50 plants. The seed will remain viable for two years.

Sow seeds ¼ inch deep, and keep the medium uniformly moist. Since seeds will lie dormant if cool, put the growing container in a warm, sunny window. After the first true leaves show, prick out each plant to a three-inch pot filled with a sterilized potting soil, and transplant the seedling to a larger pot before it becomes root-bound. When the plant is about six inches tall, pinch off the growing point to encourage bushiness.

Once the danger of frost is past, it's still best to avoid moving these half-hardy plants directly outdoors. Take a week or two to harden them off in a cold frame, or put them outside on sunny days and bring them inside for warmth at night. Once the weather is settled and the earth is warm (a soil temperature of 65 degrees is ideal), choose a sunny location protected from the wind with well-worked, well-drained, fertile loam with a pH of 6.0 to 7.0. To enrich the soil, use rotted compost; avoid fresh manure, since too much nitrogen will encourage leaf growth to the detriment of the fruit. Instead, add potash in the form of granite dust, greensand, seaweed and wood ashes. If your soil is deficient in magnesium (a lack of which can cause leaf drop, poor production and sunscald of fruit), use dolomite lime, talc or Epsom salts to provide this essential nutrient.

Make sure the garden soil is moist before setting out the young plants. (If transferred to the garden in the evening, they are less likely to wilt.) Place them 18 to 24 inches apart with three feet between rows. (In very dry climates, put them closer together to conserve moisture.) Water as often as necessary to keep the ground uniformly damp. This is especially important when the blossoms open and the fruit is forming, since dry soil puts the plants under stress and can cause blossom-end rot. Don't, however, overwater. Organic mulches, such as grass clippings, help conserve moisture and keep down weeds at the same time. Be careful when weeding not to disturb the peppers' roots. As the flowers fade and the fruit begins to form, provide a dose of weak liquid fertilizer.
When growing peppers in containers, water them every day, and once flowers and fruit start to appear, apply a liquid fertilizer each week. Handpicking a few of the first flowers will encourage fruit formation.

WHAT TO WATCH FOR

If given fertile soil and proper moisture, peppers are seldom hassled with pests or diseases. Occasionally,

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they're hit with aphids, flea beetles or Colorado potato beetles, but all three can be controlled with hard hose sprays, sticky traps, garlic sprays, diatomaceous earth and wood ashes. In addition, ladybugs, lacewing flies and praying mantises consume aphids; nearby eggplant, flax and green beans help repel Colorado potato beetles; and tansy planted between rows discourages cutworms. The latter pest can also be controlled by placing cardboard collars in the ground around the peppers' stems. And, of course, keeping the garden free from refuse can help reduce most insect problems.

Among diseases, anthracnose (a fungus that causes ugly brown spots and black lesions on the fruit) can be avoided by allowing three years to pass before again planting peppers, or other relatives of the nightshade family, in a particular location. Mildew, bacterial spot and tobacco mosaic can be avoided by simply raising resistant varieties. (If you smoke, wash your hands before working with peppers to keep from spreading mosaic.)



These flawless beauties are the sweet pepper variety 'Red Knight.'

HOW TO HARVEST AND STORE

Peppers will be ready to harvest from late summer until the weather cools. When fruits are of sufficient size and their flesh is firm with a smooth, even color, pick them at least once a week to encourage production. Green peppers will eventually turn a rich red or yellow, depending on the variety, and these brightly colored fruits will be somewhat sweeter than green ones. (Pimento and paprika peppers are always harvested in their dark red, ripe stage.) However, once the color changes, they'll also go soft quickly, and leaving them on the vine too long will reduce yields. These later-picked colorful peppers, however, contain more vitamin C (120 to 180 milligrams for each average-sized fruit) than do those in the green stage. Peppers also provide 700 to 3,000 international units of vitamin A, 30 to 70 milligrams of thiamin and 28 milligrams of phosphorus. All this nutrition is in a package containing around 25 calories.

When frost is predicted, harvest all the remaining fruit, and—once the last pepper is picked—pull up and compost or burn the plants to prevent future pest and disease problems. To avoid damaging the plant, use a sharp knife or pruning shears to cut off the peppers and handle them carefully, because they bruise easily.

Sweet peppers are excellent eaten like apples. You can also, of course, slice them up in salads, stir-fries and meat loaves, or stuff them with brown rice, soybean grits or meat/vegetable/egg mixtures and bake them or simmer them in a covered casserole.

Hot peppers should be fully ripe for drying or pickling. Thin-walled varieties are easy to dry and can be ground and stored in jars. (This method is also used for paprika peppers.) To dry them, either cut the whole plant and hang it in an airy place, or string individual pods to hang in the kitchen for both ornamental and culinary use.

Peppers don't need blanching before freezing. Just chop and freeze them in jars, or core and freeze them whole for future stuffed dishes.

To can red sweet peppers (or even hot ones), wash and remove the seeds, fill pint jars to ½ inch from the top, cover the fruits with boiling water, seal and process for 25 minutes at 10 pounds of pressure.

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CHILES RELLENOS

6 large, fresh, green chili peppers
½ pound mozzarella cheese, shredded
4 egg yolks, beaten
½ teaspoon salt
4 tablespoons flour
4 egg whites, beaten stiff
4 tablespoons vegetable oil

Sear peppers on all sides under high broiler heat. Quickly wrap in damp towel to steam for a few minutes until the skins peel off easily. Split the fruit and remove seeds. Stuff with cheese. Make a batter of egg yolks, flour and salt. Fold in stiff egg whites. Dip stuffed peppers into batter one at a time, slip into hot oil, turn immediately, and allow one side to brown. Turn again to brown other side. Put on platter, and cover with Mexican sauce. Serves 3 to 6.

MEXICAN SAUCE

1 tablespoon minced onion
1 clove garlic, minced
1 tablespoon minced green pepper, sweet or hot
2 tablespoons olive oil
1 cup stewed tomatoes, fresh or canned
½ teaspoon salt
Sauté onion, garlic and pepper in oil. Add tomatoes and salt, and continue stirring over medium-low heat until sauce reaches boiling point. Pour over stuffed peppers.

STIR-FRIED SWEET PEPPERS

6 sweet peppers, red and green
3 tablespoons vegetable oil
1 clove garlic, minced
1 tablespoon tomato juice
1 tablespoon nutritional yeast (optional)
½ teaspoon oregano

Core peppers, remove seeds and slice into strips. Sauté briefly in oil. Add remaining ingredients. Cover pan and simmer for 3 minutes. Serves 6.

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POTATOES

Sowing Spuds

Dozens of different varieties of potatoes you can grow in your garden.

By Brook Elliott
Photos by David Cavagnaro



Tap on a freshly dug potato and it feels crisp, like an apple right off the tree. Cook that spud up immediately and savor a subtle nuttiness in its tender flesh—almond-like in some varieties, walnutty in others, tantalizing flavors that are quick to fade. So says William Woys Weaver, food historian and heirloom vegetable expert who tended 54 varieties of heirloom potatoes in his Pennsylvania garden last summer.

"Growing potatoes at home really is lots of fun," Weaver says. His culinary students at Drexel University help out in his garden, and those who have not previously grown potatoes are totally amazed. "It's like digging for gold," he says.

And anyone can do it. Potatoes are high-yielding veggies that really are easy to grow and store, and contrary to conventional wisdom, they do not require a lot of land.

A pound of seed stock, which takes about 10 feet of planting space in a row, can produce 15 to 25 pounds of delicious tubers. (Weaver's book, "Heirloom Vegetable Gardening," has an excellent chapter on growing potatoes.)

If you use organic growing methods, you'll have delicious tubers without the chemicals used on store-bought spuds, which are routinely treated with pesticides and antisprouting compounds, and which may have been in storage for so long they've lost much of their flavor.

Growing potatoes at home also opens up a whole new world of varieties not available in the super-

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market. Nearly 4,000 different kinds can be found just in the Andes, birthplace of the potato, according to the industry's Global Potato News, but fewer than 70 varieties are listed in the Potato Association of America's inventory, and only six types are commonly grown in commercial fields.

For home gardeners, the current Seed Savers Exchange (SSE) yearbook lists nearly 600 varieties offered by its members, including Clara Klettke of Spud'tacular Potato Research in Kulm, North Dakota. She says in the past 12 years, she personally has grown 735 varieties, and this year alone, she grew 350. Several mail-order companies across the country offer dozens of hard-to-find choices as well.

Potatoes come in a diversity of colors: purple, blue, yellow, and red or pink, in addition to white. Among Weaver's favorites is 'All-Red,' also called 'Cranberry Red,' a big midseason heirloom potato available to Seed Savers members and sold by most of the mail-order sources listed.

Potatoes with color sometimes fade when cooked, according to Weaver, but 'All-Red' remains a rosy pink. It also is never bitter; some colored potato varieties have toxins in their skins that can impart a bitter taste, but that characteristic can be bred out of them over time, he says, through careful seed stock selection.

"The flavor of 'All-Red' is rich, like English walnuts, even a bit earthy," Weaver writes in his book "100 Vegetables and Where They Came From." "Walnut oil in the salad dressing is a perfect match and a good way to enhance the flavor."

Along with 'All-Red,' several varieties of French "fingerling" potatoes, so named because they look a bit like a human finger, also have won Weaver's favor. These include 'Roseval,' a waxy, gourmet European salad potato introduced to the U.S. market in 1950 and still a standard among gourmets, and the heirloom 'La Ratte,' introduced in 1872 in Europe, and, says Weaver, "one of the best fingerlings to grow at home — productive and disease-free." Both are available through SSE.

PLANTING TIME

'All-Red,' also known as 'Cranberry Red,' remains a rosy pink inside even after it is cooked. Although classified as a cool-season crop, potatoes are flexible and will grow well under a broad range of conditions. While they tend to be more productive in the northern tier of the United States and in southern Canada, they can be grown virtually anywhere in this country.

St. Patrick's Day, March 17, is the traditional potato-planting date, but regional weather conditions may dictate fudging a bit on that timing. In the South, start plants before temperatures regularly climb into the 90s. Determine your last average spring frost date and back off three weeks from there to set a planting date. Potato foliage is hardy to about 28 degrees, but the roots can withstand even more cold.

Klettke, in North Dakota, times her potato planting by feel. "After tilling," she says, "grab a handful of soil. If it feels cold, wait; potatoes can easily rot. The ground should be cool-to-warm to the touch."

In his book, "Growing Vegetables West of the Cascades," Steve Solomon recommends using a fabric row tunnel-cover if you are determined to plant early, or waiting until May 15 to June 1. "Sowing later than this will greatly reduce the yield," he says, "but sowing earlier, even if frosts don't get them, will tend to make the vines dry out too soon, making it harder to store your crop over the winter." Many home growers just take their tater-planting cues from nature: When the dandelions bloom, it's time to set the spuds.

From planting time to harvest varies with variety. Some come on early, in 60 to 90 days; others are ready

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at midseason, in 90 to 110 days; and still others are late maturing, coming on in 110 to 135 days. Later varieties generally make the best storage crops, and most fingerling types fit between the mid- and late-season types.

In selecting which potatoes to plant, keep maturation dates in mind to ensure a steady harvest throughout the growing season and a storage crop as well. Jim Gerritsen of Wood Prairie Farm, Bridgewater, Maine, one of the country's largest producers of organic potatoes, recommends the following as one possible grouping that provides for harvests of great-tasting spuds from late spring to early fall:

'Caribe,' pronounced Ka-REE-bay, (early) is one of the prettiest potatoes you'll dig from your garden, with its purple skin and snow-white flesh. This variety makes excellent new potatoes, so it's hard to leave them in the ground; when allowed to mature, they grow fairly large and oblong.


'Caribé' sports purple skin and snow-white flesh.

'Rose Gold' (midseason) is the best of the redskinned, golden-fleshed potatoes, producing medium to heavy yields of medium-sized round tubers.

'Island Sunshine' (late), developed by organic farmers on Prince Edward Island, Canada, probably has the highest tolerance to potato late blight of any variety now being grown. The medium-sized, round tubers have gold skins and golden flesh, and the plants are heavy producers.

'Russian Banana' (fingerling; mid-to-late season) is an heirloom gourmet variety first grown by early Russian settlers. It produces a heavy set of flavorful, golden-skinned and golden-fleshed, crescent-shaped tubers with tapered ends. Their culinary qualities are considered unsurpassed.

CULTURE

'Caribe' sports purple skin and snow-white flesh. Potatoes need at least six to eight hours of full sun a day and at least 1 inch of water per week from rain or deep watering. They will grow in any soil but prefer a light, well-drained sandy loam, high in organic matter and slightly on the acidic side.

For most vegetable crops, heavy soils can be amended with manure, but for potatoes, manure increases the chance of infection from potato scab, a disease that causes superficial reddish-brown spots on the surface of tubers. As the potatoes grow, the spots may expand and turn corky and necrotic. For a safer, alternative potato amendment, try compost and leaf mold.

Potato plants are started from small tubers called seed potatoes. Buy "certified seed stock," which is guaranteed disease-free. The best size is comparable to a hen's egg, but larger tubers can be cut into $1^1/_2$-to-2-inch-square pieces, each containing two to three eyes. Rest cut seed potatoes in a warm, dark place for a few days before planting, so the cuts develop calluses, which help protect the seeds from disease and rot.

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To avoid those problems, Klettke prefers not to cut her seed tubers. "When you do," she says, "you open it up to disease. Besides, there is nothing wrong with planting an entire large tuber. It will send up shoots, too, and produce plenty of potatoes."

Seed potatoes can be "chitted" to hasten the development of the crop. To chit them, spread the tubers in open-topped crates, boxes or flats in a single layer (standing them in egg cartons also works well). Position the heaviest concentration of eyes to point upwards. A week or two before planting, place them in a warm location with a medium light level but no direct sunlight; the seed potatoes will produce strong, stubby sprouts.

TO HILL OR NOT TO HILL

Chitted (pre-sprouted) potatoes, ready for planting, sit in an egg carton. Traditionally, potatoes are planted in "hills." A trench is dug about 4 to 6 inches deep, and the seed spuds are set in it, 12 to 15 inches apart. The trench is then back-filled until it is level with the soil surface. For home gardeners, the recommended spacing between rows is 24 inches.

When the plants are 8 inches tall, they are half-buried by hoeing soil up and over them from each side of the row. This is done at least twice as the plant grows, each time being sure to let some leaves show for continued growth.

After that, the hills should be heavily mulched with straw, dried leaves or other organic materials. Mulching helps the soil retain moisture and controls weeds; otherwise, frequent, shallow cultivation must be done. Mulching also assures that light does not reach the tubers; potatoes exposed to light turn green and produce a toxin that renders them inedible. (Such green tubers can, however, be safely used for seed stock the following spring.)

Klettke mulches, too, but in a different way. For starters, she reverses the hilling method by first hilling up the rows to create long, thin, raised beds, which leaves deep walkways in between the rows. She plants seed potatoes about 4 inches deep in the beds and then covers the beds with mulch. As the plants grow, she adds more mulch. "When I started, my soil was solid clay," she says, "so I added leaves, grass, straw — any organic matter — to continually improve it." Potatoes also can be grown successfully in various containers — and even without actually planting them in soil (see "Surface-Sown, No-Dig Spuds," p. 113).

HARVEST TIME

'Russian Banana' fingerling potatoes. How big a harvest can you expect from these rows? "More than most crops," says Gerritsen of Wood Prairie Farm. "There are three factors that affect potato yields: relative fertility — rich soils produce greater yields; watering — the soil surrounding them should be consistently moist but not soaking wet; and to what extent you successfully keep insects and disease pressures at bay."

If all three factors are right, he says to "expect to harvest at least 10 times as many pounds as you plant. Even higher yields are not unusual."

Potato tubers begin forming when the flowers fade; after that, the crop can be harvested as needed. For day-to-day new potatoes, merely work the soil under the plants with your hand or a fork until you encounter the small tubers. Gently break off those you want and re-cover the rest.

To harvest potatoes for storage, wait until the plants have died back completely. In dry weather, if temperatures are below 80 degrees, let the crop cure by allowing the tubers to lay on the soil surface for a day or two. If temperatures consistently exceed 80 degrees, sunlight can cause the potatoes to turn green and rot; in this case,

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collect them immediately and place them in a dark, well-ventilated place to cure for 10 days at 60 to 65 degrees and 85 percent humidity.

After curing, tubers will keep for several months without sprouting if kept in complete darkness at 40 to 45 degrees and high humidity. For potato storage, heirloom gardener Weaver recommends buying a cheap, old-fashioned refrigerator and keeping it set at 40 degrees (a box of moist leaves or sawdust in an unheated garage or basement is another alternative if no refrigerator is to be had). In his potato fridge, Weaver keeps his eating potatoes and two or three egg cartons full of each variety of next year's seed potatoes.

SURFACE-SOWN, NO-DIG SPUDS

An offbeat technique popularized by Ruth Stout in her book "Gardening Without Work" is to plant potatoes without actually burying the seed. The tactic goes under several names: Henry Doubleday Research Association (HDRA), England's premier organic gardening group, calls it "no-dig potatoes;" the Illinois Extension Service calls it "straw potatoes;" Ronniger's Potato Farm in Idaho merely refers to it as "the mulch method" and notes the technique is particularly good if you have shallow, rocky or compacted soil.

The idea is based on the fact that tubers will grow from potato stems if they are shielded from light. As long as the seed potatoes have contact with soil somewhere, they will send down roots for the nourishment they need to keep producing.

To plant a "no-dig potato patch," simply lay the seed potatoes on the surface, spacing them at regular intervals. You can lightly press the seed into the soil surface if you want, but it's not necessary. Cover the seed potatoes with several inches of straw or other mulch. As the plants emerge, add more mulch. HDRA recommends a final layer of grass clippings rather than straw to totally seal out light. (The grass clippings also will release nitrogen and other nutrients.) When you are ready to harvest your crop, merely lift the mulch and harvest the potatoes; they will be much easier to find and cleaner than if you'd grown them in soil.

About Sweet Potatoes

The joys of growing, harvesting, preparing and cooking yams.

By Sara Pacher



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As a child, one of my favorite after-school snacks was a warm-from-the oven baked sweet potato. My sisters and I would slit them open, pour in some melted butter, and spoon out the succulent yellow or orange flesh, scraping the last satisfying bite from the skins. Our mother (probably wisely) never pointed out that these garden grown treats were also good for us. Though vitamin content can vary with different varieties, an average-sized tuber contains a whopping 15,000 international units of vitamin A and about half as much vitamin C as an orange. Added to that are worthwhile amounts of protein, calcium, magnesium, iron and carotene, and practically no fat. In fact, sweet potatoes are one of the few vegetables capable of providing the full nutritional needs of human beings, and they're delicious boiled or baked, whole or mashed, and in casseroles, puddings, breads and soups. They can substitute for pumpkin in pies and are used to make candies, ice cream and cookies. (For an unusual salad, grate and mix raw sweet potatoes with green peppers, cucumbers and nuts.) In Japan, where sweet potatoes are the second most important crop, they've long been a popular ingredient both in stir-fry and tempura dishes.

The sweet potato (Ipomoea batatas) probably was first cultivated in Peru, and four varieties, along with sweet potato bread, were served to an impressed Christopher Columbus on his fourth voyage to the West Indies. In the sixteenth century, these vegetable natives of Central and South America were introduced to Spain, but they were not grown extensively in the southern United States until the mid-eighteenth century. Today, the crop is found in many tropical and subtropical regions—Polynesia, the Philippines, New Zealand, Australia, Africa, Asia and even in southern parts of the USSR. In most of Europe, however, this heat- and moisture-loving plant never gained the popularity of the botanically unrelated Irish potato (Solanum tuberosum). The sweet potato is, in fact, a close kin to morning glories, and in tropical climates, it produces small white, pink, red-purple or pale violet flowers. In more temperate regions, the quick-growing vines rarely flower and those that do seldom produce seeds. Even so, it's wonderful to watch this vegetable grow, and because it thrives during the hottest days of summer, it can be one of the prettiest plants in the August garden. It's also beautiful trailing from a hanging basket and can be used as a temporary ground cover. In large containers, sweet potatoes can be grown—and harvested—as patio plants.

WHAT TO GROW

Because sweet potatoes are hot-climate natives, they are extremely sensitive to frost. Many varieties require 150 to 170 days of warm growing weather, though some types—the popular copper-skinned, high-yielding 'Centennial' and the good-storing 'New Jewell,' for example—mature in 90 to 100 days. The compact 'Bush Porto Rico' does well in small gardens or on trellises or wires in greenhouses. 'Old Gold,' whose flavor continues to improve for some time after harvesting, is a favorite variety for storing, while other cultivars are prized for their disease and pest-resistance. 'Nancy Gold,' for instance, is resistant to soft rot, while 'Heart of Gold' resists the root-knot nematode and 'All Gold' not only resists stem rot but also can ward off a viral disease called internal cork.

Most sweet potatoes have reddish tan skins and creamy yellow to deep orange flesh and are classified as "moist" or "dry," terms that describe the eating texture of the flesh. Moist, deep orange types—like the soft-fleshed, sugary, good-storing Porto Rico (150 days)—are sometimes called "yams" because of their resemblance to the true yam (Di oscorea alata or D. sativa), an African plant that can be raised only in tropical climates.

Sweet potatoes are grown from slips—sprouts taken from the tubers. While sweet potato slips can be purchased from nurseries, seed houses and garden supply stores, it's easy to propagate them yourself. First, locate some tubers that haven't been treated or waxed to prevent sprouting. Then, some six to eight weeks before planting time, half bury them in a pan or box of rooting medium (moist sand, sawdust or chopped leaves will do) or suspend a potato with toothpicks halfway into a water-filled jar. To be successful, keep these potato parents moist and at a temperature between 75 and 80 degrees. (The Japanese use the warmth of miniature compost heaps to start potato slips.) Approximately a month later, the first shoots will appear. When they're about six to nine inches

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long, cut them from the parent potato and remove and dispose of the bottom inch from each slip, because this particular segment sometimes harbors disease organisms.

Sweet potatoes will grow in poor soil that won't sustain most other vegetables, but yields from such plots will be sparse. Ideally, they do best in a well-drained sandy loam with a clay or clay-loam subsoil. Heavy clay, unless well-worked, produces misshapen roots, while a too-light soil creates long, stringy tubers.

Prepare the sweet potato bed in a full-sun area around the time of the last spring frost, digging the ground to a depth of eight to 12 inches in order to allow the tubers' long roots to make use of moisture deep in the earth. To further provide the loose soil so essential to good tuber development, most gardeners prefer to plant in long, wide ridges that are at least 10 inches high. Rows are generally spaced around three-and-a-half feet apart. (A 10-foot row will produce four to eight pounds of potatoes.) Remove all deformity-causing rocks and dirt clods, and work in average amounts of compost and wood ashes or rock phosphate. Potassium-rich materials will help the potatoes fill out properly, but, unless you're planting in very sandy soil, go easy with manure or other nitrogen-rich fertilizers that will encourage lush vines, stunt tuber development, and combined—with excessive rainfall—can delay maturation. Sweet potatoes like a slightly-to-moderately acid soil (pH 5.2 to 6.7), which also discourages soilborne diseases that can mar tuber skins.

Once the earth has warmed up (usually three to four weeks after the last frost), use a hoe handle to poke holes about six inches deep and 12 inches apart. Bury the slips up to the last leaves, tamp down the dirt gently but well, and water thoroughly. Some two weeks later, mulch heavily with hay or grass clippings to eliminate the need for weeding and watering and to keep the soil soft for root development. Soon the thick, sprawling vines will smother most invading weeds. You might want to occasionally lift the longer vines to prevent them from rooting at the joints, and if rain is scarce, try to provide an inch of water a week until two weeks before harvesting. Use caution, though, as this vegetable survives dry spells—and even droughts—quite well, and over watering encourages rot. Otherwise, once the plants are established, you can usually forget about them until harvest time, because, despite all the pests and diseases that can attack this crop, it's usually remarkably trouble-free.While white-potato foliage is toxic, that of the sweet potato can be stir-fried.

WHAT TO WATCH FOR

Gardeners in the South, where the sweet potato is such a popular crop, are likelier than those in more northern areas to encounter problems in their sweet potato patches. Handling the plants as little as possible when transplanting and cultivating prevents wounds that might be invaded by disease spores.

Common ailments include black rot, scurf, dry rot, stem rot (or wilt) and soft rot. The first four are caused by fungi. Black rot causes pale yellowish foliage, and its circular dark depressions on the outside of tubers may appear in the field or in storage. Discard potatoes with these marks, and take special care in curing those from the same harvest.

Don't confuse black rot with less serious scurf. The latter makes small, round, dark spots on the surface of the potato, which, though unsightly, don't affect its edibility.

Dry rot, which causes tubers to mummify while in storage, can usually be avoided if the harvest is kept in a cool area (55 to 60 degrees).

Plants infected with stem rot or wilt may deteriorate throughout the season. Even if they aren't killed off by this disease, the harvest will be poor. This fungus enters the plant through injuries caused by insects, careless cultivation and wind.

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Soft rot, another storage disease, causes a watery decay and whiskery growth but isn't usually a problem when the tubers are cured and stored properly.

Fusarium wilt stunts plants, and leaves turn yellowish or brown, wilt and drop off. To prevent it, plant resistant varieties such as 'Allgold,' 'Coppergold,' 'Dooley' or 'Gem.'

Among insects, the sweet potato weevil, a quarter-inch-long bug with a dark blue head and wings and a red-orange body, can punture a plant's stem or even the tuber to lay its eggs. The developing larvae then tunnel through and feed on the vegetable, while the adult feeds on the vine and roots. The weevil also spreads foot rot that creates enlarging brown-to-black areas on stems near the soil line and at the stems' ends. This rapidly multiplying pest is nearly impossible to defeat, but can be avoided by using certified disease-resistant seed sweet potatoes, planting in clean ground and practicing four-year crop rotation. If an infestation occurs, destroy all affected plants, then plow up and dispose of any roots left in the infested ground.

Aphids, on the other hand, are easily controlled with garlic sprays, diatomaceous earth, ladybugs or, simply, hard hose sprays. Don't neglect to discourage them, because—aside from the damage they do directly—aphids also transmit internal cork, a disease that mottles leaves and makes them yellowish along the veins and that results in hard, corky islands in sweet potato flesh.

Stunted vines, brown-spotted leaves, and roots with blemishes or poor color are symptoms of underground root-knot nematodes. Here, too, prevention in the form of organically rich soil and disease-resistant varieties is the best cure.

HOW TO HARVEST AND STORE

The longer sweet potatoes stay in the ground, the richer the yield and the higher the vitamin content. However, once the vines are blackened by frost, the tubers quickly become vulnerable to rot. Therefore, unless you can harvest immediately after the first cold spell, it's best to dig the potatoes soon after the leaves begin to yellow. Pick a sunny day when the soil is dry, because roots which are harvested when the ground is wet can shrink considerably when stored. Sweet potatoes can be found growing a foot or more from the plant, so use a potato or spading fork to start digging from the outside of the row, remembering that any cuts or nicks in the tender skins will encourage spoilage.

Leave the tubers on the ground for several hours—but no longer—after digging, then move them to a well-ventilated place with temperatures at around 85 to 90 degrees for 10 to 15 days. (Some people place them near hot water heaters.) Once cured, store the potatoes at around 55 degrees with a humidity of 75 percent to 80 percent. If cured and stored properly, they will keep for several months, particularly if handled as little as possible until they are ready to be used. In fact, during curing and storage, some of the sweet potato's carbohydrate changes from starch to sugar, causing the flavor to improve with age.

Sweet potatoes can also be frozen, canned or dried. To can them, cook washed potatoes in boiling water for 20 to 30 minutes until they're partially tender. Then slip off the skins and cut the flesh into uniform pieces. Pack these into jars, leaving an inch of head space, and cover them with boiling water. Process at 10 pounds of pressure for 55 minutes for pints and 90 minutes for quarts.

To freeze, cook the washed tubers for about an hour until they're tender. Peel them, cut or mash them, and pack them into containers to be stored in the freezer. Thin slices dried for several days in the sun or in a low oven produce tasty ("bet-you can't-eat-just-one") sweet potato chips.

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About Potatoes

History and horticulture of the potato: nutritious, versatile and easy to grow.

By Phillipe Louis Houze



'Russian Bannana' fingerling potatoes.

There's nothing small potatoes about the potato. It's the most eaten vegetable in the Western world and the fourth largest food crop—after wheat, rice, and corn—on earth. Nutritionally it yields more sustenance on less land in less time than any major staple. The potato's protein rates higher in quality than the soybean's. Just one medium-sized spud contains about half the daily adult requirement of vitamin C, as well as significant quantities of carbohydrates, calcium, protein, A and B vitamins, potassium, phosphorus, and iron—yet it's 99.9 percent fat free, and has only about 100 calories.

Horticulturally, the potato is a botanic blueblood, with a lineage longer than any aristocratic Homo sapien's. Nomadic Indians were gathering wild potatoes from the central Andes plateau, where the vegetable originated, before 6000 B.C. Archaeologists have found dried cultivated spuds, and pottery decorated with potato motifs, in Incan burial mounds dating to the second century. The potato was considered a spirit by the Incas. Some tribes even expressed time in units based on the potato's cooking time.

When sixteenth-century Spanish explorers brought the tuber back from their conquests, the spud enjoyed a short life as the most high-falutin' vegetable in Europe. It was even thought to possess exotic powers—not the least as an aphrodisiac. Naturally, word got around. English noblemen paid upwards of 250 pounds (money) for one pound (potatoes).

But the vegetable's uppity status lasted only as long as its novelty. By the 1800s, the spud had lost favor with the rich and was a staple among western Europe's peasants. Because of its nutritional wallop, the potato is credited with turning the tide of nineteenth-century Europe's horrific death rate—and with fostering a population boom that made possible the Industrial Revolution. Deaths from scurvy, rickets and other malnutrition-related diseases dropped sharply as potatoes supplanted wheat and rye in European diets. By growing the tuber instead of grain (which required at least twice the space to produce the same amount of food), peasants with little land could support larger families. In Ireland alone, where the potato became an economic cornerstone, the population soared to over 8 million by 1845—more than twice the present number—with a density greater than today's China.

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Even the spud's shortcomings have influenced human history. When late blight, one of several fungus diseases to which the potato is susceptible, destroyed the crops in three successive years (1845 through 1847), a million Irish died of starvation, and a million more fled the country for America. Tens of thousands in other European countries also perished or joined the emigrating Irish. The potato famine sent a flood of talents and traditions and cultures to this country that helped carve the character of modern America.

Today, more Americans are eating more potatoes than ever: On the average, each of us consumes 120 pounds of spuds a year. Finally, after a long period of ill-deserved nutritional disgrace when the tuber was thought fattening (the real culprits were butter and sour cream), the potato is recognized for what it really is: a tasty, low-calorie, fat-free nutritional powerhouse.

WHAT TO PLANT

Because different kinds of potatoes prosper in different regions, it's usually best to plant whichever types are commonly grown in your area. Among the most widely distributed and popular early-maturing U.S. varieties are 'Irish Cobbler,' 'Cherokee,' 'Norland,' and 'Norgold Russet.' Mid- and full-season choices include 'Red Lasoda,' 'Chippewa,' 'Superior,' 'Sebago,' 'Katahdin,' and 'Kennebec.'

Regardless of the variety, it's a good idea to buy certified disease-free seed potatoes for planting each year. Your sense of economy and independence may tempt you to use potatoes you grew the season before, particularly if the harvest seemed healthy—but you will be taking a chance. You can't always tell by looking whether a potato has a disease that will be passed on to the plant it produces. Also, tubers don't necessarily reproduce true to themselves.

Don't try planting supermarket potatoes; they're usually treated with a chemical to keep them from sprouting.

WHERE TO PLANT

Almost any soil will produce potatoes if it's well drained and not terribly heavy. For best yields, the earth should be mildly acid (try for a pH between 5.2 and 5.7) and thoroughly enriched with organic matter. Don't add compost or manure—even aged manure—just before planting time, or you'll "burn" the seed potatoes. It's better to add amendments the previous fall and let the soil mellow. Avoid using lime or wood ashes in your potato patch, too. Such "sweeteners" encourage a fungus called scab that makes for decidedly ugly (though still edible) potatoes.

WHEN TO PLANT

In keeping with tradition, many gardeners (particularly those in the North) always plant potatoes on Good Friday or on St. Patrick's Day. But you can sow spuds anytime after the ground has thawed enough for you to work the soil. Two to four weeks before the average last frost date in your area is usually about right. Potatoes can't stand a hard frost, but will survive light spring "nips." Just keep in mind that tubers are most prolific in cool weather; 60 to 70 degrees is ideal. In the South, potatoes are planted in the fall and late winter and harvested before the onset of hot weather. In less temperate climes you should be able to plant and dig an early crop in time to replace it with a fall stand of spinach, kale, lettuce or other cool-season cultivar. Get late potato varieties in the ground soon enough to mature a few weeks before the average first frost date.

HOW TO PLANT

You'll need about five to seven pounds of seed potatoes for every 100-foot row, which in turn should yield about three bushels (180 pounds) of eating spuds. Though some gardeners plant their seed potatoes whole, the

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more common practice is to cut the tubers into blocky pieces, each containing two or three eyes (shallow depressions in the skin). Too-large seed pieces produce undersize potatoes, and small pieces produce a scant harvest of extra-large spuds. The ideal is to strike a happy medium. Researchers say that $1^1/_2$- to 2-ounce chunks give the best return (you might want to weigh the first few pieces you cut to get a feel for the correct size). Let the chunks dry at least 24 hours before you plant them, to reduce the likelihood of rot.

If you're getting a late start—or want to go for an early harvest—try sprouting your seed potatoes: Two to four weeks before planting, spread the spuds out in a single layer in a warm (60 degrees or more) room where they'll get indirect light. They'll develop thick green shoots. Three days before you intend to put them in the ground, cut the potatoes into chunks that have one strong shoot apiece (rub off any small shoots).

Come planting time, hoe out furrows two to three feet apart and about six inches deep. Drop a seed potato in every 10 to 12 inches (shoot side up if you sprouted them), cover the pieces with five inches of soil, and tamp the earth down lightly with a hoe.

Most row gardeners "hill" their plants, gradually mounding soil up around, but not completely over, the developing greenery during the first several weeks of growth. Because potatoes grow above the parent tuber, the theory goes, hilling provides room for more spuds to develop on the stem. Whether this is true or not, hilling does, at least, keep the soil cultivated, and it protects plants from bending and breaking in heavy rain or wind. But stop hilling after the plants bloom, to avoid damaging the developing tubers.

Another way to plant potatoes is the deep-mulch method: Till or dig the intended patch, then push your seed potatoes into the soil, cut side down, until they're flush to the ground. The pieces should be spaced about 10 inches apart in all directions. Now cover the area with a foot or more of leaves, chopped cornstalks or old hay. Add more mulch as necessary through the season. Then, come harvest time, just push the mulch aside to pluck your potatoes.

If you don't have enough space for a "real" garden, you can grow fresh spuds in bushel baskets or half-barrels. Just line the bottom of the container with a few inches of stones for drainage, pour in four or five inches of good soil, and lay a few seed potato pieces six to eight inches apart on top. Cover them with three or four more inches of soil and put the "later patch" in a sunny spot. Add more soil around the stems as the plants grow.

WHAT TO WATCH FOR

Potato plants don't like weeds. If you use the deep-mulch method, this won't be a problem. Likewise if you hill your potatoes. But when the plants bloom and it's time to stop hilling, you'll need to mulch the soil to keep weeds down.

Spuds are also fussy about water. They need a steady, even supply, particularly when the tubers are first developing—about six to ten weeks after planting. If the weather turns dry during that period, give the plants a good weekly soaking. Don't let them go for a long time without moisture and then suddenly drench them in water, though; the resulting abrupt growth will most likely crack the tubers, or make them knobby.

A long period of cool, moist weather can bring on early or late blight, the most common diseases that attack the potato. The first signs of early blight are small, brown, bull's eye patterns on the foliage. Late blight shows itself as watery spots on the leaves and a white, downy mildew on their undersides. Both maladies will eventually kill the foliage, then spread to the tubers and rot them. You may be able to keep blight from wiping out your entire crop if, at the first sign of infection, you dig up the affected specimens and, without shaking the leaves or otherwise giving the spores a chance to become airborne, burn the plants some distance away from the garden.

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Scab, another common disease, shows itself as ugly lesions on your potatoes' skins. If it's widespread, chances are your soil is too alkaline. The fungus that causes scab can't live in dirt with a pH below 5.4, so take a soil test and—if necessary—add oak leaves, pine needles or some other acidifier to your potato patch to bring the pH down.

Other contagions that frequently prey on the potato are ring rot, mosaic and verticillium wilt. Ring rot starts as decay just beneath the tuber's skin, and spreads all the way through. Mosaic, true to its name, shows up as a mottled pattern on the leaves, which eventually wither and die. Verticillium wilt, a malady all too familiar to tomato growers, usually occurs late in the season. First the lower leaves turn yellow and drop off, and eventually the whole plant succumbs.

Fortunately, you can keep all these and most other diseases out of your potato patch by following the same simple prescription: Plant certified seed, rotate your nightshade crops each year, keep your garden free of infected plant residues, and choose varieties resistant to the diseases most prevalent in your area. ('Irish Cobbler,' 'Chippewa,' 'Katahdin,' and 'Kennebec' are resistant to mosaic; 'Cherokee' and 'Kennebec' resist late blight; and 'Red Lasoda,' 'Superior,' and 'Russet Burbank' resist scab.)



Chitted (pre-sprouted) potatoes, ready for planting, sit in an egg carton.

Of insect pests that favor the spud, none is more voracious than the Colorado potato beetle. The adult averages about three-eighths of an inch long and has a hard, broad, black-striped yellow shell. If you spy some, pick them off and check the undersides of the leaves for orangered egg masses. Squash all the beetles and eggs you find. Keep an eye out also for the beetle's larvae, which are humpbacked, dark red, grublike creatures with black heads. Squish them, too. Hand-picking potato beetles is not a job for the squeamish, but it's that or see your plants stripped clean. Bush beans grown between (or among) your rows of potatoes can also help deter the pest, as will basil or garlic sprays.

Flea beetles are tiny black or brown bugs that can quickly pepper your plants' leaves with small holes. They're especially attracted—and damaging—to young plants. Aphids, too, will suck the sap from tender potato leaves and weaken your crop. Discourage either insect with forceful water sprays, basil or garlic juice, or rotenone.

Underground pests—wireworms and nematodes—can be particularly bothersome. Wireworms are thin and white, later turning brown, redbrown or yellow depending on their species. They feed on tubers, often making it necessary to cut away affected parts or destroy the crop altogether. Most wireworms are a problem only in new gardens, and their population should diminish with increased cultivation. If you have wireworm problems season after season, however, you're dealing with an especially difficult species; you may have to move your potato patch. Nematodes are microscopic creatures that cause root knot, or galls, preventing water and nutrients from reaching the plants. The symptoms above ground, yellowing leaves and a withering plant, are sometimes

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mistaken for those of verticillium wilt. The knobby growths on the plants' roots, though, are a sure giveaway. Interplanting with marigolds, working plenty of organic matter into your soil, and rotating your crops can help prevent nematode problems.

HOW TO HARVEST AND STORE

Early-variety potatoes are ready to harvest when the plants are in full bloom—usually nine or ten weeks after planting. Carefully loosen the soil around a few plants and pull some spuds out to check for size. If they're big enough to suit you, you can harvest all your early spuds at once and plant a different crop—or you can take just a meal's worth at a time and simply replace the soil or mulch after each plundering. As long as you don't cut or bruise the remaining tubers, you won't hurt the plants and they'll keep right on producing. Don't forget, though, that early varieties generally don't store well and should be eaten by autumn.

Late potatoes destined for storage can be harvested anytime after the vines have died back or the tops have succumbed to frost. Just be sure to get the spuds out of the ground before the earth freezes, or you'll lose your crop. The best weather for digging late potatoes is a warm, dry, cloudy day following a period of no rain. Too much exposure to sunlight can turn spuds green, making them bitter (and even mildly toxic, from the solanine produced).

Use a digging fork or pointed shovel to lift the tubers free of the soil. Handle them carefully, gently removing clumps of dirt. Set any damaged potatoes aside for the evening meal; they won't keep. Place the others in a single layer, not touching and not in direct sun, on a dry surface such as newspaper. Leave them for a couple of hours, then turn them over to dry the bottoms. This process gets rid of surface moisture and helps toughen the spuds' skins.

Properly stored, your spuds should keep nicely through the winter and into spring. Don't be surprised, though, if your family eats them all before that. It seems the more you have, the more you use. Inevitably, one evening you go down to the cellar, reach into the bin, and pull out the last plump potatoes, firm as the day you dug them and still smelling of fresh earth.

Then you find yourself repeating a scene that has played over and over for centuries, perhaps since the first Inca emptied an ancient cache: "This year," you promise yourself as you carry the final few spuds back to the kitchen, "this year I'll plant more."

A TASTY POTATO RECIPE

Potato, how do we love thee? In countless ways: boiled, baked, creamed, fried, chipped, scalloped, hashed, pureed, sauteed, au gratined—and more. It's possible to serve the versatile spud every day and never tire of it, simply because it lends itself to so many delicious preparations.

1 pound potatoes, peeled and diced
1 cup sliced leeks (white part only)
Salt and white pepper to taste
2 1/2 cups vegetable stock
1 small carrot
1 cup cream
1 1/2 cups milk

Combine potatoes and leeks in a saucepan with salt, pepper, and vegetable stock. Simmer over medium heat until potatoes are tender, 20 to 25 minutes. Purée soup in a blender until smooth. Chill in refrigerator. Peel

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carrot and cut in fine matchsticks. Blanch until tender in boiling, salted water. Drain and chill. When soup is thoroughly chilled, stir in cream and milk. Taste and add seasoning if desired. Garnish with carrot slivers. Serves 8.

Taters in a Barrel

How to grow potatoes in a barrel for simple harvesting.

By Peggy M. Mills

Remember what potatoes used to taste like—hot and steaming from the oven, full of fluffy white meal, and with an earthy flavor that didn't need the help of butter or sour cream? Well, you can raise your own spuds and recapture that special flavor, and you won't have to do a lot of backbreaking digging, either. You can do what I do and grow taters in a barrel, and what's more, that container is filled with sawdust. Yep, you heard me right, sawdust! Here's how it's done:

First, get yourself a barrel. You can use an old metal or plastic trash can, or even a discarded whiskey keg. However, the size of the container will determine the number of "earth apples" you'll harvest, so make your selection accordingly. To prepare your growin' bin, poke a series of holes—spaced about six inches in each direction—in the bottom of the container. The drainage provided by the bores will help keep your spuds' "feet" dry, an important consideration. Then spread a sheet of fiberglass screening over the holes, and put about six inches of soil in the bottom of the barrel. Next comes a four-inch layer of sawdust, and—with that in place—you're ready to plant the seed potatoes.

As you probably know, spuds—unlike most vegetables—aren't usually raised from seed. Instead, they're sprouted from the eyes of fully grown tubers, known as seed potatoes. So, if you grew your own crop of taters last year and set some of the bumpy beauties aside, you're ahead of the game. If not, don't worry: There are several commercial vendors of certified seed potatoes. (There's one source to avoid, however: store-bought spuds, even if they are beginning to sprout. The commercial edibles have usually been sprayed with an antisprouting chemical, and even the ones that do put forth new growth will develop poorly.)

Slice your seed potatoes so that each chunk contains two eyes, and let the severed spuds sit for a day or two while their cut surfaces dry. Next, take the "seeds" and push 'em down into the layer of saw dust in the barrel, just far enough so they're covered. Now dampen the tree shavin's and stand back. In only a few days you'll find little plants sproutin' through the sawdust. Then, each time these young'uns grow a couple of inches above the woodwaste, dump in another load to cover 'em up, and give the crop a soaking. Since the new potatoes form above their parent eye, you are—in effect—creating room for more down-home delicacies each time you bury the plant! By the time the container is full, you'll have two or three feet of barrelgrown beauties to harvest.

Come September, when it's time to gather your May-planted crop, you can forget about your spading fork. Simply tilt the barrel over on its side, give it a shake or two to get things moving, and pour out the most beautiful crop of luscious spuds you've ever seen! And—after you've taken those terrific taters from their nest— you'll have some mighty fine organic material left over to work into your garden soil. But plantin' time is coming on, and seed potato stocks are often limited, so you'd better get crackin' if you want to raise a banquet in a barrel!

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RAAB

Raab: The Uncommon Cole

Vegetable harvests don't end with the first frost—if you grow this season-extending crop.

By Nancy Pierson Farris

Broccoli raab, or rapini, can play an important role in the home garden. For one thing, it can provide a nutritious green vegetable during very early spring and very late fall, times when few other crops are productive. And for another, it has a perky, unusual flavor that you just plain won't get from any other vegetable. (The best I can do to describe the rapini "culinary experience" is to say that the leaves taste a bit like turnip greens, while the flavor of the flower shoots resembles that of mustard greens!)

But just what is raab? Well, although this little-known plant is related to both mustard and turnips (indeed, some people raise a similar crop simply by letting ordinary turnip plants mature to the budding stage), Brassica campestris probably most resembles its cousin broccoli. Raab produces a central bud within eight weeks after seed is sown in the garden. When this head is cut, the plant will send up smaller side shoots with dime-sized tips. You can harvest these tasty second shoots and, a short while later, even gather a third cutting!

Don't wait until your first pickings are as large as broccoli heads, however, or the much smaller buds will go to flower—and then seed—while you're still hoping for them to fatten up. Because so many American raab-growing novices have made precisely that mistake, one seed company offers the vegetable for sale to "European customers only" (rapini's often grown in Europe), just to reduce the number of gardeners who "misraise"—and are likely to complain about—the plant!

CATCHING COLE

Despite its difference from broccoli, though, raab prefers the same growing season as does its Brassica relative: It will tolerate light frosts, but will bolt to seed in hot weather. Here in South Carolina, I sow my fall crop about six to eight weeks before the date of the first expected frost, and plant my spring crop quite early in the year, while the soil temperature is still in the mid-40's! (As the season progresses and the spring-planted raab deteriorates, I often set tomato plants among the Brassica, letting the two crops share space for a while, and later pull the finished raab out and feed it to my livestock.) Some growers also make late fall sowings—which they then mulch over during the cold months, especially if their local winters are typically harsh—for extra-early spring harvests.

To plant, I open a 50-foot furrow and line it with about 25 pounds of rough compost. (Rapini doesn't require heavy fertilization, but does appreciate a bit of a nutritional boost. It also prefers soil with a pH above 6.0.) I top my compost with a layer of earth, sprinkle seeds thinly in this loam, and cover them with a half-inch more of soil.

Although some growers crowd their raab by planting on two-inch centers, I prefer to thin my young sprouts until they're six inches apart, so that they can develop a good quantity of greens. (Pulled seedlings transplant well, and can be moved to another row if desired.)

About six to eight weeks after sowing,, the first heads are usually ready to pick. Raab buds shatter easily,

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so I cut the stems well below their heads, taking a cluster of leaves with each. I usually begin harvesting—as early as possible—at one end of my row. Then I move down the line, gathering a meal's worth every day or so. By the time I pick the shoots from the end of my 50-foot row, the plants I started with will have put out their second growth!

To cook rapini, I first strip the leaves from the stem, examine my pickings for insects, and wash the crop in cold water. Then I cut the leaves into strips, slice the stems into serving-sized pieces, and drop everything—buds, leaves, and stems—into rapidly boiling water. (In my experience, this hard initial cooking keeps the vegetable from tasting bitter.) As soon as the leaves are thoroughly wilted, I lower the heat and simmer the mixture for about 15 minutes. Oftentimes, I'll add a small chunk of ham to the pan for flavoring, and then join my family in some good eating!

And once you've sampled boiled raab, you'll want to experiment with other ways of preparing the versatile Brassica. You can, for instance, cook and serve the greens alone or eat the steamed stalks as mock asparagus. Third-growth cuttings work particularly well for the latter purpose, since they tend to have many stalks but tiny leaves and well-nigh insignificant heads. (Such shoots are also tasty sliced and stir-fried in a bit of oil that's seasoned with garlic.)

Right now, many growers are watching their gardens slowly die, as the profusion of mature, and nearly exhausted, crops starts to decline. Why not put a row of new life into your plot by sowing some raab?

In a few weeks, you'll be glad you did!

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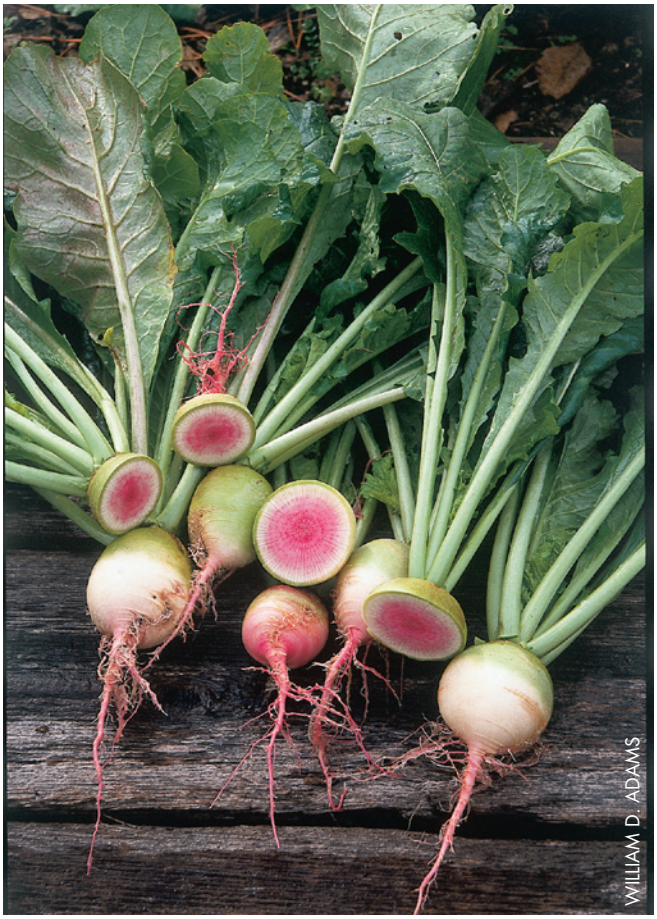
RADISHES

The Other Radishes

These beauties are "Misato Rose" Chinese radishes.

By Doreen Howard

Forget those wimpy little radishes found on relish plates. They pale in comparison to the other radishes you can grow. Consider sweet, rose-fleshed, green-skinned 'Shinrimei' radishes, zesty Japanese daikons or even crunchy, mustard-infused radish pods.



These beauties are 'Misato Rose' Chinese radishes.

Some weigh up to 5 pounds apiece. Others offer a color explosion. Still others impart cooked dishes with subtle flavors that are the hallmark of some ethnic foods. Now these are radishes!

Esteemed by the Greek god Apollo, cultivated by Egyptian pyramid builders and eaten for breakfast by American settlers, the radish has been around forever. It was prescribed by physicians to prevent scurvy, used by herbalists to ward off women's chatter, and salted or pickled to accompany food and drink throughout recorded time. The radish is still so revered there is a Night of the Radish—La Noche de los Rabanos—every December 23 in Oaxaca, Mexico. Local farmers grow giant white winter radishes, which are carved into sculptures worthy of a museum. Radish bullfighters, radish nativity scenes, radish Madonnas and more line the village square, while merry makers dance and eat—radish tamales, radish empanadas and radish pickles—until midnight, when one radish sculpture is awarded the grand prize. Sculpting a radish may not be your passion, but growing a few of the exotic types certainly can liven up your garden and dinner table.

COOL CONDITIONS

Most of the exotic radishes are best planted in late summer or fall (fall-planted) for a winter crop, or in earlyspring, as soon as the ground thaws. Warm-climate gardeners do best to plant in late October. Cool soil and air temperatures are needed to develop flavors and avoid building heat, which can mask the subtleties of the various undertones. If you're growing a radish for storage, Jeremiah Gettle, owner of Baker Creek Heirloom Seeds in Mansfield, Missouri, suggests it should be fall-planted. "After harvest, store them in sand or sawdust to maintain moisture, like you would a carrot, and they will improve in flavor." he says. "it takes cool growing conditions to produce a sweet radish." He plants in late August and harvests in early November in his USDA Zone 6 gardens. Some varieties, like 'Black Spanish Round,' contain much of their heat in the skins. Removing the skin helps tame particularly hot radishes.

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Some radishes are grown solely for their edible seed pods, and they, too, produce the highest quality crop in cool conditions. Because they can mature in as little as 30 days after sowing, podding radish varieties, like 'Munchen Bier,' 'Madras' and 'Rat Tail,' can be planted in very early spring, too. However, if spring is short-lived in your area, fall planting is advisable. "Pick the pods when they are young and tender for best flavor," says Bill Adams, retired Texas extension service agent and vegetable specialist in Houston. Pods can be green or have a purple hue and are attractive salad ingredients. "They have a mustard flavor people either love or hate. I like the bite and use them in stir-fry," says Melinda Smith, a former Massachusetts organic farmer, who now conducts a farming apprentice program. "But they were not the hit with my produce customers like I thought they would be."

PICKLED PLEASURES

Radishes make great pickles, and you can prepare them overnight. Start with 2 cups of sliced or chunked firm radishes. Put them in a mixing bowl and sprinkle 1 teaspoon of salt over them. Cover and chill for 30 minutes. Drain accumulated liquid and rinse to remove the salt. Pat dry with paper towels and return to bowl. Add 2 tablespoons rice wine vinegar, a dash or two of ground black pepper and a couple drops of sesame seed oil. Refrigerate at least 8 hours and enjoy.

Since they mature rapidly, exotic radishes prefer a stress-free growing environment, in addition to cool temperatures. Start with fertile soil that has plenty of organic material incorporated into it. Dig a 1-inch layer of compost into the bed and work the soil to a depth of at least 8 inches. Japanese daikons will grow 20 inches or more into friable soil. Don't be surprised to see up to one-third of the radish growth above ground, though. Such growth is typical of Asian radishes, including Chinese varieties.

Sow seeds and grow exotic radishes as you would small red ones. Maintain a steady supply of soil moisture, so plants are never stressed. Thin plants to stand 6 inches apart (8 inches for daikons) after two sets of true leaves appear. Flea beetles and root maggots, the two major radish pests, can be avoided by placing floating row cover over the bed.

If podding radishes are grown, don't cover them when flowering begins. They need insects and air movement to pollinate flowers that create the pods. Instead, spray in early morning with neem seed oil if insect pests appear. Don't use neem oil after 10 a.m., since beneficial pollinating bees will be present and the oil may burn plant leaves in full sun.

JAPANESE DAIKONS

Sharper flavor and much larger than Chinese radishes.

'All Seasons,' also called 'Tokinashi' 65 days. Can be planted in spring or fall. Great for pickling.

'Sakurajima Mammoth' 70 to 140 days. Fall-planted. Largest radish in the world, can grow to 100 pounds. Mild and sweet. Also fed to livestock.

'Miyashige' 60 days. Fall-planted. Will bolt—go to seed prematurely—if spring-planted. Sweet, brittle, tender flesh.

CHINESE

Beautiful colored flesh: delicious eaten fresh out of hand.

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'Bartender Red Mammoth' 70 days. Does well in hot weather. Nine-inch roots with red skin and crisp, pink flesh.

'Red Meat,' 'Chinese Shinrimei' or 'Misato Rose' 60 days. Fall-planted. Red-fleshed with white-and-green skin, 2- to 4-inch diameter globes. Very sweet.

'Green Meat' or 'Misato Green' 60 days. Spring- or fall-planted. Green skin and flesh; 8- to 10-inch-long cylindrical roots. Skin has pungent flavor, but flesh is sweet.

'Chinese White Celestial' or 'Chinese White Winter' 60 days. Fall-planted. White skin and flesh; 7- to 9 - inches long with a blunt tip. Crisp, mild and excellent keeper.

SPANISH

Rough skins with dense flesh; zesty flavor

'Black Spanish Round' 65 days. Fall-planted. Black, corky skin with white flesh. Best used as a pickling or cooking radish. Excellent for storage.

PODDING RADISHES

You eat the seed pods instead of the roots.

'Madras' 30 days. Fast flowering and bearing. Juicy pods appear on tall stalks. Pick young for mild taste. Blanch when older to temper radish taste. Use in salads and stirfries.

'Munchen Bier' 55 days. Needs cool soil to produce flower stalks and pods, so plant early or wait until autumn. This variety will also produce a thick, dense radish root when fall-planted. The radish is traditionally sliced thin, salted and served with beer.

'Rat Tail' 30 days. Long bearing; purple pods will form all summer if kept picked. Use pods before they become fibrous.

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SPINACH

Fall In Love With Spinach

It's not just for Popeye anymore.

By John Navazio



Spinach is one of the most tender and delicious of all the leafy green vegetables. Yet in many gardens this delightful crop is absent. The reason? Many gardeners have been frustrated because they plant spinach in the spring and get only a small harvest of undersized, parched leaves before the spindly central flower stalk appears, signaling the plant is starting to bolt or run to seed.

What's the best remedy for the spring spinach blues? Plant a fall crop! By planting spinach at the end of summer you'll get your crop off to a running start and have it mature to its luscious best during the cool, golden days of fall. After several years of trialing spinach varieties and gathering information from other spinach aficionados around the country, I'm convinced spinach can have a jump in popularity if we just keep it cool.

UNDERSTANDING SPINACH

To appreciate why spring-planted spinach misbehaves, one must know its humble origins. Spinach is a cool-season vegetable originally grown in the fall and winter in the fertile agricultural valleys of the Middle East. In spring, longer days and warmer temperatures trigger spinach to finish its cycle and go to seed.

While many modern spinach growers blame early hot weather as the villain causing spinach to bolt, in actuality it is the increasingly long days of spring, which signal the plant to reproduce. Most modern spinach varieties will initiate flowering when the days reach 14 hours, as early as mid-May in the northern half of the United States.

The influence of hot weather, while more subtle, also has an adverse effect on the quality of spinach sown in the spring. Even mildly hot days in the upper 70s can dramatically speed up the flowering of a spinach plant that's already been triggered to bolt by day length. Also, the tenderness and juiciness of the leaves is greatly diminished after just a couple of days of hot spring weather.

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Certainly some gardeners claim success stories of spring-planted spinach, but any gardener will be challenged by the one-two punch of longer daylight hours and early hot weather. Timing a fall crop properly can help you easily avoid the pitfalls of spring, resulting in a bumper harvest of succulent, huge, easy-to-pick spinach leaves. Just look at the size of those leaves in the picture on top!

YOUR FALL TARGET DATE

Seed catalogs and gardening guides often advise gardeners to plant their fall spinach crops four to six weeks before a hard frost. In my own experience in both coastal Washington State and southern Wisconsin, this means planting between September 1and 10. Unfortunately this strategy produces plants that are only about the diameter of a teacup with leaves the size of silver dollars, before the days become too cool for continued growth. This teacup size is perfect for overwintering spinach (see "Overwintering Spinach," p. 131) , but it doesn't produce the yield a fall crop should.

Taking a tip from commercial spinach farmers who plant their fall crop a full eight to 10 weeks before the first hard frosts, I tried planting a number of spinach varieties between the first and the third weeks of August. This method has worked so well I have been spreading the news to my spinach-growing friends in other parts of North America, and all of us have been amazed at our shared success. We've been comparing notes on what varieties work the best, and here's what we've found:

BOUNTIFUL FALL VARIETIES

I've grown a wide range of spinach varieties, both open-pollinated and hybrid, smooth-leaf and savoy (wrinkled or curly), in my fall gardens. The first thing I learned was that varieties I knew well from spring planting performed differently in fall; for example, in spring 'Olympia' grows faster than the classic bolt-resistant standard 'Tyee,' but in hot August weather, 'Tyee' out-yielded 'Olympia.' I've had similar success with the semi-savoy leaf variety 'Indian Summer,' which like 'Tyee' quickly produced baby-leaf cuttings by the end of August and nice fullgrown leaves by midSeptember.

Other varieties that did well from early August plantings (August 1 through 10) were the smooth-leaf varieties 'Viroflay,' 'Space,' and 'Olympia.' While these are not as fastgrowing as 'Tyee' in August, they seem to really come into their own with the cooler weather of September, sometimes producing leaves that are 5 to 6 inches in diameter by late September. In several regions 'Olympia' performed superbly from August plantings, producing the largest yields of all the varieties tested. 'Viroflay' and 'Olympia' also proved to be especially tasty varieties when harvested in late September and October.

'Winter Bloomsdale' didn't grow fast, but chugged along and kept producing succulent savoy leaves into the cold days of October. David Cavagnaro, a skilled vegetable gardener and photographer, has also tried his hand at planting spinach in August in his gardens in Decorah, Iowa. David is very enthusiastic about the tremendous yields he gets in late September from his early August plantings. He says it is by far the best spinach he's ever grown. Some leaves are the size of his outstretched hand. "Even the big leaves are still succulent and juicy and are really fun to pick," he says. Smooth-leaf 'Olympia' and 'Space' varieties were also the best yielders in my own garden in Bellingham, Washington. In late September both grew to sizes most gardeners only dream about.

Out on the East Coast, C.R. Lawn of FEDCO Seeds in Waterville, Maine, had a similar experience, with 'Olympia' outperforming all others in his fall garden. C.R. praises the whole idea of fall spinach. "There's nothing like the spinach you harvest on those crisp fall days. By the time it's ready, the weather is cool and there's plenty of moisture, that's what spinach really likes."

Steve Bellavia, trials manager at Johnny's Selected Seeds in Albion, Maine, also grew fall spinach a couple

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of years ago, planted in August. While many of the varieties he planted were impressive for their tenderness and yield, Steve was most struck by the performance of 'Spinner.' "[It] grew to a nice full size, was dark green and flavorful, and was the best variety in the whole trial," he says.

Many people believe savoy spinach varieties taste better than smooth-leaf types, but that doesn't seem to be true with fall crops. In our trials, the smooth-leaf varieties 'Olympia' and 'Viroflay' both got rave reviews for flavor, while the standard savoy variety, 'Bloomsdale Long Standing,' and its modern semisavoy cousin, 'Tyee,' both proved less flavorful.

KEEP YOUR SEEDS COOL

Bellavia also reminded me of one of the pitfalls of planting fall spinach. When he planted a fall-spinach plot in early August, the soil was somewhat dry and then received one-third inch of rain; daytime temperatures hovered in the low 80s for a couple of weeks. Although the soil never became excessively dry, the spinach came up rather sparsely. Of course this can happen with any crop when you allow the seedbed to dry out after planting, but this is especially problematic for spinach when the weather is hot. Spinach seed doesn't germinate well above 75 degrees and won't come up at all when soil temperatures are above 85 degrees. One way to get a good stand of spinach when planting in late summer is to water it lightly on hot days. This will cool the sod enough to get a good stand established.



Spinach contains nutrients that help prevent cancer, heart disease and age-related eye diseases.

If you use this trick, try to plant into raised beds in the best-drained spot in your garden to reduce the risk of root rot. A well-drained soil also will stay warm longer, enabling the spinach to grow a little more before the season comes to an end. A soil with lots of mature compost worked into it is very desirable, as spinach is a very heavy feeder. We also found not all spinach varieties planted in early August fared as well as some of our big winners like 'Olympia' and 'Spinner.' David and I have had the early August plantings of savoy varieties 'Long Standing Bloomsdale' and 'Coho' bolt by early September. Why? Presumably because in our locations the day length was still long enough in mid-August to trigger flowering. By trying a number of different planting dates throughout August we've found planting between August 15 and 20 seems to be the best time of all for Northern gardeners. You'll avoid the hottest days of early August, which can be tough on spinach germination, and you'll avoid possible bolting problems if you're in the higher latitudes of the North. Certainly we've found that all the best fall varieties did well planted in mid-August.

IN THE SOUTH

In parts of the southern United States growing fall spinach has a long legacy. A large amount of fresh market spinach was once grown for fall consumption in coastal Virginia and Maryland near the Chesapeake Bay. These crops were traditionally planted for the fall crop from mid-August until mid-September. Long, warm autumns in this and other mid-Atlantic areas will ensure bountiful crops that may yield until the New Year. In Arkansas and Oklahoma spinach can be planted in the second half of September for fall salads that easily can take you into December. In southern Texas and in much of the Deep South, spinach can be planted anytime from

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early October until the middle of November for a fall crop that grows through the winter.

In the desert Southwest, where there's a wide range of environments based on elevation, it's possible to plant from late August until late November, but you'll have to experiment for your location. When you plant spinach in these hotter regions, it's much like planting it in August in the North: Keep the seedbed cool with some irrigation water (or some shade) until the seedlings emerge. Formerly a spinach breeder at Alf Christianson Seed Company in Mt. Vernon, Washington, John Navazio now breeds spinach and other crops specifically for organic growers in the Upper Midwest.

WILTED SPINACH SALAD

Succulent, fall-grown spinach is great for this recipe. Just tear the bigger leaves into bite-size pieces after washing.

Wash, trim and dry 6 cups of spinach and place into a large salad bowl. Saute 4 or 5 slices of bacon until crisp, remove from pan and cut into bits. Drain off all but 2 tablespoons fat and add 1 tablespoon olive oil. (For a vegan or vegetarian alternative, skip the bacon altogether and start with 3 tablespoons of olive oil.)

Saute 1 cup grated onion in fat or oil for just a minute before adding $^1/_2$ teaspoon salt, teaspoon sugar, 1 tablespoon balsamic vinegar and 3 tablespoons white vinegar. When sugar and salt are dissolved, slowly pour the hot liquid over the spinach and liberally grind black pepper over the salad. Toss. Garnish with chopped bacon and serve on warm plates.

OVERWINTERING SPINACH

Spinach is one of the hardiest winter vegetables, sometimes surviving temperatures far below freezing if grown to just the right size before going through the coldest part of winter. 'Winter Bloomsdale' and 'Winter Giant' are the standards for overwintering, and 'Tyee' and 'Melody' have been successfully overwintered in upstate New York and New England. Savoy varieties generally overwinter better than smooth-leaf types.

The rule of thumb for getting the right-size spinach for overwintering is to plant it four to six weeks before your average first hard frost date. This should produce a spinach plant about 3 to 4 inches in diameter, the best size for overwintering. As far as mulching the plants for protection, all I can say is that in my own experience in wet Maine and Washington winters I've killed the plants, as they had rotted under my leaf mulch by the time I uncovered them in early spring. Perhaps porous row covers would work better.

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SQUASH

Wonderful Winter Squash

Winter squash can easily be stored for up to six months.

By Barbara Pleasant



Delicatas and an acorn.

What if you could grow a vegetable that has a rich, nutty flavor; is packed with nutrition; adapts readily to soups, pilafs and pies; stores easily for up to six months; and even is pretty to look at? This description fits winter squash, which comes in dozens of different packages, with shapes ranging from acorns and turbans to 30-pound pink bananas. North and South American gardeners have been growing them for more than 9,000 years, and indigenous tribes from Argentina to Oregon each cultivated their unique strain, which often rambled among shriveling corn stalks during the second half of summer.

In an odd turn in culinary history, Americans decided to prefer pumpkins to winter squash. Or did we? Several types of winter squash—acorns, buttercups, delicatas and hubbards—are the same species as most pumpkins (Cucurbita pepo or C. maxima), and most canned "pumpkin" in stores actually is cushaw or butternut squash (C. moschata). So, if you like pumpkin pie but think you might not like squash pie, think again. In fact, any recipe that includes pumpkin or sweet potatoes can be easily adapted for winter squash.

A latecomer to the winter squash fan club, I began eating them several years ago after discovering winter squash soup, in which onions, celery and winter squash mingle with apples in a curried broth. Since then, seedlings have been sprouting from my compost heap (and producing lots of squash); clearly this vegetable wants to be a permanent part of my garden.

"That's why they're called trailing squash," says Minnesotan Martin Diffley, who with his wife, Atina, was named the 2004 Organic Farmer of the Year by the Midwest Organic and Sustainable Education Service. "They followed people to new settlements by sprouting and growing in their trash heaps."

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At their Gardens of Eagen farm, the Diffleys grow 16 types of winter squash, which is easier than choosing only one or two. A truly diverse crop, winter squashes come from four different Cucurbita species, which can grow into a huge range of shapes, sizes and colors. See "Sorting Through Winter Squash," below to find out which squash fall into which group and how species differ from one another.

BEAUTIFUL BUTTERCUPS

There is a perfect winter squash for every climate and palate, but finding one for your area is not a simple quest — unless you are a Midwesterner. "Buttercups have always been the precious ones around here," Diffley says. After waiting 20 years for an improvement in the old 'Burgess' variety, Diffley found 'Bonbon,' a 2005 All America Selections (AAS) winner from Johnny's Selected Seeds, and says it's worth making the switch from open pollinated (OP) to hybrid. "It's uniform, vigorous and has the same good flavor of 'Burgess,' only better."

The Asian version of buttercup, kabocha squash, also has many fans, as do three C. maxima varieties — 'Potimarron,' 'Hokkaido' and 'Red Kuri' — that probably started out as the same thing and changed a bit as they traveled the world. Subtle chestnut flavor is this strain's fame, whereas fast-maturing, North Dakota-bred 'Gold Nugget' is still endearing itself to gardeners with its orange softball-sized fruits 40 years after earning the 1966 silver AAS medal.

Buttery texture and user-friendly size aside, all of these squashes (and those of the C. pepo group) are much sought after by squash vine borers — pests that can decimate small garden plantings, but are not as bad in big fields of squash, where the mother moths have more plants to choose from as they seek host plants upon which to lay their eggs.

Both C. maxima and C. pepo squashes have the type of stem that squash borers love — wide and hollow in the middle, with a thick lining of spongy parenchyma, the preferred food of hungry squash borer larvae. However, C. maxima squashes have a way of defending themselves that the C. pepo lack: They vigorously develop supplemental roots where their vines touch the ground. You can improve the borer tolerance of long-vined buttercups by dumping a shovelful of soil over places where you see roots trying to get established in the soil. See "Stick it to Borers," for other strategies aimed at managing this pest.

ACORNS AND DELICATAS

Worth skirmishing with borers, both heart-shaped acorn squash and delicatas (which can look like little striped pumpkins or oblong loaves, depending on the variety) are classified as C. pepo, as is spaghetti squash, which is grown for its pastalike strings. Acorns and delicatas are great for stuffing, and because of their small fruit size, they are usually very productive, spewing out six or more fruits per plant.

Yet, maximum productivity and flavor from C. pepo squash requires that you manage squash borers and squash bugs — half-inch-long shield bugs that weaken plants by sucking plant juices. These are the critters that lay groups of shiny brown eggs on squash leaves, which hatch into long-legged nymphs. Adults overwinter in mulches and other garden debris, and then emerge in early summer, just as squash plants hit their stride. Squash bugs infest other types of squash, too, but they are most damaging to C. pepo varieties, which typically have a limited number of large leaves on compact plants. The loss of only a few leaves to squash bugs will reduce a plant's vigor, resulting in small, weakly flavored squash.

If you have a terrible squash bug and/or vine borer problem, the best solution is to grow squash beneath floating row covers, which are put over the plants soon after the seeds germinate or seedlings are set out. Be sure to allow plenty of growing room before you bury the row cover edges. Then let your squash grow for four to

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six weeks and remove the row covers when flowers appear (squash must be pollinated by bees and other flying insects).

When you let pollinating insects in, some pests will join them, but by then the plants will be strong enough to produce well, despite pesky insects.

This row cover protection works especially well with bush-type cultivars, which are not strictly bushy. Molly Jahn, professor of plant breeding at Cornell University, whose team developed two outstanding C. pepo "bush" varieties — 'Sweet REBA' and 'PMR Bush Delicata' — says the ideal squash starts out bushy, so young plants can be grown under row covers or closely watched for pests, and then has a late adolescent growth spurt when the vines stretch out, fill in and suppress weeds. "You get higher yields per area, especially if you go through and cultivate to remove weeds after the plants are established," Jahn says.

Beyond their bush habit, the Cornell varieties show excellent taste and high powdery mildew resistance, which is abbreviated as PMR in a variety name. Powdery mildew looks like a spidery dusting of white powder on squash leaves. It weakens plants and shortens their life spans, which results in fewer, less flavorful fruits that also store poorly. If you frequently see powdery mildew on your squash leaves, switching to a resistant variety will increase productivity and enhance your crop's flavor and nutritional value.

SQUASH BAKING SECRETS

Whether you grow your own winter squashes or buy them at a local farmer's market, there is no shortage of great ways to cook them. Martin and Atina Diffley cut most winter squash in half, place the halves cut side down in a roasting pan and bake at 375 degrees for an hour. "Be sure to flip them over during the last 10 to 15 minutes to caramelize the sugars," Martin says. And, if you're baking one squash, go ahead and bake six more, even if they are not of the same type. "Scoop out the cooked flesh, mix it together and freeze it. You'll get a blend of flavors, the same way you would if you were making apple cider," he says.


ROSALIND CREASY

If you are cooking large squashes, cut them into serving-sized pieces before baking. Renee Shepherd, owner of Renee's Garden Seeds, suggests roasting big chunks until they are almost done, and then coating them with a little honey and rosemary before returning them to the oven for a final glaze.

You also can cook 1-inch chunks in a pot with a little water for about 20 minutes if you need mashed squash for pies, but don't overcook cubes that are destined for stews, casseroles or risotto. Ellen Ecker Ogden, co-founder of Cook's Garden, likes to cook bite-sized chunks of winter squash with braised onions, season the mixture with curry, turmeric and other Indian spices, and then add coconut milk before serving the stew over rice. Rose Marie Nichols McGee, owner of Nichols Garden Nursery, suggests seasoning winter squash and mushroom pilaf or risotto with a little sage and serving it hot with plenty of freshly grated parmesan cheese.

And let's not forget pumpkin (er, squash) custard pie. With so many fine recipes to choose from, it's easy to get hooked on winter squash.

Only a few winter squashes are classified as C. mixta, a species first described in the 1920s that probably originated in Central America and Mexico, and then spread to the American Southwest by the late 1400s. The

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best known of these are the cushaws, which need up to 115 days of warm weather to produce their 10- to 12-pound bottle-shaped fruits, so they are rarely grown outside the South and Southwest. Yet in their home range, cushaws and other C. mixta, such as 'Hopi Black Green' and 'Tequila Black' show tremendous tolerance of heat and insects, especially borers. Their seeds are great for roasting, and plant historians think these squashes were first grown for their seeds rather than for their flesh.

Like C. mixta, winter squash classified as C. moschata have thin, ridged stems that make them unattractive to squash vine borers. They also come in several different forms. Familiar butternuts are the most widely grown moschatas, and reliable open-pollinated varieties such as 'Waltham,' released in 1970, and Johnny's 'Metro PMR' hybrid have much to offer. Easy to peel, with creamy smooth flesh, long storage potential and high in vitamin A, butternuts also can be picked immature and eaten as summer squash.

"They taste way better than summer squash, and people really like them," Jahn says. "We're actually breeding some new butternuts to use as summer-winter squash. They taste great, and the plants don't shut down like summer squash do. And, if you miss some, they will go on and mature into a butternut." Some C. moschata also are famous for distinctive flavors, such as the spicy, hazelnutty 'Futsu Black' variety from Japan, which is similar to other varieties called cheese pumpkins (so-named because they are round and flattened, like a wheel of cheese). These 6- to 10-pound pumpkin-like squashes include numerous pest-resistant heirloom varieties grown from Texas to Thailand.

There is even a heat- and drought-tolerant moschata called 'Tahitian' that is grown from South Carolina to Southern California. Boasting big fruits weighing from 8 to 30 pounds on vines that often run 20 feet long or more, 'Tahitian' is described as "a butternut on steroids" by Tim Miller, an organic farmer near Austin, Texas.

In 20 years of growing 'Tahitian,' Miller has never had an insect problem. "Be sure to plant it in really warm soil, in a hill enriched with compost," he says. Miller's favorite way to eat 'Tahitian' is baked with a little cinnamon on top, but 'Tahitian' has such high sugar content that it also can be grated and eaten raw.

TAKING THE CURE

Winter squash is wonderful because it stores easily for up to six months. Rob Johnston, founder and chairman of Johnny's Selected Seeds, says he handles stored squash gently to avoid bruising them. But even under ideal conditions, some squash last longer than others. As a general guideline, figure on six weeks for delicatas; two and a half months for buttercups; between three months and four months for acorns; and five months to six months for butternuts.

"Each variety has a peak time for eating, and the varieties that are sweeter at harvest don't keep as well," Atina Diffley says. That's because squash sweetens in storage as the starch converts to sugar.

"We eat our way through the season according to peak flavor; the order goes something like this: 'Sweet Dumpling' delicata and buttercups; 'Honey Delight' acorn and butternuts; spaghetti squash; and then hubbards," she says.

With any type of winter squash, the Diffleys point out that ripeness is crucial, because immature squash tastes watery and doesn't store well. The classic test for ripeness is to see if the skin is tough enough to resist a thumbnail puncture, but err on the side of overripeness if you're not sure. Martin Diffley leaves his squash in the field as long as possible. "I think a light frost helps sweeten them up," he says, though he points out that all squash should be brought in before a hard freeze.

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Once harvested and wiped clean with a damp cloth, Diffley says, squash should be cured in an 80-degree place for a few days, which makes their skin develop a good waxy coating. Or, cure them by keeping them at 70 degrees for 10 days before moving them to a 45- to 55-degree storage place. Warmer temperatures shorten the storage life of winter squash, so if you have no cool basement or root cellar, it's best to cook and freeze the fruits within a couple of months.

STICK IT TO BORERS

The nemesis of squash lovers is squash vine borers (Melittia cucurbitae). They girdle squash stems from the inside out and radically shorten the plants' life spans. Here are seven creative ways to control them:

- Grow a moschata or mixta variety. Squash vine borers leave them alone.
- Use row covers to delay infestation.
- Inject Bt or beneficial nematodes into the stems. Studies have shown that nematodes remain active inside the stems for two weeks or more. Supplies for trying either method are available from Gardens Alive (www.gardensalive.com).
- Surgically remove borers. Use a small knife to make a slit where you think borers are feeding, and fish them out with forceps or tweezers. Then cover the slit stem with moist soil.
- Trap them. Large yellow pails filled with soapy water placed among your squash may attract the egg-laying adults (which are moths that look like wasps). Theoretically, they fall in and drown.
- Strip off the eggs. Some folks wrap the bases of squash stems with aluminum foil or cloth to deter egg-laying adults. Later, should eggs appear farther up the stem, they can be stripped off with duct tape.
- Skewer the borers at night. Inspect stems using a strong flashlight, and stick straight sewing pins in where you see the shadows of feeding borers. Repeat every few days, moving the pins to new victims.

SORTING THROUGH WINTER SQUASH

Cucurbita maxima

Includes buttercups, bananas, hubbards, kabochas and some pumpkins
Days to maturity: 95 to 105
Appearance: Tremendous variation in size and rind color; from 4 to 40 pounds
Flavor: Dense, smooth, rich-flavored flesh becomes sweeter in storage, often with nutty undertones; great for pies
Nutrition: More protein than other winter squash; high in vitamins A and C
Pest/disease tolerance: Attractive to squash vine borers, but the plants compensate for damage by developing supplemental roots where vines touch the ground; susceptible to powdery mildew
Storage: Up to five months
Good varieties: 'Burgess Buttercup' (OP), 'Sweet Meat' (OP), 'BonBon' (H), 'Potimarron' (OP)

Cucurbita mixta

Includes cushaws and Mexican and South American heirlooms
Days to maturity: 90 to 120
Appearance: Pear- and club-shaped fruits, as well as rounded pumpkins; often weighing 10 to 20 pounds
Flavor: Smooth and creamy, becoming sweeter in storage; seeds good for roasting
Nutrition: High in vitamins A and C; seeds high in protein
Pest/disease tolerance: Not preferred by squash vine borers; some tolerance of powdery mildew; best grown where summers are long and warm
Storage: Up to four months

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Good varieties: 'Orange Cushaw' (OP), 'Fortna White' pumpkin (OP), 'Pueblo Indian' (OP), 'Tequila Black' (OP)

Cucurbita moschata
Includes butternuts, "cheese" pumpkins, 'Tahitian' and many Japanese heirlooms
Days to maturity: 80 to 100
Appearance: Tan, green or striped skin; shapes include bulbs, clubs, pears and flattened pumpkins; from 3 to 12 pounds
Flavor: Dense orange flesh becomes smooth when cooked; often quite sweet with fruity or nutty flavor overtones; can be eaten immature as summer squash
Nutrition: Extremely high in vitamin A
Pest/disease tolerance: Excellent; highly resistant to squash vine borers, some resistance to powdery mildew
Storage: Up to six months under ideal conditions
Good varieties: 'JWS 6823 PMR' (H), 'Tahitian' (OP), 'Futsu Black' (OP)

Cucurbita pepo
Includes acorns, delicatas, spaghetti squash and all summer squash
Days to maturity: 85 to 100
Appearance: Huge range of colors and forms, including many with 2-pound fruits.
Flavor: Generally milder than other winter squash; good size for stuffing; can be eaten immature as summer squash
Nutrition: More vitamin C and potassium than other winter squash, less vitamin A
Pest/disease tolerance: Attractive to squash vine borers and squash bugs; compact varieties can be grown under row covers; several are resistant to powdery mildew
Storage: Up to four months for acorns; two months for delicatas and spaghetti squash
Good varieties: 'Sweet REBA' (OP), 'PMR Bush Delicata' (OP), 'Spaghetti' (OP)

'Yokohama' Squash

Enjoy the buttery-rich flavor and floral fragrance of this rare heirloom variety.

By William Woys Weaver
Photos by Rob Cardillo



Imagine my surprise when I went into the garden this past August, and I found it littered with oddly shaped squash that resembled large chunks of hardened lava. Gray-black, other-worldly, yet hauntingly beautiful, this unique heirloom vegetable from Japan, the 'Yokohama' squash, was a visual study in the Japanese affection for serenity through form and texture.

Not only that, the 'Yokohama' possesses one of the most complex flavors I have run across in any squash or pumpkin I have grown. Everyone's taste buds are different, but I detect hints of Asian pear, mango, avocado, lemon balsam, and if you have experience with tropical fruits, the unmistakable aroma of sapote. Can this be a squash? It is even a great boon to gardeners because it is highly resistant to borers and powdery mildew. Why didn't I know about 'Yokohama' squash

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years ago?

This vegetable also comes with a historical pedigree hard to beat. In 1858, Japan signed treaties that opened settlement in Yokohama to foreigners, especially those who came to engage in commerce.

According to Japanese food historian Shunro Kusama, Yokohama was the first place in Japan to experience the influence of Western food culture, especially after the establishment of Western-style hotels and restaurants during the 1860s. But Westerners also found evidence of much earlier outside contacts, not the least being tempura (batter-fried vegetables), a cooking technique taught to the Japanese by the Portuguese. The lingering Portuguese influence could also be seen in a number of vegetables introduced into the Japanese diet, including peppers, tomatoes and the famed 'Yokohama' squash.

The genetic origin of the squash traces to Central America, but over the centuries it underwent further development at the hands of Japanese gardeners. Today, several Yokohama-type squashes are known by distinctive local names in Japan. From a horticultural standpoint, it might be more accurate to say there is a Yokohama "group," since the number of closely related varieties are many, and a few of them, like 'Chirimen,' are thought to be direct descendants of the same type of squash sent to the United States in 1862.

At the time of its reintroduction to the Americas, the 'Yokohama' squash caused a sensation, so its story is relatively well documented. While the United States was preoccupied with the Civil War at home, the big news from abroad was the new political opening of Japan, and American growers were quick to see the financial rewards of dipping into Japan's rich botanical heritage.

The 'Yokohama' squash was introduced to American growers by James Hogg, a wealthy horticulturist who lived in the Yorkville section of New York City. Hogg's brother was visiting Yokohama on business and sent him a number of unusual Japanese seeds. Hogg grew the plants in 1863, and The Magazine of Horticulture reported the results in March 1864, complete with detailed drawings of the mature fruit. Hogg named the squash in honor of its city of origin and declared it to be much superior to the 'Hubbard,' an heirloom squash still well known today.

Hogg's opinion may have been based on a number of factors, not the least being the extraordinary floral fragrance of the 'Yokohama.' But additionally, due to its smaller size, it is easier to store, and unlike the 'Hubbard,' it does not turn dry and pithy after prolonged storage. In fact, the flesh of the 'Yokohama' will remain velvety and moist for more than a year.

Unfortunately for the 'Yokohama' squash, its popularity lasted no more than 20 years at the most, for by the 1890s it more or less dropped out of commercial circulation. Hogg's 'Yokohama' was much larger than the variety grown today, measuring about 8 inches in diameter and weighing from 6 to 8 pounds. Like its modern namesake, it was squat, heavily lobed and warty, the difference being its dark-green skin that ripened to orange. The present-day 'Yokohama' is about half that size, normally 6 inches in diameter, with dark gray- black skin that only changes to orange after prolonged storage.

HOW TO GROW IT

I start my plants indoors in April and get them outside as soon as I can plant tomatoes. The exact planting time varies from year to year because it is a judgment call on the weather: Will it be a rainy, cool spring? If so, then I wait a bit. But it is better to get them in early because the stronger the plants become, the better they will resist beetle attacks in the summer. Plant three or four vines to a hill, and be certain to manure the hills generously (I used well-rotted horse manure). The vines require a lot of room, so space the hills about 6 feet apart, keeping in

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mind that by summer's end the vines will be anywhere from 14 to 16 feet long. You can let them run over one another for better cross pollination, but I would not allow more than two squash to form on a vine at a time. The small, green squash that you pull off can be cooked like zucchini. You also can use the male flowers for stuffed squash blossoms.

If you harvest the fruit on a regular basis, it is possible to have vine-ripe squash from mid-August until frost. Stored in a cool, dry closet, the squash will keep like an acorn squash until the following spring.

HOW TO COOK IT

Because of its unique shape, the 'Yokohama' squash can be sliced easily into thin segments, thus it is ideal for tempura and for cutting into ornamental shapes for such hearty winter preparations as oden (Japanese stew) or hot pot. Another excellent health-conscious serving idea is steamed dumplings because the rich flavors and texture of the 'Yokohama' do not get lost when played against the subtle complexities of classic Asian-style soup stocks. Typically, Japanese make their dumpling stock with dashi, a broth created with water, kombu (sea kelp) and dried bonito (a type of mackerel). Dashi is so ubiquitous in Japanese cooking that it is possible to purchase it as an instant stock powder in many Asian food stores and markets. Other types of broth are prepared with stocks made of chicken, pork or duck.

The recipe below for squash dumplings is meant to serve as an outline for your own creative instincts. It employs duck stock, because this stock complements the flavor of the dumplings. Better yet, a few duck feet from an Asian butcher not only will enhance the taste, they also will give the stock more body and what chefs refer to as better "mouth feel" (in this case a velvety quality). Not the least, duck stock also offers an opportunity to experiment with the range of distinctive flavors available from heirloom duck breeds, a branch of cookery that is only now beginning to come into its own. Of course, if duck is not available, you can make the stock with chicken, or from anything that suits your taste.

SAVING THIS SQUASH

The delicious 'Yokohama' squash is very rare. As best we can determine, the only commercial mail-order company you can order seeds from is Baker Creek Heirloom Seeds [2278 Baker Creek Road, Mansfield, MO 65704; (417) 924-8917; www.rareseeds.com]. Only one member of Seed Savers Exchange (SSE), Decorah, Iowa, offers it in the 2004 SSE Yearbook, which lists hundreds of heirloom vegetable varieties offered by members.

If you want to save 'Yokohama' seeds for yourself and to pass them on to other gardeners, you should not have other members of the same species (Cucurbita moschata) growing in your garden or even nearby. To insure that you have the very best germination rates, let the squash ripen on the vine to the point that the stem is dry. Select only the best looking or most typical specimens for seeds. Then set aside the seed squash in a pantry and let them age for a month or so (the skin may turn orange), then remove the seeds and use the squash flesh in your favorite squash recipe.

Wash the seeds in a strainer or colander to remove all of the placenta (the membrane in which the seeds form). Spread the seeds on a screen to dry in a cool, airy room away from direct sunlight. Let the seeds dry until they snap when broken in half, then store them in an airtight jar in a dark, dry closet. The seeds will remain good for four to six years. You also can freeze the seed in an airtight jar. This will prolong viability for as much as 15 to 20 years, but it is better to renew your seed supply every six years.

STEAMED SQUASH DUMPLINGS

This makes a nice starter course, but it can become a full meal if you decide to make a large batch of the dumplings. Depending on the size of your steamer, you may need to make the dumplings in two batches, but

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that's OK, because you can cover and set the cooked ones aside without harming the texture. Just reheat in a microwave for about 1 minute. And don't forget to have the duck stock ready. It should be boiling while you are making the dumplings; or microwave it if you made it ahead and want to reheat it right before serving.

Yield: 16 to 18 dumplings (serves 4 to 6)
1 pound pared, seeded squash
1 tablespoon reduced-sodium soy sauce
1 tablespoon grated ginger root
1 teaspoon dark sesame oil
6 tablespoons plain bread crumbs
1 whole egg, well-beaten
4 tablespoons rice flour (or use cornstarch)
1 tablespoon sesame seeds
3 quarts duck stock
chopped spring onions

Steam the squash in a vegetable steamer for 20 minutes, or until soft. Remove and purée. Add the soy sauce, ginger, sesame oil, bread crumbs and beaten egg. Thicken the batter with the rice flour and add the sesame seeds. Set aside to recover for about 25 minutes so that the batter stiffens slightly.

Grease the bottom of the vegetable steamer with sesame oil and add heaping tablespoon scoops of the batter spaced evenly about a half inch apart. Cover and steam 20 minutes, or until tested with a toothpick and the centers are dry. To serve, put three dumplings in a small bowl and add hot duck stock to cover. Garnish with chopped spring onions.

TO MAKE DUCK STOCK

This recipe was tested with a breed of duck known as Ancona, named after a port town on the Adriatic Coast of Italy. Duck seems to complement the sweetness of the 'Yokohama' squash.

Yield: 3 quarts (3 liters)
1 duck carcass
Half an onion
Several pieces of daikon (white Japanese radish) or any large, white radish, cut into irregular pieces
A small piece of pared ginger root a few leaves of komatsuna (a mild mustard green) or collards
2 or 3 pieces of kombu (sea kelp; optional)
4 to 6 duck feet (optional)
½ cup (125 milliliters) low sodium soy sauce, or to taste
½ cup (125 milliliters) Chinese cooking wine (optional)



Break up the carcass into pieces and add them, together with the onion, ginger, daikon, collards, kelp and duck feet to 4 quarts (4 liters) of boiling water. Simmer gently for about 1 hour or until reduced by a quarter. Strain, season with the soy sauce and cooking wine, and reserve until needed.

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TOMATOES

First Class Tomatoes

Get delicious, hard-to-find varieties delievered to your door.

By Barbara Pleasant



You can explore the wonderful world of great-tasting heirloom tomatoes by purchasing tomato seedlings from a mail-order company. Several companies now offer varieties that pair superior flavor with unique shapes and colors that probably aren't available at your local garden center. You can choose from hundreds of varieties — usually grown organically — and have them shipped directly to your garden gate.

Thanks in part to the utter tastelessness of most supermarket tomatoes, interest in great-tasting home-grown tomatoes is booming. But before you turn to the mail-order sources discussed here, be sure to check with your local Extension office and at your farmer's market to see if any nearby growers are offering tomato transplants. If not, order from the nearest company listed in Tomato Plants by Mail.

ALL IN GOOD TASTE

"We want tomatoes that taste so good that when you bite into them, you hum," says Cindy Martin, co-owner of The Tasteful Garden in Heflin, Ala., a pioneer in the mail-order tomato seedling business. Cindy and her husband, George, grow and ship 30,000 tomato seedlings each year, from February through July. Like many other mail-order companies, The Tasteful Garden always ships plants early in the week so they never spend a weekend in transit, thus minimizing trauma to the plants.

Waiting until late spring to buy and plant tomatoes also can lead to better crops, according to David Baldwin, owner of The Natural Gardening Co. in Petaluma, Calif. "I never advise customers to be early birds," Baldwin says, "because seedlings grown in intense sunlight during April and May have a denser cell structure that makes them sturdy and strong. A perfect plant for shipping stands 8 to 10 inches tall, but the best readiness indicator is the thickness and strength of the stem."

Receiving big, sturdy plants of richly flavored 'Black Krim' or fruity 'Sungold' cherry tomatoes is espe-

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cially meaningful to gardeners who have lost their early plantings to unexpected catastrophes.

Organic from the Start

Unlike typical garden centers, most mail-order companies that specialize in tomato seedlings rely on organic methods to produce vigorous plants. For example, both Territorial Seed Co. in Cottage Grove, Ore., and The Tasteful Garden mix worm castings into custom soil mixtures for their tomato seedlings, then use organic fertilizers to support steady growth. You may be able to find organically grown tomato seedlings at your local farmer's market, but most commercially raised seedlings get their start in fumigated soil and are then fed a steady diet of synthetic chemicals. The difference is important to any gardener who wants to start out with the best.

Martin says she gets orders from many young families who want to begin gardening. "I always suggest cherry tomatoes to people with kids," she says. "They're easy to grow, and children love them." She also advises beginning gardeners to start with a mix of dependable hybrids, such as 'Better Boy,' and beautiful heirlooms such as 'Green Zebra.' Baldwin agrees — he offers a dozen disease-resistant hybrids such as the mouthwatering 'Sugary,' as well as heirlooms including 'Marvel Striped' beefsteak, which has won a top spot at The Natural Gardening Co.'s annual taste-testing event. "We try to do some of the homework for gardeners, so that the things we put out work for them," Baldwin says.

Companies that specialize in heirloom tomato seeds generally choose their most dependable varieties to sell as transplants. For example, Seed Savers Exchange in Decorah, Iowa, sells seeds for 79 tomato varieties, but devotes precious greenhouse space to only a dozen. Not surprisingly, the same varieties frequently turn up on multiple mail-order seedling lists. 'Amish Paste,''Cherokee Purple' and 'Stupice' have earned places on several mail-order lists by performing well under a wide range of conditions and delivering the flavor people want from homegrown tomatoes.



Mail-order companies offer unique tomato varieties, such as 'Cherokee Purple,' that deliver superior flavor in uncommon colors.

Indeed, trying plants from unusual, open-pollinated (nonhybrid) varieties is an excellent way to decide if you like them enough to start saving seeds, which is the first step toward cultivating varieties that are especially well-suited to your garden. Instead of buying half a dozen seed packets to try six varieties, for example, you might simply order one of the seedling collections offered by Seeds of Change in Henderson, Nev. The company's "Farm Favorite" collection includes 'Garden Peach,' Greek 'Thessaloniki' and four other tomato varieties.

Other companies offer similar assortments. But don't expect Laurel Garza, owner of Laurel's Heirloom Tomato Plants in Southern California, to suggest a short list. Her current favorite is a smoky-hued slicer named 'Paul Robeson,' but each season brings new contenders such as the pea-sized 'Hawaiian Currant,' which Garza calls "a magnificent, miniature morsel." With more than 180 varieties available (until the rare ones sell out), Laurel's is the place to look for hard-to-find goodies such as the gourmet 'Goose Creek' and the disease-resistant 'Clint Eastwood's Rowdy Red.'

DOING THE MATH

How much will an adventure in mail-order tomatoes cost? Plant prices vary, as do shipping costs, but expect to pay between $25 and $35 for a half-dozen plants, including shipping. Seedlings from Laurel's Heir-

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loom Tomato Plants and The Tasteful Garden run high ($4 and up per plant, plus shipping), but are grown in big 4-inch containers. Plants grown in smaller pots typically cost less; $2 per plant is a common price for seedlings in $2^1/_2$-inch pots, and those grown in $3^1/_2$-inch pots sell for about $3 each.

If $2 to $4 per plant seems high to you, remember that over the season each plant will produce many pounds of high-quality, super delicious, vine-ripened tomatoes for fresh eating, canning, freezing or drying. It's smart to work with a grower who knows which tomato varieties consistently do well in your region, especially if you're new to the art of tomato growing. And remember it's always wise to keep plants' transit times as short as possible. Some suppliers continue to grow and ship plants through June and July, when seedlings are long gone from retail store shelves, but be sure to place orders for late plantings in advance so they can be seeded and shipped at just the right time.

Environmentally speaking, the downside to having tomato seedlings shipped to you is the packaging. To protect the plants in transit, tomatoes are carefully packed in cardboard armor. Some sellers also wrap the pots in plastic to keep the soil from jiggling loose. Plan to set the plants free as soon as you receive them, and look for ways to reuse the cardboard and pots before sending them to your recycling bin.

TOMATO PLANTS BY MAIL

Each of the following companies sells at least 10 varieties of tomato seedlings by mail, and some sell more than 100. Packaging practices affect minimum order size, which varies by company. This list includes suppliers in most regions of North America, and many offer organic seedlings. To minimize shipping costs and trauma to your plants, first check with companies located close to where you live. Also keep in mind that Canada, as well as California and a few other western states, place costly restrictions on the incoming shipment of live plants, which is yet another reason to work with regional suppliers.

1. W. Atlee Burpee & Co.
300 Park Avenue
Warminster, PA 18974
(800) 333-5808
21 varieties, shipped in 3-packs

2. Cedar Knoll Farm Greenhouse
57447 865th Road
Laurel, NE 68745
(402) 584-2699
26 varieties, 3 plant min.

3. The Chile Woman
1704 S. Weimer Road
Bloomington, IN 47403
(812) 339-8321
36 varieties, 6 plant min.

4. The Cook's Garden
P.O. Box C5030
Warminster, PA 18974
(800) 457-9703
11 varieties, shipped in 3-packs

5. Cross Country Nurseries
199 Kingwood-Locktown Road
Rosemont, NJ 08556
(908) 996-4646
120 varieties, 12 plant min.

6. Harris Seeds
355 Paul Road
Rochester, NY 14624
(800) 514-4441
18 varieties, 5 plant min.

7. The Herb Cottage
442 County Road 233
Hallettsville, TX 77964
(979) 562-2153
45 varieties, shipped in 4-packs

8. Hirt's Gardens
4943 Ridge Road
Medina, OH 44281
(866) 748-9984
40 varieties, shipped in 2-packs

9. Hole's Greenhouses & Gardens
101 Bellerose Drive
St. Albert, Alberta T8N8N8 Canada
(780) 419-6800
18 varieties, shipped in 4-packs; within Canada only

10. Laurel's Heirloom Tomato Plants
1725 257th Street
Lomita, CA 90717
(310) 534-8611
180 varieties, no min.

11. Marianna's Heirloom Seeds
1955 CCC Road
Dickson, TN 37055
(615) 446-9191
18 varieties, shipped in 3-packs

12. The Natural Gardening Co.
P.O. Box 750776
Petaluma, CA 94975
(707) 766-9303
26 varieties, shipped in 6-packs

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13. Seeds of Change
One Sunset Way
Henderson, NV 89014
(888) 762-7333
15 varieties, shipped in 6-packs

14. Seed Savers Exchange
3094 North Winn Road
Decorah, IA 52101
(563) 382-5990
12 varieties, shipped in 6-packs

15. Territorial Seed Co.
P.O. Box 158
Cottage Grove, OR 97424
(800) 626-0866
72 varieties, shipped in 6-packs

16. The Tasteful Garden
973 County Road 8
Heflin, AL 36264
(866) 855-6344
44 varieties, no min.

17. Totally Tomatoes
334 West Stroud Street
Randolf, WI 53956
(800) 345-5977
21 varieties, shipped in 8-packs

Grow Great-tasting Tomatoes

With these simple strategies, you can grow the most delicious tomatoes.

By Barbara Pleasant



'Lemon Boy' has medium-sized fruit and a sweet and mild, slightly tangy taste.

Nothing captures the flavor of summer quite like a homegrown, perfectly ripe tomato, and for some gardeners, the quest for ultimate tomato taste becomes a way of life. Take Nebraska greenhouse owner Linda Morris for example. Five years ago she reshuffled her priorities, giving up full-time nursing to start Cedar Knoll Farm Greenhouse, near Laurel, where she grows tomatoes, peppers and herbs. Morris' main agenda is to help people stay healthy by eating more nutritious foods, and superior flavor is an integral part of that mission. "You cannot beat the taste of the tomato that you pick in its prime when you walk out your back door," she says.

But how do you get from wanting a great-tasting tomato to picking one? From Nebraska to North Carolina to Texas, folks who know tomatoes say great flavor involves the interplay of personal preferences and plant variety with soil fertility, water and sunshine.

The tomato varieties you pick should be a good fit for your climate because big, healthy plants produce better-tasting tomatoes. Heirloom varieties are famous for their flavors, and equally notorious for growing well in some areas, but not in others. "I had a customer from the South who could not believe he had to order 'Arkansas Traveler' plants from a greenhouse in Nebraska," Morris says. "His local nursery carried 'Brandywine,' a well-known name in the heirloom world that does not grow well in hot climates. In comparison, 'Arkansas Traveler' holds up in intense heat."

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At Angel Valley Organic Farm near Austin, Texas, full-time organic farmers Jo and John Dwyer have found they can grow a few heirlooms as early tomatoes, but even then they are lackluster producers. "Some folks find it kind of odd that most of our tomatoes are hybrids, but we need disease resistance and good productivity because we do this for a living. We won't grow a genetically modified variety, but we've found several hybrids that stand up to heat and disease and deliver big tomato flavor," Jo Dwyer says. Two of her favorites are 'Dona,' a juicy French hybrid, and 'Red Sun,' a huge slicing tomato that she says handles the heat beautifully.

In any tomato, lots of foliage leads to lots of flavor, and lush foliage is due to both nature (variety) and nurture (how the plants are grown). "Flavor in tomatoes is dependent on the food that's manufactured in the foliage," says Randy Gardner, a tomato breeder at the Mountain Horticultural Crops Agricultural Research Station near Asheville, N.C. "That's one reason why heirlooms have such good flavor. They are typically large, indeterminate plants, with a higher ratio of foliage to fruit."

In tomato lingo, indeterminate means that plants continue to produce new leaves and flowers after they enter their reproductive stage. Determinates stop growing when they start flowering and send all their energy toward the production of tomatoes. In between are the so-called vigorous determinates, such as 'Celebrity,' that produce a big crop, then keep growing and setting more fruits later in the season.

Indeterminate and vigorous determinate varieties are usually preferred where summers are long and warm, while determinates often perform best in cool climates, or in situations where you want a concentrated harvest for canning, freezing or drying.

START WITH THE SOIL

Good garden soil is an important ingredient in growing great tomatoes. Chemical fertilizers will promote growth of the plant, but they do nothing for the flavor of the fruit, the Dwyers say. You have to start with rich, healthy soil.

Chip Hope is co-owner of Appalachian Seeds, in Flat Rock, N.C., which specializes in heirloom tomatoes. He suggests creating such soil by digging in plenty of manure-based or spent mushroom composting a roomy hole and mixing the soil with the compost. Tomatoes do best in slightly acidic soil, so you may also need to add lime if a soil test indicates your soil is overly acidic. Next, move in with mulch, which helps to retain moisture, suppress weeds and prevent problems with diseases. "We've been using hairy vetch as a living mulch planted in the fall," Hope says. "In spring, we mow it down and plant through it, and it's working very well."

Recent research at the U.S. Department of Agriculture's Sustainable Agricultural Systems Laboratory in Beltsville, Md., suggests that hairy vetch mulch supports tomatoes by enhancing the plants' ability to utilize calcium and nitrogen, and by increasing their resistance to disease. Other mulches, such as wheat straw, benefit the plants' roots and keep rain from splashing soil-borne disease spores onto the foliage.

Keeping plants upright, by securing them to stakes or a trellis, or by growing them in sturdy cages, also keeps the foliage high above the ground. This reduces the risk of foliage loss due to disease and increases each leaf's exposure to the sun. Heat and sunshine are crucial to the development of a tasty tomato, the Dwyers say, noting the distinct difference between a tomato that ripens in cool weather and one that has had the benefit of nice, hot summer days.

KEEPING PLANTS HEALTHY

Hope drenches his tomatoes with seaweed (kelp) sprays throughout the season. "I think of it as a nutri-

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tional boullion from the sea, and it makes the plants tougher and hardier, and improves flavor," he says.

The Dwyers agree, and say they find that frequent seaweed sprays prolong the life and health of their plants. "It's basically a foliar feed that enriches the soil when it drips down through the mulch," Jo Dwyer says. Seaweed sprays help boost the sugar content of tomatoes (and other fruits, too), and many tomato lovers cite a balance between sweetness and acidity as the key to great tomato flavor.

A steady supply of water is required to support strong growth of foliage and fruits, and to prevent cracking, which is often due to sudden changes in soil moisture levels. You can't do anything about excessive rain, but when the water supply is under your control, take care not to overwater your tomatoes. Too much water dilutes tomato flavor. Beyond food and water, tomato plants need to keep their leaves if they are to produce intensely flavorful fruits. "When you have a loss of foliage, you have a loss of flavor," Gardner says.

Insects are usually minor problems. Tomato hornworms are big enough to pick off by hand, and lots of other pests bypass tomatoes because they find them so unpalatable. At Ohio State University's Organic Food and Farming Education and Research Center in Wooster, Sally Miller has evaluated more than a dozen natural pest-control products in tomato plots over the last three years. She has found that two products — Garlic Barrier, a garlic-based spray, and Trilogy, a neem oil extract — are effective for controlling insects that wander into the plots.

Diseases are harder to control, because most are caused by fungi that live in the soil or that enter the garden as windblown spores. When you read seed catalogs, it's hard not to be impressed by the long list of diseases for which genetic resistance is readily available. These symbols include "V" for verticillium wilt, a soil-borne fungus that causes plants to wilt and die; "F" for fusarium wilt, a soil-borne fungus that causes plants to turn yellow just before they wilt and die; "N" for parasitic nematodes that infest roots; "T" for tobacco mosaic virus, usually evidenced by oddly stringy leaves and malformed fruit; and a sprinkling of other letters for less-widespread diseases.

What's been missing — until recently — are varieties resistant to early blight, a common leafspot disease that begins as dark spots on low leaves that become so numerous the leaves wither and fall. The good news is that a few varieties offer some resistance. A "saladette" variety with characteristically small, oblong fruits called 'Plum Dandy' is resistant, and Johnny's Selected Seeds carries a round-fruited hybrid (currently known as JTO-99197) that has shown good resistance in the field. To manage early blight on nonresistant varieties, Miller has found that new bacterial fungicides, including Serenade (Bacillus subtilis) and Sonata (Bacillus pumilis), can reduce or delay foliar diseases when applied regularly to both sides of tomato leaves.

Unfortunately, no tomato can outgrow late blight, caused by ever-changing strains of the Phytopthora infestans fungus, the culprit behind the tragic Irish potato famine of the 19th century. At Oregon State University, breeders released the late blight-resistant 'Legend' determinate variety three years ago. 'Juliet,' an indeterminate, vigorous hybrid saladette, shows some resistance as well. But where disease pressure is high due to continuous cool, rainy weather, these varieties still succumb to the disease, too. This is not the tomato's fault, because Phytopthora infestans has an amazing talent for changing the enzymes it uses to invade leaf tissues. "Anything you can do to reduce the introduction and spread of the pathogen will help," says Jim Myers of Oregon State, who helped develop 'Legend.'

"Get rid of old, infected vines, fruit and tubers from tomatoes and potatoes, and do what you can to keep the foliage dry," Myers says. He also suggests removing leaves that show early signs of late blight (wilted, water-soaked leaves), but only if you can do so when the foliage is dry. Myers, Gardner and other breeders are working

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hard to develop blight-resistant varieties, which should become available within the next five years

How do these varieties taste? In a taste test, they won't blow away the sweet 'Sun Gold' or the subtly salty 'Black Krim.' But when the choice is among having no tomatoes, watery grocery store hardballs and sun-ripened beauties from your own back yard, healthy, blight-resistant varieties are the best-tasting tomatoes in the world.

FAVORITE VARIETIES

"Flavor varies so much that you have to choose a variety that tastes the way you like a tomato to taste," says Hope of Appalachian Seeds. "There are sweet ones, tart ones, smoky ones, or they can be spicy, fruity or tangy. Then there is what people call 'old-time tomato flavor,' which is usually a balance of sweetness and more complex flavor factors."

Some tomatoes have especially intense flavors. Among slicing tomatoes, so-called "black" or "purple" indeterminate heirloom tomatoes such as 'Black Krim,' 'Pruden's Purple' and 'Cherokee Purple' — and a half dozen others — have to be put at the end of taste tests because they have such outstanding, complex flavors that they would overpower any tomato that followed them

Many people, including Morris of Cedar Knoll Farm, like the light, lemony zing of 'Lemon Boy,' and the Dwyers say that 'Red Sun' is a remarkably delicious red slicer, deserving of the finest salads. Another tomato they recommend is 'First Lady,' as a full-flavored change of pace for fans of 'Early Girl.'

Pretty, productive and delightful to eat, small-fruited cluster tomatoes are well represented on many "favorites" lists. Morris says she likes 'Stupice,' and if Hope had to pick just one tomato, he says it would be 'Thai Pink,' a sweet, iridescent pink saladette that doesn't crack and that develops big tomato flavor. A yellow variety with a faint blush of pink, 'Garden Peach' gets high ratings for intense fruitiness.

Cherry tomatoes are among the sweetest types of tomatoes you can grow. Two varieties that come highly recommended are the yellow 'Sun Gold' and orange 'Sun Sugar.' The supernutritious 'Peacevine Cherry' is another favorite of many people; this variety is especially rich in vitamin C.

Can't decide? Always diversify by growing more than one or two varieties, and keep trying new ones every chance you get. Eventually you'll find it — your perfect tomato.


ROSALIND CREASY

TOMATO PLATTER WITH VINIGRETTE

Many heirloom tomatoes, especially beefsteak varieties, look and taste great when served on a platter and drizzled with this simple but tangy dressing. 6 to 8 large beefsteak tomatoes, approximately 4 pounds total. Garnish: fresh basil, mint leaves or parsley.

For the vinaigrette:
1 teaspoon Dijon mustard
2 tablespoons fresh lemon juice
1 tablespoon dry white wine
1 tablespoon fresh minced basil or mint
½ cup extra-virgin olive oil

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Salt and freshly ground black pepper

To make the vinaigrette:
In a bowl, whisk together the mustard, lemon juice, wine and basil or mint. Slowly whisk in the oil, beating continually until the dressing is thoroughly blended. Add salt and pepper to taste, then refrigerate. Just before serving, slice the tomatoes. On a large platter, lay them out in a decorative pattern. Drizzle the vinaigrette over tomatoes, add garnish and serve. Serves 6 to 8

Winter Tomatoes

With the right light, you can grow tomatoes indoors all through the winter.

Story and Photos by David Cavagnaro

Just one encounter with a tasteless, artificially ripened, imported winter supermarket tomato makes you want to grow your own tangy, sweet-tasting tomatoes in the off-season.



It sure did me, and I met with enough initial success that I continued refining my technique until now, in a good winter, at peak production, a single plant in my window produces a pint of cherry or pear tomatoes every day or two. Here's how to do this yourself:

Although many varieties of "compact" bush tomatoes are advertised as good for container production, they won't perform well over a long winter. These are "determinate" varieties — plants with branches that grow to a certain length and then stop. They produce a finite number of fruits over a limited period, certainly far less time than a long stretch of northern winter.

Better options for indoor winter tomatoes are "indeterminate" varieties, those that continue growing and producing indefinitely. Furthermore, I've found that cherry and plum types, bearing small fruits in abundance, are more productive than large slicing types.

FAVORITE VARIETIES

Because indeterminate vines bear a blossom cluster at each node, and the stems between nodes grow longer indoors in the dimmer light of winter than they would outdoors in summer, I recommend you choose from among the less-vigorous indeterminate varieties on the market, lest the vine take over the house without bearing much fruit. My favorite choices are old-fashioned 'Yellow Pear' and an unnamed, less vigorous red variety that I've grown for years, but the red 'Tommy Toe,' an Ozark heirloom and frequent winner of taste tests, and 'Pink Ping Pong,' called "very sweet, smooth and juicy" by heirloom tomato expert Carolyn Male, are worth growing this way, too.

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Sufficient light is paramount for successful indoor cherry tomato production. Choose a window as nearly floor-to-ceiling in height and as south-facing as possible. Large picture windows or sunroom exposures are ideal.

A large-enough container will be needed at the outset, too. Choose a 5-gallon container at a minimum, and 10 is even better, to support the rather massive winter-long growth that will accumulate.

To get a head start, you can start your indoor plants from cuttings at the end of the summer. If grown from seed, indeterminate varieties must reach several feet in height before the first blooms appear, so the cuttings save precious time. To start your own, cut a branch from a favorite variety in your garden in late summer, section it into several cuttings, each with two sets of leaves. Clip off all but one leaf at the top and place the whole bundle in a jar of water in a sunny indoor window.



Cherry and pear tomatoes are good choices for growing indoors through a northern winter. David Cavagnaro's techniques, detailed in the story, can yeild as much as a pint every couple days.

READY TO ROOT AND BLOOM

The lower sections of long vines are already covered with bumps that are roots just waiting to grow, so rooting will take place very quickly using these lower, older parts of stems. After cuttings root, pot them up and keep them outdoors, in full sun, until frost threatens. They should be well in bloom when you move them indoors, and these mature stems will produce blossoms immediately on new growth.

Train the plant, which will grow like a climbing vine, on a sturdy string trellis tied from and between small nails solidly hammered into a window frame, or build an independent trellis. Just be sure to accommodate the considerable weight of a huge vine amply loaded with many quarts of ripening fruit.

Regular fertilization is a must to support the vigorous growth of an indeterminate tomato vine. Fish emulsion or any other liquid nutrient mix will do. Just follow the instructions on the product label.

Also, be sure to consider pollination and potential pests. Tomato blossoms are internally pollinated, an act aided outdoors by the vibratory action of wind and visiting bees. To mimic such vibration indoors, lightly tap or shake the vines each time you water, or turn a fan on them.

Insect pests can be a much more difficult problem to solve. You can control aphids with a batch of ladybugs, which you can buy commercially or which, since the invasion of the Asian variety, you may already have in abundance in your garden.

Whiteflies, once established on an indoor tomato plant, eventually will defoliate and kill it. The best solution is to be extremely careful to not introduce these insects indoors in the first place. Also, install yellow sticky traps (widely available online) before you notice any whiteflies, to catch any that sneak inside.

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The same can be said for spider mites. Both of these pests also attack a variety of houseplants and are extremely difficult to control, especially on an edible crop where only nontoxic controls would be acceptable.

One final advantage to growing a tomato vine indoors in winter becomes clear in spring: You have a ready source of plant material from which to take blossoming cuttings for a jump start on the outdoor tomato season of summer.

Simply repeat the procedure used in the fall by rooting cuttings well enough in a dvance of the growing season that you have potted vines already in bloom in time to set out as soon as any danger of frost has passed. These plants will bear a good month or more in advance of even the earliest varieties you could start from seed in the spring, offering once again, at their natural time, the delicious, sweet-sharp taste of vine-ripened, sun-warmed tomatoes.

Stuffing Tomatoes

With the right light, you can grow tomatoes indoors all through the winter.

By Brook Elliott

When I was growing up, Mom would make stuffed tomatoes. Basically, she scraped out the seeds, core and flesh, and used the remaining tomato as a shell to hold tuna or other cold salads.

I hated them. The juice from the tomato and its thin walls would turn everything into a mushy mess.

Things would have been different if Mom had known about stuffing tomatoes: varieties developed specifically for that purpose. Resembling bell peppers, stuffing tomatoes are thick-walled, hollow and relatively juice free. “When you slice one open, the seed gel is in the middle and the rest is hollow,” says Marianne Jones, who stocks seed for nine different stuffers at Marianna’s Heirloom Seeds, in Dickson, Tennessee. “Sales are not big,” she says, “but that’s only because people don’t know about them and how much fun they are.”

Stuffing tomatoes are more popular with chefs—when they can get them—than with the gardening public. Chefs like them because they make beautiful, decorative presentations for both cold and hot dishes.

Even without widespread popularity, stuffing tomatoes come in incredible ranges of size, shape and color. On one end of the continuum are varieties like ‘Coursen Roy’s,’ a large, reddish-orange tomato with a fairly standard round shape, albeit slightly taller than it is wide. On the other end is ‘Zapotec Pink Pleated,’ a heavily ribbed, double-bowled tomato that’s a true pink color. ‘Zapotec Pink’ looks as if two smaller, fig-shaped tomatoes were stuck together. ‘Schimmeig Striped Hollow’ looks like a striated ‘Delicious’ apple-red with yellow and orange markings.

Most of the stuffers, however, look like lobed bell peppers and come in single colors, such as ‘Yellow Stuffer’ and ‘Orange Stuffer,’ which are the most commonly available varieties. They are configured inside like bell peppers, as well. When you cut the top off, you’ll find the seed mass forms a “strawberry” just under the stem. The rest is hollow, except for a few ribs in some varieties. The flesh is thick and moist, but not runny.

Stuffers, according to Darrell “The Tomato Man” Merrell, are among the earliest tomato cultivars. “They’re almost all from Mexico originally,” the Tulsa, Oklahoma, resident says. “Precontact Aztecs were great tomato cul-

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tivators, much more so than South American tribes even though tomatoes originated there."

Lacking the broad appeal that attracts large-scale commercial growers, stuffing tomatoes have been kept going primarily by amateur growers, small market farmers and specialty seed houses. They are showing up now in mainstream seed catalogs.

Stuffers are said to score low on the flavor scale. Perhaps so, but many do have a rich, tomato taste with little acidity to overpower the flavors of the food put inside them. Many people cut them up into salads instead of using standard slicing tomatoes. The stuffers provide a tomato taste that complements the other salad ingredients without dominating them.

You're not likely to find stuffers at the supermarket or farm stand yet, which means you'll have to grow them yourself. Seed is readily available, with many seed houses stocking at least one type.

Stuffers are grown the same way as any other tomato. However, because you'll be using them as edible bowls, it's more important that you prevent blemishes from blight, bug bites and cracking. While you could cut out such blemishes, it detracts from the overall appearance of the dish, especially when the tomato is used raw as a salad bowl. If you grow for the market, bear in mind that chefs will not accept blemished stuffers.

The secret to blemish-free fruit is airspace. Space plants at least 30 inches apart, in rows at least 3 feet apart, and thin out any excess growth. Consistent watering is particularly important, both to fend off blossom-end rot and to prevent cracking. Most stuffing tomatoes produce large, brushy, indeterminate plants that need strong support. I recommend growing them in wire-mesh towers.

One potential downside to growing stuffers is that they are very prolific. 'Schimmeig Striped Hollow,' for instance, seems to put out as many fruits as a cherry tomato plant. And 'Coursen Roy's' definitely does. Bobbi Cavanaugh, codirector of New Jersey's Garden State Heirloom Seed Society, has found that stuffers can be frozen and still serve for cooked dishes. "Top and core the tomatoes and drain any liquid," she says. "Put in freezer bags, squeezing out as much air as possible. Freeze."

When ready to use, remove as many as you need, she says. "Put them in a barely warm oven—not more than 250 degrees. Drain the water as they defrost. When they are thawed but not cooked, about 15 to 20 minutes, fill with stuffing and bake as the recipe requires."

YELLOW TOMATOES STUFFED WITH SHRIMP AND SALSA

This is a quick, but zesty, first course.

4 yellow stuffing tomatoes
1 avocado
1 teaspoon fresh lemon juice
$^1/_2$ pound cooked baby shrimp
1 cup of your favorite salsa
Garnish: fresh sprigs of cilantro

Cut the tops off the stuffing tomatoes and take the seeds and liquid out of the cavity. Stand them upright on a serving plate. Cut the avocado into $^1/_2$-inch cubes and sprinkle with lemon juice. Add baby shrimp and salsa and gently mix the ingredients together. Stuff the tomato cavities with the filling and garnish with cilantro. —from "The Edible Rainbow Garden" by Rosalind Creasy

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TOMATOES STUFFED WITH BEANS

1 cup small white beans
1/2 large onion, chopped
1 tablespoon butter
salt
white pepper
6-8 stuffing tomatoes, tops removed
olive oil
2 tomatoes, peeled and chopped
Worcestershire sauce
3/4 cup grated smoked cheese

Soak beans overnight. Cook until tender. Drain.
Sauté onion in butter until cooked but not browned. Combine with drained beans, salt and white pepper.
Lightly rub outside of stuffing tomatoes with olive oil. Place in a baking pan in a single layer.
In each tomato put a thin layer of beans. Cover with a layer of chopped tomatoes. Brush with Worcestershire sauce. Sprinkle cheese over tomato. Repeat layers until all stuffers are filled.
Cover pan and bake at 350 degrees for 25 minutes. Remove cover and bake another 5 minutes.

QUINOA FRUIT SALAD IN TOMATOES

1/2 cup quinoa
1/2 cup dried fruits
pinch cardamom
1/2 cup seedless grapes, quartered
1/2 teaspoon coriander
1/8 teaspoon nutmeg
1/2 teaspoon black pepper
3/4 teaspoon powdered ginger
1/2 cup chopped scallions
1/4 cup chopped almonds
1/3 cup olive oil
6-8 stuffing tomatoes, tops removed

Cook quinoa. Soak dried fruits in boiling water and chop coarsely.
In a large bowl combine quinoa, drained fruit and other ingredients except tomatoes. Chill several hours and fill tomatoes.

TOMATOES STUFFED WITH MILLET AND MUSHROOMS

1 onion, chopped
1/2 pound mushrooms, coarsely chopped
1/2 stick butter
juice of one lime
1 small head cauliflower, divided into florettes
olive oil, divided
2 cloves garlic, minced
1/2 teaspoon basil
salt and pepper, to taste

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1 1/2 cups cooked millet
1 1/2 cups grated Swiss cheese
6-8 stuffing tomatoes, tops removed

Sauté onions and mushrooms in butter and lime juice. Set aside.
Sauté cauliflower in a little oil with the garlic, basil, salt and pepper. Add to onion-mushroom mix.

Combine all ingredients except tomatoes. Lightly rub outside of tomatoes with olive oil. Stuff tomatoes with mixture, pressing down lightly to compact the stuffing. Bake at 350 degrees for 30 minutes.

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TURNIPS

It's worth putting in a turnip patch just to enjoy a "potlikker" dish.

By Sara Pacher


ISTOCKPHOTO

The turnip has, with good reason, been a staple of the human diet for millenniums. Evidence found near Beijing, China, indicates prehistoric cave dwellers wrapped turnips in ferns or wild onions and steamed them in wet leaves placed on stones in the fire. Cave paintings created several thousand years later in Aurignac, France, show turnips being boiled in clay pots.

Our Cro-Magnon ancestors apparently foraged these plants from the wild, but by 3500 B.C., Sumerians in the valley of the Euphrates were cultivating the vegetable. In later centuries, Greeks and Romans turned turnip cooking into a culinary art form, and forums were held to discuss the best ways to prepare the vegetable. Some epicures liked them pickled; others preserved the roots in myrtle berries, honey and vinegar. One Roman method involved steaming turnips successively with cumin, rue and benzoin (a fragrant, balsamic resin). After being cooked for several hours, the vegetable was then mashed and simmered in honey, vinegar, gravy, boiled grapes and a little oil. Ancients might have considered this complicated dish delicious, but I see no reason to disguise the deliciously pungent taste of turnips. In fact, a favorite Saturday night supper of my south Georgia childhood consisted of cornbread crumbled into "potlikker"—in this case, the leftover liquid from cooking turnip greens. To me, it's worth putting in a turnip patch just to enjoy this down-home dish whenever I like, though turnips (Brassica rapa) and rutabagas (Brassica napobrassica) reward a grower in other ways.

First of all, they're very nutritious. A serving of turnip tops steamed in a little water, while containing only 20 calories, gives you 184 milligrams of calcium and 6,300 units of vitamin A, along with significant amounts of phosphorus, iron, thiamin, riboflavin and niacin, as well as 69 milligrams of vitamin C. (The only vegetable containing more vitamin C is parsley.) Rutabaga greens, at 35 calories a serving, offer a little less of most of these nutrients, but add 167 milligrams of potassium. Eaten raw—and the tender leaves of both these vegetables are a tasty addition to salads—they are even better for you. The roots, while not quite as nutritious, still have the same vitamin content as potatoes and are richer in vitamin C.

Best of all, turnips and rutabagas are easy to grow and store and are relatively pest-free. Much of the crop's success depends on timing.

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WHAT AND HOW TO GROW

Like those other brassicas, cabbages and Brussels sprouts, turnips and rutabagas are cool-weather crops. The rutabaga is actually a horticultural cross between a turnip and a cabbage; it was created by Swiss botanist Gaspard Bauhin in the seventeenth century, though it didn't arrive in this country until 1806. Rutabagas are commonly called fall or Swedish turnips or simply Swedes. (Because of their liking for cool, glacial soil, they're widely grown and eaten in Sweden and other northern countries.) Additionally, rutabagas can tolerate frost better than turnips, and the roots can be stored for up to a year.

Whether you're growing turnips or rutabagas, these underground brassicas should be planted about three weeks before the last frost date in early spring or, for a (usually better) fall crop, in midsummer. They also are a winter crop in the warmer sections of the South.

The main thing to keep in mind is that these vegetables require temperatures of between 50 and 70 degrees to mature, so select a variety with growing needs that correspond to your local climate. (The soil must be at least 40 degrees for seed germination, which generally takes from seven to 14 days.) Hot weather will turn the leaves rank and make the roots woody and bitter. If you want to keep these root crops growing quickly, water is the secret.

The most popular turnip is the fine-tasting, fine-storing 'Purple Top White Globe,' which matures in 55 to 58 days and is best for a fall crop. The Japanese, however, have come up with several varieties that mature much faster. For example, the hybrid 'Just Right' (40 days) is remarkable for its tender greens and roots, while the two-inch root of virus resistant 'Tokyo Cross' is ready to eat in only 35 days. 'Shogoin' (30 days), another Japanese offering, is cultivated primarily for its thick, delicious foliage, and if you can nurture your crop for 70 days, its roots are tasty, too. Some turnips, such as 'Seven Top,' are grown only for their greens. Turnip roots can be white or yellow, and, though turnips are classified according to the shape of their roots—flat, round or cylindrical—shape doesn't make a great deal of difference in their taste. Their tops come in shades of green, red, purple and gold. Certain white varieties with green tops have proved to be the hardiest.

Rutabagas generally take 90 days to mature. Macomber (80 days) and American Purple Top (88 to 90 days) are old favorites.

Turnips and rutabagas are fairly tough crops that can be grown in almost any type of soil, but they thrive best in loose, organically rich, stone-free, water-retentive but well-drained earth that's been worked deeply. The pH should be between 6.5 and 7.0. Phosphorus (try ground rock phosphate and granite dust) encourages root development. Too much nitrogen will produce thick leaves but puny roots, so don't fertilize with unrotted manure.

Because turnips and Swedes are such light feeders, they can be rotated with heavy feeders like corn or squash. But don't plant your crop near mustard greens, which will inhibit its growth, or near other brassica cousins such as broccoli or cabbage, since all family members are susceptible to the same diseases. Turnips and rutabagas can, however, tolerate partial shade, so some people like to grow them between climbing peas. Any type of pea is a good companion plant to these crops.

Neither of these root crops transplants well, so sow your seeds where you intend to grow them. (One seed packet will plant a 50-foot row and will produce 25 pounds of leaves and 50 pounds of roots; the germination rate is over 70%, and the seed will store from two to five years and can be sprouted.) Sow your spring crop a quarter inch deep; plant fall crops a half inch deep two months (three months for rutabagas) before the first expected frost. Seeds may be broadcast and later thinned to three or four inches apart, or they can be planted in rows 18

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or more inches apart. Give rutabaga plants six inches in which to grow. (Use the tender thinnings in salads.)

Keep down weeds and aerate the soil with hoeing and hand-cultivating, and never, at any stage, allow the bed to dry out. You want to keep these vegetables growing fast and continuously, and water is the secret. Constant moisture will produce a good, well-flavored, tender crop, while lack of moisture will make the roots fibrous and strong-tasting and will force the plant to send up a seed stalk. When the leaves are about five inches long, you can mulch the plants to keep weeds down and moisture in.

WHAT TO WATCH FOR

You'd expect turnips to be susceptible to all the pests and diseases that attack other brassicas. Theoretically, they are, but scientists have found that the turnip plant has an insecticidal chemical compound in its system that helps ward of such insects as aphids, spider mites, houseflies and beetles. Therefore, root maggots are the most likely cause of problems. They can be discouraged by scattering wood ashes liberally around your plants. Should aphids or flea beetles attack, use hard hose sprays, sticky traps, garlic sprays, diatomaceous earth, wood ashes or ladybugs (for aphids) to get rid of them.

The main disease to watch for is black rot, which turns leaves black and foul-smelling. The only way to prevent this bacterial menace is with strict crop rotation. Specifically, don't put your turnip or rutabaga patch where it or any other cole crop has grown within the last five years, and immediately remove and destroy any diseased plants to keep this plague from spreading.

HOW TO HARVEST AND STORE

Greens can be harvested as soon as they're large enough to pick, but don't pluck any one plant too heavily or you'll kill the root. Turnips should be pulled when the roots are from one to three inches in diameter. (Usually, the smaller they are, the tenderer they'll be. Very young ones make a fine substitute for radishes and can be carved into decorative garnishes.) To harvest the roots, use a spading fork to loosen the soil around the base of the leaves, grab the tops, and pull gently.

Rutabaga roots are much larger — and sweeter-than turnips — but they should not be allowed to grow so big that they become woody, otherwise they're more fit for cattle than human consumption. However, because of their hardiness, many people leave rutabagas in the ground during the winter, rather than storing them, to be dug as needed.

Turnips are not as long-lasting as rutabagas, but in mild-winter areas, they can be mulched and left in the garden for an extended harvest. With both crops, though, it's often better to pull up the roots, twist off the tops (but not too closely; leave about half an inch of stems) and store them in layers in boxes of moist sand, sawdust or peat, or in heaps or ridges covered with a layer of soil and straw. Some people cover the roots in wax to prevent dehydration and store them in an area just above freezing. Others simply place them in any cool (32 to 40 degrees), damp, dark place such as a basement or root cellar. Just make sure you don't store any that are bruised, cut or diseased.

If an early hot spell hits your spring crop, taste-test the roots daily and harvest the entire crop at the first sign of deterioration. Refrigerated, the greens will keep for up to a week or can be frozen for future use. Store the roots as mentioned above in a cool, moist place.

Freezing, which preserves the most nutrition, is the best way to store turnip and rutabaga tops. Wash young, tender green leaves in several changes of water, removing tough stems or bruised leaves. Blanch each

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pound in two gallons of boiling water for two minutes, stirring to keep the greens from sticking together. Cool, drain well, and pack into containers, leaving half an inch of head space. Seal, label and freeze. When ready for use, cook for eight to 15 minutes.

The roots, while they don't can well, can also be frozen. I find it easier just to store them in my cellar, but I do like to add a diced root or two for flavor and texture in each package of frozen greens.

OLD-FASHIONED TURNIP GREENS

1 onion, chopped
3 strips bacon, cut into 2-inch pieces
1 small clove garlic, minced
1/2 teaspoon salt
1/4 teaspoon pepper
Dash of vinegar
3 cups tightly packed chopped turnip greens
1 or 2 eggs, hard-boiled

Fill a large saucepan half-full of water and add onion, bacon, garlic, salt, pepper and vinegar. Bring to a boil for 1 minute. Add turnip greens and cook until tender. Drain (save the liquid), and top with sliced-egg garnish. Serves 4 to 6. (For your next meal, reheat the cooking liquid—called pot liquor in the South—pour into individual bowls, add small chunks of cornbread, and enjoy!)

RUTABAGA CASSEROLE

3 pounds rutabagas, peeled and diced
2 teaspoons brown sugar (divided)
1/2 teaspoon dill seed
1 teaspoon salt
2 tablespoons margarine or butter
1/3 cup sour cream

Place rutabagas, 1 teaspoon sugar, dill seed and salt in about 1 inch of boiling water and simmer, covered, for 10 minutes. Drain, mash and stir in remaining sugar, salt, margarine and sour cream. Turn into a 1 1/2 -quart oiled casserole dish, cover and bake in 350-degree oven for 30 minutes or until tender. Uncover and place under broiler to brown. Serves 6.

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ZUCCHINI

By Barbara Pleasant


ISTOCKPHOTO

It's a rare gardener whose planting plan does not include summer squash, be they zucchini, yellow squash or scalloped pattypan types.

Many questions arise when considering your own squash patch: How much should you grow? Should you start with seedlings or plant the seeds directly in the garden? What can you do to keep insects at bay? Assuming you have a good year, what kinds of kitchen wizardry will you use to avoid squash burnout?

At first glance these questions may seem to have separate answers, but in fact they are closely related. For example, if you use double-duty growing techniques that deter insect pests and make the most of summer squash's natural exuberance, you'll need just four or five healthy plants to keep summer squash on your daily menu for more than a month — and stock up your freezer too. The key word here is "healthy," but growing robust plants is easy ... if you think like a squash.

SMALL PLANTINGS, BIG HARVESTS

Step one is to choose the best varieties for your garden, keeping in mind that all summer squash are flavor lightweights until they're enhanced with seasonings.

Or try a secret I only recently discovered—grill squash to greatly intensify its subtle flavors. Grilling sweats out water and caramelizes the sugars—try it, you'll be amazed!

Summer squash varieties make up for frail flavor with their abundant yields, vibrant colors, great nutritional value and variable shapes. Young specimens of colorful yellow and green 'Zephyr' or 'Sunburst' squash are almost too beautiful to eat, while dark-skinned zucchini varieties, such as 'Raven,' have a high quota of lutein (an antioxidant that can prevent vision loss associated with aging). Squash is also a good source of fiber and potassium, as well as vitamins A and C. To save space in a small garden, try training a vining variety, such as 'Costata Romanesca' or 'Tatume,' up a sturdy trellis or fence. If you don't have room to grow your own squash, buy your favorite varieties from farmers markets or roadside vegetable stands.

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Don't worry if you end up buying several packets of seeds to get the diversity you want in a small planting, because summer squash seeds will remain viable for three to four years (or more) when stored under good conditions. Another option is to start with a mixture of varieties, such as the 'Summer Squash Mix' from The Cook's Garden, or 'Summer Scallop Trio' and 'Tricolor Mix' zucchini from Renee's Garden. If you're worried about pollination problems in a small planting of different varieties, just think like a squash. Yellow squash or zucchini might tell you, "No worries, pollen from a pattypan is just fine with us!" Unless you plan to save seeds, it's fine to mix them up.

PLANTING SEEDS FROM A SQUASH'S PERSPECTIVE

The next decision is whether to start the seeds in pots or directly in the garden. If your squash seeds could talk, they'd say, "Oh no, not in the garden! As soon as we sprout those nasty squash bugs will find us. Besides, we'll show you a special, magic secret if you plant us in roomy pots and give us plenty of compost." The compost is important here, because it's likely to host remnant populations of fungi and bacteria that form beneficial partnerships with summer squash roots. Once this spontaneous root myco-magic starts happening (myco means fungal), the squash root/fungi teams become geniuses at extracting moisture, phosphorus and other nutrients from the soil. (For more on myco-magic, check out "Building Fertile Soil".)

For seedlings started in 3- to 4-inch pots, this process will continue without missing a beat if you set out the plants, without disturbing the roots, when they are about three weeks old (squash grows up very quickly), in warm soil that was amended with plenty of compost and a few handfuls of an organic fertilizer. Always choose a sunny spot and the squash seedlings will promptly begin unfurling their extensive array of solar collectors, which we call leaves.

ORGANIC CONTROLS FOR SQUASH BUGS

This is probably an anxious time for summer squashlets, because they've suddenly become sitting ducks to four formidable insect pests. "Please protect us from pests that want to destroy us," the squash would plead if they could speak. When spotted or striped cucumber beetles fly in and get a taste of them, for example, they'll call their comrades to come join the party. On the ground, squash bugs patrol for the host plants they crave. And on warm evenings, the squash plants will likely be discovered by fast-flying moths, whose larvae are dreaded squash vine borers—inch-long supermaggots that devour the spongy material on the inside of squash stems, ravaging them from the inside out.

None of these insects will damage your plants if they can't reach them, so it's time to cover them up with a floating fabric row cover, weighted down at the edges. Attach the row cover to a wire mesh tunnel to make it easier to secure, install and remove for weeding. You can buy row covers at garden centers, or make your own by stitching together two lengths of tulle or nylon net, sold at fabric stores. (See "Extend Your Growing Season", for more on making tunnels.) Give the plants a good drenching, and mulch between them to deter weeds before you install the bug cover. Then, you're pretty much home free for the early growing stage.

HAPPY ENDINGS

When you start seeing female flowers, it's time to remove your bug cover so bees and other little pollinators can carry pollen between the boy and girl flowers, which should be plentiful thanks to your compost. Male flowers are attached to straight green stems, while female flowers sit atop the tiny little squash. One of the things we know about the myco-magic of squash is that plants use the nutritional goodies picked up in a biologically active rhizosphere (the soil right around the roots) to produce lots of big, viable pollen grains. And lots of big pollen grains mean loads of fat squash to harvest. Your uncovered plants eventually will be found by borers, beetles and squash bugs, but plants that were protected until they reached bearing size are strong enough to produce heavily, despite insect aggravation.

When my plants are showing signs of decline (usually from squash vine borer damage) and I've harvested all the summer squash I want, it's time to stage a crackdown cleanup by spreading a large piece of clear plastic on the ground, piling on the pest-ridden plants, and quickly gathering it into a bundle. A few days in the hot summer sun kills anything living in there, leaving me with shrunken squash skeletons for my compost heap—an appropriate ending for my garden's most prolific producer.

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