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On the Cover:
In a New Mexican farmers' market, Matt Romero roasts native chiles. Photograph by Douglas Merriam

THIS PAGE, CLOCKWISE FROM TOP: MITCH MANDEL/WREATH DESIGNED AND MADE BY MARK KINTZ; DAVID A. WHITE/GARDEN DESIGN AND HOMEOWNER, JOE VALENTINE. OPPOSITE: CHRISTA NEU; ABBIE ZABAR

THOUGHT LINES

Garden visiting and nursery hopping are my two favorite sports. They can be played alone but are most fun with at least one other person. Just as long as it's not my husband.

I was born with sonar plant-range-finding, and it starts blipping at about 300 yards: "Oooo! Nursery at 2 o'clock," I exclaim.

"Nursery at 3 o'clock. It looks reeeeeally good." I say with some urgency.

"Nursery at 5 o'clock," I sigh dejectedly.

"Do you want to go to that nursery or something?" asks my *carissimo*, with a shiver of annoyance in his voice, as we speed by, like it is my fault for not giving sufficient notice.

"Dang," I mutter. "I forgot the plank of wood to hit you on the head with."

Yes. Visit. Nursery. Read my lips . . . What's a girl to do?

Such are the joys of traveling with someone who is not a plant fan. But life being what it is—a series of trade-offs—I've had to mope around countless big-box music stores while he paws through the same CD offerings he saw in the last place. He collects music, like 84 versions of Mahler's 4th, and old vinyl discs of the Chuck Wagon Gang's greatest hits: the aural equivalent of my pulmonaria collection and the goofy cactus I hauled to Pennsylvania from Texas via Iowa. Baseball cards, Beanie Babies, Barbie dolls . . . we all collect something. I just happen to think (self-righteously, I admit) that collecting plants to make a beautiful outdoor space that adds value to our property is especially worthwhile.

Part of this garden sport's pleasure, too, is talking to the gardeners or nurserymen I encounter. They usually have their own OCD thing going, fixated on a particular genus or color or type of plant, and we can yarn away for hours. Don't get me near a bulb specialist . . . My name is Ethne, and I love naturalized bulbs and the splendiferous springtime flowering that they bring. So this fall will reliably find me on my hands and knees tucking hundreds of fritillaries, species daffodils, crocuses, scilla, you name it, under the boxwood edging, around trees and flung far and wide across what remains of the lawn.

I first learned how to do this sort of thing from a garden I visited long ago. Until then, I'd mistakenly thought naturalizing meant digging a gazillion holes and dropping each tiny bulb in place one at a time. Oh no, said the grizzled head gardener I was quizzing. Just lift a clod of turf, fork up the soil below, add some bonemeal, and toss in a handful of bulbs. Drop the turf and stomp on it. And don't, he said, ever plant bulbs one by one. Plant them in groups, or you'll be left with bulb foliage scattered across grass that can't be mowed until the bulbs' leaves have faded.

I'm a firm believer in the question asked. It's the only way to learn, and in gardening we learn our best lessons from other gardeners. So, thinking ahead to spring outings, top of my list is the Chanticleer Foundation's garden in Wayne, Pennsylvania; it's a glorious center of creativity and horticultural excellence. The gardeners there are encouraged to talk to the visiting public, so that one can actively participate in the garden's purpose rather than simply be a passive viewer of the beauty that abounds. Someone once told me, when I asked, that all it takes to be a good gardener is patience and an inquiring mind.

And, I might now add, the occasional plank of wood!

Ethne Clarke
Editor in Chief

PS: Join me and contributing editor Gordon Hayward for a garden weekend October 15 and 16 at the Sagamore Resort on Lake George, New York. For more information, visit thesagamore.com.

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A freelance writer, Harrar penned a gold-medal, media-award-winning article for our November 2007/January 2008 issue, about CCD (Colony Collapse Disorder) in honeybees. She lives in Bucks County, Pennsylvania, with her husband, daughter, two dogs, a stray cat, and one beehive.

greg bowman

An agricultural journalist focusing on organic farming and food topics, Bowman wrote the June/July 2010 Pay Dirt piece on resilience. He's helped launch several faith-based agricultural endeavors, one a Community-Supported Agriculture farm on church land in Pennsylvania.

katie standke

A photographer based in Berkeley, California, Standke specializes in the interplay between humans and the environment. Living at the cutting edge of some our country's best efforts in food gardening and design means she happily shoots and eats her way through many a project.

beth botts

Formerly the *Chicago Tribune*'s garden page editor, Botts is a veteran newspaper reporter and award-winning writer. Raised by an organic gardener on Chicago's South Side, she's a Master Gardener and Openlands Treekeeper volunteer. Follow her blog at *growinginchicago.com*.

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Fresh Food Fan

Even more than usual, your latest issue [August/September] certainly grabbed and held my interest. "The Fresh Chef," about Emeril Lagasse, was very good. I know for sure that his philosophy of cooking homegrown produce even more than equals mine. Plus, I know he can and does cook mean cuisine. Wow! My mother wasn't a good cook; she boiled or fried almost everything. Fortunately, I had an aunt who had an organic garden and she cooked very, very well. It all seemed second nature to her. Now, thankfully, I have *Organic Gardening* to read. I'm no great cook—certainly not an "Emeril"—but then again, since I eat a lot of my produce, fresh and raw, right there in the garden, not everything makes it into the kitchen.

Liz Cole
Georgetown, Illinois

Reader Reminiscence
What memories your article about Joanna Reed [Flower Power, "Making Wool Bloom," August/September] brought back. Our garden club had a trip to her house, a tour of her extensive gardens, and a lunch she had prepared herself. In just the short time we were there, she completely changed my outlook on weeds. The farther the beds were from her house, the weedier they were, which didn't bother her in the least. I think this was my first introduction to the need for beneficial insects. I now love my weeds, and if I see that the bees and tiny insects are drawn to them, I make them welcome. Joanna Reed was a wise and wonderful woman who changed my outlook on gardening, for which I will always be grateful.

Dorie Sellers
Berwyn, Pennsylvania

Cats in the Garden
I enjoyed the article "Angels & Demons" [Earth Matters, August/September]. Ms. Ciesinski tells us that cats dislike the scent of lavender. I must dispute this statement based on experience. When I had a small co-op plot, my neighbor's cat would come by, flop on the sidewalk, and deeply inhale the lavender while rolling around as though it was catnip. She also said that most outdoor cats know which plants to avoid. One of our local garden writers warned his readers about plants toxic to cats. His own outdoor cat loved greens and grass of every kind and made the fatal mistake of munching on the straplike leaves of daylilies. Most veterinarians tell cat owners to keep kitties inside for their own safety, regardless of how we humans feel about their "liberty."

Victoria Price
Silver Spring, Maryland

Carbon Search
In the most recent issue [August/September], in Ask *Organic Gardening*, Mark Hutchinson was quoted as recommending the addition of a dry carbon source to

THOMAS MACDONALD

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A deliciously crunchy salad with wholegrains and fiber?

Bravissimo!

Heritage Tomato & Basil Salad*

A fresh and fun Italian-inspired salad.

3 cups	Cherry or grape tomatoes
3 tbs.	Olive oil
3 tbs.	Freshly squeezed lemon juice
1 tsp.	Dijon mustard
1/4 tsp.	Salt, or to taste
1 bunch	Fresh Basil
2 cups	Diced Fennel (or substitute celery)
2 cups	Nature's Path Heritage Flakes
	Fennel fronds, for garnish (optional)

1. In a food processor, blend 1 cup cherry tomatoes with olive oil, lemon juice, mustard, and salt. Transfer mixture to a large salad bowl.
2. Cut remaining tomatoes in halves or quarters. Stir into bowl.
3. Pull basil leaves from stems until you have two tightly packed cups. Rinse well, drain, and pat dry in a clean kitchen towel. Tear basil leaves into bits and stir into bowl along with diced fennel and Nature's Path Heritage Flakes.
4. Let salad sit for 5 minutes, stirring occasionally. Add more salt, if needed.
5. Divide among 4 salad bowls. Garnish with fennel fronds, if you wish.

Makes 4 side-dish portions

This recipe is based on the classic Italian bread salad called panzanella. Instead of using day-old white bread cubes as Italian cooks do, we substituted Nature's Path crunchy Heritage flakes with delicious, wholegrain results. It's fun to use heirloom cherry tomatoes of various colors, or you can substitute plum or beefsteak tomatoes for a moister salad. Turn this side-dish into a vegetarian main dish by adding cubes of vegan cheese, mozzarella, provolone, or crumbled feta.

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**This recipe was created especially for Nature's Path® by Lorna Sass. For more great recipes, check out www.naturespath.com We recommend using organic ingredients whenever possible.*

LETTERS

kitchen composters to reduce fruit flies. What might these dry carbon sources be? By the way, love your new format, and really enjoy Maria Rodale's piece at the end of each issue.

Carol Kopkas
Berea, Ohio

Some dry carbon sources are shredded newspaper, dry leaves, or straw. Visit OrganicGardening.com *for more resources on composting. —Editor*

Regal Rooster

I was not familiar with photographer Matthew Benson's work until I bought the June/July issue. To say he has "good taste in chickens" is an understatement. He accurately captured all of the seemingly needless glory of their plumage and character. His photo of Tyler, the game bantam rooster, took my breath, literally. If a man could embody all it means to be a man in the same degree that little cockerel did for roosterkind, well, the world would be a different place, wouldn't it? I'd like to resolve a minor disagreement I had with someone who said the photographs, particularly of Tyler, were Photoshopped. I'm aware of the ability to fabricate beauty with a computer, but I disagreed and said that what the camera had captured was indeed the little rooster's character. To me, polishing a photographic image is different from the total fabrication of an image whose intent is to portray a value that is innate. One is in respect of beauty, and the latter is in mockery of it. Photography is the one art where the art is in how honestly the photographer has rendered his subject matter. If you tell me Tyler's little "English dandy" pose is computer generated, I'll never put stock in a photograph's ability to capture a glimpse of the soul again.

Dee Anderson
Via Email

Matthew Benson replies: Tyler was captured true to character and without any post-production in Photoshop. There would be no way to either imagine or create that wonderful and proud posture, the turn of his leg or arc of his neck. He would not be out of place on the stage of the Bolshoi. To assume these were manipulated in Photoshop is both to underestimate the chicken and overestimate the resources of technology. (Editor's note: Matthew is at work on a book about photographing the garden to be published by Rodale in early 2012. Maybe he'll include some chicken tips!)

In a Pickle

We have received a few questions about the ingredients in the refrigerator pickle recipe [Provident Cook, August/September]. The recipe should have specified light brown organic sugar (we used Hain's). Dark brown sugar is not recommended. But we didn't forget the salt; this recipe doesn't need any. The vinegars are enough to pickle the cucumbers, and salt-free pickling is heart-healthy.

Credit Due

We apologize for neglecting to credit Michael Hill for the illustration of the landscaping plan on page 50 of the August/September issue.

Right Now at OrganicGardening.com

Before planting a new garden, you must prepare the soil. And that's what we're doing now at *OrganicGardening.com*, so to speak, as we get ready to launch our new website. We're bolstering our content to include even more how-to videos and slide shows, plus growing guides for all sorts of vegetables and ornamentals—with more photos! We'll also be adding classic articles from the *Organic Gardening* archive.

We asked our fans: What's the best garden advice you've ever been given?
When you see an insect pest, wait 2 weeks before taking action to allow the beneficials to come in and solve the problem for you. This is the piece of advice more than 20 years ago that turned me into an organic gardener.

Amy Stewart-Cooper

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TIPS FROM OUR READERS

we love this tip!

"Blended" Leaves

Last fall, we found ourselves raking leaves instead of mowing them, due to our wet weather. We don't burn them, for obvious reasons, so we fixed a wire enclosure to the back of our compost bins and dumped in tarploads of leaves. The wire container filled up in a hurry, and still having more leaves, we wondered if we could use our string trimmer as a giant immersion blender to cut up the leaves, reducing the volume. It worked very well and reduced the full bin to about half. Now we can layer them in our compost bins.

Randy & Irene Fish
Kahoka, Missouri

Separate Pails

When I am weeding and pruning, I carry two kitty-litter pails with me (they hold 20 pounds of litter and have lids and a handle). I use one to hold trimmings that I put into my compost, and the other to hold weeds and trimmings I don't want in my compost. When I am only weeding I use the other pail for a stool.

Debra Van Den Elzen
Plover, Wisconsin

Bagged Potatoes

This year I decided to try to grow my own potatoes, but the "potato bags" I had seen in a garden-supply catalog were expensive. Instead, I used the reusable grocery bags I had pur-

chased for $1 apiece. Just remove the plastic inserts, wash the bags, and turn them inside out. Works like a charm and so much cheaper!

Lucy Steudel
Acworth, Georgia

Bucket Liner

I used to have a compost bucket under the sink but tired of cleaning it. Now I use bread bags. They're thick enough to prevent tears and leaks and can be thrown away after emptying in the compost. It reuses the bag and makes less work for me.

Lorraine Williams
Ansonia, Connecticut

Concrete Solution

In last issue's Letters, someone asked about the safety of pressure-treated lumber for raised beds. In the 1970s, I built beautiful, south-facing raised beds from concrete blocks as an alternative. I painted the south-facing side flat black, creating a heat sink, and had the earliest, biggest tomatoes! They can be made waist-height for more convenient tending.

Melody Masi
West Barnstable, Massachusetts

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Backyard Living

How to design a garden to be experienced and lived in, not just viewed.

Satisfying gardens engage people. This sense of engagement often comes from being *within* a garden rather than walking *past* a garden. When my wife and I sit with friends of an evening on the stone-and-gravel patio at the back of our house, we feel enveloped. We're sheltered by the branches of maple and ash trees and surrounded by flowering shrubs, perennials, and annuals; recirculating water splashes from an urn in the background. Herein lies one of the keys to good garden design: Make places for people.

Too often, we Americans choose a different, vaguely unsatisfying design for our back gardens that is comfortable only in its familiarity: perimeter gardening. As we look for places to plant new shrubs and perennials, we immediately turn to the yard's edges—a narrow band of ground that follows the property boundary and hugs the house. In the middle of this perimeter of planted borders is an expanse of shapeless lawn. This approach to design puts plants at a distance, separating people from the garden.

Start at the Back Door

Given that we usually do the majority of our gardening at the back of the house, it's time to rethink what's going on out there. When I'm designing a garden, the first thing I consider is how to extend the role of rooms at the back of the house out into the garden. If the kitchen is at the back, for example, I recommend building an outdoor dining area right off the kitchen door—that is, construct a paved area out from the entrance (**1** in above photo), erect a grape arbor over it (**2**), and add plants around the edges of this new sitting area (**3**).

Or extend a corridor from the house into the landscape. Stand at the back door, or perhaps an existing terrace or deck, and look out into the yard. Think about building a straight path (**4** in above photo and in the reverse view, opposite) that runs from the door and across the lawn to a destination. At the end of the path, imagine a cozy bench (**5**) or an arrangement of chairs on stone pavement under apple trees—a place for people.

THIS PAGE AND OPPOSITE: DAVID A. WHITE; GARDEN DESIGN/HOMEOWNER: JOE VALENTINE

Once a path and destination have been established, the walkway becomes the spine of new gardens planted on each side of it. Secondary paths (**6**) can run through those beds into other areas of the garden.

When plotting out the locations of planting beds, shrubs, and garden ornaments, keep the sight lines from windows in mind. Each back window provides a view into the garden, underpinning the relationship between house and garden. Upstairs windows will look out onto patterns of paths, garden beds, and the destination for all this—a sitting area in line with the back door.

Give the Lawn a Shape

To give shape to the remaining lawn, and thus adjacent beds, remove enough of the grass to leave a geometric panel of green, outlined with straight or broadly curving edges. Connect the house and landscape by aligning the center of the lawn with the sight line from a window, if possible, so the lawn is centered in the view from that window. Emphasize the sight line by placing a planted pot or a special tree or shrub with unusual foliage color at the far end of the lawn panel. Square, rectangular, and circular panels of grass look best when made on flat ground.

To illustrate this for yourself, sketch a map of the back lawn; by default this will draw the shapes of beds, too. Explore how to run a path from a back door out into the lawn or woods. Then consider how to plant each side of the path, and what its destination is—an arbor for sitting, a table and chairs for eating, a grove of trees under which to set a bench—all in line with the back door.

When garden paths emanate from doors of the house and extend into a secluded area out back, and when they lead through gardens to a sitting or gathering place, you are well on the way to creating engaging places for people. Those paths are like indoor hallways, leading to rooms where you live your life. Furthermore, windows reveal garden views—views of paths, major trees, or garden ornaments. House and garden are visually and physically related; each complements and enlarges the other. Home feels bigger because you've redefined the word *home* to include house and garden. —*Gordon Hayward*

Well Bred

The rise of transgenics or genetically modified food crops is at the root of heated debates around the world. Yet humans have been tinkering with plant makeup for thousands of years, as described in Noel Kingsbury's recently published book, Hybrid: The History and Science of Plant Breeding. *In the first of our occasional "contrarian" columns, Mark Kane summarizes Kingsbury's book and poses a question: "Have we gone too far—or not far enough?" Dan Koeppel, author of* Banana: The Fate of the Fruit That Changed the World, *offers one response to that question on page 20.*

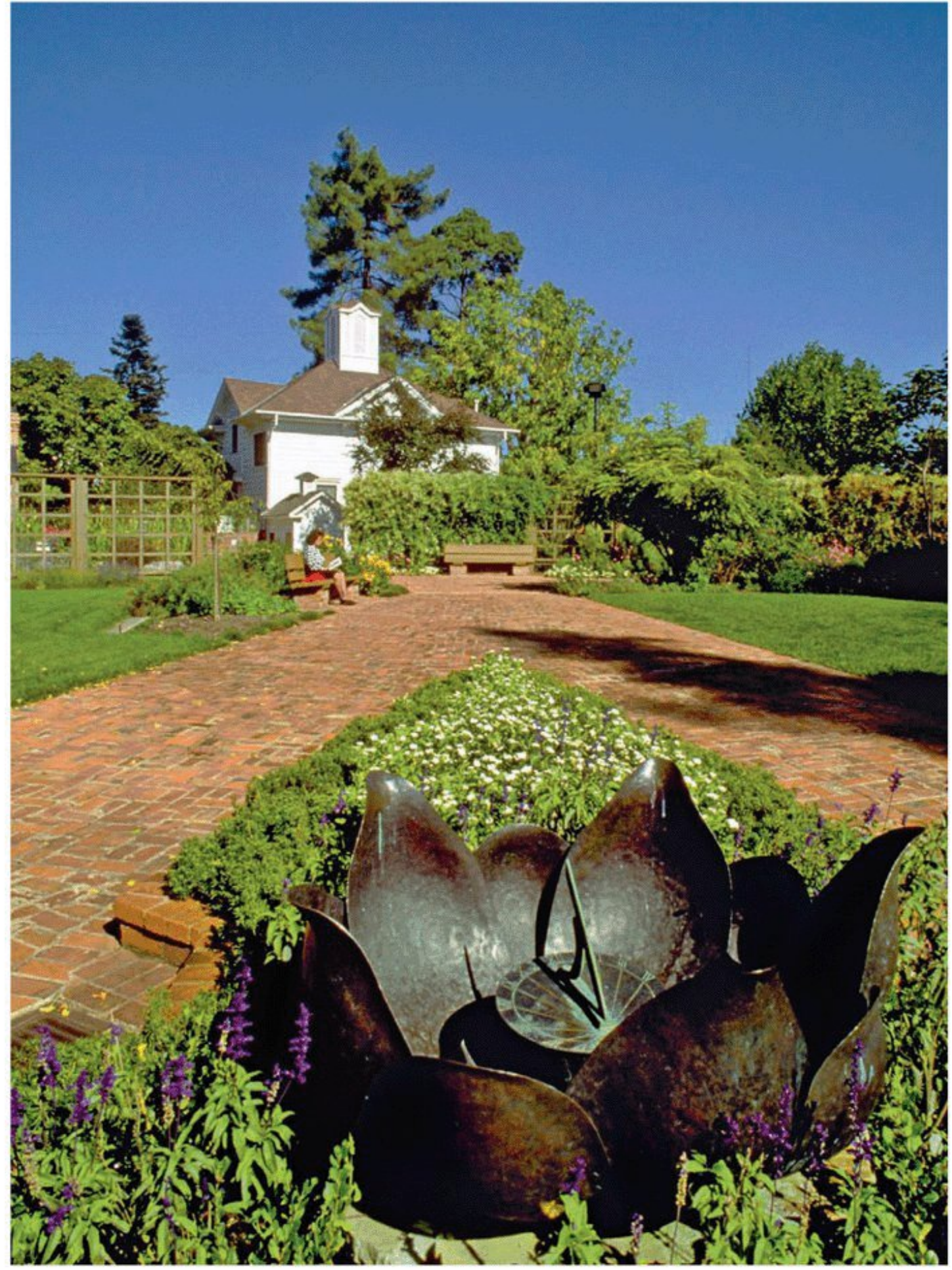
Here's plant breeding at its simplest: Grow 20 lettuce plants, reserve the most vigorous (or prettiest, or tastiest) plant, let it make seeds, plant the seeds the next year, and repeat. By using this technique, known as selection, over many generations, the people of prehistory turned a ragged, hard-seeded plant into corn and three wispy grasses into wheat.

But plant breeding also can be highly complicated, as it is for the corn, cotton, sugar beets, and soybeans grown by farmers today. With increasing frequency, field crops are the outcome of arranged marriages, bearing genes from bacteria poked into their cells to make them resist earworms, rootworms, or, in the case of so-called Roundup Ready crops, the widely used herbicide glyphosate.

How did we reach this point? In the late 19th and early 20th centuries, Luther Burbank, the best known of American plant breeders, performed selection on a vast scale. Burbank also made hybrids, the next step of simple breeding. His 'Alhambra' plum, for example, mingled the genes of seven plum species. Over a career of 50 years, he introduced 800 new selections and hybrids—but because he kept no records, scientists derided his work. Many plants grown today can be traced to Burbank's discoveries, including the 'Russet Burbank' potato, a natural variant of the original Burbank potato; and the Shasta daisy, a hybrid of confused parentage.

Meanwhile, Burbank's peers at universities and nurseries were bringing science to plant breeding. Their inspiration was the rediscovered work of Gregor Mendel, an Austrian priest, who had shown in the mid-19th century that for pea plants, the choice of parents decided the traits of their progeny. By focusing on traits such as disease resistance and vigor, plant breeding developed rapidly. Wheat yields rose 40 percent. Barley and rice made similar gains. Today, selection and hybridization are called "classical breeding" to distinguish them from genetic modification (GM), which works not with parent plants but with their cells and genes.

One type of GM crop is based on a familiar organic insecticide. Only a generation ago, gardeners struggled with cole crops—kale, cabbage, and broccoli—often losing them to caterpillars that ate



A sundial marks the hours at the Luther Burbank Home and Gardens in Santa Rosa, California. The historic property is open to the public, and the gardens display some of Burbank's most famous hybrids.

ROBERT HOLMES/CORBIS

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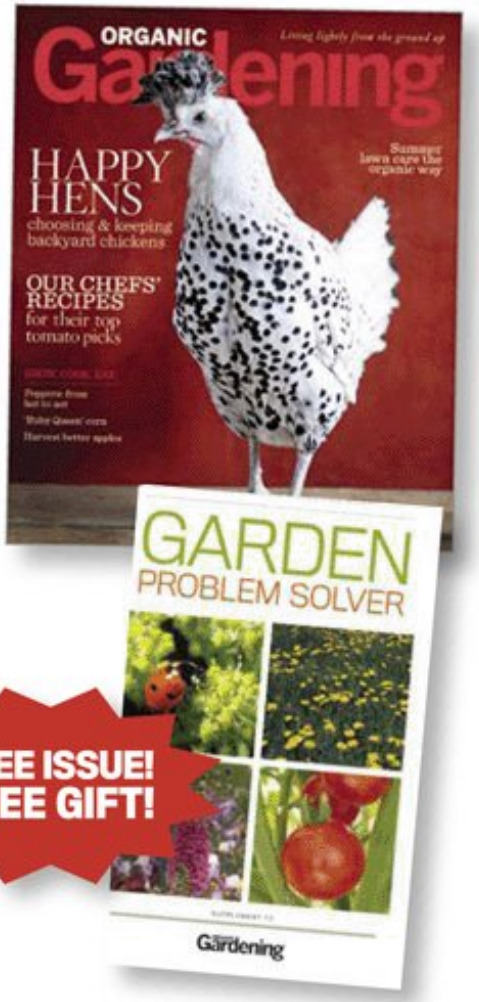

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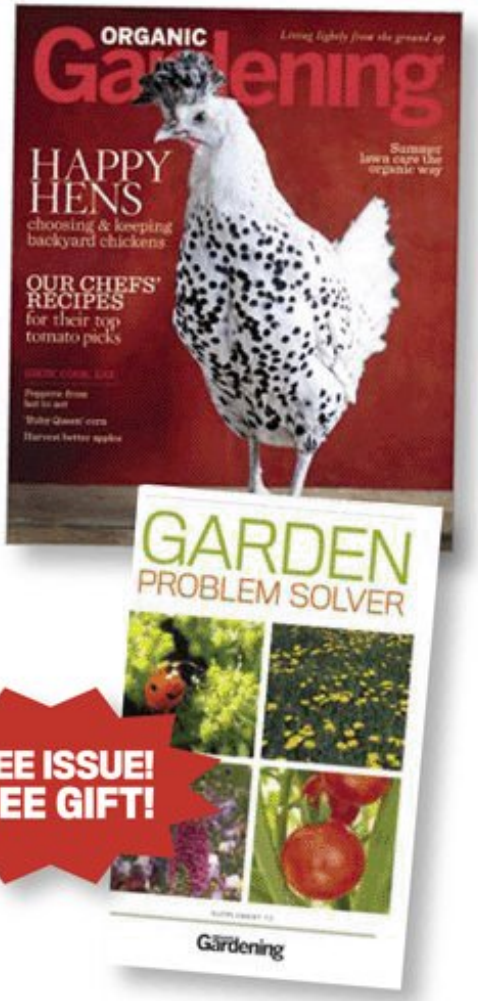

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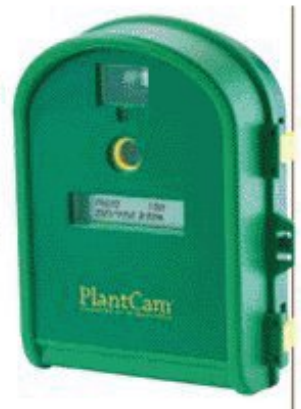

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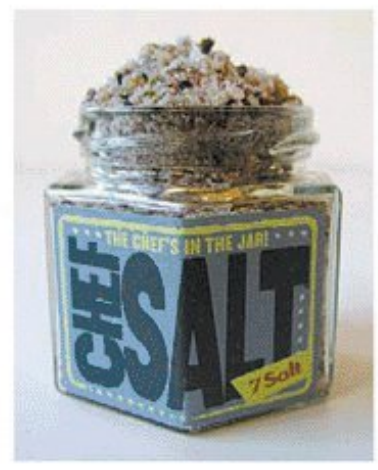

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holes in the leaves. Then came the discovery that a soil bacterium, *Bacillus thuringiensis* (BT), makes a protein toxic to the larvae of moths and butterflies. The protein soon became a product in the form of a powder to be dusted on plants. Caterpillars ate the leaves and the BT protein perforated their intestines. Toxic to the larvae and nothing else, BT was a boon to organic gardeners.

Seed companies soon found a way to insert the BT gene into corn grown by farmers. Now more than half of the corn grown in the United States comes from plants that protect themselves from caterpillars by making the BT protein in their cells. Government agencies have declared that BT corn is "substantially equivalent" to its parent and therefore needs no safety testing. Skeptics say that by eating BT corn we are all participating in a safety experiment without informed consent.

All this is the subject of *Hybrid: The History and Science of Plant Breeding* (The University of Chicago Press, 2009), an evenhanded history of plant breeding by the English horticulturist and garden historian Noel Kingsbury, Ph.D. On the phone from England, Kingsbury said that it's important to look beyond the controversies of genetic science and recognize that "plant breeding is feeding the world." The risks of altering cells must be understood, but so must GM's potential: stronger plants, resistance to pests and diseases, better taste and nutritional value, and higher yields.

Kingsbury has a tempered outlook about safety. "I support graduated testing," he says. "There's no reason to test a blight-resistant potato that derives its resistance from another potato." If the new genes come from a different genus or even further afield—say, from a bacterium—then testing should be rigorous.

GM is currently a near-monopoly of corporations that are unlikely to focus on breeding vegetables, fruits, and flowers for organic growers and gardeners. But that can change. Apple cultivars 'Liberty' and 'Freedom' resist diseases thanks to genes from another apple species, a development that took more than 30 years of classical breeding at three universities. Such an advance can come quickly with GM. Kingsbury writes: "Organic growers have missed a trick in GM. Let's use it to speed the introduction of cultivars that resist pests and diseases." As he notes dryly, it is good to have carrots that do not get carrot fly.

Plant breeding is already turning to the wishes of organic growers, Kingsbury says. "The breeding of crops for organic growers is developing very rapidly, with the Netherlands in the forefront." Could an organic Luther Burbank be next? *—Mark Kane*

Making a Case for Genetic Modification

The banana, probably the world's most popular fruit, is so prone to disease that its very existence is threatened. Ironically, the banana's inherent weakness emerges from a characteristic that helps make it so popular: Bananas are seedless. The fruits develop without the benefit of pollination, their "seeds" reduced to tiny dark specks.

Because cultivated bananas are sterile, they are propagated vegetatively through the daughter plants, or offsets, that can be divided from the mother plant. Vegetative reproduction results in consistent fruits—a benefit for fruit vendors—but the banana's sterility makes conventional breeding nearly impossible. To save the banana, we need the laboratory.

The banana's special biology makes it an ideal candidate for genetic modification (GM). Without pollen, without seeds, there's no chance of contaminating nearby crops. Despite this argument, the future of the fruit isn't promising. The variety we eat, 'Cavendish', is being pursued around the world by a virulent—and incurable by any current means—fungus. James Dale, an Australian biologist funded by the Gates Foundation, recently claimed to have developed a lab-bred variety of the fruit that resists the malady. But he's been unable to launch the field trials needed to complete his research. "Fear," he says, "is winning."

"They're wrong," says Belgian scientist Rony Swennen, referring to a general public that sees GM food crops as something absolutely and universally evil. For the banana, Swennen says, there is no other way. He spent more than a decade working in Africa attempting to develop disease-resistant fruit using conventional hybridizing techniques. It didn't work.

Swennen returned home and established a university laboratory that focused on genetically transforming the fruit; he also developed a cryogenic vault to preserve the banana's biodiversity. (Across the planet, rare breeds of the fruit—including a handful of wild varieties, which are inedible but contain valuable genetic information—are vanishing, succumbing to both sickness and habitat loss.) Swennen's first GM bananas were promising, shortcutting years of traditional cultivation and testing. But field trials in regions where the fungus occurs are sometimes prevented. In Uganda, the world's most banana-dependent country, officials and villagers expressed an interest in testing Swennen's varieties. But the trials didn't happen. There are those, Swennen explains, who oppose genetic engineering of bananas and by so doing, stand in the way of a development that would sustain the diet, economy, and way of life of millions.

It is easy to see genetic modification of our food as pure evil. But perspectives lacking nuance could lead to effects that are potentially even more ugly: starvation, market collapse, and the increased use of toxic chemicals that take a severe toll on the health of banana plantation workers. (Banana consumers are less at risk, as the fruit's thick skin is nonabsorbent and much of the chemical residue is washed off in processing.) The development of a genetically modified banana should be one element of a global program to extend the fruit's diversity and viability as a major food crop. *—Dan Koeppel*

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Cold, Hard Stash

As many of us know all too well, there *can* be too much of a good thing—especially after hauling in a bumper crop of squash from the garden or farmers' market. The only viable option for the bounty is freezing it, which should be done without hesitation. Despite fears to the contrary, most vegetables, fruits, and even herbs will keep in the freezer for several months. And, when ready for use, the produce can be tossed straight into soups, or steamed or boiled like fresh vegetables; there's no need to defrost. Or worry. Just follow our lead.

Pick in the morning. If harvesting from the garden or farmers' market, do it early, when the temperature is coolest and the leaves and stems, fruit and petals are still turgid (filled with water). Keep the produce cool until it's to be prepared for the freezer, so it stays as fresh as possible—no languishing on the countertop for 2 days.

Get to know blanch. Blanching kills enzymes that cause vegetables to discolor and develop off flavors over time. Chop vegetables into even, bite-size chunks (so they can be used in a recipe, straight from the freezer, without having to be cut down from iceberg density) and drop them into boiling water. The timing will vary depending on the vegetable—greens such as spinach or kale need to be immersed only long enough to wilt—but 1 to 2 minutes should be plenty. Transfer the vegetables to an ice bath to stop the cooking, then spread on a towel to dry.

One exception to this rule is tomatoes. Pop them into the freezer whole (the skins should peel off easily when they thaw) or peel and chop or puree them. There's no need to cook first; they'll emerge from the freezer perfect for soups and sauces.

Freeze in single layers. Once the blanched vegetables are dry, spread them on a baking sheet and freeze until solid. Then pour them into zip-top freezer bags and label with a name and date.

Think about future menus. If you're planning to make a squash gratin later, you may want some thinly sliced rounds rather than square chunks. Create a bag of each so you have options. When freezing pumpkin for pie filling, cook it completely, then mash it, so it will be ready to use.

Take stock of your belongings. Make a list of what's been frozen and stick it on the front of the refrigerator. Even if your basil gets hidden beneath a frozen turkey, the list will remind you it's there. Somewhere. —*Elizabeth Schatz Passarella*

Freezing Fruit

• Berries will lose some of their structure when thawed but are still great for smoothies, compotes, or pies. Spread berries in a single layer on a baking sheet to freeze, then pour into a zip-top freezer bag.

• To freeze apples and peaches, peel and slice them, then toss with an ascorbic acid preservative (such as Fruit Fresh) to prevent browning. They will be soft once thawed, so they're best for compotes or pie filling.

Freezing Herbs

• Treat basil like a leafy green vegetable. Blanch it briefly—just long enough for it to wilt; cool in an ice bath, pat dry, and freeze.

• Other herbs can be frozen as they are, sealed in zip-top freezer bags. They may turn brown but will still taste fresher than they would if dried.

• Consider freezing chopped fresh herbs in ice-cube trays. Drop a teaspoon or two of herbs into each cube and fill with water or chicken broth. Pop out the cubes to add to sauces or soups.

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Autumn Fancy

Celebrate nature in transition with a fall wreath.

Made with the colorful but perishable leaves of autumn, this wreath fleetingly captures the beauty of the season. The technique used to craft the wreath also works with longer-lasting evergreen foliage, such as magnolia, boxwood, and fir; but when applied to deciduous leaves that have just begun to turn, the results are brilliant.

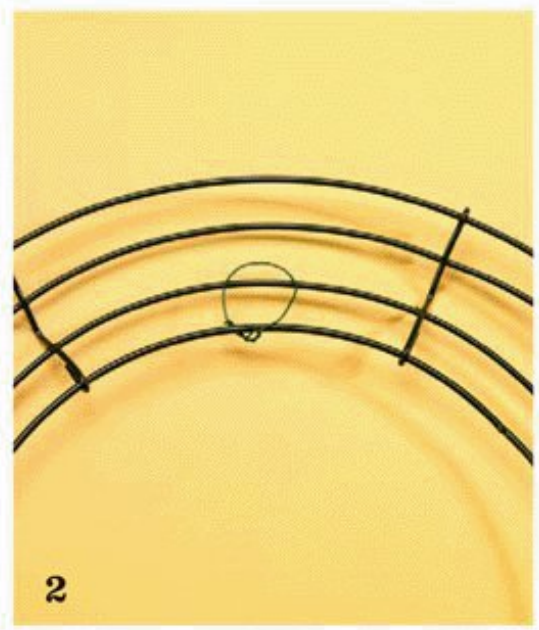
Leaves that are somewhat thick or leathery to begin with will hold up better than paper-thin leaves, which are more likely to shrivel as they dry. For this wreath, designer Mark Kintzel of Allentown, Pennsylvania, collected foliage from a dogwood that displayed a rainbow of fall hues: chartreuse, amber, russet, and bronze. Expect the wreath to last a week or two as a table centerpiece indoors or twice as long when hung outdoors on a door or gate. Because the leaves aren't preserved with chemicals, they can be put into the compost pile when you're done with the wreath.

1. Gather tools and materials: a 12-inch wire wreath frame, a paddle of 22-gauge floral wire, and wire snips. With pruning shears, cut 30 to 40 leafy branch tips, each about 8 to 12 inches long, from trees or shrubs that are starting to show fall color.

2. Twist a 1-inch loop of floral wire and secure it to the back of the frame. The loop will be used later to hang the wreath.

3. Cluster three or more branches in a way that allows the leaves to feather naturally over each other; avoid crushing the leaves. Using a short length of floral wire, secure the stems together. Twist the wire to leave two ends about 3 inches long. Place the bundle of stems flat against the wreath frame and secure it in place with the wire. Snip off the excess wire and tuck the sharp ends behind the stems.

4. Repeat step 3, placing each successive branch cluster so its leaves cover the stems of the previous cluster. Overlap the leaves densely to make a full wreath and hide the form entirely. Tuck the last bundle of branches under the tips of the first. A wreath of this size usually requires 10 to 12 leaf clusters. For variety, consider adding crabapple-laden twigs, sweetgum seed pods, or grass plumes. —*Doug Hall*



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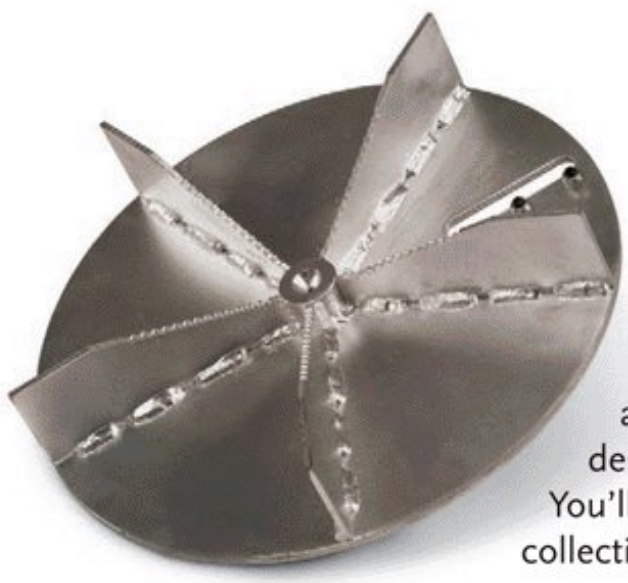

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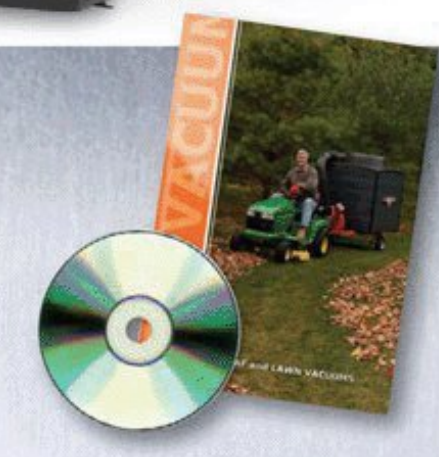

Newman's Own: Organically Grown

Nell Newman's fascination with the environment and its link to food began when she was a free-range child in Westport, Connecticut, wandering her family's sprawling property, often with a fishing pole in hand. She played in the dirt, gardening with tiny tools that her mother, Joanne Woodward, gave her. She watched the birds soar overhead, wishing she could fly. Those early experiences shaped her love of the land and helped her grow an organic business.

When Nell and business partner Peter Meehan came up with the idea of launching an organic division of Newman's Own—founded by her famous father, the late Paul Newman—she expected her father to balk. It was 1992, and, according to Nell, he equated organic food with unpalatable "hippie" meals heavy on whole wheat, brown rice, and tempeh.

Nell, who lives in California surrounded by organic farms and local-food markets, decided to give her father a covert lesson in organic food. She cooked Thanksgiving dinner complete with turkey, stuffing, mashed potatoes, salad, and pumpkin pie. "As he wiped his plate clean, I said, 'How'd you like your organic dinner?' "

That infamous meal, along with a solid business plan and a recipe for organic pretzels (Paul Newman was a pretzel lover), initiated a company that now produces more than 100 organic products, including Pop's

KATIE STANDISH PHOTOGRAPHED AT UNIVERSITY OF CALIFORNIA–SANTA CRUZ FARM

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Corn, Fig Newmans, and chocolate. Newman's Own Organics fair-trade coffee is sold at 650 McDonald's restaurants in the Northeast.

When Nell visits her mother in Westport or travels to New York, she suffers withdrawal symptoms. It's more challenging to readily find organic food on the East Coast. "I go home to Connecticut and spend all day shopping," Nell says. "I get a little miffed when I can't find what I want. But when I'm visiting the East Coast I have to let go of my purely organic attitude."

At home in California, however, she says, "I'm spoiled. There isn't anything I can't find. We're in the produce belt, and there is so much available in season. And you don't have to go to a different section of the store to get organic salad dressing or snacks."

Newman's Own Organics was one of the first brands to move from the "natural and organic" section of markets and mingle with the mainstream fare. "As public acceptance of organic food has increased, the products have gone beyond the initial natural-foods stores, such as Whole Foods, to include more traditional supermarkets," Nell says.

The company continues to be a leader in the snack-food area—its cookies and pretzels are top sellers. Licorice twists—the first made with organic ingredients—recently were added to the lineup, in flavors such as pomegranate and tangerine, along with the standard black and strawberry. The company also is noting growth in the pet-food category.

> "The growth of farmers' markets is pretty remarkable. There is a definite trend toward consumers buying local, buying organic. Those numbers are increasing."

The growing success of organic products has influenced some chains and big-box grocers to create their own store brands. While this is good news for organics in general, it is distressing to many manufacturers like Newman's Own Organics. "We do so well, [certain grocers] knock off similar products under their own private labels and force out a lot of established brands," Nell says.

Nonetheless, Nell is encouraged by the growth. "Despite the economic downturn, people are still buying organic," she says. "And the growth of farmers' markets is pretty remarkable. There

is a definite trend toward consumers buying local, buying organic. Those numbers are increasing."

Supporting organic farming practices also has a domino effect. Newman's Own Organics coffee—certified organic and fair trade—is grown on about 7,500 acres in Guatemala. "I can't even begin to estimate how many farmers, children, and birds are thriving in the resulting ecosystem," Nell said in a speech at the San Francisco Botanical Garden last year.

Those coffee sales, in partnership with Green Mountain Coffee, have exceeded expectations. It helps that the coffee is offered in McDonald's restaurants in New England and New York, introducing it to consumers who may never have tried organic coffee.

Although nationally less than 5 percent of food sales are organic, Nell believes the organic movement will only grow. "As people learn more about nutrition, where their food comes from, combined with the increasing availability of organic foods in all types of stores, not just supermarkets, but Walmart, Costco, and Target, the demand will increase and more acreage will be devoted to organics," Nell says. "First Lady Michelle Obama's role in childhood obesity and nutrition education is a definite positive and will help in the continued growth of the organic industry."

Newman's Own Organics has grown from one product—pretzels—nearly 20 years ago to 160 products today. Product sales generate funds for Newman's Own Foundation, which has donated more than $285 million to charity since 1982. The philanthropic legacy begun by Paul Newman endures in his daughter.

Nell has her father's recipe for the salad dressing that launched Newman's Own. When she makes it at home, she uses organic ingredients, and she guards the family secret. "I think I would be shot before I would give it away," she says with a laugh.

Nell also carries on her mother's love for gardening in her own small backyard garden. In addition to greens, she grows peas, raspberries, kale, and grapes. "The grapes are a blessing and a curse," she says. The 'Suffolk Red' and 'Bronx Concord' grapes are so productive, "we can't eat them all."

Nell also is enamored of her fruit trees, including a 'Babcock' peach that produces delicately flavored white fruits, a 'Meyer' lemon, and a fig tree. She's not a fan of figs, but her mother loves them. "So in a very un-socially-responsible manner, I FedEx figs to my mother," Nell says. *—Jeanne Ambrose*

For more information, see Find It Here on page 70.

the WILD SIDE *of bulbs*

This fall, plant some spring-flowering bulbs in a style that imitates nature.

By Beth Botts

BRAVE WHITE SNOWDROPS RISE ABOVE THE BROWN CARPET OF LAST YEAR'S LEAVES. SKY BLUE SCILLA BLANKETS A LAWN. CLUMPS OF YELLOW DAFFODILS STRUT ACROSS A SUNNY MEADOW. AND ALL OF THEM FLOWER YEAR AFTER YEAR WITH LITTLE OR NO CARE.

When the growing conditions are to their liking, many spring bulbs naturalize in the landscape, reblooming and even spreading happily. Not all: Gardeners who want high-maintenance red tulips will probably have to plant a new batch every fall. But a squad of sapphire blue grape hyacinths can take care of itself. Naturalized bulbs bring spring color and a wild-child air to the far reaches of a garden. They can be unexpectedly charming in the often-neglected spaces under shrubs or around the base of trees, or as a sweet treat in lawns.

To survive and thrive, bulbs have a few requirements: sunlight, soil that drains very well, and neglect. Naturalized bulbs are ideal plants for organic gardeners, because pests and diseases are rare and fertilizing is unnecessary. Summer watering and "tidying up" are downright counterproductive.

Natural Instincts

Botanically speaking, *naturalized* refers to a nonnative plant that becomes established in a new region, growing and reproducing as if it is a wild species. Naturalized bulbs reproduce by setting seed for the wind to scatter as well as by forming new bulbs beneath the soil; they return every year in greater numbers. The unquestionable naturalizers are plants such as Siberian squill (*Scilla siberica*). "It will spit seeds like crazy," says Jill Selinger, manager of continuing education at the Regenstein School of the Chicago Botanic Garden in Glencoe, Illinois, who teaches courses on hardy bulbs.

But though catalogs often sell "naturalizing mixtures" of daffodil bulbs, few daffodils set seed in the United States, according to William B. Miller, professor of horticulture at Cornell University in Ithaca, New York. Many varieties of daffodils (*Narcissus*) come back year after year and decade after decade, in clumps that get bigger as the bulbs clone themselves underground. To spread the daffodils elsewhere, however, you have to dig up the clumps, separate the bulbs, and replant them. Some would say that means *Narcissus* only perennialize, not naturalize. But Miller is willing to be generous. "When something's perennial for 50 years, we might have to give it credit for naturalizing," he says.

To bloom year after year, bulbs need all their leaves to collect sunlight. Energy reserves, captured from the sun through photosynthesis, are stored in the bulb. That's one reason bulbs often live longer and spread better in out-of-the-way spots, where nobody is tempted to trim off the leaves or gather them in a clumpy knot once the flowers have faded.

Leave Those Leaves

Interference with maturing bulb foliage brings a penalty. I love the look of blue scilla carpeting old lawns. But it doesn't spread well in mine, because the appointed lawn mower gives the grass a military haircut early each May. He slices off the flowers before they become seeds and deprives the plants of half their leaf area so they can't gather enough sunlight to make many more bulbs. The scilla that do best are the volunteers among my shrubs, where mower blades can't reach them.

Garden and landscape designer Jacqueline van der Kloet of Weesp, near Amsterdam, loves to scatter bulbs in grass—crocuses, glory-of-the-snow (*Chionodoxa*), and striped squill (*Puschkinia*), as well as scilla. "I choose certain areas of lawn where I plant bulbs," she says. "I mow the rest of the lawn and let the areas with ripening bulb foliage be a different texture for a while." It's best to wait until the bulb foliage has died back completely before mowing.

Early bulbs do well under trees, where they get enough sunlight to finish their seed and bulb business before the trees unfurl their leaves. The tree will thank you, because after you plant the bulbs you won't have to disturb its roots again. And the leaves that fall make natural, free, effortless mulch. *(continued on page 37)*

Previous pages: *Grape hyacinths in dazzling abundance carpet a Pennsylvania park.* ***Opposite top:*** *A white form of* Chionodoxa *holds its blossoms skyward.* ***Opposite bottom:*** *Lavender moss phlox* (Phlox subulata) *is the backdrop for a free-spirited planting of 'Hawera' daffodils, 'Lady Jane' tulips, and royal blue* Muscari.

THIS PAGE: ROB CARDILLO/ROB CARDILLO PHOTOGRAPHY. PREVIOUS PAGE: CHRISTA NEU

Daffodils have been known to thrive untended for decades, as in this Pennsylvania woodlot. ***Opposite:*** *A long sweep of 'Honeybird' daffodils turns a plain lawn into an extraordinary garden vista.*

THIS PAGE: CHRISTA NEU. OPPOSITE: ROB CARDILLO/ROB CARDILLO PHOTOGRAPHY

Daffodils Everlasting

Hybrid daffodils (*Narcissus*) rarely spread by seed; in fact, many cultivars are sterile. But *Narcissus* live for decades, especially in USDA Plant Hardiness Zones 3 to 7, and readily reproduce by "clumping up," or accumulating underground bulbs. They also are distasteful to deer, which prolongs their life expectancy.

For an unstudied, naturalistic look in a lawn or meadow, mix *Narcissus* species and cultivars, suggests Jill Selinger, manager of continuing education at the Chicago Botanic Garden. Include white, creamy, pale lemon, and bicolor daffodils as well as the standard yellow trumpets, with a variety of heights and flower shapes for texture. Intermingle early, midseason, and late varieties for a long season of bloom.

Beneath trees, be sure to use early or midseason cultivars; late bloomers will be too shaded by the canopy of leaves. In general, daffodils flower best in full sun. "People try to plant them in too much shade in the North," says Scott Kunst of Old House Gardens Heirloom Bulbs.

In a 2004 study, Cornell University's Flower Bulb Research Program studied 60 cultivars of *Narcissus* (out of 20,000) for four years to see how well they lasted and clumped up. Most did better in Ithaca (Zone 5) and Long Island, New York (Zone 6), than in Clemson, South Carolina (Zone 7). Among the best performers in the North were 'Accent', 'Carlton', 'Ice King', 'Jack Snipe', 'Peeping Tom', 'Jenny', and 'Tête-à-Tête'. The best southern clumpers included 'Baby Moon', 'Jenny', 'Quail', and 'Slim Whitman'.

In southern gardens, one *Narcissus* species often does spread by seed, says garden-book author Scott Ogden. It is the original wild jonquil, *Narcissus jonquilla*, which is sometimes called little sweetie. Wild jonquils have slender leaves and bunches of tiny, intensely fragrant yellow flowers.

Bulbs to Naturalize

Which bulb species will thrive and spread depends on climate, soil, and other conditions. Here are some suggestions beyond daffodils.

Snowdrops. Often blooming through the snow, the white bells of common snowdrops (*Galanthus nivalis*) or giant snowdrops (*G. elwesii*) are the classic heralds of spring. They do best in a dry site. They rarely reseed, but the clumps will expand if left alone. Hardy in Zones 3 to 9.

Crocuses. The best naturalizers are the tiny, early species crocuses with delicate grasslike leaves, such as silvery lilac *Crocus tommasinianus* and yellow *C. chrysanthus*. Zones 3 to 8.

Siberian squill. *Scilla siberica* displays jaunty blue blooms on 4-to-8-inch plants. Zones 5 to 8.

Striped squill. *Puschkinia scilloides* blooms in early spring with *Scilla*, bearing bunches of pale blue flowers striped darker blue. Zones 3 to 9.

Glory-of-the-snow. *Chionodoxa forbesii* has tiny star-shaped flowers in pink, white, or blue. If it's happy, this early bloomer reseeds. Zones 3 to 9.

Grape hyacinths. Deep blue *Muscari armeniacum*, whose midspring spikes resemble tiny bunches of grapes, is the most popular of these hardy, durable bulbs. Zones 4 to 8.

Spanish bluebell. *Hyacinthoides hispanica*, with tall spikes of sky-blue bells, clumps up readily and often reseeds if undisturbed. Zones 4 to 10.

Ornamental onions. The best ornamental onions for naturalizing have loose, casual flower heads and may reseed so well that you find yourself weeding. Among the good bets: white-flowering *Allium triquetrum* (Zones 9 to 10); yellow lily leek (*A. moly*, Zones 3 to 9); and lavender-flowered *A. schoenoprasum* (plain old chives, Zones 5 to 11).

Summer snowflake. Like a pumped-up snowdrop, *Leucojeum aestivum* blooms in late spring and into summer. Zones 3 to 9.

Choices for southern gardens. Bulbs that multiply with abandon in the North may not be persuaded to naturalize south of Zone 8 or 9. Southern bulb expert Scott Ogden recommends red spider lily (*Lycoris radiata*) and golden spider lily (*L. aurea*), which have clusters of extravagantly curlicued flowers in late summer in Zones 8 to 10. Oxblood lily (*Rhodophiala bifida*, Zones 9 to 10) blooms in summer with deep red trumpets. Crocuslike rain lilies (*Zephyranthes* spp., Zones 8 to 11) in pink, white, and yellow are another good bet.

For more information, see Find It Here, page 70.

***Right, top:** Winter aconites* (Eranthis hyemalis) *are among the first bulbs of the season. Because of their preference for light shade and moist, rich soil, they're often planted under shrubs and in woodland gardens, where they form slowly expanding colonies.* ***Bottom:** Grape hyacinths emerge from a low carpet of moss phlox.*

(continued from page 33)

"People sometimes think naturalizing means no care, but no plants are like that," cautions Scott Kunst, owner of Old House Gardens Heirloom Bulbs, a mail-order nursery in Ann Arbor, Michigan. When bulbs fail to naturalize, it's usually from too little sunlight or too much water. Watering bulbs in the summer is more likely to rot them than help them, which makes bulbs incompatible bedmates for thirsty annuals and perennials (or irrigated lawns).

Their ancestry explains it: Most spring-blooming bulbs come from high, rocky places in southern Europe, Central Asia, and the Middle East, where they wait out cold winters and sprout when the snow melts in the mountains. They flower, scatter their seeds, store up nourishment in their bulbs, and go dormant underground before the baking heat of dry, windy summers. That life cycle makes many bulbs suitable for the mountainous West, says Scott Ogden, author of *Garden Bulbs for the South* (Timber Press), who divides his time between Colorado and Texas.

How and When to Plant

To naturalize bulbs, plant them in fall before the first hard frost. Buy plenty; this is not the time to invest in expensive named varieties. Van der Kloet often mixes two or three compatible species of bulbs in a bucket and plants them together.

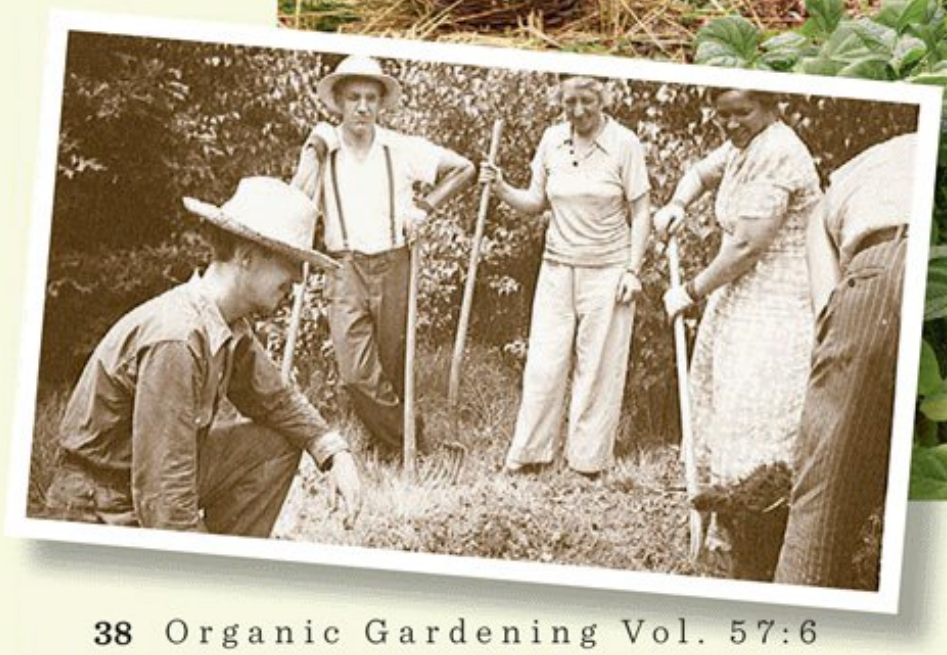
Pick an area with well-drained soil where you are willing to shrug off yellowing foliage. Scatter the bulbs by handfuls and plant them where they fall, so they are spaced irregularly, like wildflowers. To plant small bulbs in a lawn, peel back a section of turf, tuck bulbs in, and fold the sod back. Water. Then walk away.

Come spring, long after you've forgotten the slight effort of planting them or exactly where it was, you'll be charmed by the self-assured appearance of flowers that have made themselves entirely at home. ●

Below: *Although delicate of hue,* Crocus tommasinianus *makes a bright splash when naturalized in generous quantities.*

THIS PAGE AND OPPOSITE: ROB CARDILLO/ROB CARDILLO PHOTOGRAPHY

CELESTIAL ★ GARDENING



By Sari Harrar ~ Photographs by Robyn Lehr

At Threefold Farm in upstate New York, the roots of the biodynamic movement in America run deep.

★

Dressed in worn leather boots and jeans, Mac Mead reaches between Swiss chard seedlings to scoop up handfuls of dark, moist earth. It's a breezy spring morning in Threefold's historic Pfeiffer Center garden in Chestnut Ridge, New York—America's first biodynamic garden.

"Everything needed to heal the earth can come right from your own garden," says Mead, the center's program director, as the soil filters through his fingers. "That's the heart of biodynamics—a partnership with the forces of the earth and the cosmos."

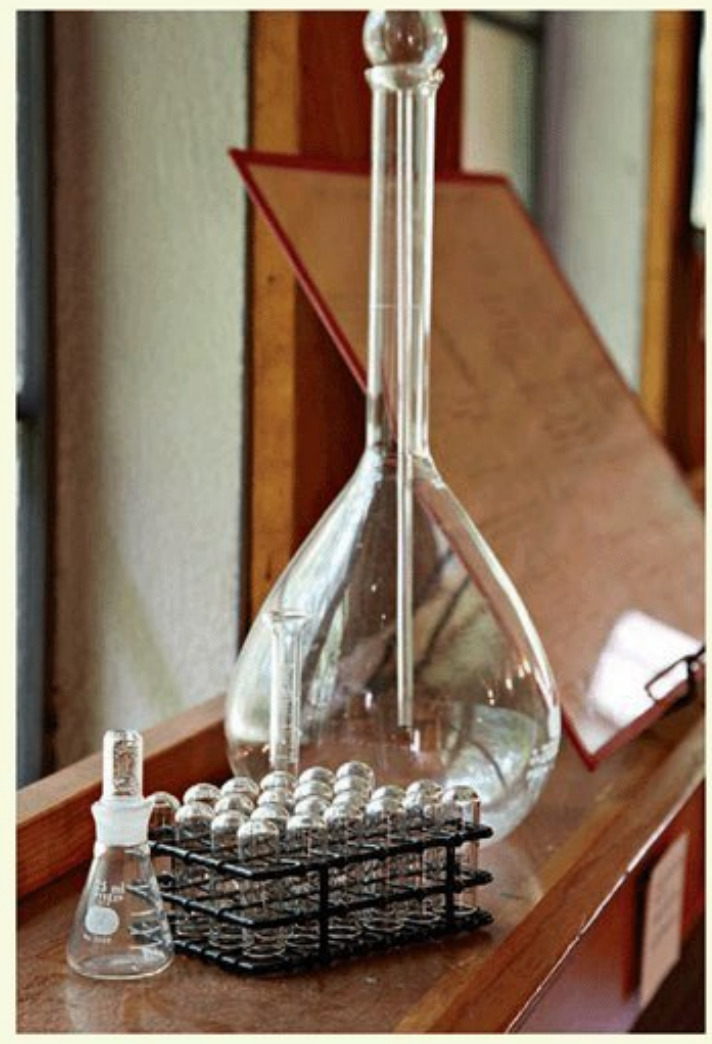
If biodynamics (BD for short) sounds a bit mystical, that's because it is—yet a growing community of proponents ranging from backyard gardeners to small-scale fruit, vegetable, and dairy farmers to commercial winemakers claim big results from its unusual techniques. These include tracking the movements of the moon and stars to guide planting and cultivation, using composting techniques that employ herbal preparations to enhance the breakdown of organic matter, and spraying specially aged manure and silica elixirs on beds and plants to focus the growth-promoting powers of soil, light, and air.

"Biodynamics is all about rebuilding healthy soil, growing healthier food, and building a community of people around that," Mead says. "And in the U.S., it all started here in this garden."

Founded in 1926 as Threefold Farm, this peaceful oasis is just 30 miles from New York City—yet worlds away from the malls and interstate traffic jams just up the road. Here, honeybees buzz in a tidy apiary. There's a small orchard of dwarf apple and pear trees. Phlox, mayapple, and bleeding heart bloom in exuberant, half-wild borders. Inside the fenced vegetable garden, cover crops of crimson clover and blue-green rye ripple in the wind. Onions and peas, lettuces and radishes—30 vegetable varieties in all—reach for the sun.

Look closer, and there are signs of the garden's biodynamic roots everywhere. This beyond-organic approach has been practiced here for most of the past 84 years. A planting calendar based on lunar cycles hangs in the garden shed. The 68 beds in the vegetable garden are raised—BD practitioners believe this enlivens the soil. There are big patches of chamomile, yarrow, and valerian—herbs added in small quantities at specific places in a compost pile to improve the conversion of garden and kitchen scraps into rich, moist humus. And a barrel of stinging-nettle tea—with a smell so pungent it makes my eyes sting—waits to be used for watering vegetables. (Tomatoes love it.)

"Biodynamics is definitely spiritual," says assistant gardener Megan Durney. "But there are no hard-and-fast rules. Add pieces of it to your gardening—you don't have to do everything. And you don't have to take it on faith. Experimenting and being skeptical are encouraged. See for yourself what works. That's what I do."



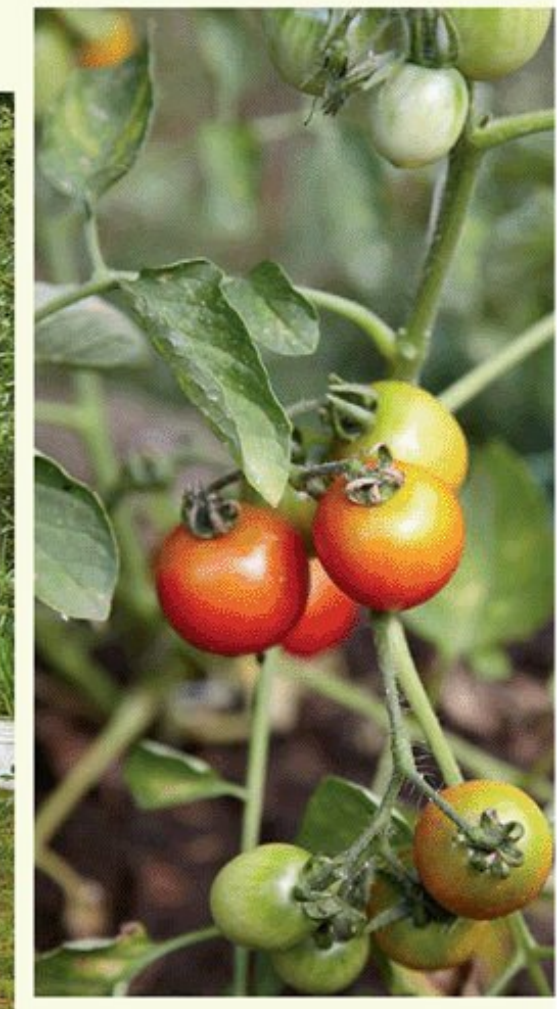
BLACK & WHITE HISTORICAL PHOTOS COURTESY OF THREEFOLD EDUCATIONAL CENTER

Opposite: *Threefold Farm was started in 1926 by followers of Rudolf Steiner, the founder of biodynamic agriculture, and has been cultivated that way for 84 years. The garden itself is named for Ehrenfried Pfeiffer, who studied biodynamic growing methods in his laboratory at the farm.*

The Organic–Biodynamic Connection

Biodynamics and organic gardening have much in common, including a shared moment of rebellious, chemical-free history—with connections to this little plot of land where renowned biodynamic scientist Ehrenfried Pfeiffer spent 17 years researching BD growing methods. The center is named for him, and his old lab is just up the hill. While Pfeiffer wasn't the first to bring BD to America from Europe, he was an important early leader—working in Switzerland with the founder of biodynamics, Rudolf Steiner, and running a successful BD farm in Holland before leaving Europe to come to America in the 1930s.

In Pennsylvania, Pfeiffer crossed paths with J.I. Rodale, founder of this magazine and of America's organic-gardening movement. In the 1930s and 1940s, it took about 2 hours to drive between Rodale's experimental farm near Emmaus, and Kimberton, where Pfeiffer was creating a model biodynamic farm and training center. "These were passionate men with



big personalities and strong opinions. Their conversations must have been fascinating," says Bill Day, development coordinator at Threefold Educational Center (parent of the Pfeiffer Center and of the other community and educational organizations on the propery's 140 acres, including a restaurant, a food co-op and a Waldorf school).

Both men were intent on showing the world an alternative to the chemical-based agriculture they feared was sapping the earth's fertility and leaching nutrients from food. Rodale funded some of Pfeiffer's early experiments, including one in which mice fed an organic diet were found to be less irritable and have fewer digestion problems than those on conventional chemically raised feed. Rodale published Pfeiffer's book *The Earth's Face and Human Destiny* in 1947 and commissioned Pfeiffer to write for *Organic Gardening*.

"The soil itself is now considered a living being," Pfeiffer wrote in the pages of this magazine 62 years ago. "It dies when it is abused and mineralized. It is sustained when organic methods are practiced."

Beyond Sustainability

Today, the Pfeiffer Center is teaching the world how to garden biodynamically. There's a yearlong training program for aspiring BD growers, weekend workshops for backyard gardeners, and a program called the Outdoor Lesson that invites schoolchildren from local public schools to get their hands dirty in the garden—and taste the results.

"For years, biodynamics was a small movement—it's better known in Europe and Australia," Mead says. "Now, more small farms, orchards, and vineyards are adopting it. So are CSAs [Community-Supported

Four Ways to Create a Biodynamic Back Yard

"Biodynamic practices are logical—it's just a different kind of logic than an organic gardener may be used to," says program director Mac Mead of the Pfeiffer Center. Get your feet wet with any, or all, of these basic practices.

Follow a celestial garden calendar. The idea that the moon and stars subtly influence plant growth is a cornerstone of biodynamics. But you don't have to study the night sky; just follow the annual *Stella Natura*. Illustrated with artwork and essays on BD principles, this calendar tracks the passage of the moon through the 12 constellations of the zodiac each month, indicating optimal times to work with a plant's roots, leaves, flowers, or fruit (a category that includes many vegetables, nuts, and seeds). A "root day" in spring, for example, is the perfect time to plant carrots or beets. But it's not a rigid system—if rain or a busy schedule get in the way, just do the best you can. Consulting the cosmos should "never paralyze or unduly postpone one's work," the authors say.

Mist with a manure or silica preparation. Mead recommends two for gardeners new to BD:

Preparation 500—made from cow manure buried in the earth to soak up energy—is mixed in tiny amounts into water, then sprayed on soil in early spring to promote root growth. "It helps the earth hold nutrients, air, and water and give them to the young plants," Mead says. "We see more consistent growth—instead of some seedlings and transplants doing well, virtually all do well."

Preparation 501—made from quartz crystals ground to a fine powder called silica—is sprayed later in spring and summer, to help leaves take in sunlight. "It's beautiful in the garden when silica is sprayed," says Mead. "We usually spray in early

Agriculture farms] where you can buy into a share of the harvest. You can buy biodynamic garden seed and find certified, biodynamic produce at natural-food stores. I think people who know about organics are looking for something more spiritual in the garden—and in their food. This goes beyond sustainability to resupplying the earth with what it really needs. We believe that's our responsibility."

One backyard gardener who's convinced is Richard Makowski of River Vale, New Jersey. Makowski says he tried the biodynamic planting calendar a few years ago "for the heck of it"—and saw his winter squash yields triple. "My wife says the vegetables are sweeter," he says, taking a break from planting a bed at the Pfeiffer garden. "I didn't even believe this stuff at first. And maybe you don't have to. But I've never met a gardener who isn't spiritual on some level." •

morning. The rising sun shines through the mist. And the plants and trees seem to lift themselves up a little bit higher afterward." Silica helps plants absorb light more effectively, biodynamic practitioners say, resulting in produce with a higher nutrient content.

Try biodynamic seed. Collected from plants raised on biodynamic farms, this seed costs more (a small packet of 25 tomato seeds, for example, might cost $3), but fans claim faster germination and better yields. The major supplier in the United States is Turtle Tree Seed, based in Copake, New York, which carries vegetable, flower, and herb seeds. Some seed meets the strict requirements of the U.S. Demeter Association, the certifying organization for biodynamic products.

Learn more. The Pfeiffer Center garden is always open for visitors; the center also hosts workshops throughout the year. Visitors can sample garden produce in-season in creative meals prepared by award-winning chef Anthony LoPinto at the Threefold Café, located across the street on the campus of the Threefold Educational Center.

For more information, see Find It Here, page 70.

Clockwise from far left:

- ***Bees on a mint blossom; like organic gardening, biodynamics encourages beneficial insects and eschews chemicals.***
- ***Jars filled with biodynamic preparations await use. Small amounts are diluted in water and either watered in or sprayed as a foliar feed.***
- ***Stinging nettles are used to make plant tea.***
- ***Views of the 3-acre Pfeiffer Center garden show its long-lived abundance. Work is done with hand tools, not machinery.***
- ***Gardeners spray Prep 500 on the plant beds.***

A carefully measured tap with a hammer will crack open a pecan perfectly, revealing a brown nut as beautiful as it is tasty. ***Opposite:*** *Pecans develop inside their green husks.*

go nuts

NUT TREES ARE A LONG-TERM INVESTMENT WITH DELICIOUS POTENTIAL.

By Marty Ross

A certain summery quality lingers in the shade of a walnut tree or in the soaring architecture of a pecan orchard. A handful of homegrown nuts captures the feeling better than any snapshot: Nut trees are beautiful, and eating nuts you've grown yourself is a rewarding experience.

"A lot of folks hesitate about planting nut trees—they have a preconceived idea that they are difficult. But nuts are no more difficult than anything else, once you learn what to do," says Barbara Fetchenhier, the gardener in charge of fruits, nuts, and berries at the Heartland Harvest Garden at Powell Gardens in Kingsville, Missouri, just outside Kansas City. The garden is a 12-acre edible landscape, and staff gardeners started growing nuts of all kinds several years before the showplace garden opened in 2009. Pecans, walnuts, chestnuts, hazelnuts, hardy almonds, and pine nuts are all part of the garden's plan.

Nut trees have great character when they are young and become increasingly majestic with age. It takes a few years to nurture them from sapling to first harvest, and even then, many need cross-pollination from a different cultivar to fulfill the promise of homegrown nuts. With the notable exception of pecans, they must grow in soil with excellent drainage. When you grow nuts, you'll make lots of friends in nature: Nut trees are fantastic habitat trees; besides squirrels, they attract birds and other wildlife. You don't grow nuts if you're not willing to share.

On the following pages are some choice nuts and suggestions on how to grow them.

1

THIS PAGE : GERRY WHITMONT/GARDEN PICTURE LIBRARY/PHOTOLIBRARY. OPPOSITE: THOMAS MACDONALD. NUTS SHOWN IN STILL LIFES COURTESY OF QUEENS NUTRITIONAL PRODUCTS/QUEENSNUTRITION.NET

2

Pecans (1, shown on pages 42–43)

- *Carya illinoinensis*
- Grow 70 to 100 feet tall
- Hardy in USDA Plant Hardiness Zones 5 to 9

Pecans are the nuts of choice for southerners. Pecan trees, with their handsome vase-shaped habit, provide light shade and are grown as street trees in southern states. Despite their slightly messy habit in the landscape, pecans are delicious, nutritious, and easy to grow, if you have room for them.

Start with container-grown, grafted trees recommended for your area, says Wes Rice, a pecan specialist in Oklahoma and author of *Pecans: A Grower's Perspective*. 'Pawnee', an especially hardy and early-ripening cultivar with large, flavorful nuts, is one of his favorites; 'Kanza', also known for its cold-hardiness and excellent flavor, is disease-resistant and a good pollinator for 'Pawnee'. Grafted pecans will produce nuts about 5 to 7 years from planting. Many cultivars are known for the habit of bearing every other year. Pecans live and produce nuts for more than 100 years. Your great-grandchildren will thank you for choosing a pecan.

Chestnuts (2)

- *Castanea dentata* (American), *C. mollissima* (Chinese), and hybrids
- Grow 30 to 60 feet tall, depending on type
- Hardy in Zones 4 to 8

Chestnut blight was introduced in trees imported from Asia in the early 1900s, and a native American tree of the eastern woodlands was wiped out. Chestnuts were prized for their valuable shade, beautiful wood, and abundant nuts. Today, trees grown for their nuts in the United States are hybrids of American and Chinese chestnuts, such as the Dunstan hybrids, which bear "large, sweet nuts that are easy to peel," says Debbi Gaw of Chestnut Hill Tree Farm in Florida. They are vigorous, hardy trees that are easy to grow and begin to bear nuts after about 3 to 5 years, she says.

Chestnuts bloom in midsummer, with eye-popping clusters of slim bottlebrush flowers that stand out against the tree's dark green serrated leaves. Hummingbirds are especially attracted to the flowers. Chestnut trees also support 125 butterfly species, according to Douglas Tallamy, author of *Bringing Nature Home*.

Walnuts (3)

- ***Juglans nigra*** **(black walnut) and *J. regia* (Persian or English walnut)**
- **Grow 80 to 100 feet tall (black walnut) or up to 50 feet tall (Persian walnut)**
- **Hardy in Zones 4 to 9 (black walnut) or Zones 6 to 9 (Persian walnut)**

Walnuts are big, beautiful trees with a gracious canopy. They are among the last trees to leaf out in spring and are often the first to lose their leaves in late summer or early fall. Walnuts are the second-largest nut crop in North America (almonds are the largest); most of the commercial production comes from Persian (also called English) walnuts grown almost exclusively in California, according to William Reid, nut tree crops specialist at Kansas State University and coauthor of *Fruit and Nut Production*. Black walnut is a hardy native tree and a host plant for caterpillars of the spectacular luna and regal moths. Grafted trees produce nuts in 4 to 6 years. Walnuts are wind pollinated, and cross-pollination with another cultivar improves yield. Black walnuts have a harder shell and a more robust flavor than Persian walnuts.

Growing other plants with black walnuts can be a challenge, as these trees produce juglone, which is toxic to some vegetables, fruits, and garden plants. Toxicity may extend 50 to 80 feet from a mature tree. The juglone from Persian walnuts is not as strong, but they are often grafted onto black walnut rootstock. The best thing to plant under walnut trees is a picnic table.

Almonds (4)

- ***Prunus dulcis***
- **Grow to about 30 feet tall, with equal spread**
- **Hardy in Zones 7 to 9**

Mediterranean climates suit almonds best: Where summers are hot and dry and winters are cool and wet, almonds thrive. They are very sensitive to frost and are thus quite difficult to grow in most of the United States. About 810,000 acres in California are planted with almond groves. Growers usually plant two or three cultivars for good cross-pollination. Trees bear fruit only 3 or 4 years after planting and are then productive for 50 years. Almonds are bee-pollinated; commercial growers truck in bees from the Midwest to pollinate their trees in February, when the handsome trees are covered with white and soft pink flowers.

'Hall's Hardy' is an adaptable, pretty peach–almond cross that extends the hardiness range of almonds into Zone 6. It grows well in the Pacific Northwest and the lower Midwest. Barbara Fetchenhier says it has a beautiful pink flower, showier than true almonds, and is "awesome for the homeowner." The nuts, while small, are very tasty, especially roasted. Fetchenhier also recommends 'Reliable' for its dependability and explosive bloom.

4

THIS PAGE, FROM TOP: THOMAS MACDONALD. ADAM JONES/VISUALS UNLIMITED/CORBIS. THOMAS MACDONALD. JOSHUA MCCULLOUGH

Pine Nuts (5)

- **Several species in the genus *Pinus***
- **Mature height and hardiness vary**

All pines produce their seeds in cones, but only pines with large, wingless seeds produce the edible pine nuts so essential for pesto and so delicious, toasted, in salads. The pine nuts sold in grocery stores are produced from Korean nut pines and imported from China, William Reid says, but if you have the time and patience, you can grow your own pine nuts. Piñon pine, Korean pine, Siberian nut pine, and Italian stone pine all produce pine nuts.

Piñon pine nut is produced by *Pinus edulis* (Zones 5 to 8) or *P. monophylla* (Zones 6 to 8), both small trees (to perhaps 20 feet) from the desert Southwest. Piñon pines have high-production seed years every 7 to 11 years, when they are harvested in the wild. Siberian pine (or Swiss stone pine, *P. cembra,* Zones 3 to 7) and Korean pine (*P. koraiensis,* Zones 4 to 7) are hardy species that grow to about 50 feet tall, for cold-climate gardeners. Italian stone pine (*P. pinea,* Zones 8 to 10) is heat-tolerant and will produce seeds (called *pignoli* in Italian) in mild climates.

It may take 20 years for pine-nut seedlings to start to set cones, Reid says. When they do, let the cones ripen until they are open, dry the seeds, and use a rolling pin to break the hard shells.

Hazelnuts (6)

- ***Corylus americana* (American), *C. avellana* (European), and hybrids**
- **Grow 12 to 20 feet tall**
- **Hardy in Zones 4 to 8**

On the East Coast, they're called hazelnuts; on the West Coast, they're filberts. They are the same nut, and they grow as bushy, understory shrubs or small trees. Most of the commercial production in the United States is of European hazelnuts, concentrated in Oregon. Hazelnuts have a tendency to sucker and will grow into a bush if you don't remove the suckers regularly. The Arbor Day Foundation promotes hazelnuts for their environmental benefits: They control erosion and are excellent riparian buffer plants.

You can count on your first crop from young plants after only 3 years. They are delicious roasted and blanched, and, as William Reid points out, with some understatement, "Hazelnuts and chocolate are a good combination." •

CHILES NORTH & SOUTH

There's more to New Mexican peppers than simply red vs. green. The part of the state from which they stem is just as important to consider.

By Deborah Madison

The mountainous, temperate climate of northern New Mexico produces chiles that are smaller than their southern compatriots but have more complex flavors. ***Opposite:*** *Matt Romero (flanked by northern chiles) is one of the region's most productive and dedicated growers.*

While the chile peppers in New Mexico may be very, very good, they are not all alike. There's the chile culture of the south and that of the north—and the two couldn't be more different.

The South: Big Pods, Big Business

The southern region is best known for its Hatch chile, a name so well branded that people often think of it as a seed variety, but it's not. These are the peppers grown around Hatch, a village of some 1,600 people who live between Truth or Consequences and Las Cruces. Here, the weight of the name is greater than the reality of the place. Drive through Hatch looking for a motel room or a place to eat after dark, and you're out of luck. But come back on Labor Day weekend, and you're in time for the Hatch Chile Festival, attended by thousands.

The land on which Hatch chiles and other crops grow was desert until Elephant Butte Dam was built to supply water for crops. Fields may be large, but according to the farmers I've spoken with, they don't have the innate natural fertility seen in the small fields of the north. Accordingly, the approach to growing chiles and other crops in the area has been to use conventional techniques, with sprays, fumigants, fertilizers, and pesticides.

The chile crop of this region—where onions also flourish—was developed by the New Mexico State University (NMSU) Chile Pepper Breeding Program and given such names as 'NuMex Big Jim', 'NuMex 6', and 'Joe Parker'. There's also 'Sunrise' and 'Sunset', two very pretty little peppers. The most important chiles are variations on meaty, midsized to long green chiles with uniform shapes, heavy pods, and a reliably clean, albeit mild, flavor. These are very efficient peppers that have been bred for processing, and that makes them big business for the state. With their straight sides and gentle sloping shoulders, they're easy to peel once roasted or treated with a lye wash. Their thick walls and uniform shapes make them practical for stuffing and canning. And restaurants can buy boxes of frozen and peeled 'Big Jim' chiles ready to turn into *chiles rellenos*, saving themselves the labor of roasting and peeling.

But there's a catch. "The industrial chiles of the south have their uses, and they're handsome chiles, for sure," says farmer Matt Romero, who grows native chiles at Romero Farms in Dixon and Alcalde, in northern New Mexico. "You're not tasting rich, fertile, organic soil like you are with the chiles up here. What you mostly taste is commercial fertilizer on sandy ground."

And soon you'll be getting a dose of genetically modified organisms, too. The state has already provided funding for NMSU to develop GM chiles, and this is not good news for those who value the native chile, which has played a vital role in people's lives for 4 centuries. Protests have gone unheeded despite the possibility that GM chiles could endanger the much older native varieties.

The North: Small Chiles, Big Flavor

In the northern reaches of New Mexico thrives a different chile—and chile culture. Some say the Pueblo culture had chiles first; others that the Spanish brought them from Mexico. Regardless,

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Left to right: Ristras *of chiles strung for drying hang in a Santa Cruz market while elsewhere, carefully roasted green chiles cut into strips are the delicious center of attention in a freshly made corn tortilla. Thin-skinned, medium-hot 'Hungarian Hot Wax' peppers are often favored for pickling.*

chiles have been in this region long enough—400 years—to be considered native, or a land race. And DNA testing at NMSU has shown that they are genetically similar to chiles in Mexico that were traded deep in the historical past. In any case, the native chiles are very different than the big Hatch pods, which makes sense considering the landscape as well as the breeding programs of the south.

Land in northern New Mexico is broken by mountains and rivers into small growing areas with unique microclimates. The high elevation means that winters are cold, summers are hot, water is an issue (no big dams here), and the growing season is short. But there is good soil.

Native chiles tend to be twisted or "J" shaped, rather than straight sided. And since they have to mature in a shorter growing season, the pods are smaller than those in the south. Their flesh isn't as thick, either, and cold nights and rough weather make the skins tough. But these challenging circumstances produce a small, thin-fleshed pod that is packed with complex, rich flavors and, often, quite serious heat. Romero's uncle loved superhot chile, so he always saved seeds from his hottest plants. When Romero started farming, most couldn't eat his incendiary variety, so he bred his native chile with NMSU's 'Joe Parker' to take the heat down a few notches, producing what he calls 'Alcalde Improved' (Alcalde being where he grows his chile). But heat can also be irregular in the native chiles, varying from season to season and reflecting the days' temperatures.

Native chiles are packed with complex, rich flavors and often serious heat.

The native chiles are also pretty inefficient to work with, and they're definitely not made for stuffing, unlike the well-behaved straight-sided 'Big Jim'. But they're great for stews, where the flavorful green chile flesh mingles with pork and potatoes, a traditional northern New Mexican dish.

The native chile culture here is all about tradition, families, and hands-on effort. The seeds are passed down from generation to generation. Hoeing is done by hand—very carefully if small chile plants aren't to be destroyed—and the pods are hand-picked during many passes in the field. As families have tended their fields over generations, the chiles themselves have gradually taken on names of the places where they are grown. There are 'Velarde', 'Chimayo', 'Abiquiu', 'Española', and 'Chamita' chiles. The subtle differences in their flavor and heat have to do with whether the soil is sandy or clay-rich, how often they are irrigated, the elevation, and so forth.

Roasting Finesse

Both chiles from Hatch and the native chiles are roasted. Trucks with Hatch chiles set up on street corners from Albuquerque to Santa Fe, Flagstaff to Denver, starting around mid-July. Native chiles, meanwhile, are being roasted in farmers' markets in the northern part of the state and as far afield as the one in Des Moines, Iowa. On any Saturday from late July on, Romero and fellow farmer Don Bustos may be found with their roasters at the Santa Fe Farmers' Market.

Romero is very particular about roasting the chiles himself. Given the thin flesh of the native peppers, one has to be very

THIS PAGE: DOUGLAS MERRIAM/DOUGLAS MERRIAM PHOTO. OPPOSITE: THOMAS MACDONALD; STYLING BY MELISSA REISS

careful not to obliterate it in the roaster. Romero takes into account how cold the chiles are when they go in the barrel, how they become more fragile as they blister under the gas jets, and how important it is to keep an eye on them so as not to ruin them. It takes maybe 7 to 10 minutes to roast a bushel of chiles via gas-fed roaster, "but those are all crucial minutes," Romero says.

People often buy a bushel or more of chiles at a time to take home and put up into smaller bags to freeze for the winter. A heavy bushel of wet roasted chiles can be an awkward purchase to lug home, but much more manageable 1-pound bags are available. Just pull off the skin and plop one on a tortilla, maybe with some fresh goat cheese from the market, and take a bite. Make a green chile stew. Or chop them up and stir them into an omelet. •

For more information, see Find It Here on page 70.

Flat Green Chile and Goat Cheese Omelet

If using thin-fleshed peppers, like the New Mexican native chiles, the flesh will be very soft after roasting, so there's no need to cook the chiles further. Most other chiles will remain fairly durable even after roasting, so to soften them, sauté them with the onion, adding a splash of water if the pan seems dry. Oregano, fresh or dried, is good with these eggs, but so is cilantro if there's some in the garden.

2 or more 'Anaheim' green chiles or 1 'Big Jim' ("New Mexican") chile
1 tablespoon butter, plus extra for the skillet
1 onion, thinly sliced
½ teaspoon dried Mexican oregano or 2 teaspoons chopped fresh oregano, plus extra for garnish (optional)
4 large eggs
½ teaspoon sea salt
¼ cup fresh goat cheese (more or less as desired)
Whole-wheat tortillas (optional)

1. Preheat the broiler.

2. Roast the chiles right in the flame of a grill or gas burner (or as close as possible to a broiler flame) until the skins are bubbly and charred. Put them in a bowl, cover with a plate, and set aside to let them steam for about 10 minutes. Slip the skins off, cut off the stem end, and push out the seeds using the flat side of a knife. Tear or cut the chiles into strips.

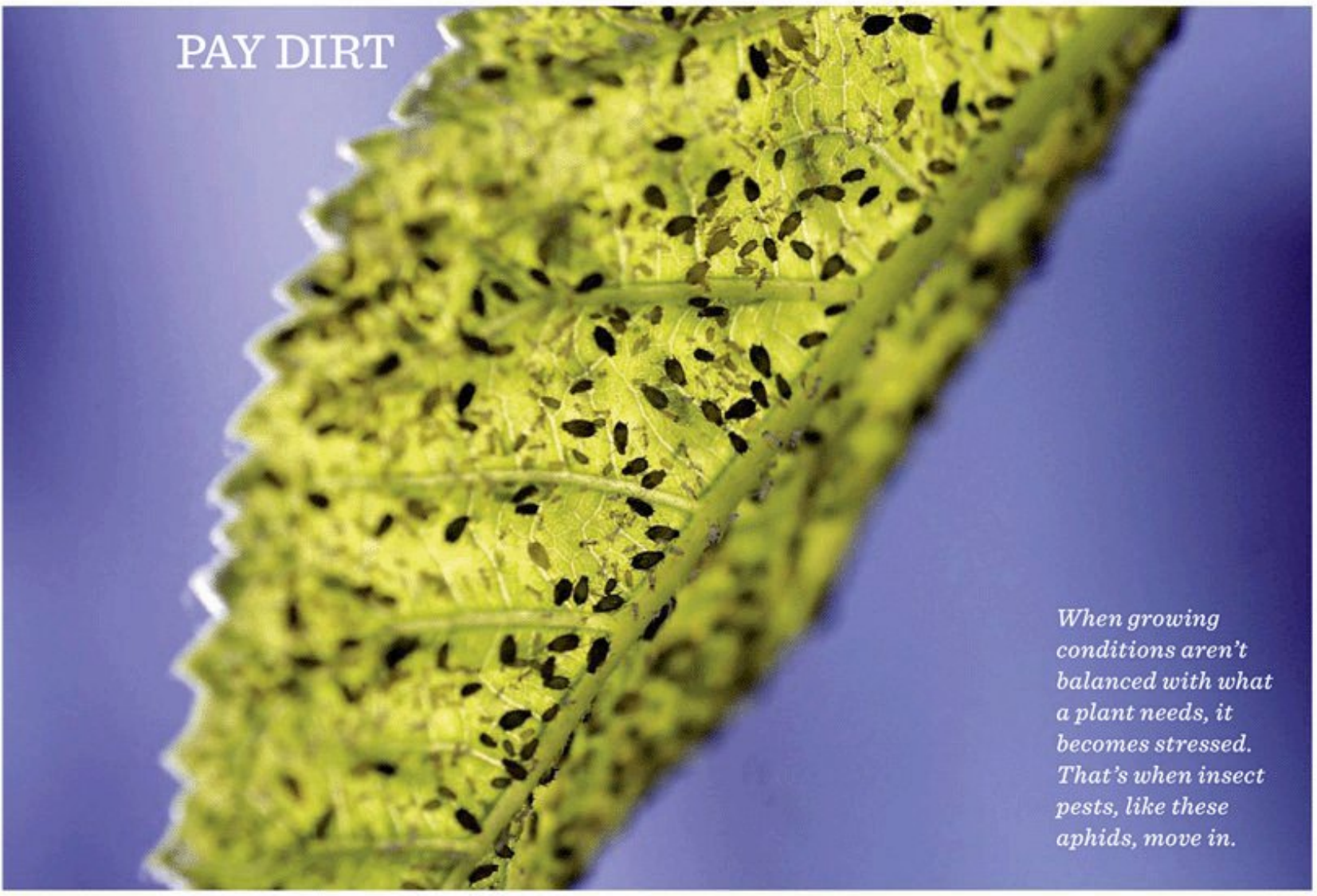
3. Heat the butter in an 8-inch nonstick ovenproof skillet over medium heat. Add the onion and, if desired, the oregano. Stir and cook gently with the chile strips (if they're still firm) until the onion has softened, about 12 minutes. Remove the chiles and onion from the skillet to let cool slightly.

4. Beat the eggs with the sea salt. Add the slightly cooled chiles and onion into the eggs. If desired, add a bit more oregano. The skillet shouldn't need more butter, but if it seems dry, add about a teaspoon and swirl it around the skillet. Add the egg mixture to the skillet and cook over medium-low heat.

5. As the eggs begin to set around the edges, lift them up with the tip of the spatula and let the wet egg flow underneath. Repeat this process until you can't do so easily any longer; then dab the goat cheese over the top.

6. Once the eggs seem fairly well set, slide the pan under the broiler so that the top can finish cooking and become golden. Slide the omelet onto a serving plate, and, if desired, dust with extra fresh oregano and serve with warm whole-wheat tortillas.

Makes 2 servings



When growing conditions aren't balanced with what a plant needs, it becomes stressed. That's when insect pests, like these aphids, move in.

The Delicate Dance

Balance, that happy medium between too much and too little, is well worth finding.

Balance in our gardens, as in our lives, is a quest. Exploring what makes for ecological balance in soil care and crop management in gardens orients our horticultural husbandry.

Plants don't care if you are slightly out of kilter on timing (early or late), row width (more or less space), watering (too much or too little), or crop rotation (restoring or depleting organic matter and nutrients). But they will let you know when conditions are significantly off balance.

Balance Nitrogen

Recognizing the early signs of nitrogen deficiency (lagging vegetative growth) helps a gardener take steps to avoid the more desperate and obvious pleas for help—beetle predation, failure to thrive, and poor yield. It's easier to shape the long-term outcome with small corrections taken earlier than to make an immediate dramatic impact.

When plant messages are subtle but inconclusive, or when starting a new garden, soil tests can help assess deficiencies. Correcting most imbalances is relatively easy: Apply what is needed to reach the necessary levels for good plant growth and health.

Achieving nitrogen balance is harder, however, for organic gardeners than for conventional ones. The organic approach requires two steps, because natural sources must first be biochemically transformed by soil microbes (i.e., mineralized) to become available for plants. Chemical fertilizer, conversely, is quickly available to crops, which also explains its tendency to leach into groundwater.

Impacting the success of natural nitrogen delivery are—surprise!—balanced conditions of soil temperature, soil moisture, and tillage. As in other soil functions (root growth, soil biodiversity, transfer of nutrients), high organic matter helps to moderate soil moisture, providing the optimum conditions for mineralization to take place. The organic nitrogen system depends on well-managed, healthy soil.

The essence of attaining balance is to adequately match the needs of a crop, the potential of the soil, and as few other management steps as possible in a timely manner. Good choices maintain balance throughout the season as the plant's need for nitrogen spikes, then diminishes, toward maturity, with the reward of less remedial rebalancing work later.

Discourage Weeds

The more exposed the soil is (without mulch or a cover crop), the more intentional the effort must be to create an imbalance of conditions to disadvantage weeds. To do that, take away:

Sunlight. Knowing the eventual shade canopy of crop plants means they can be spaced to slightly overlap, preventing sunlight from hitting the soil below.

The continuity of conditions they like. Use a rotation that mixes crops that are early and late maturing, deep and shallow rooted, long- and short-season, and heavy and light feeders of nitrogen. Change is good when it comes to preventing weeds from finding a niche.

Undisturbed weed seedbeds. Whatever disrupts, suppresses, and exhausts weed seeds tilts the balance to favor the desired crops. Repeated, shallow surface hoeing promotes germination, then kills seedlings before they can establish, and diminishes the seed reserve. Mulches keep away sunlight and can hasten the decomposition and predation (by soil critters) of seeds.

Encourage Diversity

Organic gardening relies on increased biodiversity (above and below ground) to suppress insect damage—very different from fighting one pest at a time with pesticides. The more diverse and abundant the habitat, the more beneficial insects—and the fewer pest insects. Complex crop rotations in plots, enhanced vegetation on the borders, cover crops timed to flower throughout the growing season, and biologically active soil all become parts of a dynamic balance of forces that keep pests in check. I consider balancing the variables in my garden as my coaching for the good plants to win. —*Greg Bowman*

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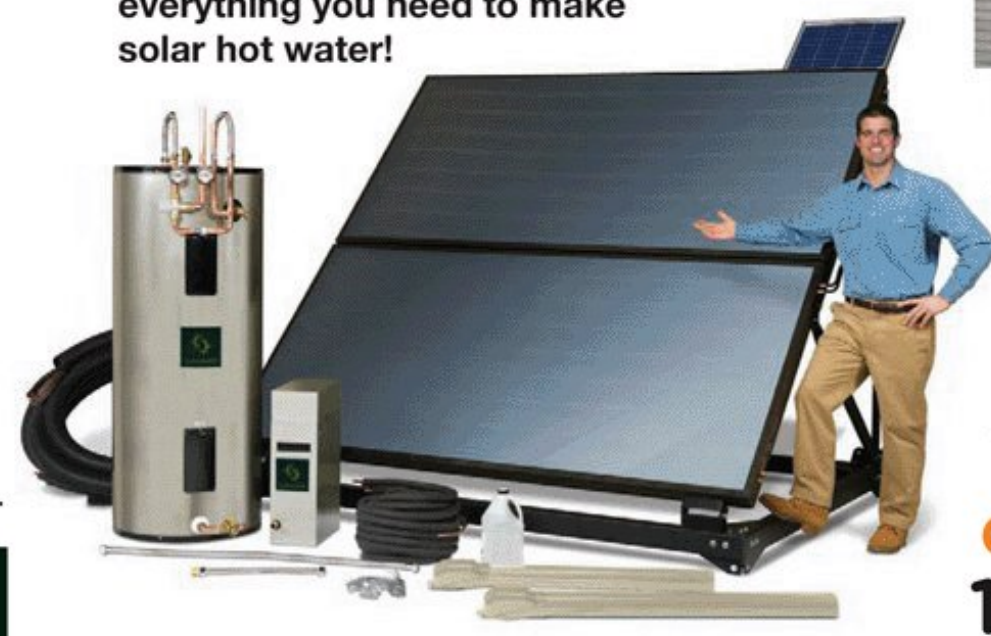

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Old tires leach small amounts of heavy metals into soil, so using them as planters isn't a good idea.

Tired Idea

Q. Is it safe to use an old tire as a planter?

Bonnie Coughlin
Missoula, Montana

A. The inclination to recycle tires as planters is commendable—more than 128 million scrap tires are stockpiled in the United States—but other reclaimed and found materials, including recycled concrete, untreated cedar or redwood, stone, and large black plastic nursery pots are better choices. Several studies have examined the effects on the environment of rubber mulch made from recycled tires. Microbes break down tire rubber over time and leach compounds from the rubber into the soil.

Leachate from rubber mulch has been shown to contain aluminum, cadmium, and chromium, plus rubber plasticizers, softeners, and accelerators used in the vulcanization process. Additionally, when tires come into contact with acidic soil, zinc can leach from them at levels that are phytotoxic (poisonous to plants). "The thing to remember here is that leaching is a surface-area phenomenon," says Alison Draper, Ph.D., director of the science center at Trinity College in Hartford, Connecticut, and a researcher who has studied the environmental impact of tire rubber. "If you were using powdered or chipped tire rubber, I'd be more concerned, but whole, old, weathered tires have much less surface area and therefore leach much less." Even though the risk of leaching may be low with intact tires, when it comes to gardens and growing food, it is best to choose building materials and containers that have no risk of contaminating the soil.

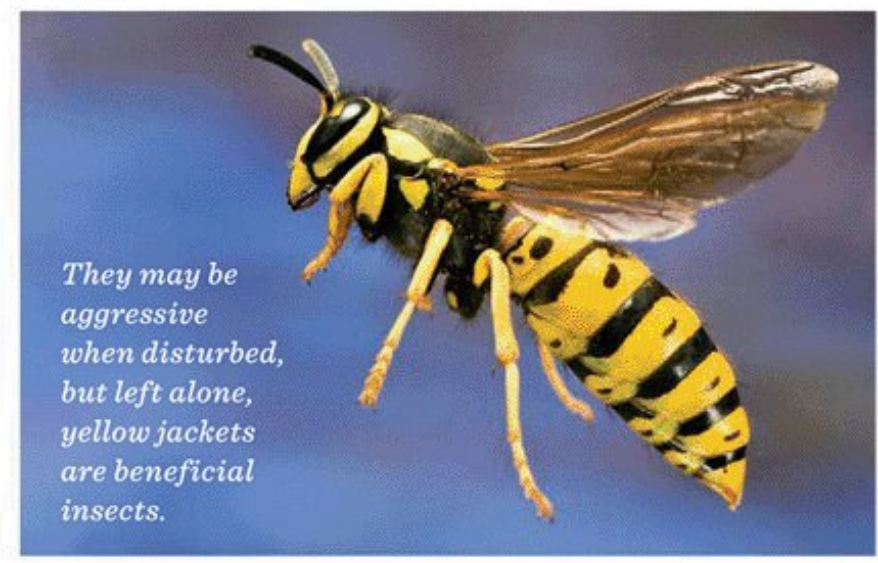
Bad Buzz

Q. Yellow jackets are nesting under our blueberry bushes. How can I get rid of them safely?

Debra Kimsey
Gainesville, Georgia

A. If you can possibly avoid the nest of a yellow jacket (*Vespula* spp., a type of wasp), leave it be. "Yellow jackets can be beneficial predators, and they provide biological control of other pest insects," explains Sarina Jepsen, endangered species program director at the Xerces Society, an organization that works to conserve pollinators and invertebrates. These social wasps commonly nest underground and in hollow cavities, and they feed on meat, including other insects, and nectar or other sugar-rich substances. Yellow jackets may vigorously defend their nests during the day, so give them a wide berth when walking by. The safest chemical-free way to eliminate a nest in a high-traffic area is to call in a professional pest-removal service that can vacuum out the wasps.

Never pour boiling water down the nest entrance or attempt to burn out the wasps—these practices can encourage them to attack. Instead, start by installing a yellow-jacket trap containing a food bait near the entrance to the nest. Trapping can reduce the wasps' numbers to a more acceptable level, but it will not eradicate every last wasp. As a last resort, spray an organic insecticide, such as Safer Brand Wasp and Hornet Killer, into the entrance hole. Protect yourself by wearing gloves, pants, and a long-sleeved shirt and working at night, when the majority of the colony is in the nest and the wasps are less active.



They may be aggressive when disturbed, but left alone, yellow jackets are beneficial insects.

TOP: ANDREA JONES/GARDEN EXPOSURES PHOTO LIBRARY; MICHAEL DURHAM/MINDEN PICTURES/GETTYIMAGES

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ASK ORGANIC GARDENING

Wrapping Up

Q. This was my first year growing vegetables. How do I get my garden ready for winter?

Grant Gardner
Seattle

A. In early fall, remove any annual vegetable plants that had a pest or disease problem and dispose of them in the trash, not the compost bin. This helps prevent pests and diseases from overwintering. Pull and compost crops that were healthy, but don't clear out everything. "Leave perennials and annuals that can provide food and winter habitat for beneficial insects and wildlife," says Beth Trigg, who grows organic vegetables at Red Wing Farm in Swannanoa, North Carolina. Trigg recommends leaving sunflowers standing or hanging bundles of bolted lettuce, mustard, and arugula to encourage birds to forage in your garden.

Spread a 1-to-2-inch layer of compost or composted manure over bare soil; then mulch heavily with straw to prevent weeds. "We like oat or barley straw best," says Trigg. She also suggests growing vegetables into the winter. "Don't be intimidated by the phrase *season extension*," she says. "Root crops, collards, kale, Brussels sprouts and Swiss chard all handle cold weather well if heavily mulched—just pile 4 to 6 inches of straw around the plants."

Cold-hardy vegetables, such as the purple kale here, will continue to grow into winter if they are mulched with 4 to 6 inches of straw.

Planting Fruit Trees

Q. What is the best time of year to plant fruit trees?

Claudia Champion
Bridgeport, Connecticut

A. For much of the country, fall is a good time to plant balled-and-burlapped and container-grown fruit trees, but in USDA Plant Hardiness Zone 5 and colder, spring is better. Early-fall planting, done before soil temperatures drop below 55°F, gives trees a head start on establishing robust root systems. The roots grow until the ground freezes—which occurs too early in the North for proper root development. In either season, apply 3 to 4 inches of woody mulch around the base of newly planted trees. Water once a week (even after the trees lose their leaves in fall). To calculate how much water is needed, measure the square footage of soil surface within the tree's dripline—the imaginary line underneath the outer circumference of the tree's branches. Supply 1 gallon of water per week for every square foot. Bareroot fruit trees—dormant trees with no soil around their roots—are another option, sold in late winter or early spring for immediate planting.

Ask **Organic Gardening** *is edited by Willi Evans Galloway. Have a question for our experts? See "How to Reach Us" on page 10.*

Bigeyed bugs are small enough—less than a quarter inch—to go unnoticed, but their contribution to pest control is enormous.

Bigeyed Bug *Geocoris* spp.

When looking at a bigeyed bug, the word *mighty* does not spring to mind—unless you plan to follow it with *small*. But after learning just what this little warrior is capable of, *mighty* is indeed the perfect adjective. Because bigeyed bugs forage for pests on plants as well as on the soil, these micro-helpers are vitally important to gardeners. Both the nymphs and adults of this beneficial insect are protein eaters. Measuring a mere one-sixth of an inch, each bigeyed bug is capable of consuming significant quantities of pests per day, including spider mites, aphids, cabbageworms, leafhoppers, flea beetles, corn earworms, and whiteflies (among many others).

Slightly oblong with a broad head and wide-set bulging eyes, the adults have clear wings that overlap and rest on their backs. Nymphs look much the same except they're a bit smaller and lack wings. Several species of bigeyed bugs call North America home, and, thankfully, they are naturally present in most back yards—except for those regularly blanketed with chemical pesticides. Though their primary food source is other insects, bigeyed bugs also feed on nectar, sap, and small seeds to sustain themselves when prey is scarce. They spend the winter in garden debris and grassy areas, emerging in spring to begin feeding on prey by piercing them with a specialized mouthpart and sucking out the internal organs.

This fast-moving predator cruises the garden in search of bean beetles, aphids, and spider mites to consume.

There are two keys to maintaining a healthy population of bigeyed bugs in the landscape. One is to eliminate chemical pesticides, and the other is to plant lots of low-growing, shrubby plants—oregano, thyme, and low ornamental grasses are a few good choices. These provide winter habitat as well as summer shelter. And if you really want to bring 'em in, plant a small portion of the garden with alfalfa and clover; both have prostrate habits and available nectar. *—Jessica Walliser*

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In Malawi, Jane Chima joined the Coalition of Women Farmers to grow more food on her family plot.

Struggling Sisters

Women are responsible for growing 60 to 80 percent of the food that feeds families in most developing nations, according to the United Nations Food and Agriculture Organization. As subsistence farmers, they are particularly vulnerable to the impacts of changes in climate. "Poor women in poor countries are among the hardest hit by climate change, even though they contributed the least to it," says Thoraya Ahmed Obaid, executive director of the United Nations Population Fund (UNFPA).

The precarious balance between women, food production, and climate change was the subject of the UNFPA annual State of World Population report in 2009 and has been at the center of debate in the world poverty community. One of the issues is that women farmers and the land on which they grow have historically been ineligible for aid meant to boost agricultural production. "For the past three decades there has been a misconception that smallholder farmers are inefficient, so they shouldn't be encouraged to grow their own food," says Peter O'Driscoll, executive director of ActionAid USA. "Rather than investing in the productive capacity of people to feed themselves, foreign aid money has instead been spent on growing crops for the export market."

O'Driscoll is hopeful there is a relatively straightforward solution. "Women farmers need access to credit, access to extension services, and access to tools and seeds and inputs that are appropriate to their needs," he says. "Let's focus on sustainable techniques that are affordable and accessible to women farmers, rather than focusing exclusively on 'magic seeds' that are highly dependent on expensive external inputs."

With these simple resources at their disposal, and an investment in land-based carbon sequestration efforts, the UNFPA sees women farmers at the forefront of mitigation efforts—heroines of resilient agriculture rather than the victims of a delicate growing region and changing climate. *—Amanda Kimble-Evans*

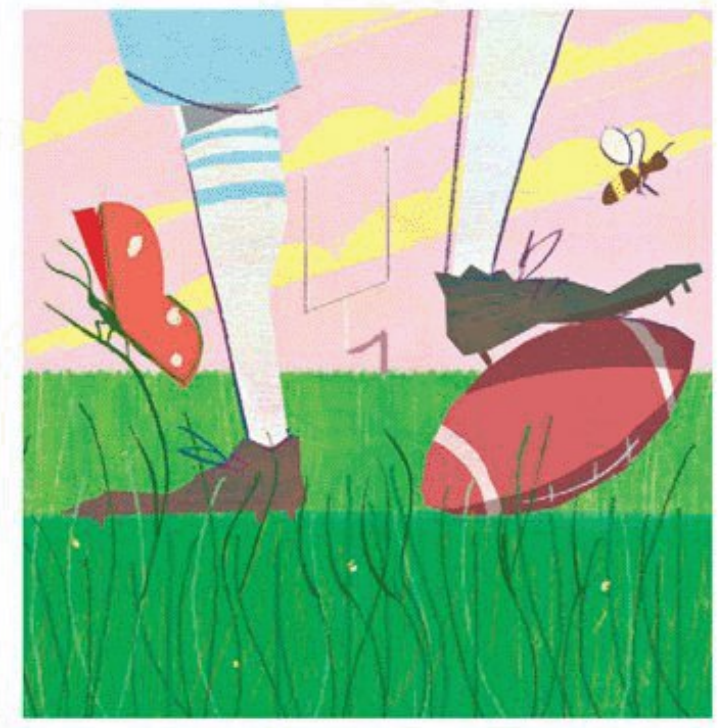
Touchdown for Organic Turf

High school football players have been getting more than grass stains on their clothes and field burns on their skin during the big game. Standard turf management for school fields usually includes a regime of herbicides, pesticides, and synthetic fertilizers. But high-profile warnings about the dangers of pesticide exposure, especially in children, are increasing the demand for organic turf management in schools, according to a report from Grassroots Environmental Education.

New York State is paying attention. In May 2011, a complete ban on chemical pesticides on playgrounds and school athletic fields will go into effect.

"The New York legislature saw our report, and all the arguments about cost disappeared," says Doug Wood, associate director of Grassroots Environmental Education. The report shows that organic practices are cheaper in the long run—with no chemical surprises to worry about.

"Chemically managed turf requires a tremendous amount of water to survive," says Wood. "Organically maintained turf develops deeper roots and is therefore more resilient." While water is the largest cost, Wood also says the chemical inputs add up to a completely unnecessary expense that parents and other taxpayers could do without. *—A.K.E.*



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Individual results will vary due to local environmental factors including bird migration and distribution, terrain, landscaping and weather.

Garden Smarts

Not only are gardeners happier, but they might be smarter, suggests a new study from the Sage Colleges in Troy, New York. In 2007, United Kingdom researchers linked that happy feeling gardeners have after they've been digging in the dirt to a little soil organism called *Mycobacterium vaccae,* which decreases anxiety and increases serotonin, the "happy hormone." The same common soil bacterium has now been found to increase learning ability.

Time in the garden may make us smarter.

"We know there is a relationship between serotonin and learning. When you're stressed, you don't learn as well," says Dorothy Matthews, an associate professor of biology at the Sage Colleges and the study's lead author. This knowledge inspired Matthews and her team to study how the bacterium might affect the ability of mice to navigate a maze and to remember that information over time.

Even the researchers were surprised with the results. "The mice exposed to *M. vaccae* performed twice as fast with much less anxiety. They were focused on getting the reward," says Matthews. And the positive effects lasted well after the exposure to the soil bacterium ended.

Matthews believes the take-home message is that spending time in the garden not only provides us with food but puts us in contact with microbes that play a role in our mental health.

This line of research also has clear implications for the current educational system. Learning environments that include outdoor play, especially school gardens, could boost students' ability to learn new material. "We should design future schools with curriculums that put kids outside planting seeds and seeing how things grow—where they can develop a respect for and appreciation of nature," Matthews says. *—A.K.E.*

STEPHEN DALTON/MINDEN PICTURES

ANIMAL TRACKS

Barn Owl

A one-pound adult barn owl consumes two to four small mammals per night, dining on mice, voles, shrews, rats, gophers, muskrats, hares, and rabbits. When feeding a growing family, a nesting pair snaps up as many as 10 rodents nightly.

While barn owls (*Tyto albans*) inhabit a range that spans the globe and the contiguous United States, they prefer to hunt over wide-open grasslands, riverbanks, and woodlot margins. Loss of suitable nesting sites has reduced their populations worldwide; they are threatened or endangered in seven mid-western states and considered a species of concern in nine other states.

A barn owl will travel over an area up to 120 acres to keep its belly full, but stick closer to home given a good nesting location—a cavity in an old tree, a barn, or a manmade box mounted on the wall of an outbuilding or a post—and plenty of local rodents. With a face shaped like a satellite dish and asymmetrically placed ears, this nocturnal raptor can hunt by sound alone, deploying echo-location in pursuit of a good meal.

Downy, pale white feathers facilitate such stealthy flight—this despite a 42-inch wingspan—that *T. albans* also goes by the monikers demon owl and ghost owl. It owes such alternate names as hissing owl and screech owl to its piercing call. —*Sharon Tregaskis*

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DeLoach Vineyards, a Demeter USA certified Biodynamic® estate vineyard and garden, is among an elite group of sustainable winegrape growers committed to farming in parallel with the Earth's natural cycles. This 17-acre estate is one of only 65 wineries or vineyards in the United States to achieve Demeter certification, and *Organic Gardening* is offering you an opportunity to enter for a chance to win a trip to visit the DeLoach estate.

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WE LIKE THIS!

A Clean Sweep

Some see a yard of unraked leaves as drudgery-in-waiting. Yet with a single tree dropping as many as 200,000 leaves, the smart gardener sees treasure: piles and piles of carbon-rich material free for the taking. But how leaves are collected has health implications for the gardener and the planet. When the tool of choice is a gas-powered leaf blower, efficiency is accompanied by hazards: Most leaf blowers emit seven times more carbon monoxide than a midsize car, while the noise level for the user is an eardrum-damaging 105 decibels, equivalent to a snowmobile. So we've found easier and greener ways to turn fall yard work into garden-friendly mulch or compost. —*Katie Walker*

For more information, see Find It Here on page 70.

1. Leaf Scoops

By turning your hands into "paws," these tools allow for picking up leaves while keeping hands clean and dry. Practically weightless, yet with considerable size (15.5 by 17.75 inches), these scoops will get the job done without the heft of a large rake. ***$18 from Clean Air Gardening***

2. Flowtron Leaf Eater/Mulcher

Reduce leaves to compost- and mulch-friendly bits with this shredder. Shredding adjustments, electric outlet power, and a manageable weight (17 pounds) combine to make this a great tool for cutting leaf piles down to size. ***$200 from Flowtron Outdoor Products***

3. Push Lawn Sweeper

Durable bristles trap and dump leaves into the sweeper container. The wide base is available in 26- and 31-inch sizes, and the 6-bushel-capacity catcher will cover a lot of ground, without the pollution or noise of a leaf blower. ***26-inch, $230; 31-inch, $270, from People Powered Machines***

4. The SnapBagger

Perfect for holding open a leaf bag in one hand while raking with the other. A large band attaches to bags 33 gallons and up. The sturdy steel body weighs in at a surprisingly lightweight 3 pounds. The reusable nylon bag accessory (sold separately) is ideal for collecting without spending money on leaf bags. ***SnapBagger, $25; SnapBag, $12, from SnapBagger***

5. Metal Leaf Rake

Although it is designed for children, this rake will help clean up small spots around the garden, and the 30-inch handle will satisfy everyone from Mom to Jimmy. Consider it your little garden helper. ***$8 from Montessori Services***

THOMAS MACDONALD

Storing Seeds

In 2005, scientists in Israel germinated a date-palm seed that was nearly 2,000 years old when archaeologists found it in the desert near the ancient fortress of Masada. Even though most seed savers are not trying to produce plants that date to the time of Jesus, there's a lesson to be learned from this feat: Store seeds in a dry place.

There are dozens of reasons to save seeds, from frugality to a desire to preserve heirloom plants. Gardeners may want to ensure that they can always reproduce that souvenir foxglove from Aunt Rosemary's garden or the great tomato that makes their caprese salads the talk of the neighborhood. Whether the seeds are collected in the garden or store-bought, proper storage is essential to germination next year—and, ideally, for several seasons to come.

A seed's worst enemies are heat, humidity, sunlight, and hungry rodents. Here's the proper way to preserve viability.

Start with dry seeds. Make sure harvested seeds are totally dry before storing. If they're not, they can develop mold, which will make them unusable. Purchased seeds are already dry. (For tips on drying seeds, see "Storing Saved Seeds" at *OrganicGardening.com*.)

Pack 'em up. Put collected seeds into envelopes, seal them, and clearly mark the envelopes with variety names and dates. Leave purchased seeds in the packets they came in, taped shut. Place the envelopes into a plastic zipper bag, mason jar, Tupperware, or other resealable storage container—anything that will seal out humidity and keep the seeds safe from rodents. Don't use cloth, paper, or thin plastic bags that cannot be made airtight. Place some dry milk powder or a desiccant such as silica gel at the bottom of the container as added protection from dampness.

Keep them cool, dry, and dark. A dark basement corner—or any cool, dry room—is a good place for storing seeds. But with some exceptions (such as aquatic and tropical plants), seeds remain viable longer if stored at constant temperatures of 40°F or lower, making a refrigerator a better choice for long-term storage. To prevent moisture from condensing on seed packets that have been refrigerated, allow the storage container to warm to room temperature before opening it.

Check for viability. Before planting, spread 10 seeds from each packet on a wet paper towel, fold it, and then place it in a plastic bag, seal, and label it. Allow it to remain at room temperature for a week or more. If all 10 seeds sprout, you're in business, but even if six or seven sprout, you can still use them—just sow more thickly to allow for duds. *—Denise Foley*

Package seeds in envelopes and keep them in a place that is cool, dark, and, above all, dry.

THOMAS MACDONALD

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Chart source: Washington State University Extension

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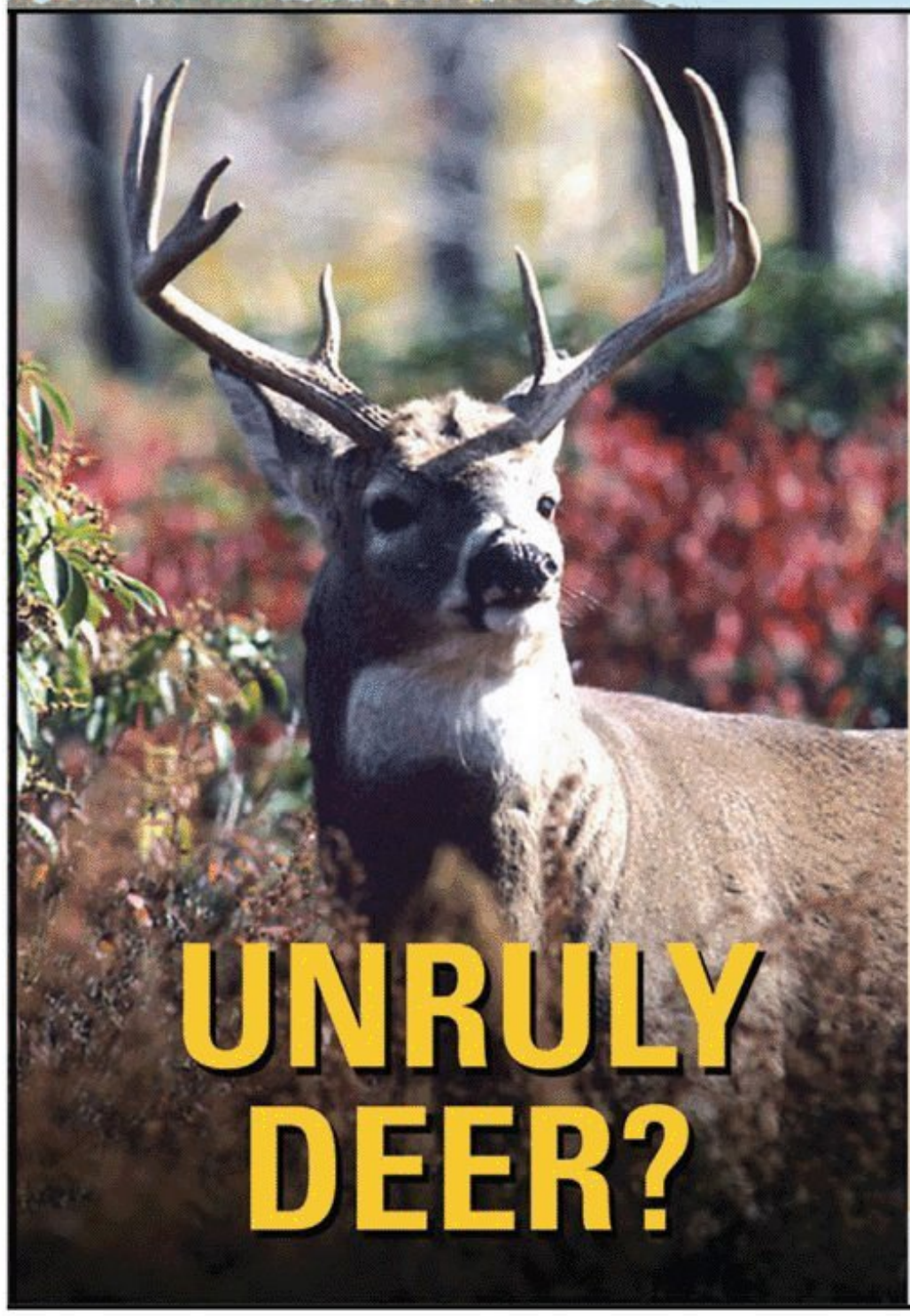

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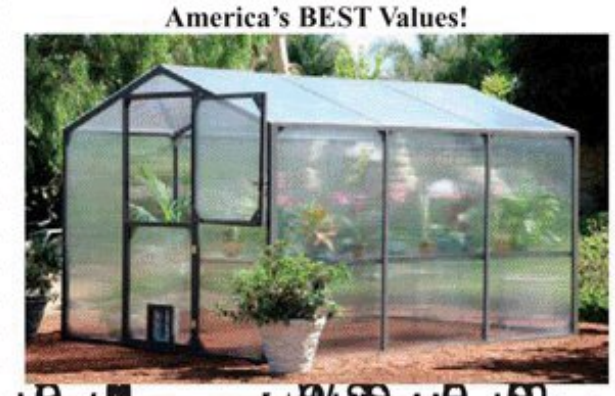

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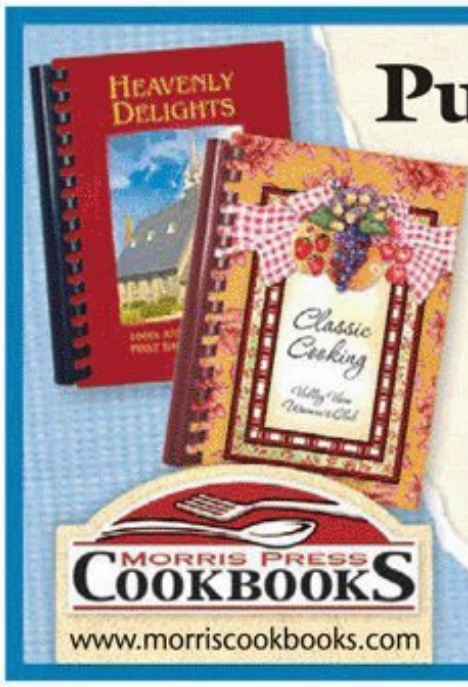

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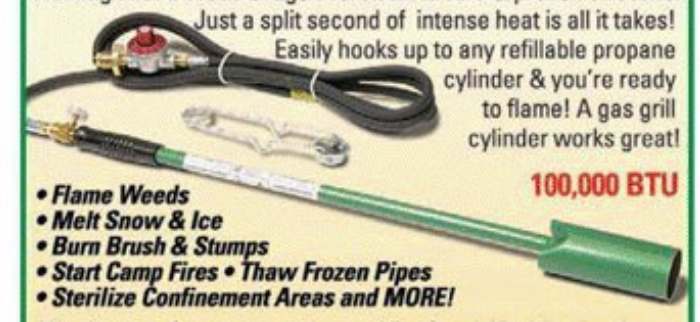

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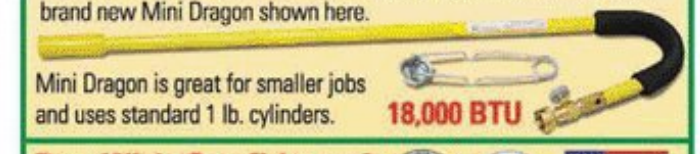

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Profiles: Newman's Own: Organically Grown, p. 26
Newman's Own Organics, *newmansownorganics.com*; **Newman's Own Foundation,** 790 Farmington Ave., No. 4B, Farmington, CT 06032-2300, *newmansownfoundation.org*

The Wild Side of Bulbs, p. 30
Bulbs for naturalizing: **Brent and Becky's Bulbs,** 7900 Daffodil Ln., Gloucester, VA 23061, 804-693-3966, *brentandbeckysbulbs.com*; **John Scheepers,** 23 Tulip Dr., PO Box 638, Bantam, CT 06750, 860-567-0838, *johnscheepers.com*; **Old House Gardens Heirloom Bulbs,** 536 Third St., Ann Arbor, MI 48103, 734-995-1486, *oldhousegardens.com*

Celestial Gardening, p. 38
The **Threefold Educational Center** (*threefold.org*), a community of programs and institutions based on the work of Rudolf Steiner, is open to the public. The **Pfeiffer Center** (*pfeiffercenter.org*) hosts workshops and training programs that teach biodynamics. 260 Hungry Hollow Rd., Chestnut Ridge, NY 10977, 845-352-5020. Celestial calendar: $15 from **Stella Natura,** PO Box 783, Kimberton PA 19442, 610-469-9686, *stellanatura.com*. Biodynamic preparations: **Josephine Porter Institute for Applied Bio-Dynamics,** PO Box 133, Woolwine, VA 24185-0133, 276-930-2463, *jpibiodynamics.org*. One dose (covers up to an acre) of Preparation 500 is $8; 1 dose of Preparation 501, $3. Biodynamic seed: **Turtle Tree Seed,** Camphill Village, Copake, NY 12516, 888-516-7797, *turtletreeseed.org*

Go Nuts, p. 42
Cooperative Extension agents can recommend appropriate nut cultivars for your region. Many agricultural extension services have nut-tree publications available online. Members of the **Northern Nut Growers Association,** *nutgrowing.org*, are helpful local experts. Mail-order nut specialists: **Chestnut Hill Tree Farm,** 800-669-2067, *chestnuthilltreefarm.com*; **Grimo Nut Nursery,** 905-934-6887, *grimonut.com*; **Oikos Tree Crops,** 269-624-6233, *oikostreecrops.com*; **Raintree Nursery,** 800-391-8892, *raintreenursery.com*

Chiles North & South, p. 48
Native chile seeds: **Native Seeds/SEARCH,** 3061 N. Campbell Ave., Tucson, AZ 85719, 520-622-5561, *nativeseeds.org*. Hatch and native ground red chile: **The Chile Shop,** 109 E. Water St., Santa Fe, NM 87501, 505-983-6080, *thechileshop.com*. 'Chimayo' chile, caribe, and canned green chiles: **Santa Fe School of Cooking,** 116 W. San Francisco St., Santa Fe, NM 87501, 800-982-4688, *santafeschoolofcooking.com*. Chile seeds from NMSU Chile Breeding Program: **Chile Pepper Institute,** New Mexico State University, PO Box 30003 MSC 3Q, Las Cruces, NM 88003, 575-646-3028, *chilepepperinstitute.org*. 'Big Jim' seeds, frozen Hatch green chiles, ristras, and dried chiles: **Hatch Chile Express,** PO Box 350, Hatch, NM 87937, 800-292-4454, *hatch-chile.com*

We Like This: A Clean Sweep, p. 64
The SnapBagger from **SnapBagger,** 877-272-7627, *snapbagger.com*; Leaf Scoops from **Clean Air Gardening,** 2266 Monitor St., Dallas, TX 75207, 214-819-9500, *cleanairgardening.com*; Push Lawn Sweeper from **People Powered Machines,** 142 Argilla Rd., Ipswich, MA 01938, 978-356-0196, *peoplepoweredmachines.com*; Flowtron Leaf Eater/Mulcher from **Flowtron Outdoor Products,** 15 Highland Ave., Malden, MA 02148, 781-321-2300, *flowtron.com*; metal leaf rake from **Montessori Services,** 11 W. 9th St., Santa Rosa, CA 95401, 800-214-8959, *montessoriservices.com*

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A Harvest of Healing

Why do we do it—garden—when it makes us sweaty, sore, and often cranky? By the end of the harvest season, our faces are red from cooking tomatoes and putting up food either into the pantry or the freezer. Our hands are calloused and nails dirty. And yet . . . and yet . . . when it's all said and done and autumn winds chill the night air, what we're left with, besides a stocked-up pantry, is a deep feeling of strength and satisfaction. It's true. With gardening, we harvest more than food and flowers; we harvest health and healing.

"As organic gardeners, we can add an extra level of healing—the healing of our planet."

It starts with the health that comes just from physical activity: Gardening is proven to be great exercise. And that, I think, comes from our stubbornness; gardeners want to have things a certain way, so we find superhuman strength to move plants, rocks, logs, or whatever else it takes to make our gardens just right. All that weight lifting, bending, and stretching, while leaving us sore the next day, also builds good bone strength and muscles—especially as we age. I bet there are few gardeners who have insufficient vitamin D thanks to gardening in the sun (and occasional rainfall)!

Another health bonus is the healing power of the food and flowers we grow—whether it's bouquets that bring stress relief and feelings of joy or the super-nutrient-rich foods we cook, eat, freeze, dry, and can fresh from the vine.

This year, same as last year, I froze single servings of homemade chicken broth (using free-range chickens from the farmers' market), with one single homegrown cayenne pepper suspended in the golden broth. It's my cold cure for grown-ups only (kids get the plain old broth). One day, when I have more time, I'd like to study the healing power of herbs, flowers, and plants so that I can grow and make actual medicines for my family. Ever since I was little, I've had a feeling that if I was lucky enough to get old, I'd be one of those scary witchy ladies who lived at the end of the lane. So far, so good . . . I'm on my way!

The garden also offers another type of healing that is not physical but spiritual, which is perhaps the greatest harvest of all: A hard day spent weeding provides an opportunity to pull out weedy thoughts so productive ones can flourish; a morning spent sitting quietly and watching chipmunks and woodpeckers do their business can teach us about the joyfulness of work. In a garden, we see firsthand the cycle of birth, reproduction, beautiful aging, and then death—and see new life born from the old. We witness the healing that happens after storms and crises and know that with good soil and good gardening practices, we too can recover.

As organic gardeners, we can add an extra level of healing—the healing of our planet. We know that the ground we tend without toxins is always better off than when we started, the soil will be richer in nutrients and carbon, the wildlife more diverse and healthy. I'm always thrilled when I find bats, bees, frogs, butterflies, and birds. If they are happy and healthy in my garden, then I know that my family and I are likely to be healthy, too. Gardens are more than just places to show off our landscaping skills, or to produce enough food to get through the winter (although both of those are good things!). Gardens are microcosms of our approach to living on this planet. If we heal the land, the land heals us. And then we have a bountiful harvest of healing. —*Maria Rodale*

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