

ALL ABOUT GROWING FRUIT TREES, P. 30



THE 2014
SELF-RELIANCE
—ISSUE—

MOTHER EARTH NEWS

THE ORIGINAL GUIDE TO LIVING WISELY
FEBRUARY/MARCH 2014

65 TIPS TO SAVE MONEY

GROW MORE FOOD IN LESS SPACE

With the Least Work!

HOMEMADE HERBAL REMEDIES

That Will Help You Heal

PLUS:

Heritage Backyard Chicken Breeds, P. 56

Olive Oil: When to Splurge, When to Save, P. 24

How to Make (and Use) Your Own Vinegar, P. 27

Growing Advice From an Organic Potato Expert, P. 52

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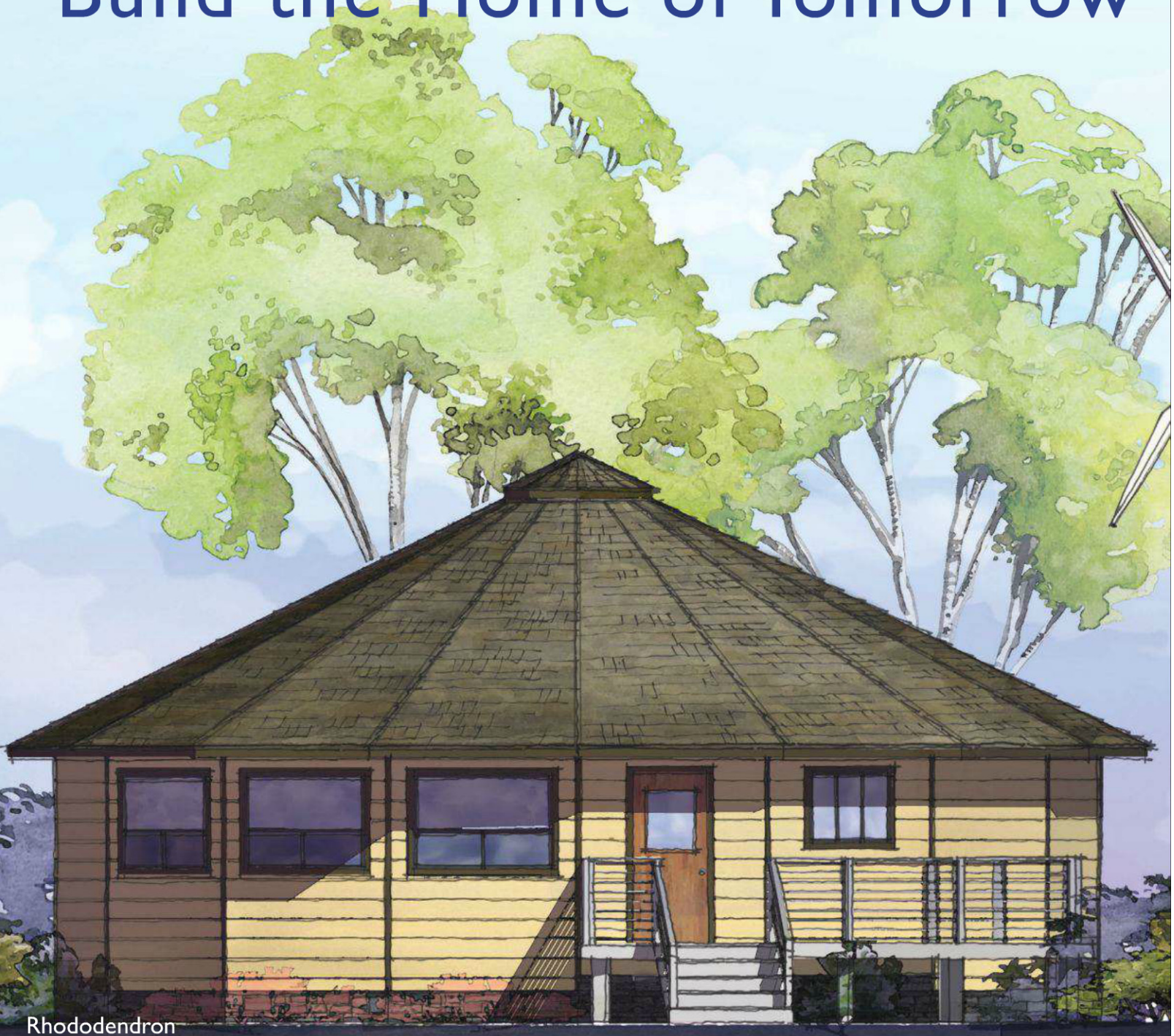
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Tip No. 22 (P. 34):
Start vegetables from
seeds rather than
buying seedlings.



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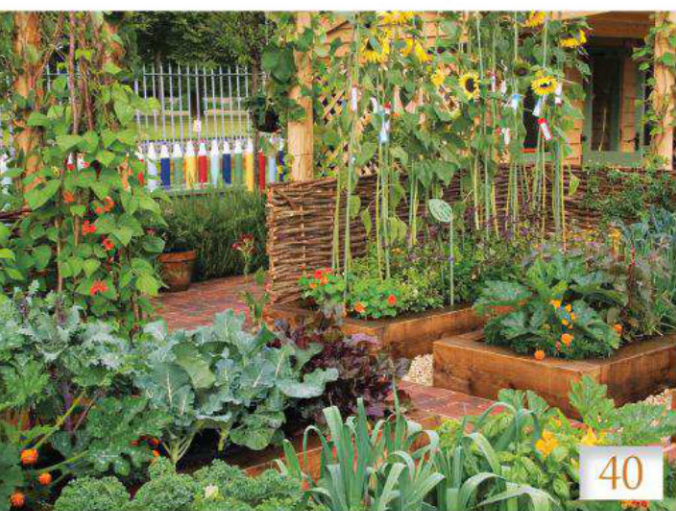


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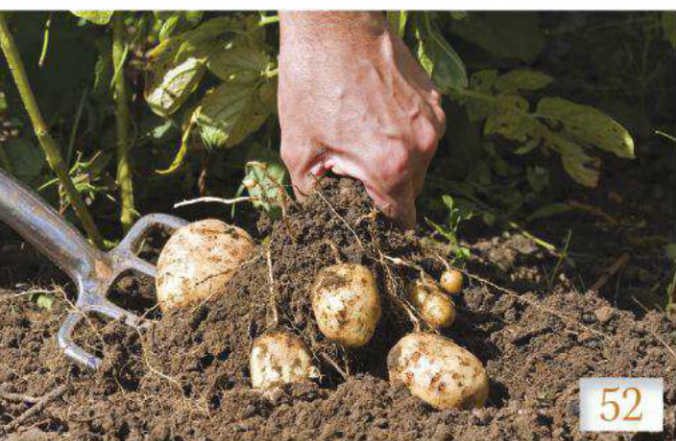
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MORE THAN A MAGAZINE ... A WAY OF LIFE

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Apply a DIY approach to any facet of your life and you can start saving big today.



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MICHELLE ALLMON



TIM NAUMAN



ELARA TANGUY



GARY BLOCKER; BELOW: SUPERSTOCK/UNIVERSAL IMAGES GROUP



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EarthWords

Charles Dickens

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Circle #44; see card pg 113



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An A-to-Z Guide to Herbs

From soothing aloe to spicy horseradish, subtle-sweet marjoram to savory thyme, discover the exceptional flavors and gentle healing capabilities of more than 40 of the plant kingdom's finest in our Directory of Culinary and Medicinal Herbs. This tour of the herb world is your one-stop shop for reliable information on cultivating, cooking and healing with these special plants. Herbs crown the cook's glory, and each plant's profile will show you how to harvest and store it for optimal quality, plus furnish you with recipes showcasing the ingredient's knack for improving or complementing flavors, such as Rosemary-Almond Biscotti, Sage-Cheddar Bagels, and bundles more. Many herbs are also valuable in the medicine cabinet, whether you're looking for natural relief for a cold or headache, or trying to ease more chronic ailments, such as allergies, back pain or high blood pressure. Identify herbs to meet your health needs or goals, learn the basic medicinal preparations—teas, infusions and tinctures—and find simple recipes for remedies that can relieve, refresh and heal. It's all gathered for you at www.MotherEarthNews.com/Herbs.



EXCLUSIVE ONLINE ARTICLES

Splendid Winter Squash Recipes

Have a hankering for fresh food in winter? When properly cured and stored, buttery, nutritious winter squash will stow marvelously into the long, chilly months, and, now, this lineup of mouth-watering recipes—Butternut Squash Lasagna, Spicy Squash Soup, Maple-Baked Acorn Squash, Squash Muffins and more—is set to keep your cravings satisfied. Go to <http://goo.gl/VSv9yB>.

Take the Leap: Sell Your Harvests!

Turn your homegrown bounty into bucks with our expert advice for launching a small-scale market-gardening business. This guide tackles important early-stage planning—determining your earning potential and pricing your products—to give you a leg up in becoming a strategic, savvy and successful market gardener. Go to <http://goo.gl/k9kUxV>.

DIY Beekeeping Equipment

As homesteading endeavors go, keeping bees is a low-cost, low-space venture that will yield a swarm of mighty sweet returns. By making your own equipment, you'll ensure your upfront expenses stay as modest as possible. Comb through this how-to for building a beehive in the top-bar style, a beekeeping method focused on sustainability and healthy, happy bees. Go to <http://goo.gl/h7a6p5>.

Grow Robust, Versatile Leeks

The leek's distinct yet delicate flavor tends to get upstaged by those of its more assertive cousins, garlic and onions. We think it's high time the leek seize the limelight, however. Learn how to cultivate your own crop of these rewarding alliums, then relish the harvest with our recipe for classic, leek-rich Quiche Lorraine. Go to <http://goo.gl/2hvxqJ>.



ADVENTURES IN UPCYCLING

From a discarded door turned cool coffee table to old tea tins re-imagined as herb pots, the art of upcycling is limited only by your imagination. We asked our Facebook community: What items have you plucked from their original purposes and made useful anew via thrifty, creative repurposing?



The doors to our pantry were once **elevator doors** in an old theater that was remodeled in Missoula, Mont. We love the many years of patina. —Dorinda Hogue Troutman

Vintage faucet knobs attached to a board make a charming towel hanger. For my herb garden, I've made plant markers from **forks** poked into **wine corks**, with the name of the plant written on the cork. —Jennifer Duncan

I upcycled some **encyclopedias** from the '60s into scrapbooks. I hot-glued fabric to the outsides, and the images and text on all of the pages provide a nice background for my photos. —Corri Peticolas Riebow

I turned old **chest drawers** into planter boxes that I use on my deck. —Timothy Jay





MEET OUR REAL FOOD BLOGGERS

Our Real Food Blog is brimming with ideas and info that will make your mouth water and your culinary skill set blossom. Get to know two of our bloggers below, and follow the latest from all of our contributors at www.MotherEarthNews.com/Real-Food-Blog.

Who: Lanette Lepper

Where: Chesapeake, Va.

What: Whether putting food by via traditional methods or stretching leftovers in new, scrumptious recipes, Lanette, a Navy wife and mother of two, writes about her pursuit of self-sufficiency by means of her practical, prolific kitchen. Read Lanette's posts at <http://goo.gl/8HDpCq>.



MOTHER: What's on the menu this winter from your stock of home-preserved fare?

Lanette: My family loves White Chicken Chili. It's a cinch to toss together from jars of canned beans and chicken, a few slices of candied jalapeños, dehydrated onions, homemade garlic powder, and cumin and other spices to taste.

MOTHER: Tell us about the community larder swaps you participate in.

Lanette: Larder swaps let me diversify what's in my pantry by exchanging homemade food with others. Through the events, I've also been able to connect with lots of like-minded people in my area. At our local swaps, we require that foods be canned using approved methods, and we ask everyone to bring samples and their recipes. To host a swap, all you need is a large room with tables, and www.FoodSwapNetwork.com is a fantastic resource for first-time swap organizers.

JUST SOW YOU KNOW ...

We're pleased to offer two digital resources for easier, more successful gardening this spring and beyond. First up, head to our new **What to Plant Now** page at www.MotherEarthNews.com/What-To-Plant-Now to get precise planting dates for 30 garden crops based on the average last spring frost date in your location.

Simply enter your ZIP code to find out exactly when to sow your seeds and set out your transplants. Then, after you've gotten your cast of crops in the ground,

peruse our popular **Crops at a Glance Guide** at www.MotherEarthNews.com/Crops-At-A-Glance, which will walk you through the specifics of growing 51 garden favorites.

These primers also detail how to save seeds and outwit common pests and diseases naturally, and more than a dozen of them are available for the first time exclusively on our website, including those for spring-heralding delights such as kohlrabi, rhubarb and sorrel.



Who: Leda Meredith

Where: Brooklyn, N.Y.

What: Take a stroll into nature's own well-stocked eatery with urban-foraging instructor Leda's tales of hunting wild edibles, complete with identification and cooking tips. Her insight will inspire you to try this local, delicious (and free!) way to dine. Read Leda's posts at <http://goo.gl/RJz4q2>.



MOTHER: Spring is nigh! Do you have a favorite spring foraging find?

Leda: Japanese knotweed. It's in season for only two to three weeks, but the shoots have a prized, grassy-lemon flavor, and they're a bit tart like rhubarb. My favorite way to eat them is combined with strawberries in sorbet.

MOTHER: What are your best tips for eating locally while winter is still upon us?

Leda: Always have a supply of local dry beans on hand. They can be prepared in so many different ways, and beans are full of relatively inexpensive fiber and protein. Centering meals on potatoes and other hearty root vegetables also goes a long way in keeping local, so try experimenting with different recipes and ways to cook these crops. And, of course, never run out of onions and garlic!

MOTHER EARTH NEWS (ISSN 0027-1535) is published bimonthly, six issues per year, by Ogden Publications Inc., 1503 SW 42nd St., Topeka, KS 66609. Periodical postage paid at Topeka, KS 66609, and at additional mailing offices. **Subscriptions:** \$19.95 for one year in the United States and its provinces; \$27.95 per year in Canada and \$31.95 per year foreign, prepaid in U.S. funds. (CANADA GST NBR. 89745 1720 RT0001). **Postmaster:** Send changes of address to MOTHER EARTH NEWS, 1503 SW 42nd St., Topeka, KS 66609-1265. **Subscribers:** Write to MOTHER EARTH NEWS, 1503 SW 42nd St., Topeka, KS 66609-1265 or call 785-274-4300 or 800-234-3368. Outside the U.S., call 785-274-4300. **Subscribers:** If the Post Office alerts us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. To purchase back issues from January 1995 to present, send \$7.50 per issue to MOTHER EARTH NEWS Back Issues, 1503 SW 42nd St., Topeka, KS 66609. Copyright 2014 by Ogden Publications Inc. All rights reserved. MOTHER EARTH NEWS is a registered trademark. Material in this publication may not be reproduced in any form without written permission. Permission requests must be in writing and should be directed to Bryan Welch; MOTHER EARTH NEWS Permissions; 1503 SW 42nd St., Topeka, KS 66609. Send story ideas to Cheryl Long at MOTHER EARTH NEWS, 1503 SW 42nd St., Topeka, KS 66609. Ogden Publications Inc. cannot be held responsible for unsolicited manuscripts, photographs, illustrations or other materials. Printed and manufactured in the United States of America. Publications Mail Agreement No. 40754547. Return undeliverable Canadian addresses to: MOTHER EARTH NEWS, P.O. Box 875, STN A, Windsor, Ontario, Canada N9A 6P2.

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MOTHER EARTH NEWS is published by Ogden Publications Inc.,

1503 SW 42nd St., Topeka, KS 66609, 785-274-4300.

For subscription inquiries in the U.S., call 800-234-3368.

Outside the U.S., call 785-274-4300; fax 785-274-4305.

Subscribers: If the Post Office alerts us that your magazine is

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Printed in the U.S.A.



A New Way to Meet Your Neighbors

Have you longed to meet like-minded homesteaders and wiser-living advocates in your area? Have you wanted to find out about neighborhood seed swaps and harvest parties, read local environmental action alerts, and seek or share gardening advice? Maybe you've pondered how to sell your surplus garlic or hope to find a new home for that tractor you no longer use?

Good news: Now you can do all of those things in one place, via the 60 state and province Facebook pages MOTHER EARTH NEWS has created for you, our readers. Minnesotans can strike up chats with other Minnesotans, Alabamians with Alabamians. Beginners can ask questions; local experts can offer answers. Expect humor and, sometimes, spirited debate.

We invite you to join the fun! To find your area's page, go to www.MotherEarthNews.com/Facebook. Or, log in to Facebook

(www.Facebook.com) and type "MOTHER EARTH NEWS" plus your state or province into the Facebook search bar. You should see the official title of the page (for example, "Kansas Community — MOTHER EARTH NEWS"). Select the page to open it and see a beautiful illustration of your state or province bird and flower.

If you're already a Facebook user, you know what to do next. After you "Like" your state or province's page, Facebook will begin publishing some of the page's posts to your News Feed. To share your own state-related news, advice or questions, simply post in the status bar on your state page. Your additions and others' will then show up under "Recent Posts by Others."

If you don't yet use Facebook, consider giving it a try. We've prepared a guide for how to join and use Facebook, available

at www.MotherEarthNews.com/Facebook, to help you get started.

Our editors will supervise the state and province pages, but it's up to you, the local users, to nurture your community's page and help it reach its full potential. Our goal is for these pages to be primarily about local news and networking. Imagine the camaraderie you can build with neighbors near and far while chatting over the virtual fence about your gardens, animals, DIY projects and more. MOTHER EARTH NEWS will post seasonal advice from our Archive and from organizations we work with, as well



as important or interesting news we spot that's specific to your area. We'll also notify you of sweepstakes and special prices on our top wiser-living books. And we won't neglect one of the best things about Facebook: the opportunity to share terrific photos and videos of cool houses and DIY projects, incredibly cute animals, and nature's ever-inspiring beauty.

We're confident these new pages will make the MOTHER EARTH NEWS community even more connected and lively, offering yet another way to access information on topics about which you care deeply. And who knows? Maybe these Facebook pages will foster more respect and solidarity between the "liberal" and "conservative" sectors of MOTHER's readership that Publisher Bryan Welch writes about on Page 11.

—MOTHER



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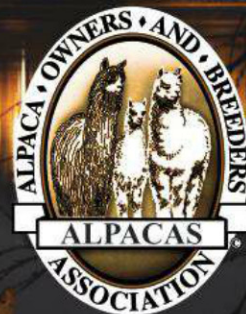
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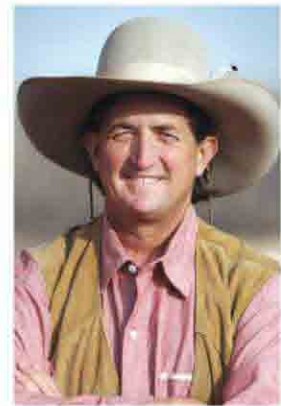
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Great Gardens, Pure Food and Clean Energy THE TIES THAT BIND



More and more people from both the right and left of the political spectrum are finding common ground in sustainable, self-reliant living.

You are growing, and we are growing, too.

Last year—in fact, for the past 10 years—MOTHER EARTH NEWS has been the fastest-growing major magazine in the country. Thank you for supporting what we do. We're proud to serve you for many different reasons.

A company called Mediamark Research & Intelligence (MRI) measures magazine audiences for the advertising industry. They confirm that, among the 211 largest magazine audiences in the country, none has grown faster than the MOTHER EARTH NEWS audience—that's you—over the past 10 years. During that period, our total audience has quadrupled.

Overall, magazine audiences have been shrinking lately. But not at MOTHER EARTH NEWS. Over the past six years, total magazine newsstand revenues across the country were down 37 percent. During the same period, our newsstand sales almost doubled. And your peer groups reading *Mother Earth Living* and *Grit*—MOTHER's sister publications that are not yet among the 211 magazines MRI measures—have been growing even faster.

Why? Well, as much as we might like to give all the credit to good manage-

ment, we actually think we're growing because we have good audiences. Very good audiences—"good" in every sense of the word.

MOTHER EARTH NEWS and its siblings here at Ogden Publications are about doing good. When we try to describe our magazines, we often say they are about "conscientious lifestyles." That's another way of saying they are magazines for conscientious people.

More and more these days, we let you tell us what to put in our magazines. We send

10 to 50 email surveys to various groups of readers every week. (If you want to join any of our advisory groups, go to www.MotherEarthNews.com/Advisory-Groups.) Based on the results of these surveys, we know that you love photos of heirloom tomatoes; you love gardens; you love barns and farmhouses; you are suspicious of the industrial food system; you enjoy growing your own food and making your own furniture; you believe natural remedies can heal most health problems (and you generally prefer those remedies); you are concerned about the future of our planet and our habitat; and you want very, very much to preserve a beautiful and abundant place where our grandchildren and our great-grandchildren can live.

Based on these common interests, we might all sound as though we're cut



A shared desire to live sustainably brings increasingly large audiences to the MOTHER EARTH NEWS FAIRS.



from the same cloth. But MRI also considers your unique personality as an audience. Starting in 2013, they began asking members of magazine audiences how they would describe themselves, politically. It turns out that about 10 percent of you think of yourselves as politically “very liberal.” And about 21 percent of you think of yourselves as politically “very conservative.”

You feel more strongly about your beliefs on both ends of the political spectrum than average Americans do. Out of a random group of Americans, only 5 percent would call themselves “very liberal” and 12 percent would call themselves “very conservative.” That means MOTHER EARTH NEWS readers are about twice as likely as the average American to describe themselves as “very liberal” or “very conservative.”

Any engagement with the media these days would have you believe that average Americans are incredibly polarized—so that must mean you, as an audience, are in polarization overload, with little to bind you together. But that’s just not so.

Commonality in Conscientiousness

As editors, we generally don’t think about whether a reader is liberal or conservative. We’re looking for readers who are very conscientious—people interested in sustainability and self-reliance. And it turns out that people who are very con-



The magazine attracts fans from diverse backgrounds.

scientious tend to describe themselves as “very liberal” or “very conservative.”

But your political differences apparently don’t extend to your feelings for gardens, tomatoes, farmhouses, pure food, a healthy human habitat or great-grandchildren.

Evidently, we all agree those are things that need to be preserved and nurtured. About the most important things, it seems you—and we—are aligned.

Not only were you the fastest-growing audience in the MRI study over the past decade, but you also spent more time reading each issue of MOTHER EARTH NEWS than any other magazine’s audience spent reading that publication’s pages—even when compared with

magazines that are twice as thick or twice as wordy.

In addition, you made MOTHER the magazine most likely to be a reader’s favorite out of all the large magazines in the country.

All of this is tremendously exciting for us, of course, and it’s encouraging in bigger ways, too.

Defying Definition

Pundits and politicians tend to group people demographically, economically, geographically, or sometimes based on one or two opinions. Ask a political consultant about any group of people and you’re likely to get a quick, simple description of that group’s interests, opinions and passions. People defined as “liberals,” for instance, are supposed to be interested in protecting the environment. “Conservatives”—as defined by television pundits and political hacks—are not.

So how do we explain the diversity of the MOTHER EARTH NEWS audience? Since 2003, most of our major editorial decisions have been guided by your opinions, collected through our email surveys. Without the research we’ve been doing, we might have relied on our instincts, which could have led us astray and prevented us from reaching the broad audience we now enjoy. But with the surveys guiding us, we’ve let you take us in some unexpected directions. We used to feature people on our covers. You told us you preferred to see vegetables and farmhouses. We used to refer to our readers as “environmentalists.” Now we know many of you don’t see yourselves that way. You prefer to be characterized as “conscientious.” Or maybe you just prefer not to be characterized at all—which is fine with us.

Surprisingly, our subject matter has changed less through the years than our terminology. The fundamental issues related to healthy people and a healthy planet are much the same as they were four decades ago. We continue to cover those topics—and, more importantly, give our readers tools for addressing those matters in a positive way through their own lifestyles.

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Many people interested in self-reliant living are choosing to grow their own food.



Distrust of the industrial food system frequently sends consumers to local farmers markets.

When we think about the tone of the magazine, we often compare it to hosting a dinner party. We want the conversation to be interesting, varied and provocative. But we don't want any of our guests to feel insulted, and we try to make sure that no one is offended, even if they are challenged. We want you to eagerly return to our next party.

As a result, experts say we have the most engaged audience of any major magazine in the country.


In our growth rate—and especially in the diversity of our audience's beliefs—we see a promising societal trend. More and more, people of all stripes are interested in changing their lifestyles to help ensure a healthy, verdant place for future generations. Many people enjoy learning how to grow their own food. They want to know who grows any food they don't produce for themselves. When they buy food in a store, they want to know what is in the food and how it was produced. They want furniture and clothing that don't depend on mistreated workers, no matter where those workers live. They want energy that is produced without polluting the environment. If possible, they'd like to produce their own clean energy.

We have good news for you. New wind and solar technologies are close to making homemade electricity affordable for many Americans. A new generation of automobiles can be efficiently powered with that homemade

electricity. More and more communities are fostering local business and local food. Companies are conducting business with more transparency, by letting consumers choose products that are conscientious as well as beautiful and durable.

Watch a half-hour of commercial television any time, day or night, and you might come away with a substantially different impression of our society. From that seat in front of your TV, our modern society may seem shallow, materialistic, oversexed, undereducated and ill-mannered.

Our research and our evolution as a business show otherwise. People are aware of the challenges we all face, and ever-increasing numbers of them are inclined to make changes in their own lives to address those challenges. We know, with absolute certainty, that many of you feel this way. And we can see in the hard statistics that more and more of you feel this way every year, bound together by your determination, regardless of your politics.

Congratulations. And, sincerely, thank you. 

MOTHER EARTH NEWS Publisher and Editorial Director Bryan Welch is the author of *Beautiful and Abundant: Building the World We Want* (see Page 96 to order).



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“Thank you for fostering the sense of contentment I feel while pursuing my goal of finding my dream farm.”



EDITORS' PICK

From Passion to Profession

I have always loved MOTHER EARTH NEWS, but I feel compelled to tell you just how much I appreciated your December 2013/January 2014 issue. It was so packed with information and inspiration!

The article “Herbal Antibiotics: An Effective Defense Against Drug-Resistant ‘Superbugs’” pointed out such a pressing health concern that I found myself considering a new career path: that of an herbalist. I’ve been circling around the idea for some time, and reading Stephen Harrod Buhner’s message about increasingly ineffective antibiotic drugs may be just the final push I need.

Also, Publisher Bryan Welch’s piece about the new terrain being forged by inventor and entrepreneur Elon Musk was magnificently presented (“Human Ingenuity: Never Underestimate Its Transformative Power”). Musk’s work is opening up new and hopeful horizons in a world that’s hurting for fresh solutions. Thank you, MOTHER, for keeping us informed of such positive work being done.

Salena Levi
Huntington, Massachusetts

Chill, Out

More than 30 years ago, I read an article in MOTHER EARTH NEWS that suggested raking up fallen autumn leaves, bagging them, and then placing the bags around the foundation of a house to help insulate against winter winds.

I have done this every year since I read the article, and in spring, I use the bagged leaves as compost. This was such a wonderful idea, and I have encouraged so many people to try it. It

really helps keep out the chill in winter!

Thank you for all of the sensible advice about ways to live better and make the most of the natural things in our world.

Jeanne Hill
Danville, Illinois

My Frugal-Living Mentor

A couple of years ago, I flipped through a copy of MOTHER EARTH NEWS from my dad’s stack of magazines and fell in love. Since then

I have been a subscriber, and I’m astonished at just how much I’ve learned. I’ve started growing vegetables indoors and in large tubs on my apartment patio, recycling my pet rabbit’s waste for the vegetables, and processing and storing all of my homegrown produce.

I can’t thank you enough for the knowledge you have given me. Since college, I have been living at the bottom of the ladder (or below it, if you can imagine), and with what I have learned

MOTHER’s Bread (In)Box

Back in the Saddle

I had been out of the practice of making my own bread for more than a year, but just today I baked a loaf following your article “5 Minutes a Day for Fresh-Baked Bread” (December 2008/January 2009). I can’t say enough about how easy and versatile this recipe is. I am back in the saddle again!

Gretchen Van Deusen
West Lebanon, New York

An Authentic Recipe

I was so excited to see the recipe for homemade sourdough in your December 2013/January 2014 issue (“Homemade Sourdough Bread, Step by Step”). I had been using a sourdough starter with a recipe I wasn’t too happy with. That recipe called for additional yeast, and the taste, smell

and texture of the finished product were not those of a real sourdough.

Since using your recipe, my sourdough is so authentic, and it just keeps getting better. Thank you!

Darlene Hunter
St. Maries, Idaho

DIY Sourdough Starter

I make my own sourdough bread often, so I loved your article about all things sourdough in the December 2013/January 2014 issue.

I currently bake sourdough with a starter I got from a friend, but I’ve made my own starter in the past from 2 cups of flour, 2 cups of water and 3 tablespoons of sugar. Mix and leave out on the counter for a few days until bubbly. I feed the sourdough starter with sugar, instant potatoes and

from MOTHER EARTH NEWS, I have been able to sustain myself and my better half for the past two years on almost nothing. You saved us, and I just wanted to say thank you!

Ben Coffman
Ypsilanti, Michigan

Dangerous Food Monopoly

Between the ag-gag laws you reported on in the December 2013/January 2014 issue ("Gagging on 'Ag-Gag' Laws?") and patent-infringement lawsuits by Monsanto against small farms, it seems there is an all-out assault being waged against our First Amendment and property rights.

These biotech companies desire an absolute stranglehold on our food-production capabilities, and, unfortunately, it's beginning to look like they're getting the upper hand and will indeed achieve their objective.

Those who control the food control the people, and allowing these corporations to dominate our food production is dangerous.

Ray White
Kingman, Arizona

Inspiration? Check!

Where have you been all my life?

That was the question I found myself posing after perusing your magazine for the first time.

Upon making the discovery that the word that best fit my lifelong search for meaning was "homesteader," I sought out like-minded spirits. Enter MOTHER EARTH NEWS magazine. I've been hooked ever since, and I have learned so many things from your publication. Each issue is a gift, spurring me on to learn more, create, and question my own intentions.

Thank you for fostering the sense of contentment I

feel while pursuing my goal of finding my dream farm, and thank you for continually inspiring me and challenging me to learn more. The short and sweet of it is: You're a keeper!

D. Hubbard
Winter Haven, Florida

Humane Poultry-Processing

I recently read the article "Raising Chickens for Meat" in your *Guide to Self-Reliance and Country Skills* special issue. Thank you so much to author Gwen Roland for putting into words what I have always felt but could never explain about raising and butchering my own chickens.

I can't count the number of times I've been told I was "coldhearted" to even consider killing an animal I had raised. Now I have your article, and I have already given it to two people as a response to such comments.

warm water. The bread recipe is quite simple: Stir together a third-cup or less of sugar, a half-cup corn oil, 1 cup starter, 1½ cups warm water and 6 cups flour (I use bread flour) in a large bowl. Add some oil to another bowl, put in dough, and turn it over. Cover with foil and let stand

overnight or for several hours. Punch down dough, knead a little, divide in half, and put into two greased bread pans. Let rise a few hours or longer.

Bake at 350 degrees Fahrenheit for 30 to 45 minutes, or until golden brown.

I sometimes replace some of the flour with whole-wheat, or I roll the dough up with cinnamon and brown sugar inside to make cinnamon bread. You can also use the dough to make rolls.

Anne Englebach
Marion, North Carolina

Snapshot: Sourdough Debut

Here's a photo of my very first loaf of sourdough bread, which I made today following the recipe in your December 2013/January 2014 issue!

Leah Robinson
Craig, Colorado



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Dear MOTHER

It is precisely *because* I care that I raise my own animals for slaughter.

I was taught by my grandmother that raising an animal for meat is a responsibility not to be taken lightly. She was very particular about every aspect of an animal's life—and death.

I live near a chicken-processing plant, and it saddens me to see the tractor-trailers going down the road loaded with live birds all smashed together in cages. My girls will eat watermelon rinds and take dust baths in the sunshine until their very last day.

*Jeanine Gurley
Eastover, South Carolina*

Respecting Earth's Natural Limits

I was quite pleased with Bryan Welch's "A Vision for a Better World" in the

October/November 2013 issue. Finally reading a piece that addressed human population issues was so refreshing. In the "Creating Abundance" section, he nailed it regarding the supply and demand of our natural resource base—that the number of people our planet can support with its natural resources is ultimately finite. One point from the article particularly resonated with me: Why not envision an ideal population rather than accept the inevitable growth of the human population?

Ultimately, humans will have to come to grips with this concept. The only alternative is to let nature control our population for us, and nature's methods will be far crueler (disease, starvation and war).

Never in the history of biology has exponential growth been sustained in

any population. Whether it's fruit flies, mice or humans, exponential growth can never continue forever. In every case, the population reaches a peak and then crashes, eventually returning to a carrying capacity. The same will happen with humans. Denial is simply not an option.

*Preston Sullivan
Meadville, Mississippi*

Timely Topics

You must have read my mind! A few months ago, I was thinking my family may want to get a working farm dog to keep an impertinent raccoon away from our chickens and gardens, and the very next issue of MOTHER EARTH NEWS had just the article I needed ("Working Dogs: Pick a Perfect Pooch for Your Pastures," October/

(CONTINUED ON PAGE 105)

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Gardener's Delight: Easier, More Adventurous Growing

I've been using the MOTHER EARTH NEWS Vegetable Garden Planner for three years, and I love it! I first tried it because we have a 3,000-square-foot garden that I wanted to manage well. The Garden Planner software has helped me implement crop rotations from year to year, as well as keep notes on which varieties are productive, hardy and delicious.

We love experimenting with new crops and varieties. Last year, we tried eight varieties of winter squash and 14 varieties of tomatoes, along with 'Lacinato' kale, 'Black Beauty' zucchini, 'Holland White' cucumber, broccoli, leeks, onions and Swiss chard.

*Caroline Graettinger
Canonsburg, Pennsylvania*

Our Vegetable Garden Planner transforms the screen of your computer into digital graph paper onto which you can sketch out your garden. Choose the shapes and dimensions of your beds, enter your ZIP code, select what you want to grow from a list of dozens of vegetables, fruits, herbs and cover crops, and—voilà!—the Planner will calculate planting dates and crop spacing, and it will keep yearly records of what you grew where. Learn more about the Planner and give it a try free for 30 days at www.MotherEarthNews.com/Garden-Planner. —MOTHER



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Ruth M.
Mother Earth News
Magazine subscriber

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Fracking and Our Food Supply

Hydraulic fracturing (usually called “fracking”), a process used to extract natural gas from far below ground, is a technology that’s been around for decades but started becoming commonplace in the United States in about 2003.

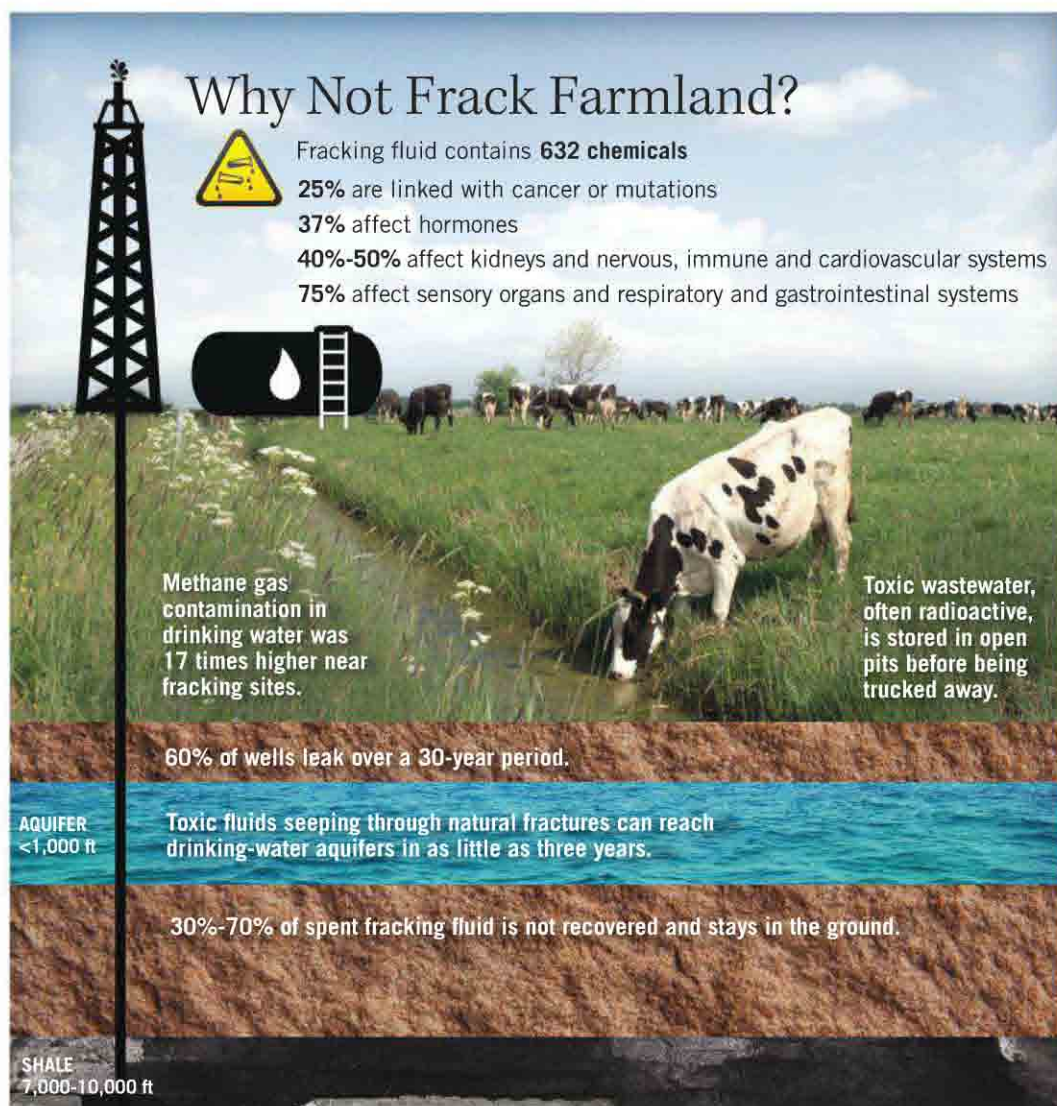
To draw out difficult-to-access reserves of gas, crews drill thousands of feet into the earth and pump in highly pressurized, chemical-laden fracking fluids. This allows them to get the gas out—but the process leaves a mess in its wake.

Fracking wastewater contains acetaldehyde, ammonium chloride, arsenic, benzene, formaldehyde, lead, mercury, radium and hundreds of other chemicals. The controversial practice pollutes water supplies and land with these toxins—which are so substantial that, in the most affected areas, household tap water can sometimes be set afire as if the water were gasoline. (Check out the 2010 documentary film *Gasland* for footage of this.)

In addition to reportedly making people sick from polluted water supplies, fracking may now be tainting our food supply. Because of the presence of chemicals in the water on farms where fracking is common, cattle in fracked areas are falling

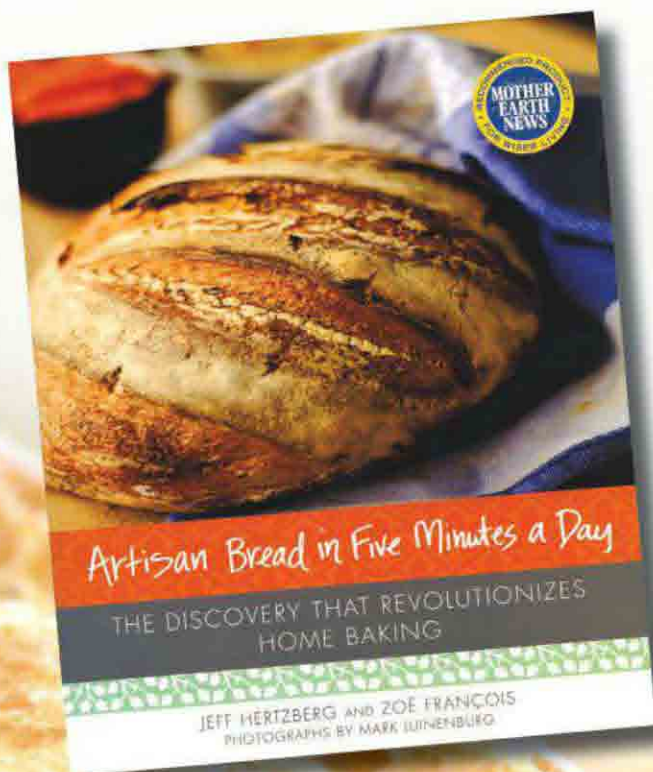
ill with neurological, reproductive and acute gastrointestinal problems. The polluted water is also threatening the health of the soil and crops near fracking sites. As reported by *The Nation*, the Marcellus Shale formation in the northeast United States holds vast supplies of natural gas and is currently being fracked—yet it also spans an area that is home to three of the country’s highest concentrations of organic farms, which are in New York, Ohio and Pennsylvania. The fracking boom is radically changing the landscape of some areas in these states. Farmers striving to avoid harmful chemicals are facing constant worry about their water supply containing toxic substances. To learn more about the dangers of fracking and its impact on our food, go to <http://goo.gl/fdL2kg>.

—Shelley Stonebrook



Graphic sources: *Human and Ecological Risk Assessment*; *Proceedings of the National Academy of Sciences* study; *Nature* groundwater study. Art by Tracy Dunn. Reprinted from *The Nation*.

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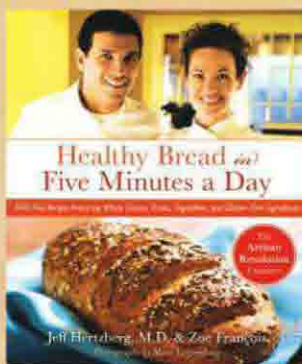


Artisan Bread in Five Minutes a Day

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Co-authors Jeff Hertzberg and Zoë François prove that bread baking can be easier than a trip to the bakery. Their method is quick and simple, bringing forth scrumptious perfection in each loaf. In exchange for a mere five minutes of your time, your breads will rival those of the finest bakers in the world.

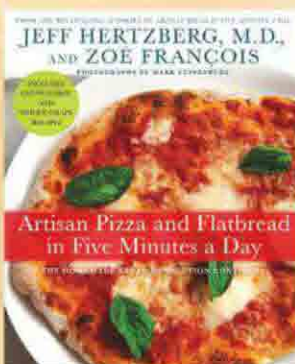
With nearly 100 recipes to put this ingenious technique to use, *Artisan Bread in Five Minutes a Day* will open the eyes of any potential baker who has sworn off homemade bread as simply too much work. Crusty baguettes, mouthwatering pizza crusts, hearty sandwich loaves and even buttery pastries can easily become part of your own personal menu, and this innovative book will teach you everything you need to know.



Healthy Bread in Five Minutes a Day

Item #4292, \$27.99

Packed with 100 healthy bread recipes featuring whole grains, fruits, vegetables and gluten-free ingredients, *Healthy Bread in Five Minutes a Day* will show you how the "secret" to gourmet, homemade bread in five minutes a day works with super-healthy ingredients, too.



Artisan Pizza and Flatbread in Five Minutes a Day

Item #5614, \$27.99

In *Artisan Pizza and Flatbread in Five Minutes a Day*, Jeff and Zoë show readers how to use their ingenious technique to make lightning-fast pizzas, flatbreads, and sweet and savory tarts from stored, no-knead dough.



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Nursery Plants Contain Bee-Killing Chemicals

Unless you're buying certified organic transplants this spring, you may be introducing persistent neonicotinoid insecticides into your garden—and thus into your food. As MOTHER EARTH NEWS has reported, neonics are potent systemic pesticides that spread through plants and contaminate pollen and nectar. The lingering poisons persist in soil, and they can be absorbed by subsequent crops. Neonics are one of the factors known to be contributing to colony collapse disorder, a phenomenon linked to the deaths of a vast number of honeybees over the past several years. These pesticides are also suspected of reducing many bird populations, as widespread use of neonics means fewer insects, which means less food for birds.

Neonics are widely used by farmers, and many garden centers and nurseries sell plants treated with them, too. This means you may be feeding neonics to your family, and bees could be poisoned by flowering plants you bring home. A 2013 study by the environmental group Friends of the Earth found neonics in plants from Lowe's and Home Depot stores in Minneapolis, San Francisco and Washington, D.C. In Europe, the Pesticide



The pollen and nectar of neonicotinoid-treated plants are poisonous to bees.

Action Network tested more than 100 plant samples of crops such as strawberries, tomatoes and zucchini, and found neonic residues in several samples of each crop.

The neonic-producing chemical companies (Bayer and Syngenta) have convinced the U.S. Environmental Protection Agency that these insecticides do not pose a danger to humans. We, however, aren't so sure. The chemicals' effect on brain cells is similar to that of nicotine, and nicotine exposure is a known cause of adverse effects in children. A 2012 Japanese study concluded that neonics may pose potent risks to human health (go to <http://goo.gl/dq3XuL> to read the study).

We believe these insecticides should be banned, period. Europe has already done so temporarily for some neonics. Hats off to U.S. Reps. Earl Blumenauer of Oregon and John Conyers Jr. of Michigan for introducing the Saving

America's Pollinators Act, which seeks to suspend the use of neonics on bee-attracting plants. For more information on these chemicals, go to www.MotherEarthNews.com/Neonics.

—Cheryl Long, Editor-in-Chief

Take a Propane Mower for a Ride

Several mower manufacturers, including Exmark, Kubota, Toro, Ferris and Scag, have impressive new zero-turn riding mowers that burn propane. Lehr even builds small push mowers, trimmers and leaf-blowers that run on propane. Propane-powered mowers typically cost slightly more than their gasoline counterparts, but if you're a landscape contractor, the Propane Education & Research Council will give you a \$1,000 incentive for buying a propane-powered machine.

Propane is a cleaner fuel overall than both gasoline and diesel. According to *Popular Science*, burning propane generates 26 percent less greenhouse gases and 60 percent less carbon monoxide than gasoline. Propane is a byproduct of processing oil, and it would be burned off if it weren't otherwise marketable as a fuel. Handling propane is a lot less messy than doing the same work with diesel or gasoline. Propane doesn't

deteriorate when it's in a sealed tank, so you can store it in winter and then go to work promptly when the grass turns green.

My wife, Carolyn, and I tested the Exmark LazerZ propane mower with a 60-inch deck, as well as a similarly equipped Kubota ZP330P. With a single 10-gallon tank, the 24-horsepower Exmark mower ran for about five hours before it needed to be refilled.



Carolyn Welch tests the Exmark LazerZ propane mower.

Filling the tank cost about \$35 during the summer of 2013. The fuel expense of our propane mower seemed to be comparable to the fuel expense of a similar gasoline mower. The Kubota carries two 8-gallon tanks on a 31-horsepower model. Both mowers supplied plenty of torque and ran trouble-free through a season of work on our large rural property.

The disadvantages we found in using a propane mower were that the full tanks were heavy to lift, and local propane dealers weren't cooperative. In general, they weren't set up for walk-in business and weren't keen to help. Also, arranging to visit them during their limited business hours was a hassle, while we could have filled a gasoline can any old time at the convenience store. If you buy a propane mower, ask the dealer to throw in an extra propane tank so you can keep a reserve in the garage.

—Bryan Welch

Blight-Resistant Tomato Varieties

Tomatoes top home gardeners' lists of favorite crops, but since 2009, thousands of tomato lovers have had to stand by helplessly as persistent rains triggered outbreaks of late blight. Caused by the microorganism *Phytophthora infestans*, late blight kills susceptible tomato plants within days of infection. Once regarded as only a late-summer ailment that hit tomatoes sporadically, last year late blight handily wiped out tomato crops from New York to Georgia.

But the end of the late-blight nightmare is nigh. Thanks to breeding work done by Johnny's Selected Seeds, Cornell University and North Carolina State University, gardeners can now fend off tomato blight by choosing from several good-tasting, blight-resistant varieties. Some are even "double-resistant," meaning they have resistance to early blight, too, which affects tomatoes almost everywhere.



Try award-winning 'Jasper' cherry tomatoes to beat blight.

After trialing in North American gardens, Johnny's double-resistant 'Jasper' cherry tomato was named a 2013 All-America Selections (AAS) winner. An early, widely adapted, indeterminate red cherry tomato, 'Jasper' received high ratings from AAS judges for its sweet flavor.

In field trials on Long Island, N.Y., slightly larger-fruited 'Mountain Magic' earned high flavor and performance scores from consumers. Bred by Randy Gardner at North Carolina State University, 'Mountain Magic' debuted on the market in 2012 after a long string of taste-test wins.

There's an open-pollinated option for blight resistance, too: vigorous 'Matt's Wild Cherry,' which is often the last heirloom tomato standing in gardens during bad blight years.

In cooperation with the North Carolina State tomato-breeding program, Johnny's has also created 'Defiant PhR,' a variety that produces small, round slicing tomatoes on compact, determinate plants. 'Iron Lady,' a joint breeding project between Cornell University and North Carolina State, resists early and late blights as well as septoria leaf spot, a disease known to weaken plants after they've set fruit. 'Iron Lady' bears clusters of 3-inch-round red fruits on bushy, determinate plants.

'Jasper,' 'Mountain Magic' and 'Matt's Wild Cherry' tomato seeds are widely available from major seed companies. Bonnie Plants (www.BonniePlants.com) sells 'Defiant PhR' plants, or you can buy seeds from Johnny's Selected Seeds (www.JohnnySeeds.com). High Mowing Organic Seeds (www.HighMowingSeeds.com) offers seeds of 'Iron Lady.'

—Barbara Pleasant

Keystone XL Pipeline

Oil from tar sands is particularly corrosive and, therefore, problematic to transport safely by pipeline. A proposed oil pipeline that would transect six U.S. states in order to transport tar sands oil from Canada to the Gulf Coast has cleaved its way into the center of U.S. political debate about the wisest course for future energy policy. If approved, the 1,179-mile Keystone XL pipeline would carry about 1 million barrels of crude oil a day from Alberta, Canada, to refineries in Texas, crossing sensitive bioregions such as Nebraska's Sandhills and the Ogallala Aquifer. Although TransCanada, the company heading up the project, touts the pipeline's potential to reduce U.S. dependence on foreign oil and to create jobs, opponents warn a massive influx of crude would push the United States to export dirty fuel to the world market, do nothing to increase U.S. energy security, and sustain fewer than 40 permanent jobs, all while threatening the environment. Whether to approve Keystone XL falls to President Obama, who, at press time, has yet to make a decision. To read the project's Environmental Impact Statement, go to www.KeystonePipeline-XL.State.gov.

—Kale Roberts

Try Bike Sharing

Need a cheap, easy way to get around? Not a problem—if you're in a city with a bike-sharing program. These systems allow you to rent a bicycle from a checkout station, take it for a ride, and return it to any kiosk in the network. Many bike-sharing programs require a credit

card to secure a membership that entitles you to unlimited rides for the subscription period, which can be anywhere from one day to a year. Communities are taking bike shares for a spin because the initiatives relieve traffic congestion, help commuters, and offer tourists a leisurely and cheap way to sightsee. Plus, bike-share stations can be installed inexpensively. Capital Bikeshare in Washington, D.C., is the nation's largest, with more than 1,800 bikes and 200 stations, but smaller systems are popping up all over. Find out whether there's a similar program near you by cruising on over to www.BikeShare.com/Map.

—Rebecca Martin

Great Garden Writing

Congrats to MOTHER EARTH NEWS Contributing Editor Barbara Pleasant, whose Garden Know-How column (www.MotherEarthNews.com/Garden-Know-How), which covers practical gardening techniques, won the 2013 Silver Award of Achievement from the Garden Writers Association (GWA) in the magazine column category. "These columns are joint efforts between Editor-in-Chief Cheryl Long, the magazine's creative team, and me. Together, we bring more than 60 years of gardening experience to each project, and a shared passion for research," Pleasant says.

In 2009, Pleasant's book *The Complete Compost Gardening Guide* received a GWA Silver Award in the book category, and in 2011, her feature "Organic Pest Control: What Works, What Doesn't" won a Gold Folio: Eddie Award (go to <http://goo.gl/asas8V> to read the winning story).

—MOTHER



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OLIVE OIL

When to Splurge, When to Save

By Tabitha Alterman
Photos by Tim Nauman

You've likely heard how healthy the Mediterranean diet is, replete with fish, vegetables, whole grains and legumes—all dressed with olive oil. But you may not have heard the complete truth about how to use olive oil.

First, realize there are differences in how to use olive oil if you're choosing it for flavor rather than cooking with it for health. Extra-virgin olive oil is expensive, but fresh-pressed, unfiltered extra-virgin olive oils can contain at least 30 beneficial phenolic compounds. These strong antioxidant phenols neutralize dangerous free radicals in your body.

You can tell an extra-virgin olive oil is rich in phenols if it's slightly bitter and astringent, peppery, and has a "bite." The most healthful extra-virgin olive oils taste this way. Light, heat and oxidation damage phenols, however, so store your top-quality olive oil in a dark bottle in a cool place, and plan to use it within a year.

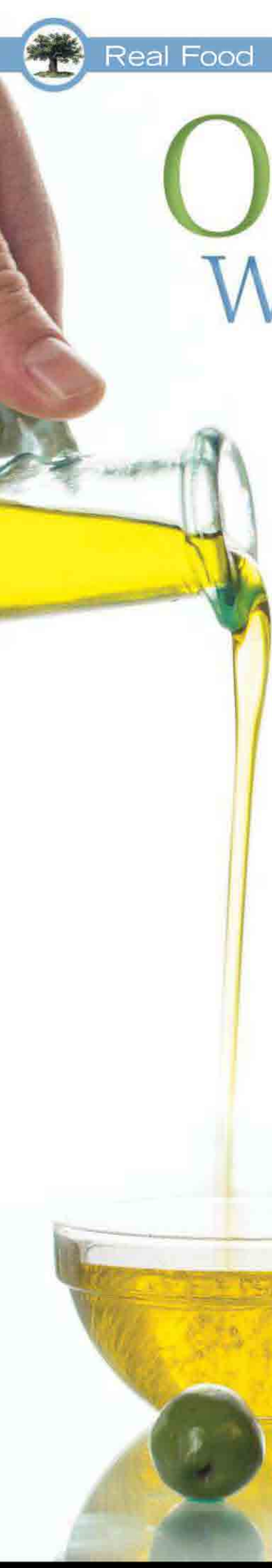
Don't cook with expensive extra-virgin olive oil if you're after maximum health benefits, because temperatures above 200 degrees Fahrenheit damage the beneficial phenols. Reach for your best extra-virgin olive oil to drizzle on already-cooked foods, or as a dip for bread. Also use it to dress salads with this classic vinaigrette recipe: Blend 3

parts olive oil to 1 part vinegar. Whisk in a little Dijon mustard—to help the vinaigrette stay in emulsion—and season with salt and pepper. This simple vinaigrette can also be a marinade.

Many chefs—usually interested mostly in flavor, not health—start their recipes by sautéing something "in extra-virgin olive oil." You can save money without sacrificing flavor by buying less expensive regular olive oil for cooking. These oils come from later pressings, and the olives may have been processed with heat, chemical solvents or other methods to extract more oil. With a smoke point of about 350 degrees, regular olive oil is a good cooking oil that imparts a mild flavor.

The United States has no official "standards of identity" for olive oil, and a 2010 University of California, Davis, report found that most olive oil labeled "extra-virgin" was, in fact, fraudulent. (Read more about the report at <http://goo.gl/ue25KN>.) Top-quality extra-virgin olive oils are often labeled with their acidity—the lower the acidity, the better the oil. (For more information, see the North American Olive Oil Association's proposed standards at <http://goo.gl/M3DC3s>.)

Buy true extra-virgin olive oil at its source to be sure. Straight-from-the-source operations are Olea Estates (www.OleaEstates.com), Fandango Olive Oil (www.FandangoOliveOil.com), Georgia Olive Farms (www.GeorgiaOliveFarms.com), Global Gardens (www.GlobalGardensOnline.com) and biodynamic DaVero (www.DaVero.com). To learn more about olive oil and access a checklist to locate the real stuff, visit www.TruthInOliveOil.com.





Olive Oil Cake

Use a mild-flavored olive oil. If your semolina (ground durum wheat) is coarse, run it through a food processor. *Yield: One 10-inch Bundt cake.*

*1/2 cup pine nuts
3 eggs, separated, at room temperature
1/2 tsp vanilla extract
Zest of 1 lemon
1 cup whole-wheat flour
1/2 cup finely ground semolina flour
1 1/2 tsp baking powder
1/2 tsp baking soda
1/2 tsp plus a pinch of salt
1/2 cup olive oil, plus extra for greasing pan
1/2 cup plus 6 tbsp granulated sugar
2/3 cup ricotta cheese
1/2 tsp cream of tartar*

For the glaze

*2 tbsp limoncello or lemon juice
2/3 cup confectioners' sugar*

Preheat oven to 350 degrees Fahrenheit. Lightly grease a Bundt pan with olive oil, and then dust the pan with flour.

Toast pine nuts over medium-low heat until fragrant and barely brown. Beat egg yolks with vanilla and lemon zest. Sift together flours, baking powder and soda, and half-teaspoon of salt.

Beat the half-cup olive oil with a half-cup sugar in a separate bowl for about 3 minutes. Beat in egg-yolk mixture, then ricotta. Gradually add flour mixture. Stir in pine nuts.

In a separate bowl, beat egg whites with a pinch of salt until foamy. Beat in cream of tartar. Continue beating until soft peaks form, then add remaining 6 tablespoons sugar. When stiff peaks form, stir a dollop of egg-white mixture into batter, then fold in the rest. Stop when batter is uniformly combined. Pour batter into pan and smooth the top with a spatula. Bake for 35 minutes or until browned and set. Let cool, then invert cake onto a serving platter or cake stand.

Whisk limoncello and confectioners' sugar together. Drizzle glaze over cake while it's warm.



Basil-Infused Olive Oil

This oil forms the basis of the simple but flavorful tomato sauce featured in Andrew Carmellini's book *Urban Italian*. *Yield: 1 1/4 cups infused oil.*

*1 head garlic
1 1/4 cups olive oil
1 cup packed basil leaves, washed,
with stems still on
1 tsp red pepper flakes*

Cut the top off the garlic head so the skin stays on but the tops of the cloves are exposed. Combine garlic, oil, basil and red pepper flakes in a small pot over medium heat and bring to a simmer. As soon as you hear the basil crackle, take the mixture off the heat and set aside.

At this point, Carmellini strains everything out of the oil and pours it into a bunch of tomatoes (5 pounds) simmering with salt (1 teaspoon). The oil is wonderful that way, but you can also leave everything in and serve the oil by itself as a dip. Or, purée the whole mixture to use as a condiment.

If you don't strain the oil, refrigerate the surplus, because infused oils can support the growth of botulism. Use within 3 days.



Olive Tapenade

Use any olives you fancy, even a mix of green and black. The flavor of olive oil will come through here, so use a good one. Pit olives easily by laying them on a cutting board and crushing them with the bottom of a cast-iron skillet, then fishing out the pits. *Yield: 1 to 1 1/2 cups.*

*1 cup pitted olives
1 clove garlic
2 tsp lemon juice
1/4 to 1/2 cup extra-virgin olive oil*

Optional add-ins

*1/4 cup capers, rinsed
1/2 cup fresh figs, stemmed
1/2 cup roasted or sun-dried tomatoes
1/2 cup nuts
1 to 2 anchovy fillets
1 tsp fresh herbs, such as basil or rosemary*

In a food processor, whiz pitted olives, garlic and lemon juice, plus any optional add-ins. While machine is running, pour in olive oil in a stream, until a chunky paste forms. Serve as a condiment, on crostini as an appetizer, or tossed with pasta as a sauce.

Choosing Olive Oil You'll Love

Olive oils come in many flavors, depending on the variety of olive or blend of olives that go into them. The most popular flavor in the United States is middle-of-the-road—not assertive enough to offend anyone, nor dynamic enough to be very interesting. This is OK for applications in which heat might destroy the flavor nuances anyway, such as high-heat sautéing. If, on the other hand, the oil's flavor has the chance to come through in the finished dish—such as in salad dressing or the tapenade recipe above—you might consider seeking out one of the following single-varietal olive oils: 'ascolano' (fruity), 'koroneiki' (fruity), 'kalamata' (juicy), 'manzanilla' (assertive), 'coratina' (fruity), 'frantoio' (assertive), 'mission' (lush), 'farga' (peppery), or 'castelvetrano' (spicy).

Varietal olive oils are easy to find via the Internet, and they're becoming more widely available in specialty markets. Excellent olive oils come from Greece, Italy and Spain. Search www.LocalHarvest.org for North American producers, many of whom are certified organic.



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How to Make—and Use!—Homemade Vinegar

Turn red wine, white wine, apple cider and beer into flavor-packed vinegars that can enhance almost any food.

In *Ruhlman's Twenty*, food writer Michael Ruhlman asserts that acid is second only to salt for elevating the flavors of your cooking. Just a few drops of acid in the form of citrus or vinegar can make a dish more complex — “brighter,” as Ruhlman says. To explore the power of acid, he suggests making a cream of broccoli soup and tasting it. Then stir in a drop of white wine vinegar and taste it again.

Ruhlman says the kind of vinegar you have doesn't matter as much as the quality, and one way to ensure high-quality vinegars is to make and age them yourself. The DIY approach also saves money, as top-notch vinegars are pricey.

The options for using homemade vinegar are nearly endless. To make a simple sauce for meat or vegetables, bring vinegar to a rapid boil and reduce by about half. Add vinegar to braising liquids to tenderize meats. Vinegar also preserves foods—think dill pickles. And, of course, vinegar has many uses outside the kitchen. (Find 20 of them at <http://goo.gl/7VF9ns>.)

What Is Vinegar?

The French word *vinaigre* means “sour wine.” In *Wild Fermentation*, author and fermentation expert Sandor Katz writes that his experience with vinegar-making began as winemaking gone awry. “Vinegar is an excellent consolation for your wine-making failure,” he writes. (To avoid getting vinegar instead of wine, you should store your vinegar-making



Top, left to right: Vinegar starters are available commercially. A mother of vinegar will form as your batch ferments. Bottom, left to right: Strain the vinegar, reserving the mother for your next batch. Bottle for longer storage.

projects far away from your homebrew batches.)

If a liquid has fermentable sugars or alcohol in it, the liquid can be turned into vinegar. Wine makes wine vinegar, cider makes cider vinegar and beer makes malt vinegar. Your kitchen is well-stocked if you have wine, cider, and possibly malt and sherry vinegars.

When alcohol is exposed to oxygen, it is transformed by aerobic (oxygen-loving) acetobacter bacteria into acetic acid, more commonly known as vinegar. The ubiquitous acetobacter bacteria in the air find the alcohol in loosely covered wine, cider or beer and go to work. Katz says the simplest method—albeit sometimes

faulty—to make both alcohol and vinegar is to let unpasteurized apple cider sit for a week until it becomes alcoholic, and then let it sit for another couple of weeks until it becomes vinegar.

To ensure your fermentation creates flavorful vinegar, however, use a “mother of vinegar.” The mother is a gelatinous mass of vinegar-making organisms that forms naturally in vinegar. You can order a starter of live vinegar containing particles that will clump together and form a mother during fermentation. Add the starter (or mother) to a new batch of alcohol—wine, cider or beer—and leave it there until the vinegar tastes right to you, at which point you

may remove the mother and use it for a new batch.

Step-by-Step Process

1 Gather your vessel.

Because acetobacter bacteria need oxygen to work, a wide-mouth crock, glass jar, food-grade plastic bucket, bowl, wooden cask or other non-metal container is best (vinegar corrodes metal). Do not fill the container more than about half-full to maximize the surface area ratio.

2 Gather your starter.

You can get a mother of vinegar from a friend who makes vinegar. Or, order a starter from wine and beer supply shops or online from www.AdventuresInHomeBrewing.com, www.Leeners.com,



www.CulturesAlive.com.au, or www.Etsy.com.

3 Gather your ingredients. To make wine vinegar, you want 1 part starter (or mother), 1 part unchlorinated water and 2 parts alcoholic beverage. Use unsulfited organic alcohols if possible, because sulfites kill acetobacter bacteria. If your wine contains sulfites, let the mixture sit for a half-hour. (If your water is chlorinated, boil it first and let it cool, or let the water sit out on the counter overnight.) For cider and beer vinegars, omit the water. Add alcohol and water, if using, to your vessel. Stir. Pour in the starter (or gently add the mother).

4 Cover the top. Place cloth or a few layers of cheesecloth over the container and secure with a rubber band.

5 Store the vessel. Set the vinegar pot where the temperature stays between 65 and 90 degrees Fahrenheit. Keep the container out of sunlight and drafts.

6 Monitor the vinegar. Over time, the mother on top of the vinegar will become thicker. It may develop a brownish cast, which is fine. If you see mold or smell a paint-thinner aroma, toss the batch. (This is rare.)

7 Taste the vinegar. After a couple of weeks, sample a spoonful of the vinegar. Simply remove or lift the mother out of the way. It's OK if the mother sinks. If the liquid tastes like vinegar, it's ready. You may want to leave it to ferment longer for a stronger flavor. In warm temperatures, vinegar may be finished in two weeks. In cold temperatures, it may take a month or more—it's OK

to let it go longer. Vinegar is stable for a long time, though it will begin to lose its potency in time.

8 Draw off your finished vinegar. Pour the liquid through a strainer. Decant almost all of it to a clean, glass jar with a narrow neck and a top with a tight-fitting lid or new cork to reduce further oxidation. The vinegar will continue to age and mellow in the bottle.

9 Save the mother. Put the mother back into the fermenting vessel and pour remaining vinegar over it. This is the mother of vinegar for your next batch. You can either start a new batch now or let your mother sit at room temperature for up to a month until you're ready to use it again.

If you plan to share the mother, now is the time to split it.

10 Age the vinegar. Store the vinegar at 50 to 60 degrees for six months to mellow and let particles settle. The vinegar will improve for up to two years, then slowly decline. Use the vinegar as is, dilute it to your taste, or infuse it with herbs or other flavors (see the box below).

To give the infused vinegar as a gift, add fresh flavoring ingredients so their colors are fresh and bright.



How to Make Infused Vinegars

Infused vinegars add dazzle to food. They make great gifts, too.

1 Wash a glass canning jar and its lid in hot, soapy water. Rinse, and leave the jar in hot water until the vinegar and other ingredients are ready.

2 Make sure infusion ingredients are clean.

3 Heat vinegar in a saucepan to just below 160 degrees Fahrenheit. Turn off heat.

4 Remove jar from the water and drain it. Pack herbs and other infusion ingredients into the jar. Pour in hot vinegar, leaving one-quarter-inch headspace. Place a small piece of wax paper or plastic wrap over the top, then screw on the lid. (The wax paper ensures the vinegar doesn't touch the metal and corrode it.)

5 Store the jar at room temperature for up to a month. You may open the vinegar to test it periodically. When you like the flavor, strain out the infusion ingredients.

6 You can store the infused vinegar in the same canning jar, but, ideally, vinegar should be stored in a narrow-neck bottle with a tight seal to prevent oxidation.

7 If you plan to use the vinegar within a couple of months, you may add a fresh sprig of whatever herb you used to the bottle as decoration.

Favored Flavors

- 2 stems of fresh tarragon in balsamic or white wine vinegar
- Half a habanero pepper with a handful of fresh cilantro in white wine vinegar
- Zest of 1 lemon plus a handful of fresh basil in white wine vinegar
- 2 sprigs each of parsley, basil, thyme and oregano with 2 garlic cloves and 1 teaspoon red pepper flakes in white wine vinegar
- 4 stemmed and sliced strawberries with 2 sprigs of thyme in champagne vinegar
- 1 sprig of rosemary in red wine vinegar
- Diced shallot in sherry vinegar
- A half-cup of fresh blackberries and a handful of fresh mint in cider vinegar
- Zest of 1 orange plus 3 cloves and 1 inch of a cinnamon stick in cider vinegar
- 1 tablespoon each of celery seed and coriander seed in malt vinegar

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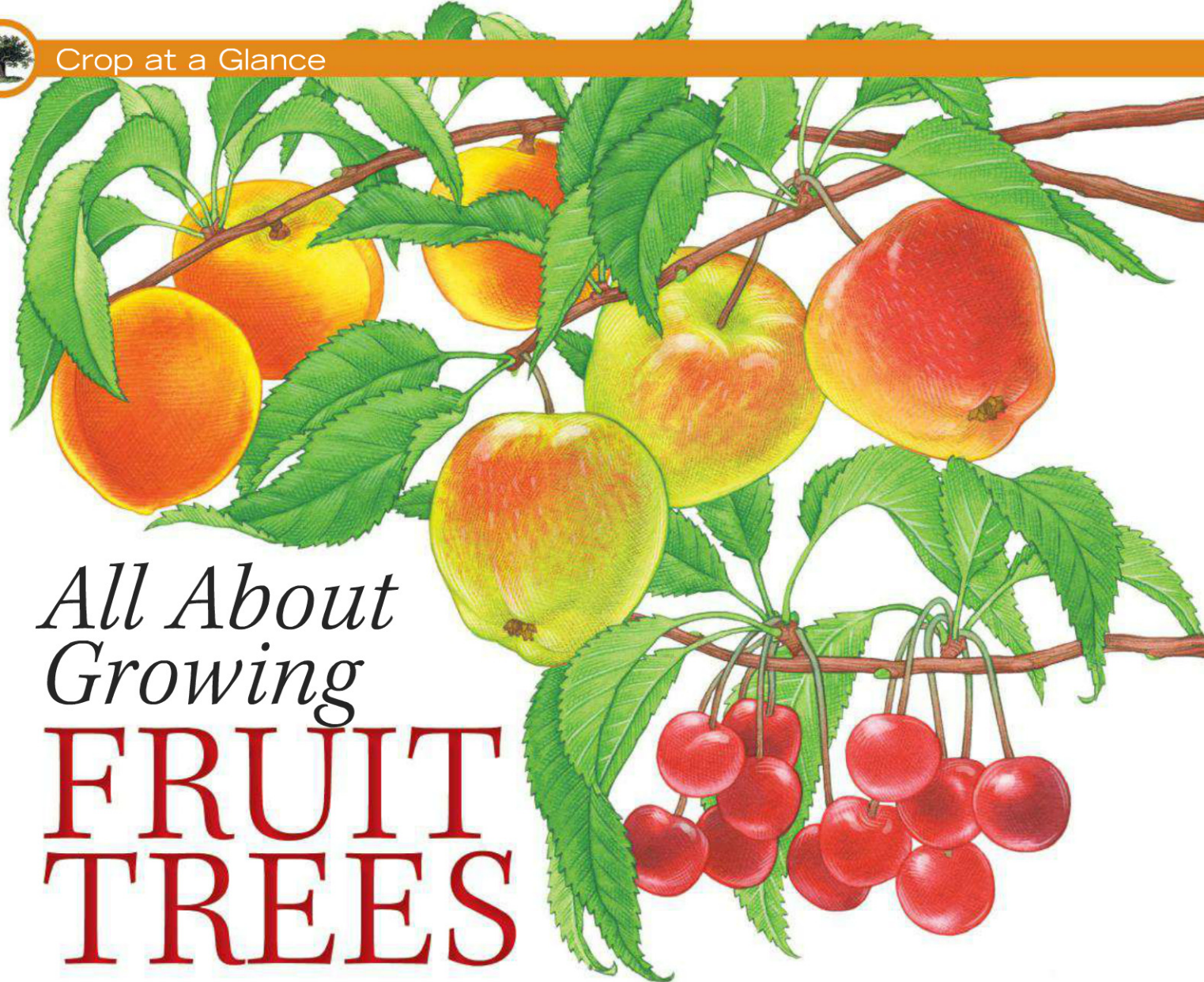
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All About Growing FRUIT TREES

By Barbara Pleasant
Illustrations by Keith Ward

No plants give sweeter returns than fruit trees. From cold-hardy apples and cherries to semi-tropical citrus fruits, fruit trees grow in nearly every climate. Growing fruit trees requires a commitment to pruning and close monitoring of pests, and you must begin with a type of fruit tree known to grow well in your area.

Choose varieties recommended by your local extension service, as some varieties need a certain level of chill hours (number of hours below 45 degrees Fahrenheit). For complete details on planning and maintaining a home orchard, we recommend the book *The Holistic Orchard* by Michael Phillips (see Page 96 to order).

Types to Try

Even fruit trees described as self-fertile will set fruit better if grown near another variety known to be a compatible pollinator. Extension publications and nursery catalogs often include tables listing compatible varieties.

Apples (*Malus domestica*) are the most popular tree fruits because they are widely adapted, relatively easy to grow and routine palate-pleasers. The ideal soil pH for apples is 6.5, but apple trees can adjust to more acidic soil if it's fertile and well-drained. Most apple varieties, including disease-resistant 'Freedom' and 'Liberty,' are adapted to cold-hardiness Zones 4 to 7 (if you don't know your Zone, see "Know Your Cold-Hardiness Zone" on Page 31), but you will need low-chill varieties, such as 'Anna' and 'Pink Lady,' in mild winter climates. No matter your

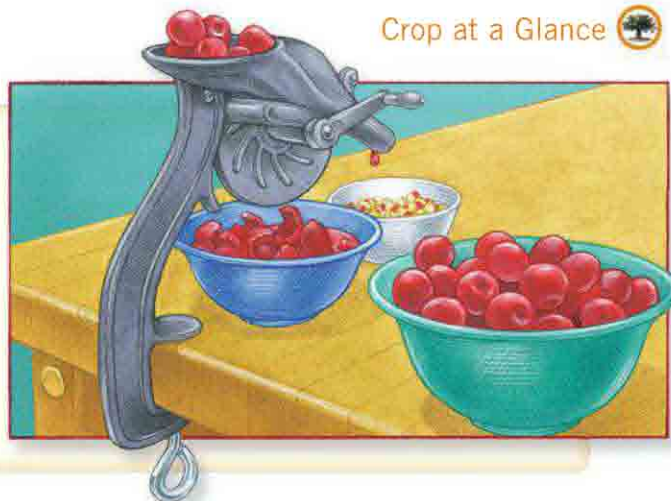
climate, begin by choosing two trees that are compatible pollinators to get good fruit set. Mid- and late-season apples usually have better flavor and store longer compared with early-season varieties.

Cherries (*Prunus avium* (sweet) and *P. cerasus* (sour)) range in color from sunny yellow to nearly black and are classified in two subtypes: compact sweet varieties, such as 'Stella,' and sour or pie cherries, such as 'Montmorency' and 'North Star.' Best adapted to Zones 4 to 7, cherry trees need fertile, near-neutral soil and excellent air circulation. Growing 12-foot-tall dwarf cherry trees of either subtype will simplify protecting your crop from diseases and birds, because the small trees can be covered with protective netting or easily sprayed with sulfur or kaolin clay.

Citrus fruits (*Citrus* hybrids), including kumquat, Mandarin orange, satsuma

In the Kitchen

Managing the hefty harvests from mature fruit trees will require a range of food-preservation skills. Manual fruit-processing equipment, such as a cherry pitter (right) or an apple peeler/corer, can be excellent investments. At each picking, a number of bruised fruits will need attention right away, while you can refrigerate and forget about sound fruits until your next preservation project. In addition to making jams, jellies and chutneys, try freezing or canning homemade fruit juices. Packets of frozen fruit are handy for baking or in smoothies, and dried fruit can be quickly rehydrated in warm water or munched as a snack.



and 'Meyer' lemon, are among the easiest fruit trees to grow organically in Zones 8b to 10. Fragrant oils in citrus leaves and rinds provide protection from pests, but cold tolerance is limited. 'Nagami' kumquat, 'Owari' satsuma and 'Meyer' lemon trees may occasionally need to be covered with blankets when temperatures drop below freezing, but winter harvests of homegrown citrus fruits will be worth the trouble.

Peaches and nectarines (*Prunus persica*) are on everyone's want list, but growing these fruit trees organically requires an excellent site, preventive pest management and some luck. More than other fruit trees, peach and nectarine trees need deep soil with no compacted subsoil or hardpan. Peaches and nectarines are best adapted to Zones 5 to 8, but specialized varieties can be grown in colder or warmer climates. Peach and nectarine trees are often short-lived because of wood-boring insects, so plan to plant new trees every 10 years.

Plums (*Prunus* species and hybrids) tend to produce fruit erratically because the trees often lose their crop to late freezes or disease. In good years, plum trees will yield heavy crops of juicy fruits, that vary in color from light green to dark purple. Best adapted to Zones 4 to 8, plum trees need at least one compatible variety nearby to ensure good pollination. In some areas, selected native species, such as beach plums in the Northeast or sand plums in the Midwest, may make the best homestead plums.



Pears (*Pyrus* species and hybrids) are slightly less cold-hardy than apples but are easier to grow organically in a wide range of climates. In Zones 4 to 7, choose pear varieties that have good resistance to fire blight, such as 'Honeysweet' or 'Moonglow.' In Zones 5 to 8, Asian pear trees often produce beautiful, crisp-fleshed fruits if given routine care. Most table-quality pears should be harvested before they are fully ripe.

How to Plant

The best time to plant fruit trees in Zones 3 through 7 is early spring, after the soil has thawed. Fruit trees that are set out just as they emerge from winter dormancy will rapidly grow new roots. In

Zones 8 to 10, plant new trees in

February. Choose a sunny site with fertile, well-drained soil that's not in a low frost pocket. Dig a planting hole that's twice the size of the root ball of the tree. Carefully spread the roots in the hole, and backfill with soil. Set

trees at the same depth at which they grew at the nursery, taking care not to bury any graft union (swollen area) that's on the main trunk. Water well, and install a trunk guard made of hardware cloth or spiral plastic over the lowest section of the trunk to protect it from insects, rodents, sunscald and physical injuries. Stake the tree loosely to hold it steady. Mulch over the root zone of the planted trees with wood chips, sawdust or another slow-rotting mulch. Water particularly well during any dry spells for the first two years.

One year after planting, fertilize fruit trees in spring by raking back the mulch and scratching a balanced organic fertilizer into the soil surface (follow application rates on the product's label). Then add a wood-based mulch to bring the mulch depth up to 4 inches in a 4-foot circle around the tree. After two years, stop using trunk guards and instead switch to coating the trunks with white latex paint to defend against winter injuries. Add sand to the paint to deter rabbits and voles.

Pruning Fruit Trees

The goal of pruning fruit trees is to provide the leaves and fruit access to light and

Know Your Cold-Hardiness Zone

The "Zones" referred to in this article come from maps published by the United States Department of Agriculture that show the average minimum winter temperature for each region. Some types of fruit can tolerate more winter cold than others, so your area's cold-hardiness is important to know before you choose which fruit trees to grow. If you don't know your Zone, you can find it at <http://goo.gl/6Bgfd>. If a mail-order nursery doesn't tell you which Zone a crop is suited for, you should probably buy from another supplier. To locate sources for fruit trees, check out our Seed and Plant Finder, which lets you quickly search the online catalogs of more than 500 mail-order nurseries and seed companies, at www.MotherEarthNews.com/Custom-Seed-Search.

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fresh air. The ideal branching pattern varies with species, and some apple and pear trees can be pruned and trained into fence- or wall-hugging espaliers to save space. Begin pruning fruit trees to shape them in their first year, and then prune annually in late winter, before the buds swell. Pruning a little too much questionable growth is better than removing too little.


Many fruit trees set too much fruit, and the excess should be thinned. Asian pear trees should have 70 percent of their green fruits snipped off when the pears are the size of a dime, and apples should be thinned to 6 inches apart before the fruits are the size of a quarter. When any type of fruit tree is holding a heavy crop, thinning some of the green fruits will increase fruit size, reduce limb breakage and help prevent alternative bearing (a tree setting a crop only every other year).

Harvesting and Storage

With the exception of pears, tree fruits should be harvested just as they approach full ripeness and then kept chilled to slow spoilage. The flavor of most apples improves after a few weeks in cold storage, so a second refrigerator or a root cellar may be useful. Apples and pears can be kept for several months in a refrigerator, but softer stone fruits (cherries, nectarines, peaches and plums) must be canned, dried, frozen or juiced within a few days of harvest for long-term storage.

Pest and Disease Tips

Some types of fruit crops attract a large number of insect pests and can succumb to several widespread diseases for which no resistant varieties are available. For example, all of the stone fruits are frequently affected by brown rot, a fungal disease that overwinters in mummified fruit. Apply early-season sulfur sprays to suppress brown rot and other common diseases. Some apples have good genetic resistance to scab and rust, but you will still need to manage insect pests, such as codling moths.

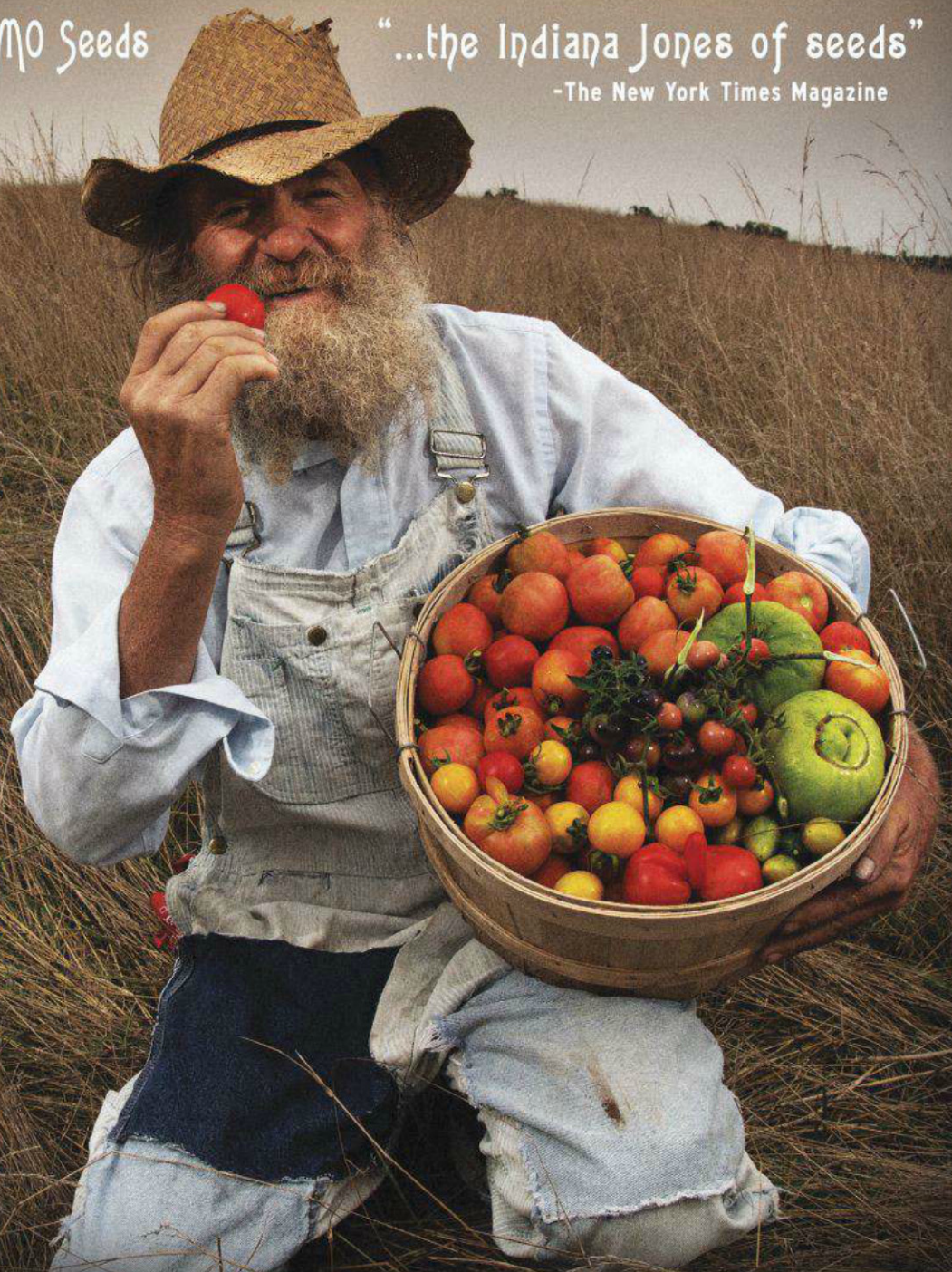
Allowing chickens to forage beneath fruit trees can help suppress insects. Many organic growers also keep their fruit trees coated with kaolin clay during the growing season to repel pests. 

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65 Self-Reliance Tips That Will SAVE YOU MONEY

Apply a DIY approach to any facet of your life and you can start saving big today.

By Kale Roberts,
Assistant Editor

Throughout the years, MOTHER EARTH NEWS readers have proved to be a clever lot. You've shown time and again that you can save a bundle when you apply resourcefulness and a little elbow grease

to home economics. Frankly, our consumer culture pressures many of us to live above our means. The good news is that making a personal and household commitment to a more frugal lifestyle can be a fulfilling, healthy choice — and the following tips to save money can start you on that jour-

ney. Imagine what your life will be like when you slash your grocery or utility bills in half, or when you're able to pay down your mortgage.

We've assembled the following tips from you, our readers, and from our Amazin' Archive — 44 years' worth of articles about living on less and loving it.



Fresh eggs from backyard hens can cost less than \$2 in feed per dozen, and buying staple foods in bulk eliminates marketing and packaging costs.

After you read our selections, find more details for how to implement the tips that interest you by going to the online, annotated version of this article at www.MotherEarthNews.com/Save-Money.

Shelter & Clothing

According to the U.S. Census Bureau, the average U.S. home built in 2012 was 2,505 square feet. For many families, that's much larger than necessary. Sizable homes are more expensive to build, heat, cool and maintain. If you're able to reduce your home size to a cozier and more practical fit that still meets your needs, savings will follow. No matter the size of your house, here are ways to keep your construction, living and maintenance costs down.

1 Learn how to be your own plumber and electrician. Check out how-to books from the library or invest in a class at a vocational school.

2 Join or start a tool-lending library. Power tools

are expensive and often only needed for a short time to complete a single project.

3 Build with salvaged materials or scrap materials reclaimed from construction sites. Visit Habitat for Humanity ReStores, search your nearest city's Craigslist posts, or check with the owners of demolition companies.

4 Barter construction labor with friends or neighbors.

5 If you're not ready to own a house, seek an arrangement to provide your labor in exchange for room and board. This is common on farms or in households in need of nannying services.

6 When shopping for land, save on a real estate agent's commission by browsing for homes listed for sale on the Internet or talking with neighbors and landowners directly. You may even discover an owner willing to sell a plot that's never been listed.

7 Scour thrift stores and consignment shops for unique and affordable clothes.

8 Sew, knit or crochet your own clothes. At the least, sew

on new buttons, darn socks, patch jeans and learn how to repair clothing you already own before buying new.

9 Forgo the cost of running a clothes dryer and instead string a clothesline in your yard or on a porch or patio. Put up a line in a greenhouse or sunroom in order to air-dry garments during cold or wet weather, or invest in fold-up clothes-drying racks for indoor use.

10 Organize a group clothing swap to trade your gently used threads for new-to-you apparel.

11 Cut your family members' hair yourself. A quality set of clippers will cost less than \$50.

12 Make your own body care products. Most store-bought options can be replaced by some combo of just four ingredients: water, beeswax, and various edible and essential oils.

Food & Gardening

Hold on to your grocery and restaurant receipts for one month to track

where your food dollars are going—you might be surprised by what you learn. Many North Americans spend nearly half of their food budgets on restaurants and fast food. Avoid most of that expense by cooking at home: Home-cooked meals cost less, and you'll cultivate a closer relationship with your food because you'll know exactly what goes into it.

13 Prepare big batches of food on weekends and refrigerate or freeze leftovers for use throughout the week. Take your own lunch and snacks to work.

14 Forgo pricey coffee-shop lattes by drinking coffee at home and filling your to-go cup for the road.

15 Buy raw ingredients in bulk rather than prepackaged or prepared foods. Start or join a bulk food co-op and place orders directly with food companies to further cut costs.

16 Make your own food staples. For example, home-baked bread can cost about

50 cents per loaf, and homemade cheeses cost about one-third of what you'd pay at the store.

17 Buy dry beans in bulk at a fraction of the cost of canned products, and pressure-cook them to save time. Pressure cooking also tenderizes inexpensive, tougher cuts of meat in a fraction of the time that conventional cooking requires.

18 Avoid supermarket prices by organizing a larger swap where you and your friends can trade dried, frozen and canned goods or ready-made meals.

19 Purchase in-season fruits and vegetables at your farmers market and preserve them to eat year-round.

20 Cold frames, hoop houses, cloches and other cold-weather gardening devices can help you stretch your home food production further into winter and start up again earlier in spring.

21 Commercial organic fertilizers tend to be overpriced. Instead, you can use grass clippings from herbicide-free lawns—they contain about 2 to 5 percent free nitrogen.

22 Start vegetables from seeds rather than buying seedlings. Save seeds from your heartiest plants and attend (or organize) a seed swap to trade with other local gardeners.

23 Learn how to hunt and fish. Deer and other wild

game will stock your freezer with delicious, lean meat for the price of a hunting license and initial equipment purchases.

24 Even in urban and suburban areas, ordinances often allow you to keep a few backyard chickens for egg or meat production. Super-fresh eggs from backyard hens will cost as little as \$1.40 per dozen for feed, and you can raise meat birds for about \$3 per pound.

25 Do you have children and go through a lot of milk? Love cheese and yogurt? Keep a couple of goats or a home dairy cow, which can produce more than \$3,000 worth of milk each year.

28 Grow medicine in your backyard! You can make many effective herbal remedies at home using kitchen equipment you likely already own.

29 Mental happiness translates to physical well-being. Find happiness in the stress-reducing aspects of simple living, and your body—as well as your mind—will be less prone to illness.

Home Energy

Take these steps to improve your home's energy performance, and you'll enjoy a triple win: lower utility bills, a smaller carbon footprint and a more comfortable home. Before investing in a solar- or wind-energy system, make your home as energy-efficient as possible. An efficient home requires less energy to run, meaning you'll be able to purchase a smaller, less expensive renewable energy system. To see calculations that outline just how quickly the measures below pay off, look online at <http://goo.gl/jpjkQc>.

30 Plug your appliances into power strips, and flip the switch off when you're not using them. This will eliminate "phantom loads" from many appliances that continue to pull power when they're plugged in but not in use.

31 Adjust your computer's power-management settings so that it powers down into sleep or hibernate mode after several minutes of inactivity.

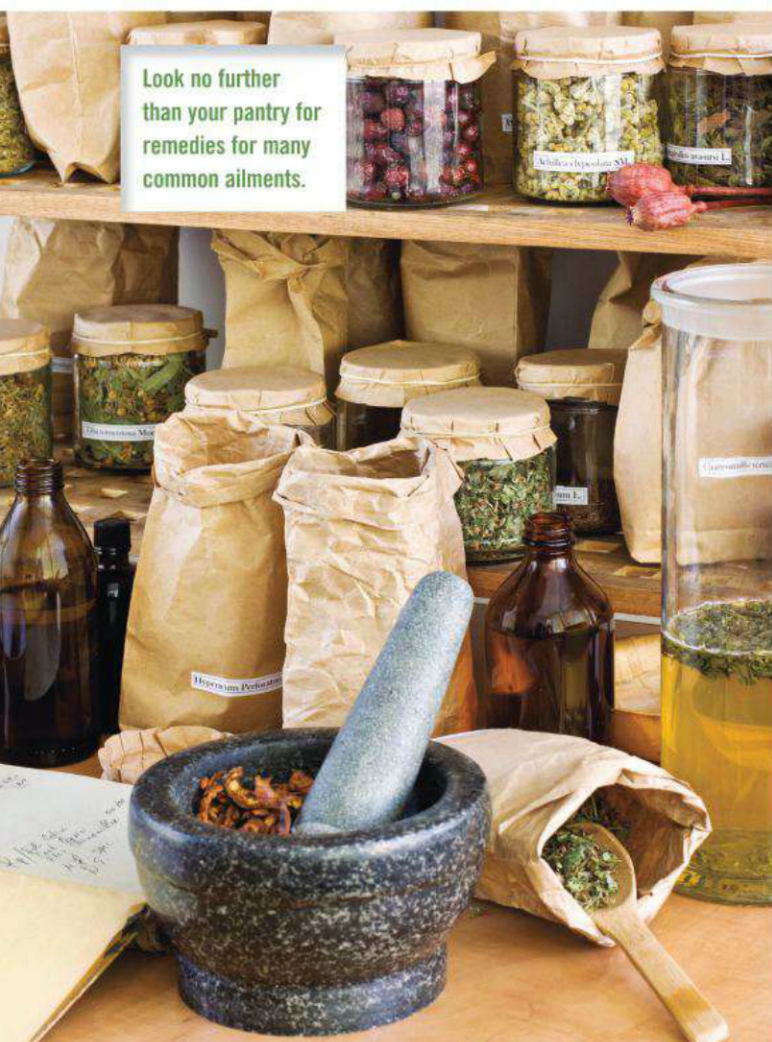
32 Replace inefficient incandescent light bulbs with light-emitting diode (LED) bulbs or compact fluorescent lamps (CFLs). The initial investment will pay for itself after one to three years, and the savings will continue for the remaining life of the bulb—up to 50,000 hours for a quality LED.

Family Health

Health care spending in the United States averaged \$8,402 per person in 2010—72 percent higher than a decade earlier. What herbalists and thrifty parents have known for millennia, however, is that matters of health can often be taken into your own hands for a fraction of the cost, especially when your goal is to prevent illness.

26 Turn the outdoors into your personal gym. Aerobic activity, coupled with a set of dumbbells you keep at home, can eliminate your need for a gym membership. Research shows that being in nature for even a few minutes at a time reduces stress hormones, which in turn boosts immunity.

27 Eating well may be the most enjoyable form of preventive medicine. Organic foods stock your body with nourishing nutrients and are free of toxic chemicals.



33 Rather than relying on air conditioning, open and close windows to regulate home temperature, and use fans to move air throughout your home.

34 If going AC-free is too challenging in your climate, set your thermostat at 70 degrees Fahrenheit or higher. For every degree you increase your thermostat, you will save seven to 10 percent on cooling costs.

35 Paint your home—or, better yet, your roof!—a light color to decrease heat gain.

36 Wash your clothes in cold water. Friction, rather than heat, does most of the cleaning.

37 Replace your old fridge or freezer with an Energy Star model to save up to \$1,000 on energy costs over the appliance's lifetime.

38 Seal and insulate heating ducts. The cost to insulate ducts is only about 25 cents per linear foot of ductwork, and unsealed ducts can lose up to 30 percent of heated air through cracks and openings.

39 Insulate your windows with transparent acrylic panels, insulative clear plastic or bubble wrap secured to the interior of your window frames.

40 During cold weather, use a heated mattress pad to keep you warm at night. Similarly, wear sweaters and use a small space heater in a room you can close off. You can then turn down your thermostat.

41 If you live in a suitable area and have access to a woodlot, heating your home with a woodstove can reduce your energy costs.

Transportation & Travel

Forty percent of all automobile trips are less than 2



miles. Walking these miles paves the way for you to save at the gas pump while reducing stress, fostering a greater connection to your environment and getting in a workout. More than 80 percent of North Americans support increased federal funding for biking and walking, and at least 16 of the nation's major public transportation systems reported record ridership in 2012. Clearly, the first step to cutting transportation expenses should be the step you take away from your vehicle.

42 Ride a bicycle. Leave your car in the garage and consider an electric-assist bike for sweat-free commuting.

43 Take advantage of car-sharing or bike-sharing programs rather than owning and maintaining a vehicle.

44 Save all of your errands that require a vehicle for a single trip.

45 If you commute by car, set up a carpool with your co-workers to save fuel.

46 Learn how to change your own oil and perform other maintenance on your vehicle to avoid service fees.

47 When shopping for a car, buy the most fuel-efficient model that meets your needs. The difference between a 16-mpg model and a 14-mpg model, for instance, can reach \$400 in fuel costs annually.

48 "Hypermiling" means adjusting your driving habits to save fuel, and these tactics can help you achieve up to 40 percent more miles per gallon. Drive slower on highways, brake less and accelerate smartly. (Turn to Page 64 for instructions on how to calculate your gas mileage.)

49 You can produce your own ethanol for an ongoing cost of less than \$2 per gallon. Just 2 acres of corn can pro-

duce enough ethanol to drive 10,000 miles.

50 Alternatively, convert your diesel-powered car or truck to run on vegetable oil. You could even build a wood gasifier unit to run your pickup on waste wood from a sawmill.

51 When flying, be flexible. Many airlines overbook flights and offer a free trip at a later time to those who are willing to give up their seats.

52 Home swap so you can enjoy free lodging in a new location. Check out www.AirBnB.com to find homeowners willing to rent out their homes to travelers, or crash on someone's couch by connecting with hosts on www.CouchSurfing.org.

53 Explore where you live. Plan a "staycation" to travel locally and discover something wonderful within a 50-mile radius of home.



Commute by bicycle to save money and make fitness a daily routine.

54 When renting a car or truck for a trip, choose a model with fold-down seats and pack a sleeping bag. That way, your rented ride can double as instant, snug lodging.

Education

Rising tuition costs coupled with stories of college graduates unable to find work are discouraging to those hoping to further their own education or plan for their children. Meaningful education can come from a variety of avenues aside from expensive university courses, such as vocational trainings, skills workshops and community-based classes.

55 For the college-bound, consider taking most course requirements at a community college, and then transferring your credits to a university to complete your degree.

56 Attend an in-state, public university, which will subsidize residents' tuition. If you want to attend college out of state,

first establish residency in that state to save big on tuition.

57 Source used textbooks online, at a bookstore that sells used books or directly from other students. Coordinate with students in your degree program early so you can swap books.

58 Audit classes for which you want the knowledge but don't need the credits.

59 Free video lectures on topics ranging from art history to economics can be viewed online at Khan Academy (www.KhanAcademy.org) and Academic Earth (www.AcademicEarth.org). Some universities, including Yale and Utah State, also offer open courses.

60 Trade skills: If you play the piano, for instance, trade your musical training for a photography lesson.

Entertainment

Modern society has replaced creativity with

consumption. We choose carryout in place of preparing a home-cooked meal; we listen to music rather than making it. But as Shannon Hayes explains in her book *Radical Homemakers* (see Page 96 to order), prepackaged pleasures pale in comparison with the joy that comes from fixing, making and tinkering with things. To be entertained isn't always a passive experience, nor is it wholly personal. Part of the pleasure of attending a community play, visiting an art museum or catching a Little League game is in sharing that time with others.

61 Use free hot spots to avoid paying for Internet use. Some towns enjoy free citywide wireless service.

62 Ditch your TV, or at least your cable service. The average cable subscriber pays about \$128 each month for service and associated fees—more than \$1,500 per year. If you do watch TV, move your set to a less-used part of your house to discourage mindless viewing.

63 For a night out without the kids, trade babysitting time with other families or join a babysitting co-op.

64 Cities and towns offer a cultural smorgasbord of free and inexpensive events. Check online bulletins and local announcement boards for summer movies in the park, art gallery openings, benefit concerts and more.

65 During the holidays, save a bundle on gift-giving by crafting handmade gifts. If you do buy gifts, discuss with loved ones the possibility of setting a gift-spending cap.

These tips are only the first steps toward financial freedom. We know you'll discover more ways to save, because when you tackle projects yourself and embrace the joys of simple living, your pocketbook—and your mind—will instantly reap the benefits. 🌿

RESOURCES

For DIY details on most of the tips in this article, go to the online version at www.MotherEarthNews.com/Save-Money. See Page 96 to order the books below for even more ideas.

Encyclopedia of Country Living by Carla Emery

The Householder's Guide to the Universe by Harriet Fasenfest

Made From Scratch by Jenna Woginrich

Radical Homemakers by Shannon Hayes

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Circle #57; see card pg 113



Beauty and productivity harmonize in an intensively planted garden when you add flowers and natural, structural elements.

GROW MORE FOOD IN LESS SPACE

(With the Least Work!)

Blending the best principles of biointensive and square-foot gardening will yield a customized, highly productive growing system.

By Linda A. Gilkeson

Whether you grow food on a spacious homestead or are digging into your first urban garden, ditching the plant-by-rows approach and instead adopting intensive gardening techniques can help you grow a more productive garden that's also more efficient to manage. These methods will open up a new world when it comes to small-space gardening, which can be so much more than just a few lone pots on a balcony. If you do it right, you can grow more food in less space and put an impressive dent in your household's fresh-food needs.

Comparing 2 Popular Methods

Two gardening authors and their systems of intensive vegetable gardening have been highly influential in North America for more than 30 years. Mel Bartholomew's book on "square-foot" gardening was first published in 1981, while John Jeavons' first book on "biointensive" gardening came out in 1974. Since these books hit the shelves, millions of gardeners have experimented with

and embraced the gardening techniques advocated within.

Bartholomew's aim with square-foot gardening is a simple, foolproof system that anyone can master (no companion planting, no crop rotation and no soil preparation). He prescribes raised beds of only 6 inches deep for most crops, filled with an artificial mix of peat moss,

vermiculite and compost. While this method is reliant on assembling purchased components, it can work well in urban spaces, especially where soil contamination is a concern, where digging into the ground isn't an option, or where people are especially picky about how a garden looks (perhaps because of ordinances for front lawns). Check out "10 Tenets of Square-Foot Gardening" on Page 42 for more on this method.

Jeavons' biointensive gardening system is based on developing fertile soil in permanent garden beds that you initially dig to a depth of 2 feet. His primary goal is to grow food sustainably, using as few inputs from outside of the system as possible. He provides detailed instructions on crop planning, making compost, companion planting, crop rotation, growing crops that serve a dual purpose as food and compost-heap fodder, and more. See "10 Tenets of Biointensive Gardening" on Page 43 for the skinny on this system.

4 Principles of Intensive Gardening

Despite such differing approaches, both sets of techniques deliver high-yielding food gardens



Adding plenty of compost is fundamental to intensive gardening.



The 1-by-1-foot grid pattern, a trademark of square-foot gardening, can help intensive growers portion out and make the most of limited bed space.

thanks to four common features, all of which I recommend.

1. Permanent garden beds. Establishing permanent beds enables you to concentrate your efforts only on where plants grow, without wasting compost or irrigation water on unplanted areas. It also makes soil compaction a nonissue, because you walk on permanent pathways and never on your growing areas. Setting up permanent beds and paths is such a popular layout here in the

Pacific Northwest that I haven't seen a garden arranged in rows for years. (Read more about the benefits of permanent garden beds at <http://goo.gl/SJRvqR>.)

2. Reliance on compost. Both systems rely on the tried-and-true groundwork of all organic gardening: heavy doses of compost to supply balanced, slow-release nutrients needed to grow healthy crops. The organic matter in compost also increases soil's water-holding capacity and improves its texture.

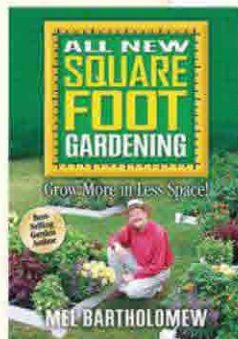
3. High-density mixed planting. A key to the high productivity of both systems is that they take advantage of the entire surface of each bed to grow plants rather than leaving spaces between rows. This results in even more yield without adding more garden space. For novice gardeners, Bartholomew's method of marking off beds in 1-foot squares may be particularly helpful as a way to visualize how densely one can plant. Interspersing crops with different root depths, plant heights and growth rates also means you can grow more in a given space.

4. Prompt succession planting. Staggered planting and, thus, staggered harvests are more efficient for the gardener and maximize the growing season. Quickly replanting any gaps left after harvesting a particular crop lets you use every area of the garden throughout the year.

10 Tenets of Square-Foot Gardening

- 1 Cultivate in small, raised garden boxes that are at least 6 inches deep, separated into a 1-by-1-foot grid pattern (often 16 squares per box).
- 2 Fill boxes with a growing medium made of one-third peat moss, one-third vermiculite and one-third blended compost.
- 3 Intensively plant a prescribed number of each crop you choose to grow into each grid space, depending on plant size. (See Bartholomew's book for the prescribed numbers. For example, plant one broccoli per square and plant 16 carrots per square.)
- 4 Sow only the number of seeds needed in each square to avoid wasting seed.
- 5 Add no fertilizer; rely on the compost in the growing medium for nutrients.
- 6 Practice low-maintenance gardening, with no digging, tilling, soil prep, soil testing or cultivating.
- 7 Achieve staggered harvests with succession planting.
- 8 Capitalize on vertical space by growing vining crops on supports.
- 9 Leave wide aisles (at least 3 feet wide) between your growing boxes to easily work in your beds and maneuver between them.
- 10 Employ tools minimally—you should only need a trowel for transplanting, a pencil for poking holes and lifting seedlings out of pots, and scissors for harvesting.

See Page 96 to order Mel Bartholomew's book *All New Square Foot Gardening*.



Customize Your Growing System

With fertile soil and dense planting, any garden can be highly productive—but as these two intensive-gardening approaches show, you can achieve this productivity via different means. I'm on Bartholomew's side in favoring simple, low-maintenance methods (after all, the energy of the gardener is a



Combine crops, flowers, steppingstones and a seat, and you'll have a backyard retreat along with plenty to eat.

valuable resource, too), but gardeners can learn much from Jeavons about sustainable practices. Reducing the use of nonrenewable resources—whether it's fossil fuels burned in transporting supplies, irrigation water from deep aquifers or even peat moss—is an important consideration and one that's on many gardeners' minds. Square-foot gardening calls for purchasing a large amount of peat moss, which isn't a renewable material. Coconut coir is a more sustainable option.

With time and experience, and based on the region and circumstances, every gardener tailors his or her system to what works best. I've talked with hundreds of gardeners over the past few decades to glean some of the commonalities between successful gardening systems, and the resulting recommendations that follow here will help you grow a high-yield but low-maintenance, sustainable garden.

Adapt to local conditions. Soil, climate, weather, water availability, composting materials, pests and diseases vary depending on where you live, so learn from local experts and look for information written for your region. (Connect with nearby gardeners on MOTHER's new Facebook pages for each state and province at www.MotherEarthNews.com/Facebook.) The

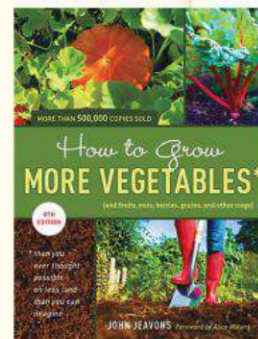
space you have available and the ease with which you can transport materials will also influence your gardening decisions. If you have a tiny urban garden, you aren't likely to be able to grow a considerable amount of grain crops for supplying carbonaceous compostable materials, as Jeavons suggests doing. Creating nutrients

and organic matter by making compost out of other ingredients, such as fall leaves and newspapers mixed with food scraps, may make more sense. For a large garden with more space, however, growing compostable or "green manure" crops may be the most practical way to build the organic matter in your soil.

10 Tenets of Biointensive Gardening

- 1 Loosen soil in raised-bed planting sites by "double-digging" to a depth of 2 feet.
- 2 Space crops tightly in a hexagonal planting pattern.
- 3 Apply no chemicals.
- 4 Compost on-site and use compost to amend and build your soil.
- 5 Use synergistic planting (also called "companion planting") so that plants grown together enhance each other.
- 6 Plant dual-purpose, carbon-efficient crops—such as grains—in about 60 percent of the growing area. (Such crops provide a significant amount of dietary calories as well as a significant amount of carbonaceous material for composting.)
- 7 Grow calorie-efficient root crops, such as potatoes, in about 30 percent of the growing area.
- 8 Sow open-pollinated seeds to preserve genetic diversity.
- 9 Create a "closed," interrelated growing system in which enough organic matter is produced by your "mini-farm" to sustain the soil within the system.
- 10 Produce food in a way that, compared with conventional farming, greatly reduces the use of resources, and places a focus on diversity, soil building and achieving high yields.

Go to Page 96 to order John Jeavons' book *How to Grow More Vegetables*, which details the complete biointensive growing system.



Go permanent. The effectiveness of using permanent garden beds is undisputed. Whether permanent beds should be raised, however, depends on the site and on personal preference. Raised beds—constructed with sides to allow the soil to be built up higher than the natural soil level—allow for good drainage on low-lying land and warm up quickly in spring. Older and less mobile folks could benefit from raised beds because they're higher up and easier to work in. Gardens on well-drained soil, however, may fare better and need less water if the beds are not raised—and, of course, you won't have the job and expense of building sides for your beds.

Use soil (if you have it). A con of Bartholomew's system is that it relies so heavily on buying the ingredients to make your growing medium. This is expensive and means you aren't using and improving the soil already on your property. Despite Bartholomew's concern that improving soil takes too long, I've found that adding organic amendments, including balanced organic fertilizers if needed, can turn any soil into decent garden soil in its first few seasons. Generous applications of compost increase the nutrient- and water-holding capacity of sandy soils and improve the structure of clay soils. Regarding water conservation, plants growing in the ground usually need less irrigation than plants in containers or raised beds do, because soil-bound plants benefit from capillary flow of water from the subsoil. This upward movement of water can come from a depth of 2 to 8 feet, depending on the type of soil. Deep-rooted plants will also survive cold snaps and heat waves better than plants in containers and raised beds because their roots are subjected to less-extreme temperature swings. Of course, if your best sunny spot is a paved parking lot, by all means, build raised beds (the deeper, the better).



"Double-digging," or digging and refilling trenches, is central to biointensive growing but may not be worth the work.



Growing vining crops, such as pole beans and cucumbers, vertically will allow you to harvest more in a given space.

Be cheap. The first time I read Bartholomew's book, I was struck by how expensive following his system to the letter would be, from the cost of building beds to buying and hauling a large volume of bulky materials for the growing medium—which he calls "Mel's mix." To me, the beauty of gardening is that it transforms waste material into tasty, nourishing food at a considerably lower cost than buying it. Compost can be virtually free if made from waste materials, such as grass clippings, leaves, manure, spoiled hay, and any waste from your garden, the grocery store or the food

industry. Perhaps the ultimate in cheap fertilizer is "pee-cycling," which merits wider acceptance for its effectiveness. (Go to <http://goo.gl/5gcPzt> for more information on this method and other liquid fertilizer options.)

Don't work too hard. When I initially encountered Jeavons' book in the 1970s, I set out to follow his technique for double-digging my garden. I quickly discovered, despite Jeavons' cheery instructions, that this was a daunting amount of work. When you finish shifting the soil, you will have moved all of the soil in the bed sideways by 1 or 2 feet and down to a depth of 2 feet. After digging one bed, I decided to skip the rest and live with the consequences—except none seemed to crop up. I saw no difference between the double-dug bed and the rest of the garden throughout that summer or in later years. Similarly, a 1998 study by Ohio State University found no significant yield difference between beans and beets grown in beds that had been cultivated only on the surface and beds that had been double-dug.

Over many years of intensive gardening, I have learned (as have many gardeners before me) that layering on mulches saves a lot of labor, and that minimal cultivation of beds works just fine. Research has provided sound reasons why minimizing soil disturbance is a good idea: Reduced-tillage systems result in higher populations of beneficial fungi that move nutrients and water through the soil column. Also, soils that receive less disruption have more beneficial nematodes, earthworms, soil mites and other microorganisms wriggling and crawling about. Neither Bartholomew's artificial planting medium nor Jeavons' repeated double-digging takes full advantage of such hardworking critters.

Because earthworms, plant roots and soil insects are so good at aerating soil, I'm happy to leave it to them. Without turning over the soil, I lightly fork



Grow in raised beds or define permanent beds and walkways to prevent soil compaction and manage garden amendments efficiently.

compost and other amendments into the top couple of inches once a year, which takes me about 15 minutes for an 8-by-4-foot bed. For the rest of the season, I plant without cultivating, allowing easy interplanting by slipping in new plants between maturing crops. I often leave crop residues on the soil as a mulch and plant right through it. Creating minimal disturbance has led to a bountiful garden with less work on my part. This can, however, require a slight shift from the “clean soil” garden aesthetic some value.

Weeding is, for most, a dreaded task, but it can be almost eliminated by smart planting. Intensive planting suppresses weeds, as the leaves of nearby plants quickly fill in and shade the soil. Using mulch to keep the soil covered is effective at smothering germinating weed seeds. I leave mulch on the soil for as much of the garden season as possible (weeds grow all winter in my Northwest climate), but I pull it back in spring to allow the soil to dry out and warm up. You can control weeds in pathways by laying down cardboard, newspaper or other light-excluding materials, or sow the pathways to grass or clover and mow (or scythe) them every now and then. Put the clippings back on the garden beds as a nitrogen-rich mulch.

Making compost can be as simple as putting everything in a bin, waiting for a season to pass, and then spreading the most digested material on the garden and returning undigested material to the bin.

Or, don't make compost at all: Just leave organic material on the soil to decompose. Any plant material, including crop residues and pulled weeds, will impart organic matter as soil organisms break it down. Roots are another source of organic matter, so instead of pulling plants when clearing a bed, I cut them at the soil line and leave the roots to decompose.

Keep it simple. My eyes glaze over when I see equations and complicated charts in a gardening book, and Bartholomew's and Jeavons' books aren't short on either. While I generally vote for skipping overcomplicated and prescriptive planting advice, I do think keeping basic gardening records is useful. They don't need to be elaborate, but recording when and what you plant, harvest dates, and notes on pest problems is a good idea so you have this information and can make well-informed adjustments when you plan next year's garden. (To keep such records digitally, try the MOTHER EARTH NEWS Vegetable Garden Planner, available at www.MotherEarthNews.com/Garden-Planner.)

Ignore the bewildering number of gardening rules and myths floating around the Internet and other sources. For example, companion-planting charts of the “tomatoes love basil” variety are largely myth, though the value of planting to cycle nutrients to different crop families and attract beneficial insects is well-established (go to <http://goo.gl/XTiYbX> for more). In my experience,

you can safely disregard most crop-rotation systems, because relatively few crops in a diverse food garden are likely to suffer from soilborne diseases or pests. After you know what problems occur in your region, you know which crops to rotate. Where I live, for example, the high risk of root disease in the onion family and for potatoes makes four-year crop rotations smart for these, but I don't worry about allowing long rotations for other vegetables.

Relax and smile. Gardens should be individualistic and fun. They can be as tidy or as wild as you like, take little effort to maintain, and still produce an astonishing amount of food from a small area. If digging beds, turning compost or setting up growing boxes works for you, carry on—just don't think any of it is a strict requirement for a bountiful garden. Personally, I figure the less time and effort it takes to grow food, the more time there is to enjoy it! 🌱

Linda A. Gilkeson holds a doctorate in entomology and has been educating gardeners through workshops and writing for more than 20 years. She gardens in British Columbia and is the author of several gardening books, most recently *Backyard Bounty: The Complete Guide to Year-Round Organic Gardening in the Pacific Northwest* (see Page 96 to order).

WONDERFUL WHEAT

Why This Ancient Staple Is Still Good for You

Learn which factors determine best uses, nutrition and flavor.

By Stan Cox

The great diversity we see today in wheat is the result of millions of years of evolution capped by 100 centuries of breeding by humans. Varieties originating throughout that history—modern types, heirloom varieties from past decades or centuries, and even wheat varieties we can date back to 9,000 B.C.—are still available today. Sorting through the types of wheat and

flour to find the most nutritious or flavorful—or the best to use for a specific purpose—requires wading into a deep gene pool. Doing so, however, will give you better breads, more tender cakes and biscuits, and sturdier pastas.

The second installment of this two-part series, in our next issue, will outline how to grow, thresh and dehull wheat, plus how to grind whole-grain flours.

There are no “standard” types of wheat. The term “wheat” encompasses a sprawling family tree of species, and myriad varieties within those species (see “Wheat’s Family Tree” on Page 51), and no two varieties produce grain that’s exactly the same.



Which Wheat for Which Purpose?

Common wheat (*Triticum aestivum*), sometimes called “bread wheat,” is the most widely grown species, and yields the flour we buy by the bag. This wheat is the chief ingredient in commercial foods, such as loaf and raised breads, tortillas, doughnuts and cakes, and East Asian noodles.

Durum wheat (*T. turgidum* ssp. *durum*) is used in most dried pasta and couscous, for raised and flat breads in parts of Europe and the Middle East, and, less often, in the United States for raised breads. Although pasta can be made from common wheat as well, durum pasta predominates and is generally considered higher-quality.

Ancient wheat varieties are currently grown on smaller acreages in the United States than common and durum wheats. Whereas the kernels of the latter two are released from their hulls by threshing, those of ancient wheats remain enclosed in inedible hulls after threshing. Each ancient species occupies a different branch of wheat’s family tree: **Spelt** (*T. aestivum* var. *spelta*) is an older form of common wheat, **emmer (farro)** (*T. turgidum* ssp. *dicoccoides*) is the direct ancestor of durum wheat, and **einkorn** (*T. monococcum*) is closely related to a wild grass species that played a part in the ancestry of all wheats (see the chart on Page 51). These early wheat varieties are now mechanically dehulled, and lend themselves to a variety of products. Some strains of einkorn can make raised bread or pasta. Spelt, too, can create good bread.

Which Wheat Is Most Nutritious?

Whole-wheat products are richer in fiber, minerals, B vitamins and antioxidants than those made from white flour—which, stripped of its nutrient- and fiber-rich germ and bran, provides mostly empty calories (see chart at right). An extra-nutrient-rich wheat variety processed into white flour will be less nutritious than whole-wheat flour from any run-of-the-mill variety. The long-running Framingham Heart Study in Massachusetts, begun in 1948 and still continuing, found that subjects who ate at least five servings of grains



A 1,000-square-foot planting of wheat can yield 30 to 100 pounds of grain.

per day, with whole-wheat products prominent, lost more belly fat than those who ate less than five servings of grains.

But if you consume the whole kernel, can you obtain better nutrition from some classes of wheat than from others? Possibly. Each wheat variety has a different profile, higher in some nutrients but lower in others.

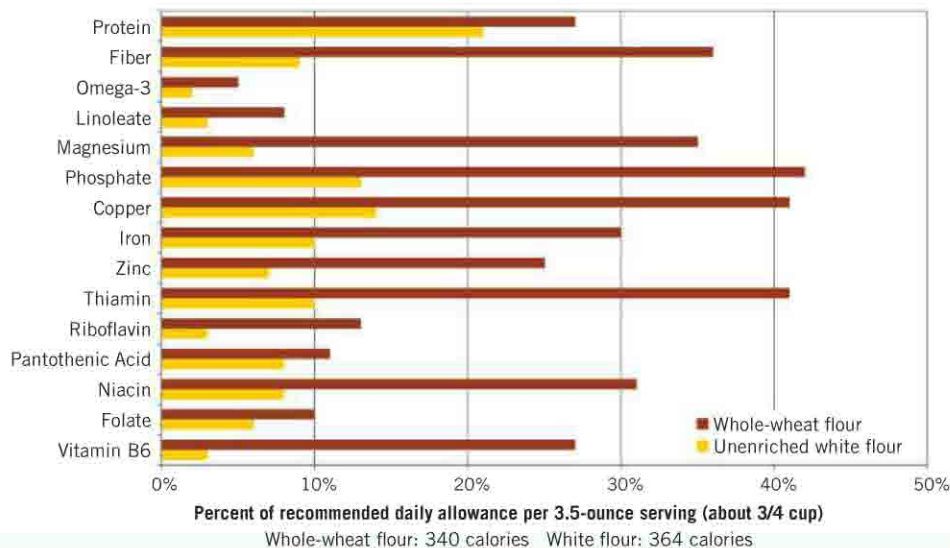
Early wheat varieties are usually higher in protein than common wheat. An

evaluation of 176 wheat varieties showed that dietary fiber was highest in common wheat, while einkorn and emmer had the lowest amount. (Remember: Everything’s relative; all whole-wheat varieties in that study would still be good sources of fiber.) Plus, although some published research finds that einkorn, emmer and spelt typically have more iron, zinc, copper and other essential minerals than do common wheats, other researchers have found no differences.

Throughout the past century, wheat breeders’ efforts have converged with changes in farming practices—most prominently, chemical soil fertilization—to increase wheat yields per acre. Millers, bakers, nutritionists and wheat breeders themselves have wondered whether these higher yields have been achieved at the cost of lower nutrition, a theory that has sparked growing interest in ancient varieties and heirloom wheat varieties (strains that were developed by farmers before the age of the university plant breeder).

Recently, researchers in Europe and North America have been studying whether wheat nutrition has indeed declined.

Whole-Wheat Flour vs. Unenriched White Flour



SOURCES: NUTRICRIBLES AND USDA

The majority have examined old and new wheats grown under the same environmental conditions, often focusing on protein, which is the dominant factor in bread and pasta quality. Most field trials have revealed that early wheat varieties have protein levels that are, on average, equal to or greater than those of modern wheats. In contrast, no strong differences have been found in the few retrospective studies of fiber or antioxidants. Wheat classes rank in protein content from highest to lowest in this order: Hard red spring wheats, hard red winter wheats, and then both red and white soft winter wheats (see "Wheat Terminology, Demystified" below).

Recent trials by North Dakota State University found that the hard red spring wheat varieties 'Alsen,' 'Elgin' and 'Glenn' showed the highest amount of protein of the 18 varieties tested. Among hard red winter wheats, the older varieties 'Karl' and 'Plainsman V' remain among the highest in protein content.



FOTOLIA/MARTINA

Whole-wheat flour retains most of the grain's nutrients.

Zinc tends to be lower in newer European and U.S. wheat varieties than in those developed 50 to 100 years ago. Iron has seen a less steep, less consistent decline, while other essential minerals have remained stable for the most part.

White spring wheat—a class grown primarily in the Pacific Northwest—is generally lower in protein than red wheats. Whole-wheat products made from these white wheats may be less bitter than those made from whole red wheat. Commercial millers like white spring wheat because they can mill "closer to the bran" and extract more flour per ton of wheat. Most wheat exported from the West Coast to East Asia is white, because noodles made from red wheat tend to be gray.

Older white spring varieties have distinctly higher levels of copper, iron, magnesium, phosphorus, selenium and zinc than do modern varieties. Wheat researcher Stephen Jones and his colleagues at Washington State University have surmised that breeders of white wheats have inadvertently

Wheat Terminology, Demystified

Varieties of wheat are classified as either "spring" or "winter" types. Those terms refer to differences in the plant's response to cold weather.

Winter wheats flower only after several weeks of cold weather, so winter wheats are sown in autumn and harvested the following spring or summer in regions that have cold winters. Spring wheats have no such temperature requirement in order to flower. They are sown in spring where winters are cold enough to kill winter wheat,

and they can be sown in autumn in regions that are relatively warm year-round. The most commonly grown durum wheat varieties are spring wheats; einkorn, emmer and spelt wheats can be either.

Wheats are also classified as "red" or "white" and as "hard" or "soft" (based on kernel characteristics). In North America, breads and rolls usually use higher-protein hard-wheat flour (which has more gluten, creating the spongy texture of yeast breads), while lower-protein

soft-wheat flour goes into cakes, cookies, crackers and pastries.

Flours labeled "bread flour" at the supermarket are made from blends of hard wheats, with a protein content of 12 to 14 percent. Products labeled "cake flour" or "pastry flour" are from soft wheats with a protein content of 8 to 10 percent, and "all-purpose flour" is either medium-protein hard-wheat flour or a blend of hard- and soft-wheat flours with a protein content of 10 to 12 percent.



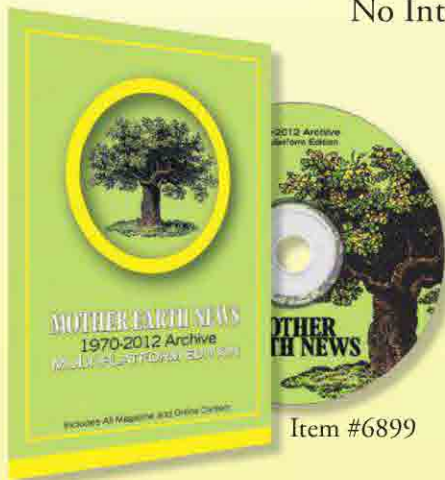
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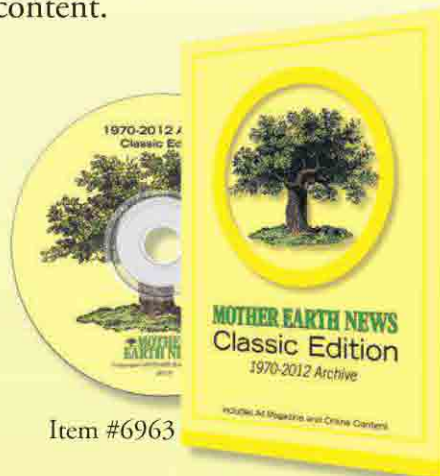
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driven down mineral content by selecting varieties with higher yields and lighter flour color.

Taking into account all nutrients, wheat from heirloom and ancient varieties could raise your intake of some nutrients while not affecting your intake of others. Wide variation exists, however, among individual wheats in their ability to pack protein, antioxidants and minerals into the kernel. Furthermore, soil and climate can trump genetic influences on nutritional quality. Thus, regardless of species or class, wheat varieties raised with optimal growing conditions will produce nutrient-dense grain.

Concerns about maximum nutrition and quality mustn't overlook the effects of processing flour on the final food product. Flour improves with age; its gluten strength increases and its color lightens if it is exposed to the air for several days or weeks



Many sweet treats are made from refined, soft-wheat flour.

before baking. Commercial millers often use tricks to shorten the time from grain to bread. They add chemical oxidizing agents to simulate this aging and allow flour to be used soon after milling. Potassium bromate, once the most common such "bleaching" agent, is a potential carcinogen that has been outlawed in many countries, and the Food and Drug Administration discourages its use. One widely used chemical, azodicarbonamide, is not harmful itself, but one of the byproducts of its breakdown in

the body is semicarbazide, also a potential carcinogen. Buy unbleached flour and read product labels to avoid such chemicals.

Which Wheat Tastes Better?

Texture and flavor in breads and other products rely on many factors. Unlike single-malt Scotch whiskeys, prized for their single-

Why Are Wheat Products Making Some People Sick?

Recent books such as Dr. William Davis' *Wheat Belly* and David Perlmutter's *Grain Brain* revile wheat, blaming it for everything from "destroying more brains in this country than all the strokes, car accidents and head trauma combined" (Davis) to depression, schizophrenia and infertility (Perlmutter).

Seizing on these sensational claims, food manufacturers have flooded the market with "gluten-free" products—many of which are just sugar-laden junk food.

Thousands of people have come to believe that contemporary wheat causes gluten intolerance and they're convinced that they suffer from the ailment.

Nutrition researchers can point to mountains of scientific data demonstrating the health benefits of whole-wheat foods. But that doesn't mean wheat is good for everyone. Just under 1 percent of people in the United States have an autoimmune condition called celiac disease,

in which certain peptides—protein fragments produced during digestion of wheat's gluten proteins—severely damage the walls of the intestines.

People who have celiac disease must not eat foods containing wheat of any type. Today, an estimated 5 to 10 percent of the U.S. population not suffering from celiac disease is nevertheless avoiding wheat because they either have, or believe they may have, a digestive intolerance of gluten proteins.

Many people think genetic modification of wheat is behind the apparent rise in gluten sensitivity. They are mistaken.

No transgenic wheats—often called "genetically modified" or "GM"—are currently available to wheat growers. Nor are wheats "hybrids" in the modern meaning of the term.

In *Wheat Belly*, Davis makes the extreme argument that *no one* should eat wheat. He blames wheat for a host of medical problems, including

gastrointestinal disruption, obesity, diabetes and autism.

Food processing and additives are more likely to blame. Because much processed food pairs refined white flour with sugar and industrial fats, some people may feel better when they eliminate wheat—because they're eliminating excess starch, sugar and fats, too.

In point-by-point reviews of Davis' claims published by the *Journal of Cereal Science* and the American Association of Cereal Chemists International journal, *Cereal Foods World*, little of *Wheat Belly* stood up to scientific scrutiny. These and other examinations of published research reveal no evidence that wheat is a top culprit in modern health problems as Davis and Perlmutter suggest.

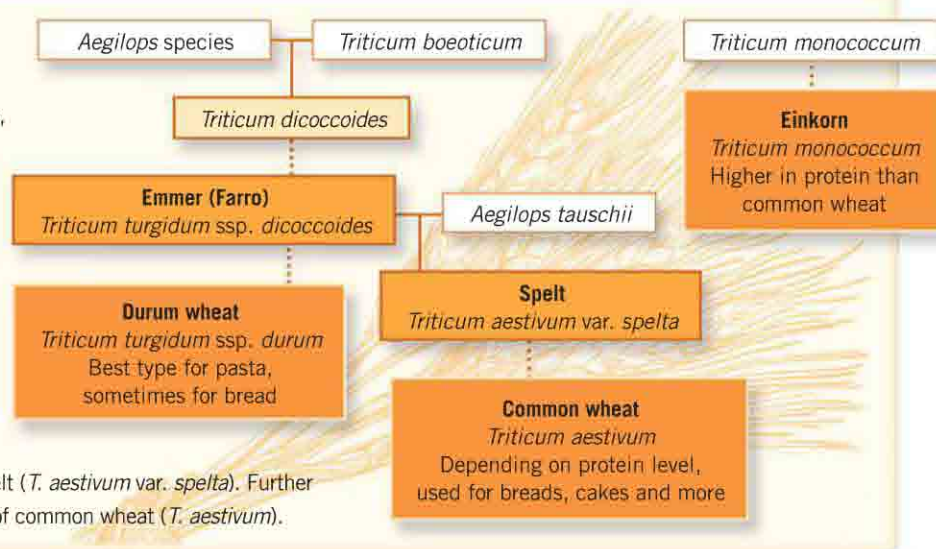
While the way wheat is bred may result in nutritional effects, claims that wheat or gluten itself is the source of various health issues remain unproved.



Gluten-free foods are often just as processed and sugary as other junk foods.

Wheat's Family Tree

Wheat's evolution goes back about 4 million years to southwest Asia, where two wild grasses, *Triticum boeoticum* and a species in the genus *Aegilops*, cross-pollinated to produce a hybrid species, *T. dicoccoides*. Between 8,000 and 11,000 years ago, a close relative of *T. boeoticum* was domesticated, creating einkorn (*T. monococcum*); at about that same time, emmer (*T. turgidum* ssp. *dicoccoides*) arose from the domestication of *T. dicoccoides*. Between 6,000 and 8,000 years ago, the wild grass *A. tauschii* pollinated emmer and produced spelt (*T. aestivum* var. *spelta*). Further domestication of spelt led to the development of common wheat (*T. aestivum*).



source origins, flour milled from only one wheat variety is rarely optimal for baking; blends predominate. Consider an experiment in France, says Julie Dawson, a plant scientist at the University of Wisconsin. Trained panelists tasted sourdough breads made from 12 flours milled from French heirloom wheat varieties, such as 'Blé de la Réole,' 'Bladette de Puylaurens' and 'Souris.' The highest average score went to a bread made with a blend of flours from several heirloom varieties—a mixture created by a farmer and baker who worked together over several years.

Recent taste research by Maria Jesus Callejo Gonzalez of the Technical University of Madrid compared spelt and common wheat varieties. She found that "one of the spelt breads was more complex with respect to flavor attributes." Available winter spelt varieties include 'Champ,' 'Comet,' 'Maverick,' 'Oberkulmer,' 'Sammy,' 'Sindelar,' 'Sungold,' 'Tiber' and 'Tora.' 'Bavaria,' a spring spelt, is also sold. There have not yet been any controlled quality evaluations for flavor on specific spelt varieties.

Randy Metz, a Pennsylvania grower, says a good spelt for baking is 'Sungold,' but it's new, expensive, and hard to find. He also likes 'Maverick,' which dehulls easily—about 40 percent clean in the combine, he says, and he recommends it for homestead growers. But dehulled spelt won't grow, Metz says, so to grow your own, plant unprocessed kernels with hulls intact.

Other early wheat varieties also stand out from the crowd, Dawson says. "We found that einkorn and emmer wheats have their own distinct flavors, and there is diversity among varieties." Today, einkorn is widely sought-after for its unique taste, which Dawson describes as sweet and nutty. Einkorn flour, despite being powdery and having low gluten strength, can still make excellent-tasting pasta.

North American heirloom wheats are treasured for good flavor. In northern cli-

mates, the red spring wheat variety 'Red Fife' is one such favorite. Among hard winter wheats of the central Plains states, 'Turkey Red' is a true heirloom variety that started as a blend of genetic types. Quickly adopted by Mennonite immigrants to Kansas in the 1870s, by 1920 'Turkey Red' constituted a staggering 99 percent of the Great Plains' wheat production. It is the genetic foundation on which today's higher-yielding hard winter wheats were built. Working with Heartland Mill in Marienthal, Kan., artisanal baker Thom Leonard has helped foster the cultivation of "Turkey Red" for use by other bakers and himself. He says the old variety has a complexity and flavor that, he speculates, may have resulted in part from its diverse genetic makeup.

Flavor is of crucial importance in durum wheat, too. At the Italian national Agricultural Research Council (CRA) in Rome, Dr. Norberto Pogna and his colleagues routinely put durum wheat to the pasta test. Spaghetti is evaluated by a panel of professional tasters, and any flour that creates spaghetti without excellent texture and taste will go no further. Pogna's panels find few differences between older and newer durum varieties in these samplings.

As a home miller or baker, you can craft noodles, bread and baked delicacies from a diverse set of wheat varieties or blends simply by adjusting ingredients and methods. This allows experimentation with wheats, whether ancient species, heirloom strains or recently bred varieties. Most will work well, with no chemical additives. 🌾

RESOURCES

ONLINE

The MOTHER EARTH NEWS Whole Grains

Guide: Recipes and information for whole-grain foods; www.MotherEarthNews.com/Whole-Grains

[MotherEarthNews.com/Whole-Grains](http://www.MotherEarthNews.com/Whole-Grains)

BOOKS

To order, turn to Page 96.

Homegrown Whole Grains by Sara Pitzer

The Organic Grain Grower by Jack Lazor

Small-Scale Grain Raising

by Gene Logsdon

Uprisings: A Hands-On Guide to the

Community Grain Revolution by Sarah Simpson and Heather McLeod

Stan Cox is a sustainable-living activist and plant breeder at The Land Institute in Salina, Kan. He has worked as a USDA wheat geneticist and his most recent book is *Any Way You Slice It: The Past, Present, and Future of Rationing*, available on Page 96.

#1 Expert Shares ORGANIC POTATO TIPS

In this exclusive interview, professional potato producer Jim Gerritsen gives the full scoop on successfully growing and storing spuds.

Interview by Joanna Poncavage

Jim Gerritsen and family have been growing seed potatoes for 37 years at Wood Prairie Farm in Bridgewater, Maine. Gerritsen, a potato farmer whom many consider the No. 1 organic potato expert in North America, has a lot to say about the benefits of homegrown spuds.

"If you do a good job, you can harvest about 70 to 90 pounds per 100 square feet—that's a lot of calories and a lot of nutrition," he says. Gerritsen agreed to share his potato wisdom with *MOTHER EARTH NEWS*, and his tips are sure to raise your potato-growing IQ. Let's dig in!

What's the most important key to organic potato-growing success?

It's the seed. Certified seed potatoes are what gardeners plant to get more potatoes, and high-quality seed will always do best.

How do you grow your seed potatoes?

We start with tissue-cultured, disease-free mini-tubers that are produced in a greenhouse or hydroponically. We plant them in spring, and after a couple of generations we have enough to sell. Currently, we cultivate two to four generations each of 23 varieties.

Why can't gardeners just plant potatoes sold in grocery stores?

You can use supermarket spuds, but they won't grow well because they're sprayed with chemicals to inhibit sprouting. Some people buy organic potatoes, thinking they haven't been sprayed, but these won't do as well as certified seed potatoes that have been handled properly and are physiologically young. The proof's in the pudding—or, in your mashed potatoes.

What are ideal growing conditions?

The most important thing to remember is that potatoes are a cool-season crop.



They simply can't take a lot of heat and can actually die in temperatures above 95 degrees Fahrenheit.

In what area of the U.S. are potatoes easiest to grow?

In the northernmost states, potatoes can be planted anytime in summer and harvested in fall. But in the South, growers need to plant early—either in late winter or early spring—to get the crop to finish growing before the hot weather comes on. Southern growers can also wait for cooler fall weather, planting in July or August and harvesting in October or November.

What's the ideal soil for potatoes?

Fertile soil that has good aeration, good organic matter and a granular structure is ideal, such as sandy loam that drains well. Heavy clay soil that holds moisture around a developing tuber will impact that tuber negatively (in such cases, growers can lighten soil with coir or leaves). Potatoes are a heavy-feeding crop, so make sure your soil's fertility level is high, with good, balanced mineralization. After you have a high level of fertility, you can cut back on amendments. To get to that point, we add 10 to 20 tons of compost per acre, which equates to almost a pound per square foot, and then we scale down.

What are remedies for soil that's less than ideal?

A soil test will aim you in the right direction. If your soil is deficient in certain minerals, you can add an amendment or apply a foliar spray, which is sprayed directly on plants' leaves. Lighten heavy soil by adding sand, straw, grass clippings, leaves or compost—anything that will increase organic matter and improve tilth and drainage.

You advise planting potatoes when the soil warms to 50 degrees, correct?

Yes. Here's the reason for that: When you cut a potato into chunks to plant, the cut pieces will not heal in soil at a temperature below 45 degrees. Because of that, the surface of the potato chunks becomes a good location for pathogenic fungi to colonize and create rot. Wait until the soil is 50 degrees so that the seed pieces will heal and grow quickly. We measure soil temperature at a 3-inch depth at 7 or 8 a.m., before the sun warms the soil.

To get a head start on planting, you can greensprout your potatoes—also called



Mulch with a material such as straw to conserve moisture and keep light off developing potatoes.



Use a shovel or digging fork to harvest, taking care not to spear your spuds.



Greensprout, or "chit," your potatoes by exposing them to light in a cool spot for a few weeks.

“chitting”—about four weeks before you expect the soil temperature to reach 50 degrees. Just place uncut tubers in a dark spot at 65 to 70 degrees for about a week to encourage sprouting, and then move the spuds to a cooler location of about 50 degrees and expose them to light for about three weeks. The light will make the sprouts turn green and stay short and sturdy. Then, at planting time, cut the potatoes into seed pieces, leaving at least one eye in each piece.

What's your opinion on mulching vs. hilling potatoes?

Few practices are better than mulching. Mulch conserves water and makes harvesting easier come fall, and as that mulch decays, it adds valuable organic matter to the



You'll be amazed how much better fresh, homegrown potatoes taste.

soil. Whatever mulching material you have will work, such as straw, hay or leaves.

What about potato diseases?

The two most common are late blight and early blight, which can also attack tomatoes. Late blight is a bigger problem in the East and needs a wet environment to grow. Always plant potatoes in a sunny location so dew will dry off quickly in

the morning, and space out plants so they have airflow between the leaves.

Weather that is perfect for potatoes is also perfect for late blight development. But if you don't have the disease inoculant, you're not going to have the disease—one reason you'll want to buy high-quality seed. If conditions are atrocious—meaning summers

are very wet and don't dry up—you can apply “fixed copper” fungicides, which are allowed in organic production, to the leaves to prevent infection.

Early blight is a bigger problem in the West. Here in Maine, it's an opportunistic disease that preys on plants under stress, especially later in the season when plants are running out of fertilizer in the soil. When we had it 20 years ago, we found that we blew through it by adding more fertilizer so that plants would not slow down in the latter part of the season.

Finally, there is a cosmetic disease called potato scab, a condition that causes rough spots on the skins. Scab is typically due to a shortage of both available phosphorus and beneficial mycorrhizal fungi.

Are potatoes genetically modified (GM) to deal with pests and diseases?

Not in the United States, right now. Back in the mid-1990s, Monsanto introduced the ‘NewLeaf’ series, six GM varieties created after developers gensepliced a bacterial toxin into the plants in an attempt to poison the Colorado potato beetle. The problem is that when you splice this bacterial toxin into every cell of the plant, including the tuber portion, everybody will be eating those tubers and thus those toxins. Monsanto was actually required to register the variety as a pesticide, because the potatoes themselves contained the toxin. Now, who in their right mind would want to eat a potato that was registered as a pesticide? That lasted for about six years, until finally the market rejected Monsanto's ‘NewLeaf’ potatoes and they were voluntarily withdrawn from the market.

How do you harvest your tubers?

If you plant your potatoes quite shallowly and mulch them, you can peel back

3 Pesky Potato Pests

Gerritsen explains potato plants' main pests and his favorite tips for coping with them:

The three big pests in the United States are the Colorado potato beetle, the potato leafhopper and the potato flea beetle. For any pest, the best strategies are rotating crops and moving debris to the compost pile at the end of the year.

In small plots, you can get rid of the Colorado potato beetle by crushing the clusters of bright orangish-yellow eggs. If you need an insecticide, the most effective organic options are those with spinosad as the active ingredient. Organic farmers typically use the Entrust brand, but other brands are available for home gardeners.

Potato leafhoppers can be tough buggers. Look for browning and curling of plants' leaves, called “hopperburn.” One of the varieties we grow, ‘King Harry,’ has pretty good resistance. It's from a Cornell University breeding program, and has hairy leaves that release a gooey substance insects don't like. If you're under extreme pressure from potato leafhoppers, you may need to use an organic insecticide like Pyganic, a botanical pyrethrum product derived from a type of chrysanthemum.

If you're just getting damage from potato flea beetles (a shotgun-hole pattern on plants' leaves), the plants can usually outgrow it without any lasting problems. But if you get a second generation, larvae can tunnel into tubers in fall. A good solution for that is to apply beneficial nematodes.



the mulch and the potatoes will be within the top few inches of soil. A high-quality spading fork is the ideal tool; use your foot to push the fork in at the edge of the row, where it won't spear any tubers, and then lean back until it frees up the soil and the tubers all in one motion.

What are tips for storing potatoes?

First, you should cure your potatoes by keeping them in the dark at 60 degrees with high humidity for about 10 days to allow the tubers to heal. After that, choose cool, dark and moist conditions, with up to 95 percent humidity, at an ideal temperature of 38 to 40 degrees. The best spot for a gardener's potato crop would be a root cellar, but an unheated, damp basement is good, too. In ideal conditions, potatoes can keep for up to about eight months, especially if they're a variety known for storage quality.

A refrigerator is probably too cold, because most people keep their refrigerators at about 34 degrees. If potatoes are stored below 35 or 36 degrees for any long period of time, the starches will reduce into simple sugars and the potatoes will taste unpleasantly sweet. Plus, if you store seed potatoes in a refrigerator for more than a couple of months, they will increase respiration from a perceived threat of freezing and age prematurely. When you plant them, they won't have the same level of vigor that a properly stored seed piece would.

Are there any no-fail potato varieties?

No, but two of the most rugged varieties out there are 'Butte' and 'Elba.' They don't require a lot of attention, and they stand up to insect and disease pressure. If you were trapped on a desert island, you'd want these potatoes with you. 'King Harry' is another good, reliable one for insect resistance. Also, 'Red Dale,' 'Onaway' and 'Caribe' are short-season, high-yielding varieties that are easy to grow.

What are your absolute favorite varieties for flavor?

Some of the best we've come across are 'Prairie Blush,' 'Rose Gold,' 'Carola' and 'Russian Banana' fingerling.



Plant sprouting seed potatoes when your soil warms to 50 degrees Fahrenheit.

For storage?

'Prairie Blush' is a great keeping variety, and so are the varieties 'Butte,' 'Red Cloud,' 'Yukon Gold' and 'Swedish Peanut' fingerling.

Which potatoes are best for which cooking methods?

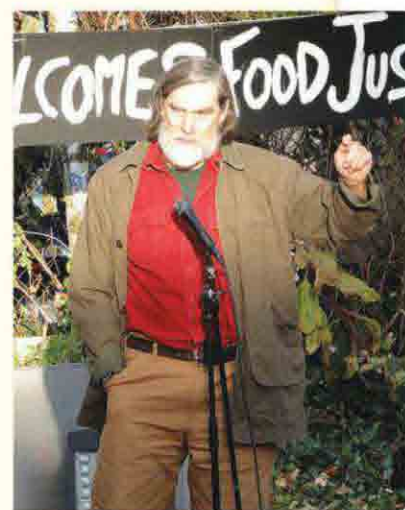
We put together a popular chart about this (go to www.WoodPrairie.com/kitchen to view). The gist is understanding two qualities when it comes to potatoes and cooking. First is the solids content, and second is the type of starch in the potato. If you're making beef stew and you want a potato that will hold its shape, use a variety that is high in amylopectin starch. Examples are 'Red Dale' and 'Onaway.' On the other hand, if you want to make the lightest, fluffiest mashed potatoes—mashed potatoes that you'll have to chain down to the table or else they'll float away—go for a dense potato with a high ratio of amylose starch. The varieties we grow that fit this bill are 'Island Sunshine,' 'Swedish Peanut' fingerling and 'Butte.' 🌱

Fighting GMOs, Protecting Farmers

Gerritsen has been facing corporations that produce genetically modified seed head-on. Here's how he describes his work to protect farmers and consumers:

I'm president of a national trade group called the Organic Seed Growers and Trade Association. In 2011, we filed a federal lawsuit in New York against Monsanto. We're trying to do two things with this lawsuit: First, we're challenging the validity of Monsanto's GM seed patents, and, second, we're trying to get court protection for farmers, so that, should their crops become contaminated through no fault of their own by Monsanto's patented seed, they cannot be sued for patent infringement. What our large plaintiff group has in common is that none of us are customers of Monsanto. We don't want their seeds; we don't want their technology. None have signed licensing agreements with them. It is a perversity in the law that we who are innocent victims and suffer a contamination incident could be sued. But that's how the law reads, and that's why we have gone to the courts to gain protection. The case is still making its way through the courts.

I was part of the team that got a GMO labeling bill passed by the Maine legislature in spring of 2013, and our governor has promised he will sign the bill when the legislature reconvenes in 2014. People have the right to know about GMOs, and when we did a poll here in Maine, 91 percent of residents supported the right to know whether their food was genetically engineered.



Gerritsen speaks out against GMOs at a rally in New York.

GO ONLINE! Still got a basket full o' potato questions? Find more answers at Wood Prairie Farm's website, www.WoodPrairie.com, including in their potato-growing guide. Plus, read a longer version of this interview by going to www.MotherEarthNews.com/Organic-Potatoes.

Heritage Backyard CHICKENS

Discover the advantages of heritage chickens and select the breeds for your needs.

By Oscar H. Will III

Illustrations from WATT Poultry Tribune

Not long ago, most farms and households in the United States played host to at least a small flock of chickens. Chores such as collecting eggs and butchering birds were a part of daily life for all but the most urban residents.

In many cases, the household's flock consisted of a multipurpose breed suitable for egg production and of sufficient size to fill a frying pan when young, or to roast when mature. Humans have fancied the flock for hundreds, if not thousands, of years, and early breeding efforts gave rise to a number of specialized meat- and egg-producing varieties as well as ornamental chicken breeds.

Industrial Production

Today, chickens born of pinpoint-focused genetics are raised by the millions in factory farms. The industrial frying chicken is physiologically adapted to gain weight so that it's ready for the skillet in six weeks. Modern hybrid laying hens are so efficient that they don't even think of sitting on eggs—and they barely have enough meat on their bones to make a stew when their laying days are over.

Industrialized chicken farming has done wonders for keeping meat and egg prices low, but with many unfortunate consequences—one of which is the extinction of many interesting old breeds. In the United States today, the several hundred million Cornish hybrids and strain-crossed White Leghorn chickens raised each year are estimated to account for nearly 99 percent of the country's total chicken production. The reality that traditional breeds have little value to the factory farm is all the more reason to consider raising them yourself.

Heritage Revival

A heritage chicken is one that was hatched from a heritage egg sired by an American Poultry Association standard breed established prior to the mid-20th century. It is slow growing, naturally mated, and lives a long, productive, outdoor life. These breeds don't fit our modern production standards, even though most will outperform their conventional counterparts in the home flock. Heritage chickens are also profoundly important as a pool of genetic diversity and will no doubt be essential to the well-being of future factory flocks. Because of their often quirky characteristics and good looks, heritage chickens offer many excellent choices for those of us who want more control over our food supply.

We've compiled the key characteristics and some anecdotal information on 20 compelling heritage chicken breeds, plus each breed's status from The Livestock Conservancy's Priority List. See

this list by going to <http://goo.gl/aJGsv>. The Conservancy classifies a breed as "critical" if fewer than 500 breeding

birds and five or fewer primary breeding flocks exist in the United States. "Threatened" breeds have fewer than 1,000 breeding birds and seven or fewer breeding flocks. A "watch" breed has fewer than 5,000 breeding birds and 10 or fewer breeding flocks, presents genetic or numerical concerns, or has limited geographic distribution. All three of these classifications include breeds that are considered globally endangered. A "recovering" breed is one that has exceeded the numbers of the watch category but still needs monitoring. A "study" breed is one of genetic interest that lacks definition and genetic or historical documentation. For more help selecting your ideal chicken breed, download our *Pickin' Chicken* app on your iPhone or iPad (go to <http://goo.gl/mXYFR>).



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Andalusian

Size: medium
Comb: single
Plumage: black, blue, white
Legs: clean
Egg color: white
Use: eggs
Origins: Spain
Status: threatened

These birds make an attractive addition to the home flock. The hens are good layers and show little tendency to broodiness. The Andalusian's preferred blue color results from crossing white birds and black birds. With two blue Andalusians, the resulting offspring exhibit a pattern of 1 black: 2 blue: 1 white (neither dominant nor recessive).

The Black Australorp was developed in Australia using Black Orpington stock originally imported from England. An Australorp hen carries the dubious honor of world-record egg layer. In 365 days, she laid 364 eggs. This medium-heavy breed is an excellent homestead chicken because it makes a fine layer and has a compact but meaty frame.

Australorp

Size: medium
Comb: single
Plumage: black
Legs: clean
Egg color: brown
Use: dual
Origins: Australia
Status: recovering



Brahma

Size: large
Comb: pea
Plumage: buff, dark, light
Legs: feathered
Egg color: brown
Use: dual
Origins: North America
Status: watch

Although often considered a meat breed, heavy-framed Brahma hens are also efficient egg layers. The light feather coloration pattern consists of a white base with white and black accents on hackles, feet and tail. The buff variety is similar, with buff as the base color. Dark Brahma hens have a gray and black penciled base, while the rooster has a black base and white shoulders.

Campine

Size: small
Comb: single
Plumage: golden, silver
Legs: clean
Egg color: white
Use: eggs
Origins: Belgium
Status: critical

Campines are among the oldest breeds found in North America. The birds exhibit a black barred feather pattern with a buff or gray base. The hackles on both males and females are uniformly golden or silver. Hens don't typically go broody, and Campines are described as alert, intelligent and excellent foragers.



Cochin

Size: large
Comb: single
Plumage: widely variable
Legs: feathered
Egg color: brown
Use: meat, ornamental
Origins: China
Status: watch

One of the largest domestic chickens, Cochins are poor layers but excellent setters. Early American settlers valued these fowl for their uncanny good looks and their willingness to hatch eggs from virtually any other poultry breed or species. Cochins are well-suited to confinement, but due to thick, fluffy feathering, egg fertility is often lacking.



The famed Indian Game bird, as the Cornish was once known, was bred for meat production in a self-sufficient and relatively hardy package. The birds have massive breasts and thighs that, when coupled with their short and closely held feathers, make them look somewhat prehistoric. This breed provided a large proportion of today's meat-breed genetics.

Cornish

Size: large
Comb: pea
Plumage: widely variable
Legs: clean
Egg color: light brown
Use: meat
Origins: Cornwall, England
Status: watch



Dorking

Size: medium
Comb: rose, single
Plumage: colored, silver-gray, white
Legs: clean
Egg color: white
Use: dual
Origins: England
Status: threatened

In addition to striking plumage, the Dorking has remarkably short legs and five toes instead of the four more prevalent among chickens. Although it is a good layer, the Dorking remains renowned in England for its delicious meat. As a table fowl, the Dorking chicken has few peers. The flesh is tender and delicate.

Hamburg

Hamburgs are known to be a little skittish, but they are good foragers, have strong flying abilities and thrive with free-range management. The breed is cold-hardy and highly active, and it may have been developed before the 17th century. Hamburgs are excellent layers but are not at all broody. Their eggs are small.

Size: small
Comb: rose
Plumage: silver or golden spangled or penciled, black, white
Legs: clean
Egg color: white
Use: eggs
Origins: Holland
Status: watch



Jersey Giant

Size: extra large
Comb: single
Plumage: black, blue, white
Legs: clean
Egg color: brown
Use: dual
Origins: New Jersey
Status: watch

The mellow Jersey Giant was originally bred to replace the turkey as a premium table bird. Mature roosters typically weigh about 13 pounds and adult hens weigh close to 10 pounds. Jersey Giants are the largest purebred chicken breed. This extra-large bird lays extra-large eggs and demonstrates both good vigor and fine foraging ability.

Langshan

The Langshan was introduced to the Western world in the mid-19th century. The hens tend to be broody, and both sexes are extremely cold-hardy. Langshans are adaptable and thrive under confinement or free-range management. The birds are noted for their long legs, high tails and stately appearance. Langshans lay dark brown eggs and produce notably white and flavorful breast meat.

Size: large
Comb: single
Plumage: black, blue, white
Legs: feathered
Egg color: dark brown
Use: dual
Origins: China
Status: threatened



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Leghorns are active foragers with small appetites. They are known for their high rate of egg production and excellent hardiness. Leghorns can be found in many colors, including brown, buff, cuckoo, mottled, red, silver and white. Their long tail feathers, slim bodies and regal combs make the roosters easily recognizable as the poster child of farm poultry.

Leghorn

Size: small
Comb: rose, single
Plumage: widely variable
Legs: clean
Egg color: white
Use: eggs
Origins: Italy
Status: recovering



Minorca

Size: medium
Comb: rose, single
Plumage: black, buff, white
Legs: clean
Egg color: white
Use: eggs
Origins: Minorca, Spain
Status: watch

Among the largest of the Mediterranean breeds, the Minorca is an efficient layer of large eggs. In spite of their size, these birds are not particularly known for meat production because of their narrow frames and characteristically slow growth. This breed makes an ideal laying flock where summers are warm and the birds have plenty of space to range.

New Hampshire

Competitive and aggressive, New Hampshires are a good meat chicken with fair egg-laying ability. Bred for rapid growth and early maturity, they are prone to go broody and make good mothers. The standard New Hampshire rooster weighs about 8.5 pounds and the hen weighs approximately 6.5 pounds.

Size: medium
Comb: single
Plumage: red
Legs: clean
Egg color: brown
Use: meat
Origins: New England
Status: watch



Old English Game

Size: small
Comb: single
Plumage: widely variable
Legs: clean
Egg color: white
Use: ornamental
Origins: England
Status: watch

Domestic Old English Game chickens are descendants of ancient fighting cocks and have changed little in size or appearance in more than 1,000 years. Old English Game hens do show broodiness; however, they don't make good mothers because they're so small and aggressive. These birds should be kept securely confined because they can fly impressive distances and easily revert to a feral state.

Orpington

The original Black Orpington was bred by William Cook in 1886 by crossing Minorcas, Langshans and Plymouth Rocks. The traditional colors are black, buff, mottled, speckled and white; buff is the most common. Orpingtons are well-known for their fast growth rate, excellent egg production and good table quality. These fabulous backyard birds frequently go broody, do well in cold climates, and have a calm, friendly demeanor.

Size: large
Comb: single
Plumage: black, blue, buff, white
Legs: clean
Egg color: brown
Use: dual
Origins: Orpington, England
Status: recovering



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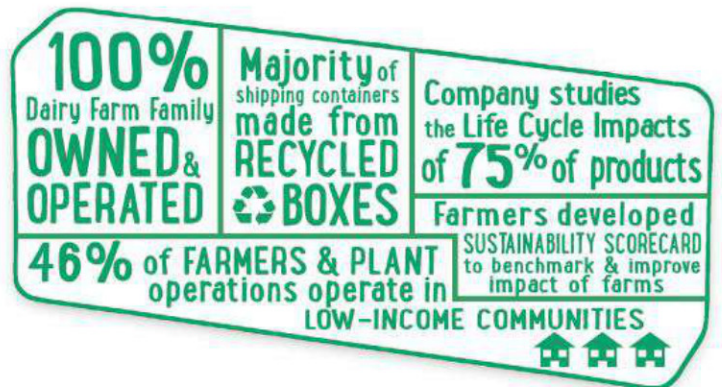
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Plymouth Rock

This friendly, docile bird originated in Massachusetts in the 19th century. The Plymouth Rock has a great reputation thanks to its hardiness, broodiness, meat production and egg laying. Often called "Rocks" or "Barred Rocks" after its most popular color, this breed is cold-hardy and gets along well with people and other animals.

Size: large
Comb: single
Plumage: widely variable
Legs: clean
Egg color: brown
Use: dual
Origins: Massachusetts
Status: recovering



Polish

Size: small
Comb: V-shaped
Plumage: widely variable
Legs: clean
Egg color: white
Use: eggs, ornamental
Origins: Spain
Status: watch

Although named for the feathered caps historically worn by Polish soldiers, this crested breed is thought to have originated in Spain. Historically, Polish hens were known for their egg production. As modern ornamentals, though, they always require protection from foul weather. Polish chickens come in many color variations, often with contrasting-colored crests.



Rhode Island Red

The Rhode Island Red is the best-known and most successful dual-purpose U.S. breed. Perhaps the best layer of all dual-purpose breeds, Rhode Island Reds can lay between 200 and 300 eggs per year. Roosters of this breed can weigh more than 8 pounds, and hens weigh about 6 pounds. Known for their hardiness and ability to continue producing eggs in marginal conditions, Rhode Island Reds make first-rate farm chickens. The hens are peaceful, but roosters tend to be slightly aggressive.

Size: medium
Comb: rose, single
Plumage: dark red
Legs: clean
Egg color: brown
Use: dual
Origins: New England
Status: recovering



Sussex

Size: large
Comb: single
Plumage: light, red, speckled
Legs: clean
Egg color: tan to brown
Use: dual
Origins: England
Status: recovering

As an excellent meat and egg producer, the Sussex makes a perfect homestead chicken. The hens are broody and make good mothers, and the cockerels are heavy and well-muscled. Sussex chickens are well-mannered, friendly and easy to handle. They are also cold-hardy, robust and adaptable to various management schemes.



Wyandotte

Having originated with a silver-laced color pattern in the 19th century, the Wyandotte is now available in golden-laced, white, buff, partridge, silver-penciled and other color patterns. This resilient breed is calm and cold-hardy, and it adapts to a wide range of management practices. The Wyandotte's eggs are large and plentiful and the breast meat is succulent, making it a superb breed for home flocks.

Size: large
Comb: rose
Plumage: varied
Legs: clean
Egg color: brown
Use: dual
Origins: United States
Status: recovering





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How to CALCULATE GAS MILEAGE



If you want to save money on gas, the best first step is to keep tabs on your vehicle's MPG.

By John Rockhold

Even if you hate doing math, checking your vehicle's gas mileage is easy. If you've avoided learning how to calculate miles per gallon for fear of complex equations, fear not—anyone can do this. Plus, there are several benefits to monitoring your vehicle's exact mpg.

First and foremost, knowing is half the battle. While it can be all too easy to assume your vehicle gets 30-something mpg—or whatever the sticker said when you bought the car—regularly calculating gas mileage is the best way to know how your vehicle is really performing versus what it could achieve. Think of checking your vehicle's mpg as akin to listening to it with a stethoscope. Sustained declines in gas mileage without obvious explanations (driving habits, etc.) might point to a maintenance need that could become an expensive problem if left untreated.

Furthermore, observing how your car's mpg changes over time will give you a better understanding of positive and negative influences on gas mileage, which will help you identify what you can do to improve mpg—and save money on gasoline.

Here are the steps to check your vehicle's gas mileage:

1. **Fill up** your vehicle's gas tank, but know that it's not worth topping off after the pump nozzle quits. Doing so can be bad for the environment and waste money. Pumping in too much “extra” gas can lead to spills or even damage your vehicle's vapor collection system, which captures harmful and polluting vapors before they can escape into the atmosphere. (Learn more at www.EPA.gov/donttopoff.)

2. **Reset** your car's trip meter to zero. Now you're on the gas mileage clock.

3. For accuracy, **use at least half** of your tank, and then refill.

4. **Write down** the number of miles on your trip meter and the **number of gallons** it took to fill your tank. A payment receipt is an easy place to do this; it should already have the number of gallons printed on it.

5. **Divide** the trip meter miles by the gallons of gas. Bingo—that's your gas mileage. For example: 293.1 miles divided by 8.374 gallons equals 35 mpg.

6. **Reset** your trip meter to zero before you drive away so you can calculate the mpg of the next tank. Start your car, and you're back on the gas mileage clock.

If you're an mpg geek like me, you'll check gas mileage after every fill-up, but doing so once a month will give you data to help identify trends and save money on gas. To record the numbers, you could keep a small notebook in your car or use an app on your smartphone. Even if your car keeps mpg history for you, it's a good idea to manually check it to confirm the computer's accuracy. Think of this as a personal challenge. Can you beat last month's average mpg? Can you beat your car's fuel economy estimate? Don't miss our next issue, which will offer driving tips for improving fuel-efficiency. 🌱

Easy MPG Math

The equation below only works if you previously filled your vehicle's gas tank and reset the trip meter to zero. After refueling, fill in the blanks below to calculate your mpg.

$$\frac{\text{Trip meter \# of miles}}{\text{\# of gallons to fill tank}} = \text{Your vehicle's mpg}$$



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THE DIRT ON COMPOSTERS

If you dig composting and want a tidy setup, try hiding your heap inside one of these bins or tumblers endorsed by our readers.

By Vicki Mattern

Gardeners know that the key to beautiful, bountiful beds is to nourish them with compost. This rich “super soil” can defend plants against disease and drought, help supply them with essential nutrients, balance soil pH and more.

According to a recent survey of our Gardening Advisory Group, more than 95 percent of nearly 2,000 respondents already make compost, and 70 percent have at least two piles going. While big, open heaps are the most popular method, more than a third of our readers prepare some of their “black gold” in store-bought composting bins to keep out animals or tidy up their yards. To help you choose the best compost bin for your home, we talked with readers who have tried one or more models. (To join any of our advisory groups, go to www.MotherEarthNews.com/Advisory-Groups.)

Bin There, Done That

Stationary composting bins tend to have the largest capacity, typically holding between 10 and 15 cubic feet. Most are made of recycled plastic that’s darkly colored to help retain heat. Many also have lids to keep in moisture and keep out critters. Stationary bins are generally open on the bottom so that worms and beneficial microorganisms can get inside to speed up the process. Most stationary bins also have one or two doors for removing the finished compost. Or you can simply lift off the bin and relocate it, forking unfinished material from the top of the old pile back into the bin and exposing the finished compost ready to be used.

How quickly you get compost will depend on your climate, the season, and how involved you choose to be with the composting process. Turning the contents of composting bins can be tough—one downside mentioned by several readers. That isn’t a problem if you skip the turning and can wait a little longer for your compost. Even without fussing, most readers report they get a bin full of finished compost within four months of adding the last fresh compostables.

Kitty Werner, a master composter in rural Waitsfield, Vt., accumulates gallons of kitchen waste in large paper shopping bags she keeps on her deck during winter. “The freezing helps it break down faster. By the time we get it into the bins in spring, it goes crazy! Within a month we have compost.” Werner doesn’t mind mixing and turning with a garden fork to speed things up.



Tumblers such as the dual-chamber Mantis Compost-Twin (left) and the Sun-Mar 400 (right) make it easier to turn composting materials.

Donna Bates in Raleigh, N.C., loves the design of her FreeGarden Earth compost containers. “The lids screw on, which makes it tough for animals to get in and scatter half-decayed compost all over,” she says. “I also have the option of either removing a small amount of finished product from the door at the bottom, or—because the composter is reasonably lightweight—lifting the bin off the finished contents, shoveling the pile into the wheelbarrow and moving it into the garden.” Bates’ busy schedule doesn’t give her time to actively manage her compost, but by keeping two bins going she always has some that’s ready to go. Like many readers, she

bought her composting bins for a reduced cost from her city’s solid waste department. (Bates paid only \$45 for each bin!)

Take a Tumble

Compared with stationary bins, most compost tumblers hold less (about 5 to 12 cubic feet) and cost more per cubic foot at capacity, but they’re designed to make turning easier. Load ’em with grass clippings, leaves and other organic waste, moisten the contents, and then give the tumbler a whirl. All that turning is supposed to speed the process, but our reader reviews are mixed.

DIY Composting Methods: One Heap Is Never Enough!

Making compost can be as simple as heaping organic waste and letting it rot in its own sweet time. But plenty of other methods fit with a DIY composting mentality.

Wood pallet upcycling. You can get free wood shipping pallets from business loading docks and warehouses. They usually measure about 40 by 48 inches and make nice compost bins. Use several pallets to create a side-by-side, multi-bin system.

Pros: sturdy; neat and attractive; free materials. *Cons:* not animal-proof; some assembly required.

Wired-up compost. Homemade wire bins are simple and easy to assemble using 4-foot-high fencing wire. Arrange them at the diameter you want and wire the ends together. *Pros:* low-cost; neater than an open pile; easy to relocate. *Cons:* not animal-proof; longer time to break down if you don’t turn.

Ring around the compost. Barbara Taylor in Sparta, N.J., likes to sur-

round her 3-foot-diameter wire-enclosed compost pile with a garden bed. On the outside, she grows vining flowers or crops, then plants flowers or veggies in front of the vines. In fall, she takes down the wire and spreads the finished compost. *Pros:* feeds plants while it’s working; attractive; low-maintenance. *Cons:* not animal-proof.

Sheet composting. This easy method involves spreading organic materials over

garden beds or paths where they can decompose in place—think heavy mulches. In just one year, Christi Moeller of Centre, Ala., transformed dry, sandy soil into lush, productive raised beds by layering oak leaves, kitchen scraps and soilless mix. *Pros:* easy; no turning; great way to start new beds. *Cons:* waste can take up to a year to fully break down.

In the trenches. Instead of putting organic material into a container or pile, you can bury it below ground by trench composting. Beneficial microorganisms and worms will do the work for you out of sight and without taking up space aboveground. In Waitsfield, Vt., Kitty Werner sometimes puts unfinished compost at the bottom of raised beds. “It finishes composting on its own, and the plants on top love the warmth and nutrients,” she says. *Pros:* saves space; no turning needed. *Cons:* labor-intensive digging.



Jeff Reiland built these composting bins in his Waukee, Iowa, garden using pallets and other wood scraps.



Stationary bin brand names include Earth Machine (left) and Blackwall (center). The Worm Factory 360 (right) got high marks from readers.

Readers who love their compost tumblers appreciate their speed and ease of use. Of all the methods Joyce McNally has tried—including worm composters and open heaps—she says her 5-year-old Compost Wizard tumbler is the best compost bin. Although she doesn't always turn it daily, or even weekly, she still gets finished compost in a few months. "The compost seems more uniform than what I get from my stationary bins. The tumbler has 'fins' inside that help stir and mix," she says. McNally, who lives in a rural area near Erie, Pa., also appreciates the tumbler's secure lid, which threads on and off so raccoons and other animals can't get inside.

René Hall in Topeka, Kan., says her Mantis tumbler will make three full wheelbarrows of finished compost in each of its two barrels in about a month if she turns it daily and waters properly. "When both of those bins are full, it's hard to turn the contents, but it beats using a fork to turn a pile. The older I get, the more I'm willing to pay for convenience," she says.

Other readers grumble that their compost tumblers are tough to empty or hold too much water. "Mine holds water like a rain barrel," says Christi Moeller in rainy Centre, Ala. "Rain comes in through the perforations, but it doesn't drain out." For her, bins work far better.

Comparing Composters

For a comprehensive list of different brands of composting bins and where to purchase them, go to <http://goo.gl/jwDtYc>.

Style	Pros	Cons	Price Range	Brands Include
Stationary bins with lids	Larger capacity; least expensive; open bottom allows drainage and contact with worms and soil microorganisms; secure lids help keep out animals	Can be difficult to turn; take longer for finished compost	\$50 to \$120; check with municipality for composting bins at a reduced cost	Earth Machine, EcoBin, Exaco, FreeGarden, Garden Gourmet, Lifetime, Redmon, SoilSaver
Compost tumblers	Potential for faster compost; easier to turn; animal-resistant; some can be rolled directly to unloading site without lifting	Tend to hold less than bins and cost more per cubic foot of capacity; must be spun frequently for best results; moisture level must be monitored	\$100 to \$500	Mantis ComposTumbler and Twin, Sun-Mar, Compost Wizard Jr. and Dueling Tumbler, Lifetime
Worm composters	Produce high-quality compost; can be used in a small space, including indoors; odorless; no heavy lifting needed	Take several weeks to make a relatively small amount; need attention (regular feeding); can't tolerate temperature extremes; not best for garden or yard waste	\$80 to \$100, plus the cost of worms	Can-O-Worms, Uncle Jim's Worm Farm, Worm Factory 360
Indoor composters	Fast-working; can be used in a small space; low-maintenance; no heavy lifting needed; convenient for kitchen waste	Produce less compost than bins and tumblers; expensive; not designed for garden or yard waste	\$250 to \$400 for NatureMill; \$45 to \$70 for bokashi kit, plus ongoing cost of bokashi blend	NatureMill, Probiotic Bokashi Composter, TeraGanix Bokashi Kit, VermiTek Bokashi Kitchen Composter

Worm Power

Surveyed readers deemed worm composters the best compost bin type for performance. Red wigglers (*Eisenia fetida*) are used in worm composters to digest food waste and paper. This species prefers moderate temperatures (between 55 and 75 degrees Fahrenheit). Worm composters are usually placed indoors. Most come with small (16-inch-square) stackable trays; when the worms digest food in one tray, you add another tray above it. Over time, the worms work their way upward while their manure (the finished vermicompost, also called "worm castings") accumulates on the bottom. You'll have usable compost in about three months. Some worm composters also include a spigot for draining off the liquid "tea."

"About every three months, I remove the bottom of the three tiers, and the material is pretty broken down," says John Feeny in Burien, Wash. "I dump that in my outdoor pallet bin, and feed my plants a diluted compost tea." Feeny overwinters the red wigglers in his basement because they won't survive the cold in his area.

Elizabeth Close of suburban Audubon, N.J., loves the quality of the compost from her Uncle Jim's Worm Farm unit. "It's a lot richer and finer than what I get from my compost bins and tumbler," she says. "It doesn't make a large volume, so I'm selective about where I use it. When the worms become too plentiful, I just give them to the chickens for a snack."

Burdened by a small yard, wild animals or picky neighbors? Try a commercial compost bin.

Stay Indoors

More than just a pretty bucket, an indoor composter actively breaks down kitchen waste. The electric NatureMill models heat and aerate food scraps. You add wood pellets, sawdust or coir as a source of carbon to help cook high-nitrogen food scraps and get finished compost in a few weeks. The electricity used is about the same as for a night light.

René Hall is a fan of NatureMill, despite the \$250 to \$400 price tag. "If it ever wears out, I'll buy another in a heartbeat. It runs by itself about once an hour. It isn't loud, nor does it smell when the lid is closed." Barbara Taylor in Sparta, N.J., says keeping bears out of her outdoor bins is hopeless. With her 5-year-old NatureMill, she can transform 10 cups of kitchen waste into ready-to-use compost in about a week.

Bokashi buckets are another way to compost indoors. Based on an ancient Japanese method, bokashi composting uses a packaged blend of microorganisms, bran and molasses to break down food through fermentation. The kits usually include a compost container with a spigot and tight-fitting lid, along with the bokashi blend. You layer food scraps with the blend inside the container. Compost tea can be drained from the spigot. According to the suppliers, you can expect nearly finished compost a few weeks after the bokashi bucket is full. At that point, you can add the fermented waste to an outdoor bin or work it into your garden soil. 🌱



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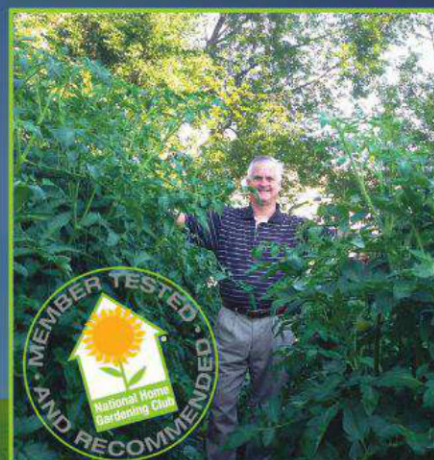
We've done all the work for you! We have taken those proprietary minerals and blended them in a way a chef bakes a cake, the result - we call this our **Harmonic Balance Blend™**. Dino-Green Dino-Mite mineralizer plant and soil amendment provides you with all the convenience and cost benefits - **imagine the cost of buying all the ingredients yourself?** From the beginning Dino-Green **SAVES YOU MONEY** and that's just the start!

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Me standing in my bed of Dino-Green fed tomatoes. I really like the product and I would like to lead many others to the natural route. ~J. Sikina-Director of New Product Development, W. Altlee Burpee Co.

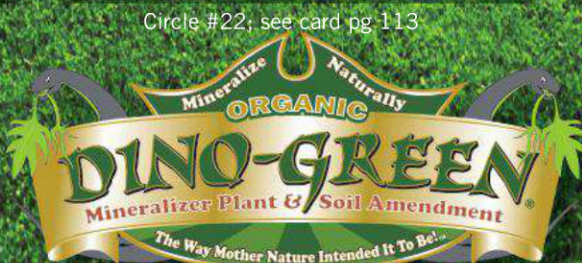
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HOMEMADE HERBAL MEDICINES

Simple and safe, these powerhouse plant remedies can help you heal on a shoestring.

By Stephen Harrod Buhner

Somewhat glumly, I celebrated my 61st birthday this past July. In the back of my mind, I've been sure for 45 years that God would make an exception to my normal and natural biodegrading process, thus allowing me to remain 35 years old well into my 90s. Somehow, it escaped the Universe's notice that some fine print in my birth contract negates, in my case, the aging process. A failing I am trying to get across, without success (so far).

In general, however, I am very healthy and I do have one very special thing going for me: I don't use any pharmaceuticals, unlike

nearly everyone I know in my age group. On the rare occasion I do visit a physician, that statement always generates a great deal of surprise. It is, as I have found, a very unusual event in these early decades of the 21st century. (It wasn't when I was young.)

The reason I don't take even one prescription pharmaceutical every day is mostly due to my lifestyle—primarily because of my reliance on herbal medicines. I have been using homemade herbal remedies as my primary health care for about 30 years. I've successfully treated everything from minor colds, flus, cuts and scrapes, which we all encounter on our journey through life, to irritable bowel syndrome and staph—with visits to many inter-

esting conditions in between. Though herbal medicines may not be right for everyone's lifestyle, I have found the natural approach life-enhancing, self-empowering, inexpensive and safe.

The best treatments I've found for common ailments all use herbs you can grow in your garden or likely have in your kitchen cupboards, disguised as condiments and spices. And, of course, these remedies are not the final answer on what works; nearly every plant you see around you can heal something.

Skin Conditions

Burns. I usually just pace around while verbally—and loudly—exploring the world of expletives. But sometimes I also use the following remedies.

1. Honey: This is especially good for severe burns. It will stop infection, stimulate skin regeneration and keep the burned area moist. Honey is better for burns than nearly all medical interventions, even for third-degree burns.

2. Prickly pear cactus pads, filleted: Wear gloves to hold the pads while using a sharp knife to gently fillet the exterior skin off the pads. You will be left with slimy, oval pads of plant matter. Place the pads directly on the burn and bandage the wound. For a sunburn, rub the pads on the affected area.

Cuts and scrapes. Every one of us encounters life's sharp edges, often over and over again. Here's how I handle the aftereffects.

1. Wound powder: My homemade wound powder stops the bleeding, dries out the wound, inhibits infection and stimulates healing. I generally use a bandage the first day and then leave the wound open afterward (unless it's in a hard-to-protect area or is gaping).

A good wound powder recipe contains any berberine plant (such as barberry, goldenseal or Oregon grape root); comfrey root or leaf; juniper needles (the older the needles on the tree or bush, the better—old needles contain more tannins and will thus stop bleeding faster than young needles will); and maybe oregano, rosemary or thyme. The berberine plant and juniper needles will disinfect, and the juniper needles will also stop the bleeding. Comfrey will stimulate healing, and oregano, rosemary and thyme are also antibacterials. I usually make the following recipe and keep it in the freezer to retain freshness:

Measure out 1 ounce of the berberine plant root or bark, a half-ounce of the comfrey root, 1 ounce of the



Take your healing into your own hands for a powerful and practical way to get well.

juniper needles, and a quarter-ounce of the oregano, rosemary or thyme leaves (optional). Combine the ingredients, mix them in a blender or food processor until well-ground, and then powder the mixture until fine in a clean coffee grinder. I often sieve it afterward to get as flour-like a powder as possible. Sprinkle it liberally on the wound.

2. Honey: Stop using the wound powder after a few days and switch to honey. It's effective against all known drug-resistant bacteria and really speeds healing. Just cover the wound with honey, bandage, and change the dressing daily.

3. Wound salve: Use a combination of berberine plants, black walnut hulls, comfrey root, oregano leaves, rosemary leaves, Siberian elm bark (*Ulmus pumila*) and dried thyme. Add a quarter-cup each of the roughly ground herbs to a baking dish and mix. Coat the blend with olive oil, cover the dish, and bake over-

night in an oven on its lowest heat setting. In the morning, let the mixture cool. Press out and then reheat the oil. Stir in finely chopped or grated beeswax—2 ounces per cup of infused oil—and let melt. To check hardness, put a drop of salve on a plate and wait until the salve cools. It should remain solid but melt after a second of pressing on it with your finger.

Rashes. Rashes come in many forms, so treatments will vary. Here are a few.

1. For hives: Apply a tincture of *Echinacea angustifolia* root topically, using a cotton ball to administer it to the affected areas. Take a half-teaspoon of the tincture internally each hour or so as well. (Pass on *E. purpurea*—I've found it useless for hives.)

2. For poison ivy: Jewelweed salve is best. Good additives are calendula flowers, chamomile flowers and Siberian elm bark, all of which will soothe skin. Add any other herbs you want, but use the aerial parts of a jew-



Comfrey



Oregon grape

Some plants' roots are medicinally potent. Comfrey root prompts healing, and Oregon grape root is a disinfectant.

elweed plant for half of the dried herbs by weight. Then, follow the same process as on Page 73 for making the wound salve.

Stings and bites. Use prickly pear as you would for burns or echinacea as you would for hives.

Intestinal Upsets

Diarrhea. Any strongly astringent plant will work for ordinary diarrhea. Blackberry root, the main standby used for millenia, is extremely effective. Krameria root, older pine needles just pulled off the tree, and wild geranium (*Geranium maculatum*) are all very helpful for regulation. To use, roughly chop or grind the dried herb of your choice. Add 1 ounce to a quart jar that can take heat, and fill with hot water. Cover the concoction and let it steep overnight (or for two hours if you really can't wait). Drink it throughout the next day. Repeat as needed.

Irritable bowel syndrome. Juice 1 beet, 1 piece of green cabbage (about the size of a medium carrot), 3 carrots, 4 stalks of celery and 4 leaves of fresh plantain (*Plantago* spp.). Plantain is a



Bearberry



Jewelweed



Prickly pear



Geranium

Medicines derived from a variety of plant parts can heal many ailments, from burns to bacterial infections.

common plant you can usually find growing in front yards, and is unrelated to the banana of the same name. Cabbage and plantain are the most important ingredients, but they don't taste very good by themselves. The other ingredients will improve the taste while assisting your adrenal glands, liver and immune system. Drink this juice every morning for breakfast, eat oatmeal for lunch, and



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Bidens



Plantain

Some common “weeds” with healing properties are likely growing right in your yard.

have whatever you want for dinner. Irritable bowel syndrome will clear fairly rapidly on this regimen.

Viruses and Infections

Colds and flu. Many plants have antiviral properties—plants get colds just like we do, but because they can’t go to the doctor,

they make their own medicines. One of the best antiviral remedies is ginger, but use the fresh juice or it won’t work. When cold and flu season approaches, I buy about a pound of fresh ginger and juice it. Make sure you squeeze out the pulp—a lot more juice will be in there. Put the ginger juice in any handy bottle and keep it the refrigerator. If everyone around me is getting sick or I feel that first onset of illness, I stir together 3 fluid ounces of the juice, 1 tablespoon of honey, a sprinkle of cayenne, the juice of a quarter of a lime, and 6 fluid ounces of hot water. Drink this blend as a hot tea three to six times per day. This tea rarely fails to either stop an infection’s progression or heal it altogether. It’s pretty good for opening up the sinuses as well.

Urinary tract infections. Juniper berries are highly effective for urinary tract infections. Bearberry (*Arctostaphylos uva-ursi*) is nearly as useful, and berberines are handy, too. I make a tincture of juniper berries—works like a charm. To make the tincture, take 1 ounce of dried juniper berries, grind them as finely as

you can, and add 5 fluid ounces of a 50 percent alcoholic beverage, such as vodka. Let the tincture steep for two weeks, decant it, press the berries to drain them of liquid, strain the tincture, and keep it in a bottle. Take 10 drops six times per day until the infection clears. If you use bearberry in place of juniper berries, take 30 drops six times daily. You can do the same if using a berberine plant.



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RESOURCES

Here are some of my favorite sources for healthful herbs and tinctures:

www.ElkMountainHerbs.com
www.HealingSpiritsHerbFarm.com
www.MountainRoseHerbs.com
www.PacificBotanicals.com
www.SageWomanHerbs.com
www.WoodlandEssence.com
www.ZackWoodsHerbs.com

Bidens also works for urinary tract infections. Bidens species constitute a fairly large grouping of plants, and all of the species you're likely to encounter are very good herbal medicines. They are sometimes called "beggar's ticks" (and even worse names), so you might be familiar with them under another moniker. Bidens plants are invasive and they grow pretty much everywhere. Bidens is a reliable, broad-spectrum antibacterial herb if you make a tincture from the fresh plant (dried bidens is useless for this). Pick bidens during or slightly before the plants are flowering. Cut up the plant, weigh it and put 6 ounces in a jar. Add 12 fluid ounces of pure grain alcohol. You can use vodka, but the resulting medicine won't be as strong. Let the mixture steep for two weeks, decant it, strain and press the herbs to drain them well, and bottle the liquid. Use when needed.

Bidens is good for general systemic bacterial infections, but it's specifically useful for infections in mucus membrane systems. If you have a urinary tract infection and almost get well but then have a relapse, bidens is the perfect plant to use. Take a quarter- to a half-teaspoon of the tincture up to six times per day for two to four weeks. Bidens is safe, and it hasn't failed me yet. *Bidens pilosa* is what most people use, but I use *B. pinnata* from my yard. Any bidens plant will most likely do.

Recommended Reading

To learn more about herbal medicines, I recommend *Making Plant Medicine* by Richo Cech, *The Herbal Medicine-Maker's Handbook* by James Green, and my book *Herbal Antibiotics*, second edition, which contains a *materia medica* of more than 200 plants and their medicinal preparation methods. These books explain in-depth how to make nearly all

of the herbal medicines you'll ever need to use.

Wholesome Healing

The plant medicines that grow in our yards or sit in our kitchens can fairly easily heal most common ailments. I have found that after your life is saved by a plant, nothing is ever the same again. Herbal medicines open up a new world to the perceiving self. All of us who read MOTHER EARTH NEWS know we should work to help heal the Earth, but your perspective will change significantly after you've experienced the Earth healing you. 🌱

Stephen Harrod Buhner is a renowned herbalist and the author of 19 books, including *Herbal Antibiotics* and *Herbal Antivirals* (see Page 96 to order). He lives in Silver City, N.M.



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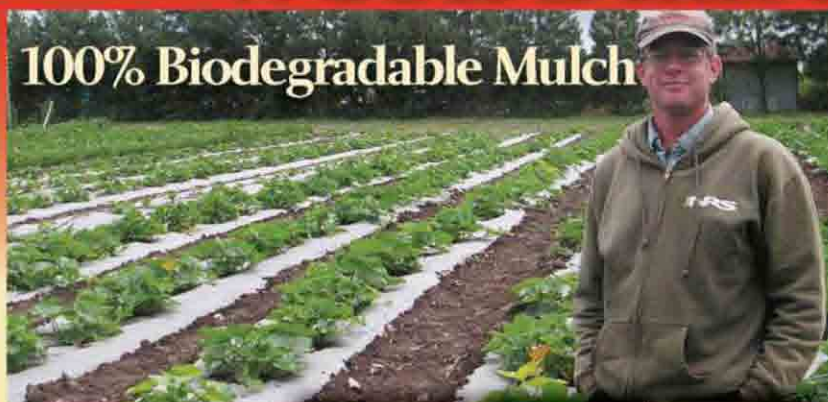
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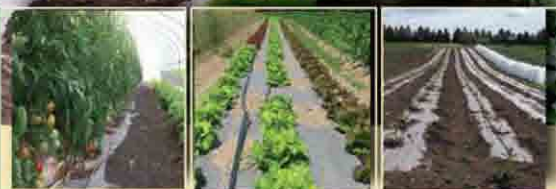
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Making a Green Choice

CHILDFREE LIVING

One woman reflects on the pros and cons of choosing not to bear children.

By Lisa Hymas

In 1969, graduating senior Stephanie Mills made national headlines with a commencement address in which she declared that, in the face of impending ecological devastation, she would live childfree by choice. “I am terribly saddened by the fact that the most humane thing for me to do is to have no children at all,” she told her classmates.

I come here before you today to make the same proclamation—with a twist. I’m thoroughly delighted by the fact that the most humane thing for me to do is to have no children at all.

Making the green choice too often feels like a sacrifice, hassle or expense. In this case, it feels like a luxurious indulgence that just so happens to cost a lot less for me and weigh a lot less on our carbon-bloated atmosphere.

I call myself a “GINK”: Green Inclinations, No Kids.

A Word to Parents

Let me get this out of the way upfront: I like kids—many of them, anyway. Some of my best friends are parents. I bear no ill will toward procreators—past, present or prospective. I claim no moral or ethical high ground.

I respect your choice and wish you luck if being a par-

ent is something you’ve longed and planned for or is a journey you’ve already embarked upon. Go forth and raise happy, healthy kids. May they bring you joy and fulfillment, and may they become productive members of society who faithfully pay their Social Security taxes.

Of course, you parents and parent wannabes don’t need my encouragement, because our society already overwhelmingly supports your decision. OK, yes, the United States lacks paid family leave, universal child care, and many basic rights for same-sex couples with children, and we should remedy those shortcomings. But from tax breaks to family-focused workplace benefits, from eager grandparents to the complete strangers who ask when the first kid is coming, from the “What to Expect” empire to the proliferating

mommy and daddy blogs, our culture constantly affirms your decision to have children—in many ways, it almost demands it. And—no small matter—our biology does, too.

So this article isn’t for you. It’s for the childfree by choice and the child-free-curious, who *don’t* get a lot of encouragement in our society. Parents, keep reading if you like, but you have to promise not to tell the rest of us that we’d feel differently if we only had our own.

Why Not to Have Kids

Here’s the dirty little secret we’re never supposed to say in mixed company: There are a lot of perks to a childfree life—and a lot of green good that comes from bringing fewer human beings onto a polluted and overcrowded planet.

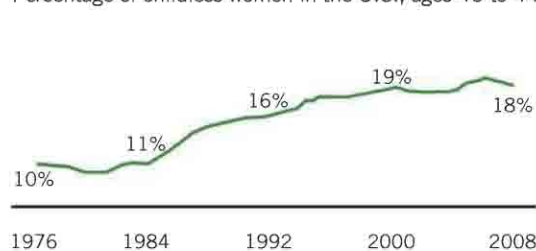
Yes, I’ll miss some experiences by not having kids: The miracle of childbirth (though, truth be told, I don’t feel so bad about skipping that one). The hilariously perceptive things that only kids say. A respectable excuse for rereading the Harry Potter series. The hope that my kid will be smarter and cooler and better looking than me. More boisterous holiday celebrations.

Someone to carry on the family name (assuming I would win the arm-wrestling match with my partner over whose name the kid would get). Maybe even the satisfaction of helping a child grow into a well-educated, well-adjusted adult, and the peace of mind of expecting there will be someone to take care of me in my old age.

But parents miss out on a lot, too (as some will be the first to tell you): Time and emotional

Rising Share of Women Who Have No Children

Percentage of childless women in the U.S., ages 40 to 44



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Money and Happiness

Living childless by choice also means a lot more financial freedom. How expensive are kids? Try \$302,000 for a child born in 2012 to parents bringing home between \$60,000 and \$105,000 a year, according to figures from the U.S. Department of Agriculture. That's just for the first 17 years, so it doesn't include college. And if you earn more, you're likely to spend more. Couples bringing in upward of \$105,000 a year can expect to drop an average of \$501,000 on a child in his or her first 17 years.

Not having kids might leave you richer in happiness, too. Here's how Harvard psychology professor and happiness expert Daniel Gilbert explains it:

"It's probably true that without children, your marriage might be happier in the sense that you would report more daily satisfaction. People are surprised to find this, because they value and love their children above all things. So how can children not be a source of great happiness?

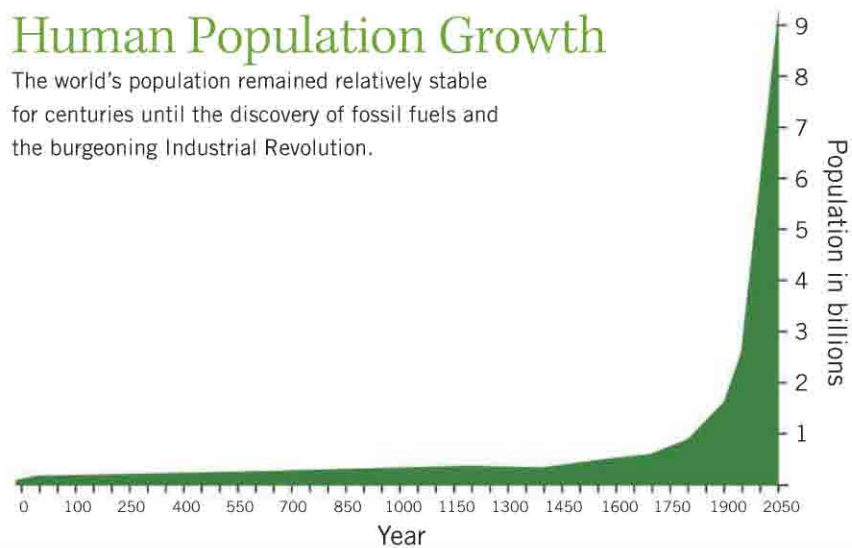
"One reason is that although children are a source of happiness, they tend to crowd out other sources of happiness. People who have a first child often find in the first year or two that they're not doing many of the other things that used to make them happy. They don't go to the movies or the theater. They don't go out with their friends. They don't make love with their spouse."

Gilbert offers more on this topic in his book *Stumbling on Happiness*: "Careful studies of how women feel as they go about their daily activities show that they are less happy when taking care of their children than when eating, exercising, shopping, napping or watching television. Indeed, looking after the kids appears to be only slightly more pleasant than doing housework.

"None of this should surprise us. Every parent knows that children are a lot of work—a lot of really hard work—and although parenting has many rewarding moments, the vast majority of its moments involve dull and selfless service to people who will take decades to become even begrudgingly grateful for what we are doing."

Human Population Growth

The world's population remained relatively stable for centuries until the discovery of fossil fuels and the burgeoning Industrial Revolution.



Even firebrand valedictorian Stephanie Mills, who initially considered her decision not to have children a sacrifice, has said in recent years it “proved to be a good personal choice.” She explains, “I am cussedly independent and I love my solitude and freedom. Other women, I know, have been able to combine demanding vocations with motherhood. Given my particular nature, the responsibility and distraction of child-rearing most likely would have prevented me from pursuing my work as a writer, which has been immensely rewarding.”

That isn't to say she never wonders about not having children: “Now that I'm old enough to be a grandmother, I sometimes wish that I had a granddaughter to commune with, but I am friends with some spectacular young people and can learn from them as well as pass along whatever wisdom I've developed. That will have to do.”

Ultimately, as Mills suggests, life is a series of trade-offs. Living childless by choice means some doors are closed to you, but others are open—and they don't have sticky doorknobs.

Kids Leave Dirty (Carbon) Footprints

Beyond the gleaming doorknobs, consider the environmental benefits of not having kids.

The global population surpassed 7 billion people in 2011. Compare that with the 3.6 billion people we had on the planet when Mills got all riled up in 1969. We've spewed enough greenhouse gases into the atmosphere to push it past the safe point that many climate scientists agree upon, which is 350 parts carbon dioxide per million; we're at 400, and rising fast. Plus, residents of the United States are among the most polluting people on Earth. The average U.S. citizen generates about 66 times more carbon dioxide per year than the average Bangladeshi — 20 tons versus 0.3 tons.

The numbers get even starker if you consider not just the carbon impact of your own kids, but of your kids' kids, and so on. According to a 2009 study in the journal *Global Environmental*



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Circle #51; see card pg 113

Change that took into account the long-term impact of descendants, each U.S. child adds an estimated 9,441 metric tons of carbon dioxide to a parent's carbon legacy—that's about 5.7 times his or her direct lifetime emissions.

"Many people are unaware of the power of exponential population growth," says study co-author Paul Murtaugh, a professor of statistics at Oregon State University. "Future growth amplifies the consequences of people's reproductive choices today, the same way that compound interest amplifies a bank balance." (To take an extreme example, compare childfree me with Yitta Schwartz of Monroe, N.Y., who left behind 15 children, 200 grandchildren and an estimated total of 2,000 descendants when she died in 2010 at the age of 93, according to *The New York Times*.)

A person who cares about preserving a livable environment has lots of options for doing his or her bit, and you've heard all about them: Live in an energy-efficient home. Grow your own food, and buy the rest local and organic. Eat less meat. Bike, walk or take public transit when possible. Drive an efficient car (if you drive one at all). Fly less. Limit purchases of consumer goods. Switch to CFLs or LEDs. Vote for climate-concerned candidates and hold them accountable for their campaign promises.

But even in aggregate, all of these moves don't come close to the impact of not bringing new human beings—particularly new U.S. citizens—into the world. Here's a simple truth: For an average person like me, a childfree life is the single most meaningful contribution I can make to a cleaner, greener world.

Just Say It

Why does it feel audacious to articulate reasons not to have kids?

If you judged the childfree by public discourse, you'd think we were practically nonexistent. But we're not: Nearly 20 percent of U.S. women reach their 40s without bearing children.

Parents talk all the time about the delights and challenges of raising

kids—to other parents and to the rest of us—and I don't begrudge them that. Childless couples, on the other hand, rarely discuss in public the upsides and downsides of life without kids, and that's what needs to change.

If you're childless by choice, how many times have you been asked, "So, when are you going to have children?" to which you mumbled a less-than-candid, "Oh, I'm not sure," or, "Well, it just might not happen for us," or, "Maybe someday"—when what you really meant is, "Never"?

Childfree people tread too gingerly around parents, as though we might wound their feelings if we told the truth about why we've made different decisions. But we insult them by thinking they're so fragile or insecure about their family choices—and we shortchange ourselves and society at large by not speaking openly about the legitimate reasons not to have kids.

What would happen if you answered the kid question honestly? "No, I'm happy with my life as is," or, "A child doesn't fit into our life plans," or, "Kids aren't really my thing," or, "I think there are plenty of people on this planet already."

If we say what we really think, I suspect we would actually find a lot of kindred (or at least sympathetic) spirits out there, GINKs and otherwise. We might have some refreshingly frank and gratifying conversations with the parents in our lives. And we could give those who are undecided about parenthood the understanding that living childfree by choice is completely valid—and not completely lonely. Little bundles of (j)oy aren't for everyone—and it's time we say so out loud. 🌱

Lisa Hymas is a Senior Editor at the green-news website *Grist.org*, where an earlier version of this article first appeared. She also writes the Green Inclinations, No Kids blog at www.GINKThink.WordPress.com.





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Duck, Duck, Goose!

A Homesteader's Guide to WATERFOWL

Ducks and geese are low-maintenance birds that provide fresh eggs, homegrown meat, weed and pest control, and even down for cozy homemade comforters.

By Gail Damerow

Illustration by Elara Tanguy

Whether you raise them for fun or frugality, ducks and geese are great additions to a homestead. They forage for much of their own food, need only a simple shelter and fencing for protection, and convert insects and weeds into healthy proteins. So, aside from the charms of honking, waddling, quacking and splashing, what can ducks and geese offer your family?

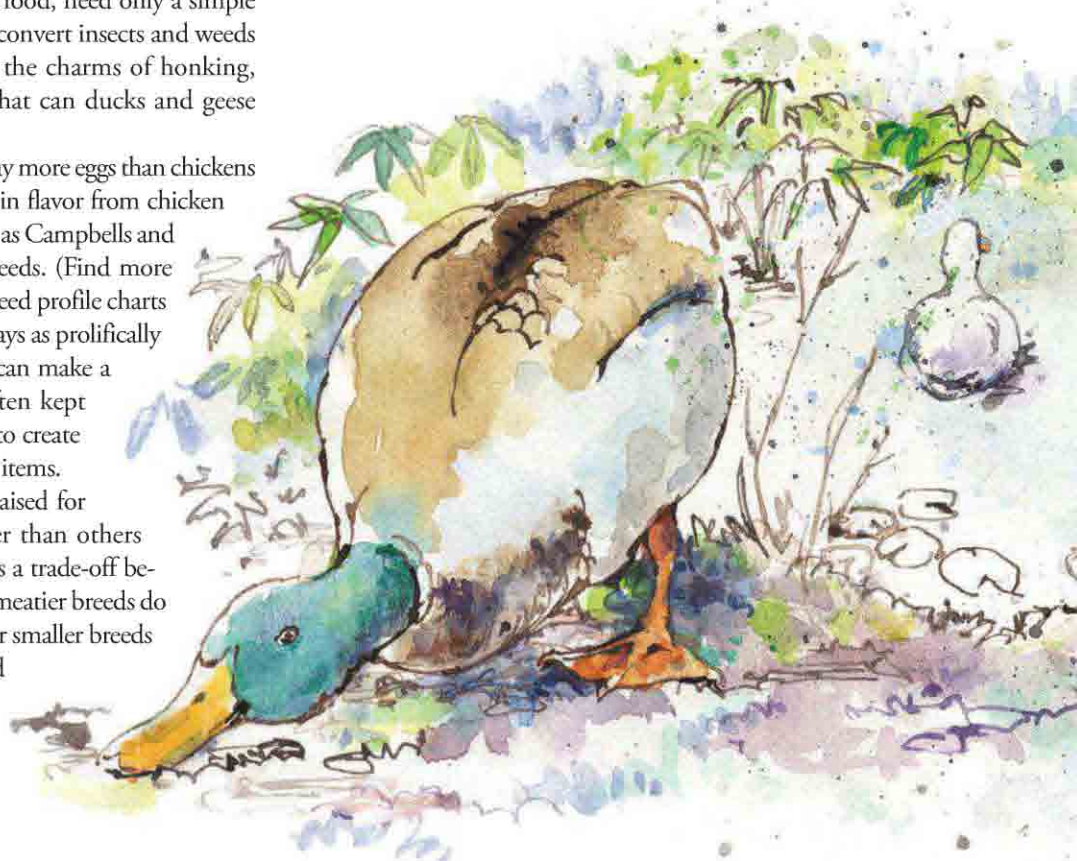
Eggs. Some duck breeds will actually lay more eggs than chickens will. Duck eggs are not much different in flavor from chicken eggs. In general, small duck breeds, such as Campbells and Runners, lay more eggs than bigger breeds. (Find more information on breed selection in the breed profile charts on Page 86.) None of the goose breeds lays as prolifically as a duck, although a single goose egg can make a formidable omelet. Goose eggs are often kept for hatching or hollowed out by artists to create decorative jewelry boxes and other craft items.

Meat. Any waterfowl breed can be raised for meat, but some grow faster and larger than others while consuming less feed. Also, there is a trade-off between meat and egg production; larger, meatier breeds do not lay as prodigiously as the mid-sized or smaller breeds commonly kept for fresh eggs. Duck sold at the butcher counter is most likely Pekin, and a goose from a butcher is typically an Embden. The lean, tender meat of the mid-sized Muscovy duck

is comparable to fine veal, and rendered goose fat provides terrific shortening for baking. Raising ducks for meat is a short-term project completed in two to four months depending on species. Geese are ready for butchering in about six months.

Weed and pest control. In the garden, ducks will scarf down emerging weeds, weed seeds, bugs, slugs and snails—just keep them fenced away from tender greens and ripening strawberries. Muscovies will clean out ticks, wasps, mosquitoes, flies, Japanese beetles and other pests. Geese are also excellent at weed control, especially young Chinese geese, which are light enough that they don't compact the soil as they forage. One product of all this weed-eating and insect-munching is phosphorus-rich manure, which, along with soiled shelter bedding, is ready for composting.

Feathers. If you intend to roast a bird with the skin intact, white-feathered breeds look cleaner when plucked than breeds with darker plumage. On the other hand, waterfowl with colorful plumage



are less visible to predators. No matter their color, the birds' soft feathers and down can fill comforters, pillows and vests.

Fun and fancy. Waterfowl can also be kept for exhibition, to conserve a rare breed, or simply for the enjoyment of their silly antics and beauty. Sebastopol geese, for instance, have luxuriously long, soft feathers, and several breeds of both ducks and geese are available in versions with striking crests or tufts.

What's not to like? Getting your waterfowl to stay put can be an issue, as some breeds like to fly around—but you can control them by carefully clipping the feathers of one wing. While ducks are typically gentle, geese can get aggressive, a trait rendering them well-suited for guarding property. If you worry that incessant quacking and honking might be irritating to nearby neighbors, choose Muscovies, which are also known as “quackless ducks.”

Which Type and How Many?

Domestic ducks come in two species: Muscovy (*Cairina moschata*) and mallard-derived breeds (*Anas platyrhynchos*). Mallard breeds are often kept in pairs, although maintaining fewer drakes (males) will reduce the feed bill and offer hens relief from high-libido males. If you don't want ducklings, you can keep just hens; experience has shown that peace will reign in a yard housing only sweet-tempered female Muscovies.

Muscovy ducks don't pair up; the two sexes lead separate lives.

Ducks will gobble up emerging weeds, weed seeds, bugs, slugs and snails in the garden.

Drakes of all breeds have an insatiable sex drive, but they won't pester hens as much if living in groups of at least five ducks. An offspring from the mating of a Muscovy duck and a mallard breed is normally incapable of reproduction. Geese bond in pairs or trios, although a gander (male) of a lightweight breed may take on up to six females, and a heavy-breed gander can handle up to four.

Some smaller breeds of duck, such as the Welsh Harlequin, may lay as many as 300 eggs per year. An Embden goose will supply only 15 to 35 large eggs per year, but she may reach a hanging weight of 14 pounds in only six months.

As weeders, two ducks per 500 square feet of garden will do more good than harm, but two mature geese could do a lot of damage. Goslings, on the other hand, are great springtime weeders.

Getting Started

Raising ducklings and goslings poses more challenges than raising chicks does. Waterfowl like to play in water, which necessitates frequent changing of bedding to ensure a clean, healthy environment. A cardboard box is thus not the greatest brooder option.





Instead, fit a large plastic storage tote with an elevated floor made of hardware cloth (turn the cut edges under so the birds can't snag a foot), giving excess moisture a place to go until you can mop it out.

To keep drinking water clean, you'll need a waterer that discourages play. Try an open bowl or pan with a piece of clean, untreated

lumber floating on the surface. Cut the lumber to be slightly smaller than the container so birds can only drink around the edges.

Place food and water on opposite ends of your brooder, or the feed will become a wet mess and the water will turn to sludge.

If you can't find a commercial waterfowl starter ration, use chick starter crumble. Ensure it's not medicated with a coccidiostat (which prevents specific intestinal parasites in chicks, but is of no use to waterfowl) and fortify the crumble with livestock-grade brewer's yeast (3 pounds brewer's yeast per 25-pound bag of starter) to prevent niacin deficiency, which can cause bone and joint disorders.

Typically, an infrared heat lamp or light bulb provides brooder warmth, but a hot glass bulb will shatter if splashed with cold water. (Beware: Most "shatter-proof" bulbs are coated with Teflon/PTFE, which is deadly to birds.) A safe alternative—and a good investment if you continue raising water birds—is a sealed infrared pet heater, such as Infratherm's Sweeter Heater, which can be found online at www.SweeterHeater.com. Shelter the birds from rain, wind and hot sun until they are fully feathered—seven to 10 weeks for mallard-derived ducklings and about 16 weeks for Muscovies and goslings.

Most "shatter-proof" bulbs are coated with Teflon/PTFE, which is deadly to birds.) A safe alternative—and a good investment if you continue raising water birds—is a sealed infrared pet heater, such as Infratherm's Sweeter Heater, which can be found online at www.SweeterHeater.com. Shelter the birds from rain, wind and hot sun until they are fully feathered—seven to 10 weeks for mallard-derived ducklings and about 16 weeks for Muscovies and goslings.

Making Ducks and Geese Feel at Home

Consider adding both ducks and geese to your homestead, as the two get along well. Geese tend to be aggressive toward trespassers, so domestic ducks—which don't fly well or at all and are sometimes too heavy to even waddle fast—will enjoy some degree of protection from predators when kept with geese. Do not keep waterfowl in a small yard with chickens or turkeys, as ducks and geese like wet conditions that are unhealthy for land fowl.

A fence keeps waterfowl safe and confined. A 3- to 4-foot-tall narrow-mesh fence will hold most breeds, while a 5- to 6-foot fence is better for Muscovies (which like to perch on the fence top) and the lighter goose breeds.

Most predators, such as coyotes and raccoons, prowl at night, so install a

14 Dapper Duck Breeds

Breed	Eggs Per Year	Live Weight in Pounds (Male; Female)	Foraging	Temperament
Ancona	210 to 280	6; 6.5	excellent	calm
Aylesbury	35 to 125	10; 9	good	calm
Buff	150 to 220	8; 7	good	calm
Campbell	250 to 340	4.5; 4	excellent	excitable
Cayuga	100 to 150	8; 7	excellent	docile
Magpie	220 to 290	6; 5.5	excellent	excitable
Muscovy	50 to 125	12; 7	excellent	f: docile m: aggressive
Pekin	100 to 180	10; 8	fair	docile
Rouen	125 to 160	8; 7	good	docile
Runner	150 to 300	4.5; 4	excellent	excitable
Saxony	190 to 240	9; 8	good	docile
Silver Appleyard	200 to 265	8; 6	good	calm
Swedish	100 to 150	8; 7	good	docile
Welsh Harlequin	250 to 330	6; 5	good	docile

12 Gregarious Goose Breeds

Breed	Eggs Per Year	Live Weight in Pounds (Male; Female)	Foraging	Temperament
African	35 to 45	22; 18	excellent	gentle
American Buff	25 to 35	18; 16	good	docile
American Tufted Buff	35 to 50	15; 13	good	calm
Chinese	30 to 50	12; 10	excellent	usually calm
Emden	15 to 35	25; 20	good	calm
Pilgrim	20 to 45	14; 12	good	docile
Pomeranian	15 to 35	17; 14	excellent	variable
Roman	25 to 35	12; 10	good	docile
Sebastopol	25 to 35	14; 12	good	variable
Shetland	15 to 30	10; 7	excellent	feisty
Toulouse	25 to 50	20; 18	good	calm
Toulouse, dewlap	20 to 30	26; 20	poor	docile

Source: The Backyard Homestead Guide to Raising Farm Animals by Gail Damerow

well-built shelter for protection, and train your birds to go in at dusk. This will also be a place for hens to lay eggs and take refuge from wind, sun and rain.

Pine shavings for bedding will help simplify cleaning and keep eggs clean. Do not furnish water while your birds are confined, as boredom plus the attraction of water can result in a soggy abode. They also shouldn't have food while in their nighttime shelter; they'll do fine overnight and eagerly look forward to breakfast.

Ducks and geese love to splash and gambol in water—for the larger breeds water is essential for mating and egg fertility—so a small pond is an asset. Water access also helps birds clean and condition plumage. Sebastopol geese, for example, need water for the care of their fancy feathers. Of all water birds, only Muscovies do well without a pond for bathing and mating.


A water feature must have easy access for the little ones, and it should be easy to clean. A children's wading pool works, provided it's equipped with a drain for cleaning and ramps to help the smaller swimmers climb in and out.

Feed and Forage Considerations

Mallard-derived ducks can satisfy 90 percent of their dietary needs by eating vegetable matter; the remaining 10 percent comes via live snacks, such as mosquitoes and tadpoles. The diet of a

Muscovy leans more toward meat treats, such as slugs, snails and baby gophers. Geese are entirely vegetarian.

Waterfowl that are not pushed for egg or meat production can forage for nearly all their nutritional needs. Supplementing their diet with grain or a commercial ration helps them through the winter months and gives fertility a boost during breeding season. Birds with access to plentiful forage need only as much commercial ration as they will eat within 15 minutes, morning and evening.

Unless your yard has a flowing spring or stream, you'll need to supply plenty of potable water for your birds. In addition to hydration, ducks and geese clean their bills by squirting water through their nostrils, so a drinking trough should be easy to wash, and birds must be able to dip in their entire heads. To keep water out of the feed—and feed out of the water—keep the two at least 6 feet apart. Waterfowl are fun, but they can be messy. 

Gail Damerow is the author of *Hatching & Brooding Your Own Chicks: Chickens, Turkeys, Ducks, Geese, Guinea Fowl* (available at a reduced rate until March 31, 2014; see Page 96 to order). She and her husband look after goats, poultry, fruit trees and an ample garden on their farm in Tennessee.

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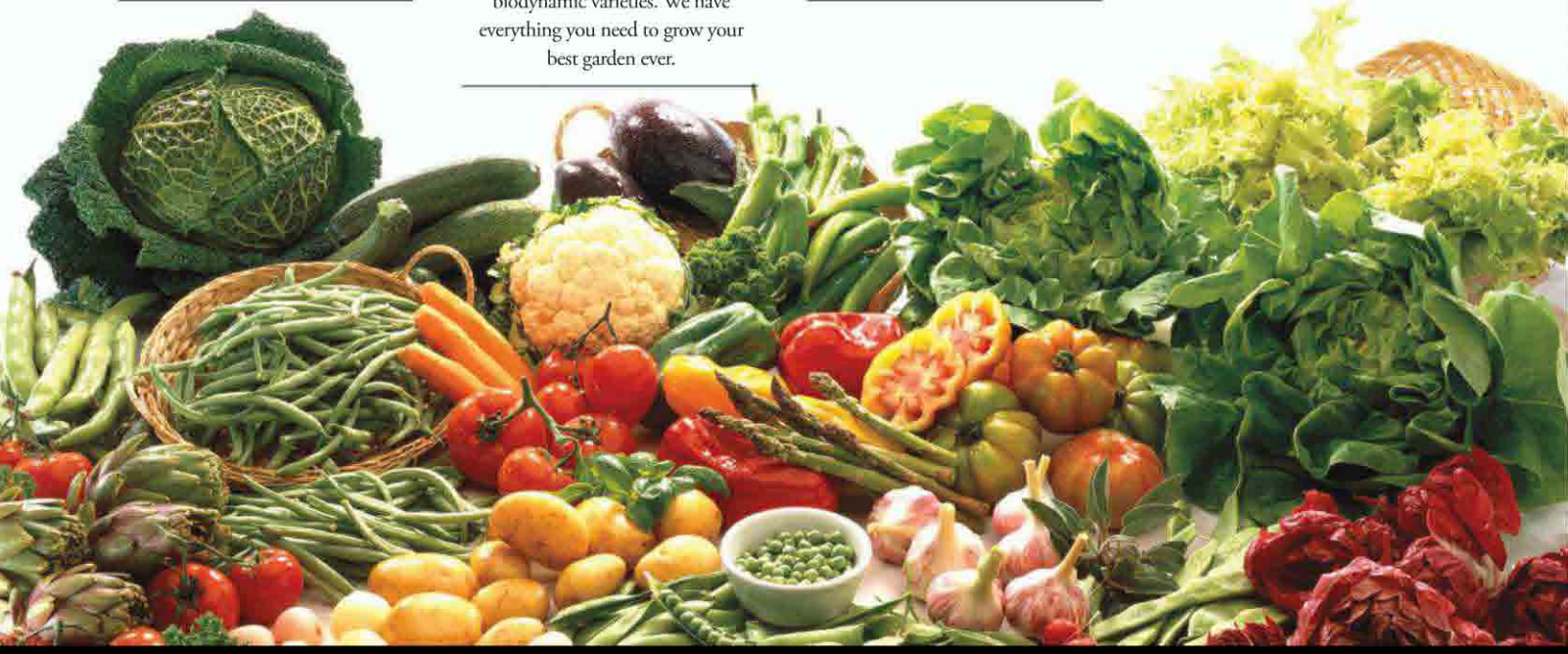
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Hang a Glass Jar Chandelier

When I wanted to come up with a creative, inexpensive light fixture for our dining room, my mind was drawn toward common kitchen objects: We spend a lot of time each summer canning food from our garden, and we also collect old fruit jars. It was only natural that jars be incorporated into the theme of our dining room décor.

Before tackling the project, we scoured thrift and consignment shops until we found a wooden crate for \$10. We used this crate as the base of the light fixture.

We drilled six holes to run the electrical wires through to create "pendant" lighting. We then drilled holes through the zinc jar lids (not the common two-piece metal lids) and attached bulb hardware to the lids. We used six blue Ball canning jars as the globes, and we attached the fixture to the ceiling using scrap lumber. We love our lights!

*Gary and Gina Blocker
Oran, Missouri*



Repurpose glass jars into a country chic pendant light fixture.

Transform Charcoal Ash Into Homemade Putty

While cleaning my barbecue grill, I noticed that the gray ash of the charcoal has the same feeling as whiting, also known as calcium carbonate (or chalk). Whiting is sold in paint stores and is the basic ingredient in window putty. I mixed the ash with some linseed oil and I got working homemade putty! This reminded me of my grandfather's old adage: "A little putty, a little paint, makes it look like what it ain't."

*Robert J. Raynor
Merrick, New York*

fan adjacent to my cutting board, so the fan blew the onion fumes across the board and away from me. I can now peel and cut onions all day long and not shed a tear. (Do stay away from the downwind side of the fan, though.)

*Jennifer Grahovac
Wooster, Ohio*

Boo-Hoo: How to Cut Onions Without Crying

While canning a large batch of vegetable soup, I discovered how to cut onions and avoid all the painful tears. I placed a small

Recycle Wood Chips for Chicken Coop Nests

We heat our home during the winter months with an outdoor woodburning stove—and it works wonderfully. But what to do with all those little wood and bark chips that accumulate from chopping the firewood?

Instead of buying \$5 cubes of wood chips from the local farm store for our nest boxes in the chicken coop, I rake the dry wood chips from chopping into burlap

bags, removing any large pieces of bark. I then use these wood chips as clean bedding on the floor of the chicken coop and in the nest boxes.

*Linda Deming
Attica, Michigan*

Go Nuts for Kindling

Given the health benefits of nuts, our family keeps a ready supply of in-the-shell organic nuts on hand for snacking. One of the benefits of cracking fresh nuts is that you tend to eat fewer because you have to work for each bite, but we still accumulate a good amount of nutshells. While these could go into the compost bin, they tend to decompose much slower than other kitchen waste, so we've started using them as fire kindling instead.

Whenever we find ourselves with a fire in the woodstove that is nearly out, or that needs a boost because of the presence of damp wood, we toss in a handful or two of the nutshells. The effect is explosive. We speculate it's due to the wood-like composition of the shells combined with the nut oils present in them. We keep a small copper bucket full of shells near—but a



Not Your Ordinary Clothes Hangers

I prefer not to buy the expensive covered and padded clothes hangers, yet my clothing slips right off the cheap plastic type that's readily available. To remedy this problem, I wrap my plastic clothes hangers in leftover yarn to create friction that holds my clothes in place. Wrapping ribbon or even crocheting directly onto the hanger is another way to make an upgrade. This makes a great winter craft project that can be fun for kids, too.

*Rhonda Shephard
Arapaho, Oklahoma*

safe distance from—the woodstove so we can easily dip in when needed. We mostly use walnut, almond, pecan and pistachio shells.

*John Atwell
Oakton, Virginia*

Tangle-Free Electrical Cords

When my electrical appliances aren't in use, I wrap the cords into tight bundles and slide the bundles inside toilet paper rolls so I never have a tangled mess of cords. Cardboard rolls from paper towels and other paper products will work as well.

*Vanetta Wiegman
Palos Park, Illinois*

Blend, Drink, Eat, Repeat

When I use my juicer, I always have fruit or vegetable pulp left over. In order to not waste anything, I use the pulp in baking or add it to soups. I usually squeeze my own homemade orange juice, and the leftover



orange pulp is great for making orange-cranberry bread, muffins and cranberry sauce.

*Jen Hohl
Holbrook, Massachusetts*

(Juice pulp also makes wonderful livestock feed for pigs or chickens. If all else fails, add juice pulp to your compost pile. —MOTHER)

Ping! Pop! A Kitchen Orchestra

I'm sure there are some great stories to tell regarding novice home-canning experiences. Here's mine: When I was about 21 years old, I lived in western New York, where the blueberries grow beautifully. I eagerly picked quarts and quarts of these jewels to take home to make and can homemade blueberry jam.

Months after successfully completing the job, I heard an orchestra of popping and pinging one cold night. I walked toward

Get Grindin' With a Home Grain Mill

Ever since we acquired a hand-cranked grain mill, we've been eating freshly ground grains, beans and nuts nearly every day. Apart from baking whole-wheat bread, pancakes and cornbread from ingredients we grind ourselves, we've also tried some innovative combinations that were not possible without the mill. For example, we can bake a cake that tastes like chocolate by including freshly ground adzuki bean powder and brown jasmine rice powder in the recipe.

Our main use of the grain mill is to grind wheat kernels. After you taste bread made from newly milled flour, you won't find regular bread satisfying anymore. And it's not just the taste; fresh flour is nutritious—even more than the whole-wheat flour sold in stores. Industry-produced flour is void of the bran within the kernel, which, despite being nutritious, would cause the flour to go rancid quickly on store shelves and is therefore removed.

A grain mill makes enjoying delicious and nutritious flour possible anytime you want. Although it takes some extra time and effort, it's worth it—and the grinding is half the fun!

There are many brands of grain mills out there. The one we bought is the Wonder Junior Hand Grain Mill, shown at left and available at <http://goo.gl/mgWH5C>.

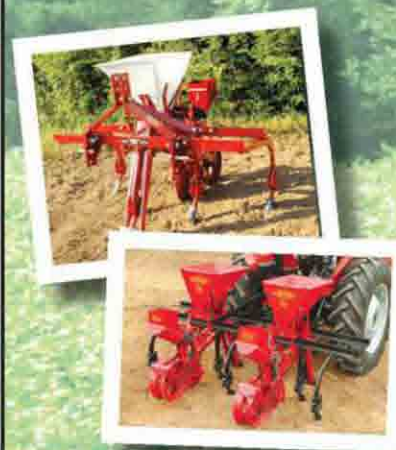
*Alexander Wang
Kanata, Ontario*



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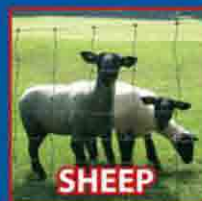
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Circle #43; see card pg 113

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the sound and discovered that the seals on the half-pints of jam were breaking! That's when I learned never to store canned jars of jam in a cupboard right next to a wood-stove. Thirty years later, I still think of my inexperience with a smile on my face.

Julie Kerr
Fritch, Texas

Homemade Laundry Soap

After learning more about the chemicals in commercial cleaners and the harm they can do long after they go down the drain, I decided to start making my own household cleaners.

During some online research, I found a great homemade laundry soap recipe. It

Unique Ways to Say 'I Love You'

Routine Valentine's Day gifts can be so uninspired. Because we know MOTHER EARTH NEWS readers are far more creative than the average Joe, we asked our Facebook friends to share their best ideas for low-cost or handmade gifts that convey the message of the day: "I love you."

Go to www.Blurb.com or another book-making website to write the story of how you and your partner met. If you think your story is too uneventful, you can make up a tale with you and your honey as the stars.

—Rebecca A. Behar-Johnson

Last year for my boyfriend's and my anniversary, I bought a padlock. We decorated it with colorful permanent markers, sprayed a fixative on it, and locked it onto a bridge in Pittsburgh. We tossed the key off the side of the bridge to symbolize our unbreakable love. Search for "love lock bridge" online to see great photos of this being done around the world.

—French Creek Gardens

My fella has turned my driftwood sticks into hiking sticks, and he collects rocks

for me from all the places he goes with and without me. They mean more to me than anything store-bought because I know he was thinking of me while picking out each piece of nature.

—Denise Ferree

Instead of a dozen roses, give the love of your life a dozen apple trees. Your love will bear fruit forever!

—Jillian Berg

One year, I cooked a lobster dinner and set the table for two. While cooking, I noticed there was a mess in the fridge, so I cleaned it up. What was the one thing that stood out to my mate? The clean fridge. My advice is to pay attention to the small things.

—Todd Richards

Go for an old-fashioned picnic with a basket, tablecloth and candles. Enjoy each other and the spirit of Mother Nature.

—Carmen Bailey

We cook a heart-healthy meal of wild-caught Alaskan salmon, roasted fingerling potatoes and garden-fresh Brussels sprouts. We also share glasses of champagne infused with frozen raspberries from the backyard patch and Endangered Species Chocolate for dessert—yummy for us and bird-friendly!

—Kate Hughes Brown

Rather than buying cut flowers, try giving a potted moth orchid. Widely available, potted orchids are often more affordable than large bouquets and their flowers will last several months.

—Cheryl Long



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Circle #10; see card pg 113

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Circle #32; see card pg 113

has only three ingredients: 2 cups borax, 2 cups washing soda and 4 cups grated homemade bar soap (or Ivory or Fels Naptha). Mix these ingredients together and store them in a container, and use one-fourth to one-third cup of the homemade laundry soap per load.

It costs pennies to make and works fine for my family's laundry. There are no harsh chemicals in this recipe, and no need to use laundry softener. You can add an essential oil for fragrance if your soap bar isn't scented.

At first, I had a hard time finding the washing soda that the recipe calls for, but after a little more research, I discovered it's the same thing as "pH PLUS" (sodium carbonate), a swimming pool compound found in the pool section of stores during summer. Some stores carry it in the laundry section, too. Happy greener cleaning!

Lisa Ifland
Williamsburg, Kansas

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Plastic Bag Alternative

When I forget to bring my reusable shopping bags to the store, I ask for a brown paper sack at checkout instead of a plastic one.

At home, I put any recyclable items into the paper sack and then take them to the city recycling center. I drop off the cans, plastic and other items, and after the bag is empty, I simply toss it in with the cardboard recycling.

Clare Haffernear
Kalispell, Montana

Walk On: Homemade Treadmill Desk

After I became a full-time writer, I was in trouble fitness-wise because people were paying me to sit down all day. About five years ago, I heard of a newfangled thing called a treadmill desk, which is exactly as it sounds: a desk built over a treadmill so that a user can walk while she works. It sounded like the sort of thing I needed, but the \$5,000 price tag seemed geared toward someone with more money than sense.

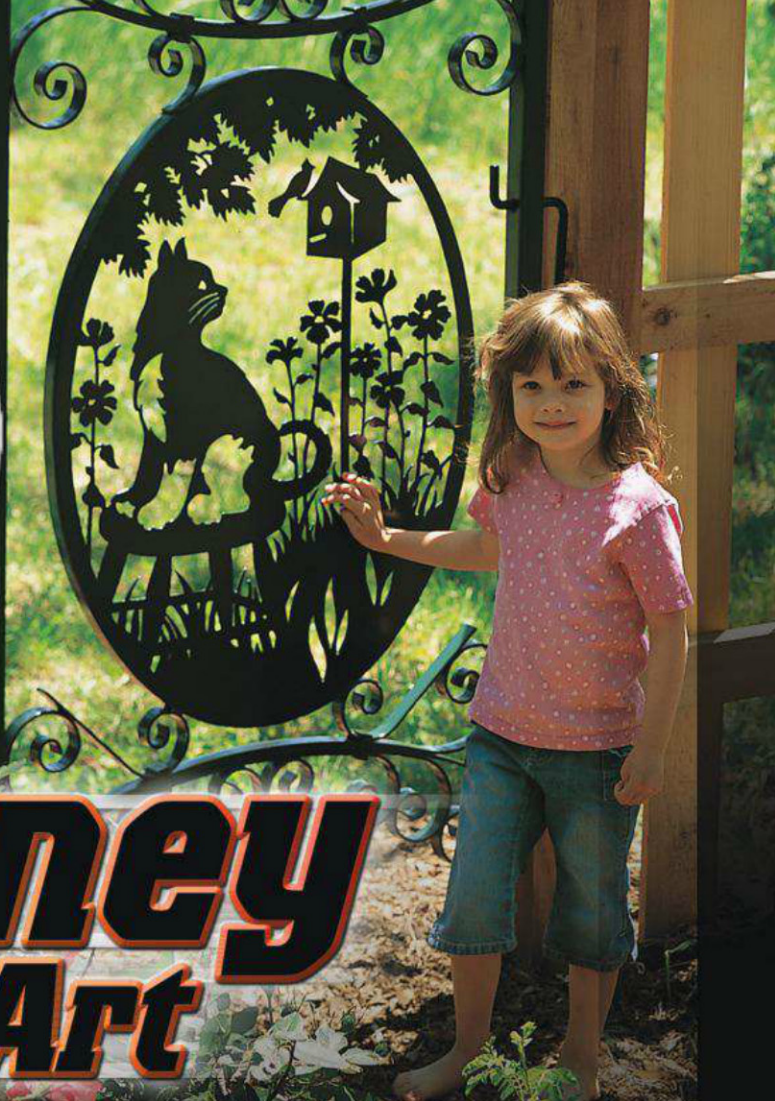
I watched the classifieds and scored a barely used treadmill for \$250. With 10 bucks' worth of lumber, a friend built a shelf across the treadmill's arms for my laptop to sit on, and I got to work. I felt a bit dizzy looking down at my computer, so I put a shelf on the wall in front of the treadmill to hold a large monitor I could plug into my laptop. Looking straight ahead at the larger screen made all the difference.

People assume writing while walking is difficult, but it's remarkably easy—most friends who have tried my homemade treadmill desk have been successful. It only took me 15 minutes to get used to working while I walked, although several months of strolling at different paces passed before I finally found my groove: 2 miles per hour. You could also try using a treadmill desk while browsing the Internet, sending emails or watching movies.

Joëlle Anthony
Gabriola Island, British Columbia



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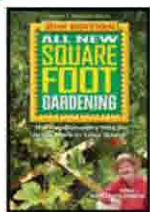
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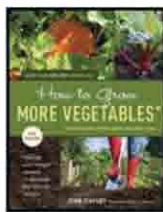
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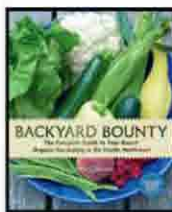
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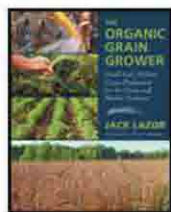
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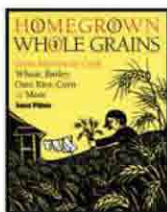
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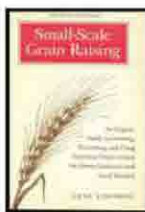
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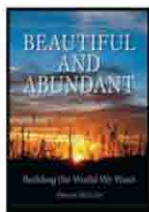
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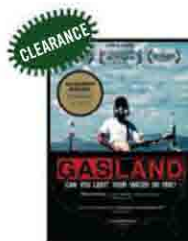
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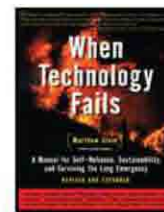
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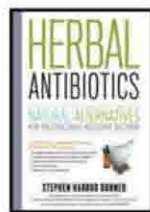
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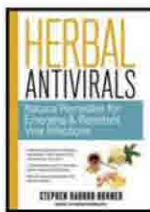
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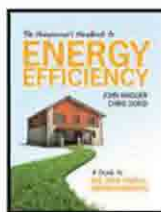
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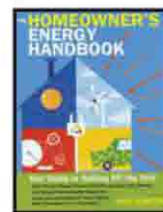
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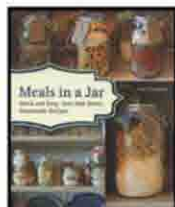
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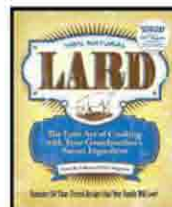
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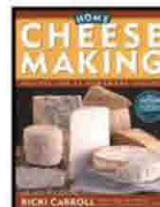
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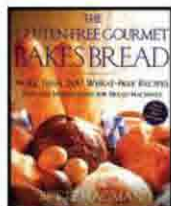
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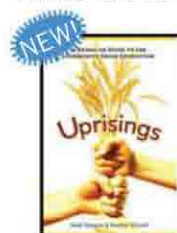
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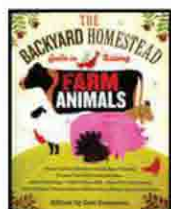
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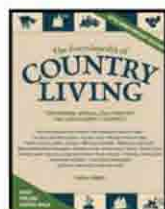
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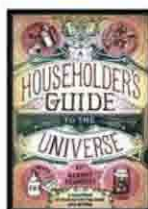
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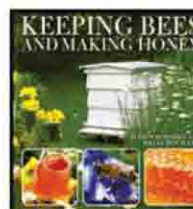
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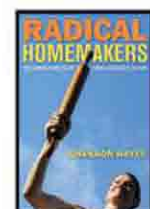
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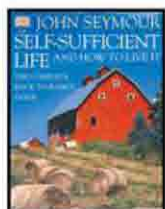
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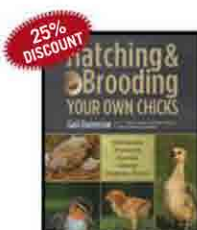
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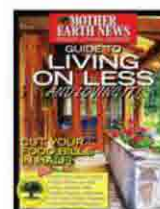
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Understanding 'Organic' Labels

What does the "Certified Organic" label mean?

The "Certified Organic" label is, at its core, a consumer protection law. It's the U.S. Department of Agriculture's (USDA) assurance that you're buying food that has been produced and processed according to its National Organic Program (NOP) standards: **Vegetables and fruits** have not been produced using irradiation, sewage sludge, synthetic fertilizers, prohibited pesticides or genetically modified organisms (GMOs); **livestock** have been fed 100 percent organic feed without antibiotics or growth hormones, and were raised with at least some access to the outdoors; and **multi-ingredient processed foods** must contain at least 95 percent Certified Organic ingredients.

The Certified Organic label is backed by regulations developed by the USDA and the National Organic Standards Board, an advisory committee of consumers, environmentalists, farmers and scientists. Part of the board's job is to advise the USDA regarding the "National List of Allowed and Prohibited Substances." But it aims to be more than an organic referee that rules a farming substance or practice either "fair" or "foul play." The board also makes recommendations about sustainable agricultural practices, and if its recommendations are approved by the USDA, the law requires farmers who seek organic certification to demonstrate that they follow such methods.

To obtain organic certification, applicants must have their operations reviewed by a third-party certifying agent. The review process includes annual inspections, and inspectors can request samples of soil, water, and plant and animal tissue to test for chemical residues. Producers must also pay certification fees that range from a few hundred to several thousand dollars. For some growers, the financial cost and the rigorous path to gain a Certified Organic label are daunting. The law thus makes allowances for small operations. Producers who market less than \$5,000 of organic products annually may call their



Organic standards guide consumers who want to choose sustainably produced food.

products organic (but not Certified Organic) without going through the certification process, provided they comply with other regulations. (For more information on certification requirements, go to <http://goo.gl/Z56LMP>.) Labeling a product Certified Organic without receiving USDA authorization is illegal and can result in prosecution and a fine.

Although some of the USDA's decisions have been criticized by organic watchdog groups (such as The Cornucopia Institute, www.Cornucopia.org), we've come a long way in organic food labeling. Before the national organic standards went into effect in April 2001, consumers had no way of knowing whether food labeled as organic was in fact produced using sustainable, environmentally sound practices. Today, we can know that farmers have produced food without using toxic pesticides, harsh fertilizers, and unsustainable—and sometimes inhumane—systems. Year-over-year increases in sales show that more and more consumers prefer to eat Certified Organic products.

—Vicki Mattern



DREAMSTIME/CHARLES BRUTLAG

With wild animal control, what seems like a humane option may actually be a harmful one.

Relocating Wild Animals

Do wild animals that are trapped and released in new locations manage to survive?

Though critters roaming your yard can be a nuisance, controlling wild animals by live-trapping and releasing them is not recommended by most wildlife biologists. An animal's odds for survival in a new location aren't very good, according to the Washington Department of Fish and Wildlife (WDFW).

"While releasing wildlife in a new location is an option often preferred by well-meaning

people opposed to killing animals, this may be at the expense of the released animal or the animals at the release site," says wildlife biologist Russell Link in the WDFW publication "Trapping Wildlife" (read it at <http://goo.gl/euuJQY>).

Many animals cannot survive the stress and trauma of being trapped and then moved to an unfamiliar location. A relocated wild animal might become involved in a territorial dispute, especially if its species' local population is already at or beyond its limit. If the animal does survive, it may try to return to its original home and be killed en route.

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If you're considering trying this approach to wild animal control, be particularly careful to avoid two circumstances. First, never relocate an animal when weather is severe. The animal could expend so much energy simply finding shelter that it dies soon afterward. Second, never move an animal that's caring for young—relocating a nursing mother will almost certainly cause her offspring to die. (How do you know a nursing mother? The trapped animal will have enlarged teats with relatively little hair on them.) Wait until the young have left their nest, generally 8 to 10 weeks after birth, and plan to set multiple traps.

Many states (and some municipalities) have strict regulations about trapping, transporting and releasing certain animal species, which sometimes even apply to mice,

rabbits and squirrels. Check with your nearest wildlife office to find out whether you need a permit or must follow certain trap-and-release procedures.

—Vicki Mattern

Airplanes and Illness

Am I more likely to get sick if I travel on a plane?

Yes! According to a 2004 study published in the *Journal of Environmental Health Research*, plane travelers are up to 113 times more likely to catch a virus than their ground-bound counterparts.

Why is this? The study put forth a series of potential culprits: fatigue, low outside air replacement, dry cabin air, and proximity of people to one another in a small space.

Best Electric Bicycle Brands

I'm thinking of buying an electric bike, but I've heard some brands have quality problems. Can you tell me which brands are best?

First of all, congrats on getting ready to join the ranks of satisfied e-cyclists. Zipping around town on an electric bicycle will save you money while easing pressure on the environment. (Look, Ma! No gas!) Because a battery-powered e-bike helps you conquer hills with little effort, you can roll up to your destination without feeling tired and sweaty. (Another benefit is that cyclists claim to be happier than those who commute in other ways, according to a 2013 Oregon Transportation Research and Education Consortium study.)

Prices for electric bicycles range from a few hundred dollars to more than \$4,000. You may be tempted to purchase from the lower end of this scale, but these less expensive machines lack power. "They're not practical for serious commuters because their top speed is only 12 to 16 mph, and the batteries don't hold a charge for long," explains Dave Dierker, who has been dealing in e-bikes since 2002 as founder and co-owner of ElectricRider (www.ElectricRider.com).

The e-bike industry is growing rapidly, with new companies popping up—and disappearing—all the time. Your best bet is to choose a well-established brand that is more likely to be around if you need to replace parts later.

For ready-made electric bikes, Dierker recommends the brands Montague and Enforcer, both of which he has found to be reliable. Or, he suggests finding a standard bicycle that's comfortable and suits your needs, and then installing a conversion kit to turn it into an e-bike. ElectricRider sells e-bikes and conversion kits, and it also provides how-to and troubleshooting videos at <http://goo.gl/5ANL8s>.

Finally, be sure to educate yourself on local and state laws pertaining to e-bikes. Cities may require operators' licenses, or they may prohibit e-bikes on multi-use paths and bike trails, so research your local regulations online or contact your department of motor vehicles. The League of American Bicyclists offers a rundown of cycling laws by state at <http://goo.gl/7W3adX>.

—Rebecca Martin



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Circle #53; see card pg 113

While all of these may play a part, the researchers found that an airplane cabin's low humidity—which weakens humans' defenses against infection—is likely the greatest factor in passengers' heightened susceptibility to infection.

Use these preventive tactics to keep from catching a cold the next time you catch a flight: Get plenty of sleep before your trip, stay well-hydrated, wash your hands often, and avoid touching your face or mouth.

Boost your immunity pre-flight by supplementing your diet with medicinal herbs, such as astragalus, garlic, ginger and ginseng, and medicinal mushrooms, such as maitake, reishi and shiitake.

For even more helpful information on staving off infection, check out the comprehensive article "19 Ways to Prevent and Treat Colds and Flu," available on our website at <http://goo.gl/bXLDUu>.

—Amanda Sorell

Tomatoes That Can Take the Heat

Can you recommend some tomato varieties that will continue to produce fruit when temperatures are high?

Faced with long bouts of daytime temperatures higher than 85 degrees Fahrenheit and nights above 72 degrees, tomatoes may fail to set fruit. The plants may look dark green and vigorous—evidence that all other growing conditions are favorable—but have blossoms that dry up and fall off.

If the heat spell lasts no more than a week, the tomato plants will quickly recover. During long stretches of warm nighttime temperatures, however, the plants will stop setting, causing a subsequent gap in tomato production.

In recent years, a flood of new varieties has been bred for greater heat tolerance. Known as "heat-set" or "hot-set" tomatoes, some commonly grown hybrids are 'BHN 216,' 'Florasette,' 'Florida 91,' 'Heatwave II,' 'Solar Fire,' 'Summer Set,' 'Sunchaser,' 'Sun Leaper,' 'Sunmaster,' 'Sun Pride' and 'Talladega.' According to the Alabama Cooperative Extension System, many heat-set varieties also perform well in cool, rainy weather.

Some heirloom tomato varieties are heat-tolerant as well, and these include 'Arkansas Traveler,' 'Eva Purple Ball,' 'Hazelfield Farm,' 'Homestead 24,' 'Illinois Beauty,' 'Neptune,' 'Ozark Pink' and 'Tropic.' Additionally, some "cold-set" varieties, such as 'Stupice,' are all-weather standouts because they're able to function in hot weather, too. A handful of cherry tomato varieties, such as 'Lollipop' and 'Yellow Pear,' also do well in prolonged stints of heat.

Tomato growers in the South often choose heat-tolerant tomato varieties for summer and fall production—a strategy growers farther north may want to emulate now that climate change is causing hotter summers in most regions. When growing tomatoes in hot temperatures, you can boost your success rate by planting deeper (where the soil temperatures are lower), providing afternoon shade, watering in the morning and using thick organic mulch to keep soil cool.

Learn more about heat-tolerant tomato varieties in the Alabama extension publication "Blossom Drop in Tomatoes" (go to <http://goo.gl/HXf8En>) and the Louisiana extension publication "Performance of Hot-Set Tomato Varieties in Louisiana" (check it out at <http://goo.gl/yuxdT5>). To find sources for some of the varieties mentioned here, use the Seed and Plant Finder at www.MotherEarthNews.com/Custom-Seed-Search.

—Lynn Byczynski



'Stupice' tomatoes thrive in cold weather and can also handle heat.

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Circle #85; see card pg 113

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(CONTINUED FROM PAGE 16)

November 2013). Your magazine and web-site have everything my husband and I need to fulfill our dream of becoming self-sufficient—I even read all of the classifieds!

I was wondering whether you'd consider doing a future article on essential, nonelectric tools and equipment for a small homestead, both for farming and food-processing? My family is undertaking homesteading from scratch, and we know precious little about what's out there.

For example, I keep seeing references in your magazine to a broadfork for gardening, but I have no idea what a broadfork is used for. I've heard about mills that can take corn off the cob quickly, but I don't know where to get one. I had no idea they even existed! What do I need to harvest a small hayfield or wheat field by hand? Are there special items I can purchase in order to cook on top of or inside of my woodstove?

Any information on these topics would be great, so we don't have to try to reinvent the wheel. Knowing you, you probably already have an article on the way!

Amy Smith
Lavonia, Georgia

Thank you for the thoughtful suggestions, Amy. We do have an article on top homestead tools in the works, and, in the meantime, you can find information on one of our favorite broadforks and get the lowdown on how to use this indispensable gardening tool at <http://goo.gl/4aNUQ9>. —MOTHER

Need a Farm Dog? Consider a Corgi

I'm a huge fan of MOTHER EARTH NEWS and love getting every issue, but I must comment on your recent article about herding dogs ("Working Dogs: Pick a Perfect Pooch for Your Pastures," October/November 2013). I was looking forward to reading it, fully expecting to see at least one reference to the mighty Corgi, but, alas, it was not to be.

You have let your audience down by not mentioning this awesome herder. Cardigan Welsh Corgis and Pembroke Welsh Corgis are both strong and capable herders—that may be why they have such stumpy little legs!

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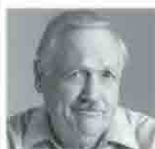
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By Mike Walters
Staff Writer

If you want to grow better tasting vegetables, this will be the most important message you will read this year. Here's why:

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You know the ones I'm talking about... the ones Grandma and Grandpa used to grow.

The folks at Heirloom Solutions are so confident that you'll love the old time heirloom vegetable varieties

that they are willing to "go the extra mile" to convince Mother Earth News readers with this unusual offer.

Here's how to get your free seeds:

If you have a computer you can go watch a special video about this free heirloom seeds offer by going to:

www.FreeHeirloomSeeds.com

If you don't have a computer, you can simply send \$2.00 to cover some of the shipping and handling for the new 2014 catalog. Be sure to include your address so we'll know where to send your catalog as well as your phone number so one of the guys can call and tell you how to get the seeds you want.

Don't worry, no one will pressure you into ordering anything you don't want. They simply don't allow that.

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Circle #67; see card pg 113

not be disappointed. My Corgi's herding instinct is so powerful that he herds the grand-kids, soccer balls, and even me at times!

Mary Shawe
Fernley, Nevada

Garden to Plate (And Back for Seconds!)

Thank you for the discount on *The Four Season Farm Gardener's Cookbook* in the October/November 2013 issue. I have read all of Barbara Damrosch and Eliot Coleman's books, and, as usual, I was sorry to reach the end of this one.

The authors present the perfect combination of information on growing, harvesting, storing and cooking crops. I have made three of Barbara's recipes so far, and my husband, who usually doesn't eat very much, went back for seconds on all three!

This spring, I'll also be trying some of the cold-season vegetable varieties the book recommends, as we have a very short growing season and cool summer nights here in the mountains of Southern California.

Celia De Frank
Big Bear City, California

Windows: Don't Replace—Insulate!

I was delighted to read your article recognizing that up to 40 percent of a home's heating and cooling energy is lost out of its windows ("Find the Best Energy-Efficient Window Treatments," October/November 2013).

I don't think there is any other equally significant, largely untapped way to save energy in U.S. homes than to install insulating window shades—and it's such a simple solution.

Because the U.S. Department of Energy recommends walls insulated to R-13+, I think it's long past time we should improve the insulation of any windows that are R-2.

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Circle #82; see card pg 113

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or less in today's homes. But replacing all existing windows would be neither economically wise nor simple to do. Insulative cellular window shades, however, are affordable for the vast majority of homeowners in the United States.

One erroneous impression the article gave that I would like to correct was the undue focus on condensation problems. When a window shade insulates, it causes the glass to become colder, which will exacerbate a condensation issue on extremely cold days in homes that have excessive humidity. In Vermont, we have plenty of those frigid days. However, throughout 20 years, my business has installed thousands of cellular shades, and if I get two phone calls a year about condensation, that's a lot. In 20 years, not a single person has asked to return shades—customers know how much they are saving and how much more comfortable they are. In short, even the miniscule number of people affected by condensation still think cellular window shades are worth it.

*Gordon Clements
Gordon's Window Decor
Williston, Vermont*

Single and Seeking Self-Sufficiency

I am a single parent, and about three years ago, after losing everything, my son and I moved from the Pacific Northwest to the Arkansas Ozarks, where we now rent a 10-acre homestead.

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Circle #73; see card pg 113

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Hopper Hoover

You printed a reader report in the June/July 2013 issue about using an electric, hand-held bug zapper for garden pest control (Country Lore). I gave it a try, but it only works for bugs such as flies and mosquitoes. It does not work for pests that cling to plants, such as squash bugs, nor does it work for grasshoppers or other large bugs.

I've found the best way to control grasshoppers is to attach a 5-foot plastic pipe extension to a small, portable vacuum, and then simply suck up the hoppers. As a nice little bonus, my hens love when I empty the vacuum bag of hoppers into their pen!



Luma Rose
Balmorhea, Texas

Toward a Sustainable Society

I am responding to the letter "Downsize Population, Degrade Humanity" in the December 2013/January 2014 issue. The letter writer dreams of a future full of people. I believe that is where we are now. Experts, including Lester R. Brown, founder and president of the Earth Policy Institute, have been indicating for years that the world is overpopulated and that we will get to the

point where we can no longer carry on our current way of life.

The author of the letter wants "truth." I think nobody has stated the truth of our predicament better than Brown, who says civilization cannot survive the ongoing environmental trends of deforestation, over-plowing, overgrazing, over-pumping, overfishing, and overloading the atmosphere with carbon dioxide. This is a losing scenario. And it is all the result of overpopulation.

In his book *Plan B 4.0: Mobilizing to Save Civilization*, Brown outlines four strate-

MOTHER'S Wish List

Debt-free home reports. We want to hear your firsthand accounts of how you built a home with little or no mortgage. Maybe you crafted it out of cob, or perhaps you purchased and moved an abandoned house? To share your story or that of someone you know, send us a 500-word summary **by Feb. 21** (including photos, if you have them), with the subject line "Debt-free home report." See Page 106 for our contact information. For more details and to see the specific questions we'd like you to answer about your debt-free home, go to www.MotherEarthNews.com/Debt-Free-Home-Reports.

Nominations for standout homesteaders. As part of our third annual International Homesteading Education Month this September, we're seeking individuals and families to honor as Homesteaders of the Year. To nominate your family or someone you know, send us a 500-word summary of the homestead's activities and at least three photos **by Feb. 21**, with the subject line "Homesteaders of the Year." Find our contact information on Page 106, and get more details at www.MotherEarthNews.com/Homesteading-Month.



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Carol Pellett
Anacortes, Washington

Kudos for Cork

You printed a nice overview of cork flooring's qualities and sustainable attributes in the December 2013/January 2014 issue (Ask Our Experts). Cork also has the benefit of being warm on the feet, slip-resistant, and an acoustic insulator. It also makes great wall panels.

As with most flooring products, cork flooring brands differ, so pay attention to the thickness of the wear layer, the types of resins used, and the finish coating. MosaiCork (www.MosaiCorkTile.com) and Versacork (www.VersacorkUSA.com) mosaic tiles are solid cork (not chips) cut from wine bottle stoppers. These tiles are waterproof and installed with flexible grout, and they're ideal for wet areas, including tub surrounds and even shower pans. They're also great for bar tops and wine cellars.

Andy Gale
Boulder, Colorado

Hello, North Carolina!

I just saw the ad for the MOTHER EARTH NEWS FAIR for 2014, and I was so happy to see you will be in Asheville, N.C., in April!

I have been hoping the FAIR would come close enough for us to be able to go. Counting down the days until April 12!

Michelle Cantrell Bennison
Flat Rock, North Carolina

We'll look forward to seeing you in Asheville, Michelle! The MOTHER EARTH NEWS FAIR will be making stops in four locations in 2014: Asheville, N.C., April 12 and 13; Puyallup, Wash., May 31 and June 1; Seven Springs, Pa., Sept. 12 through 14; and Lawrence, Kan., dates to be determined. You can keep up with the latest news on the FAIR, including program schedules and speaker announcements, by signing up for our FAIR newsletter at www.MotherEarthNews.com/Newsletters. — MOTHER

Herbal Formula Eases Farmer's Aches & Pains



"I keep a jar of Steuart's Pain Formula by my bed and reach for it at night when my knee pain flares up. It knocks the pain right out," says Mike Mardsen of Mabel, MN. Mardsen's been using Steuart's Pain Formula for about 4 years and says he's constantly recommending it to other people.

Steuart Laboratories originally developed Steuart's Pain Formula for race horses. Over the years it has gained a following for treating other animals and humans. The cream contains extract of the herbs comfrey and arnica in a liposome base that penetrates the skin rapidly, says Gary Steuart, who founded the company in 1982. "People now use the product to relieve joint and muscle pain associated with arthritis and injuries," Steuart says.

Rose Johnson of Hazleton, IA uses Steuart's Pain Formula to relieve the tissue pain caused by fibromyalgia, a disorder characterized by widespread pain and tenderness in joints, muscles, tendons and other soft tissues. In addition to pain relief from Steuart's Pain Formula, she appreciates that the product has no side effects.

Warren Ward of Pemberton, MN, says his knees ached so terrible at night that he couldn't get to sleep without taking painkillers. "An orthopedic surgeon told me both of my knees were shot. I had bone rubbing on bone, and I needed knee replacement surgery. Then someone told me about Steuart's Pain Formula. I started using it and in three days I had no pain in my knees. I went right to sleep at night, and I haven't taken a pain killer since."

"I like Steuart's product because there is no odor, it doesn't stain your clothes, and I don't feel a thing when you apply it. It's an excellent product and I know it works," Ward says.

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Circle #69; see card pg 113

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Portable Backup Power That Fits In Your Pocket!

In today's world we all seem to have multiple electronic gadgets (that are extremely important to us and our family) that must be charged over and over.

And there are few things more frustrating than realizing your cell phone, laptop or other mission-critical device is dead (or almost dead) before you head out the door for the day... because... you forgot to charge it the night before.

Hi, Bill Heid, President of Solutions From Science here with some absolutely amazing and exciting news.

Let me explain:

As part of my mission to bring to market the latest and greatest in off-the-grid gear, I literally have to travel around the world. And I do so quite frequently.

That being the case, and because I run several companies, it is a must that I stay in touch with my teams of employees back here in the states. And I don't know what your experience has been but, if you're "off the grid" when traveling like I am, you KNOW that isn't always easy... because...

Charging Your Devices Overseas Can Present A Real Challenge!

For example: In Europe, you'll find two different kinds of plug-ins (one for Britain and another for continental Europe) that are totally incompatible with your American devices. Plus, you'll need a voltage converter, as well.

And in remote places like Belize or Costa Rica, sometimes the power goes in and out with regular frequency. Heck, even the Florida Keys can present power challenges regularly.

Not to mention outages caused by other emergency situations.

Not good. Not good at all when you have several businesses, your family and scores of employees relying on you to keep things moving forward.

So, for the last two years, I have been on a frantic search (literally scouring the globe) looking for a reliable, portable backup power solution. And to be quite frank...

It Has Been Frustrating!

Don't get me wrong. I've found several. But no matter what the manufacturer says, if the unit is light and small, it's underpowered. Or, if the unit is powerful, it's way too heavy and bulky to be practical... that is...

They Just Don't Perform As Described... UNTIL NOW!

Recently, due to a breakthrough in battery technology (which I'll discuss in a bit), I found a personal, portable backup power unit that more than lives up to every claim it makes. It's called the...

Pocket Power Plus

This device is truly amazing and very cool.

First of all, it's truly compact. The unit is just a little larger than an iPhone 5.

Second, it's truly powerful. David Fink, our chief electrical engineer at Solutions From Science, jumpstarted his Harley after it had sat for 9 months. If you know anything about old

Harleys, you know that's quite a feat.

Third, it's truly portable. The unit comes in a handy carrying case that contains everything you need, zips up completely... and... all told, weighs less than two pounds.

Those things—truly compact, truly powerful and truly portable—were the main criteria I was looking for. But the **Pocket Power Plus** not only met that criteria, it exceeded my expectations more than I ever could've imagined.

Here's what makes this device the most amazing personal, portable backup power system ever developed:

- **It will charge ALL your electronic devices.** (With 16 different kinds of adapters, there's no popular electronic gadget this device won't be compatible with. It even has a USB charging port!)

- **It will run ALL your electronic devices, too!** (For example, you can run: An iPad for 18 hours. A Kindle for 32 hours. An iPhone for 64 hours. An iPod for 150 hours. Or, you can even use it to **DOUBLE** your laptop's battery run time!)

- **The unit is small and can literally fit in your shirt or pants pocket!**

- **You can jump-start nearly any vehicle with the included jumper cables!** (We've even jumpstarted a bus!)

- **It's a perfect backup power device for nearly any outdoors activities! (It's also great for business travelers... on the ground or in the air.)**

- **When plugged into a standard wall outlet, the Pocket Power Plus charges in about 5 hours.** It can also be charged by your automobile with the included 12 volt DC adapter.

- **The Pocket Power Plus provides peace of mind when you add it to your vehicle's emergency kit!**

- **It's nearly bulletproof electrically... and much, much more!**

Pretty amazing, don't you agree? And...

Here's What Makes This All Possible!

Earlier I mentioned that there has been a recent breakthrough in battery technology. The breakthrough is an advanced type of battery that evolved from lithium-ion batteries.

It's called a Polymer Lithium-Ion Battery.

These batteries are much more powerful than their predecessors... and... can be shaped to almost any size or design needed. And that's what makes the **Pocket Power Plus** so powerful... yet... so compact and portable.

These batteries are already starting to power the next generation of battery-powered electric vehicles. And get this, these batteries are so powerful, since April 2011...

They Have Been Responsible For Several World Drag Racing Speed Records!

Now I hope you see why I'm so excited about the **Pocket Power Plus**.

In any case, by now I'm sure you are wondering how much the **Pocket Power Plus** costs. Well...



Pocket Power Plus Is So Powerful It Can Even Jumpstart A Bus

Here's Great News For Mother Earth News Readers:

The retail price of the unit is \$229.00. However, as a special, limited-time introductory offer, you can get the **Pocket Power Plus** at...

More Than Half-Off... Just \$99.97!

Plus, if you order 2 or more **Pocket Power Plus** units, I'll throw in free shipping and handling (which is \$15.95 per unit.)

AND... just to ease your mind, I also want you to know that I am shouldering all the risk with our...

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Here's How It Works: Try out the **Pocket Power Plus** under any conditions. If it fails to perform as I've described here... or... it breaks or malfunctions in any way, just return it to my office and you'll receive a prompt refund of your full purchase price (less shipping and handling). No hassles. No questions asked.

For Fastest Service: Got to the web site below and click the "BUY NOW" button at the bottom of the page and enter code ME121...

www.PocketPowerPlus.com

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Checks and Money Orders should be made payable to: **Solutions From Science.**

One last thing: This special, more-than-half-off introductory offer on the **Pocket Power Plus** is only good until our current supply runs out. New units will be sold at the regular retail price of \$229.00 each.



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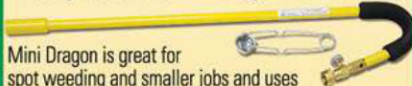
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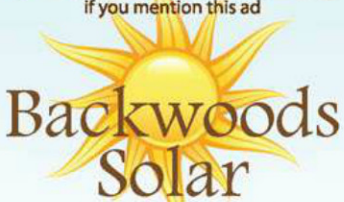
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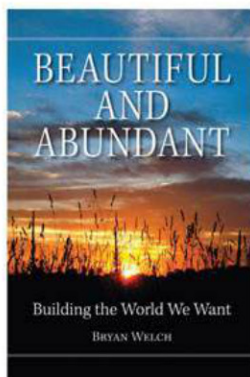
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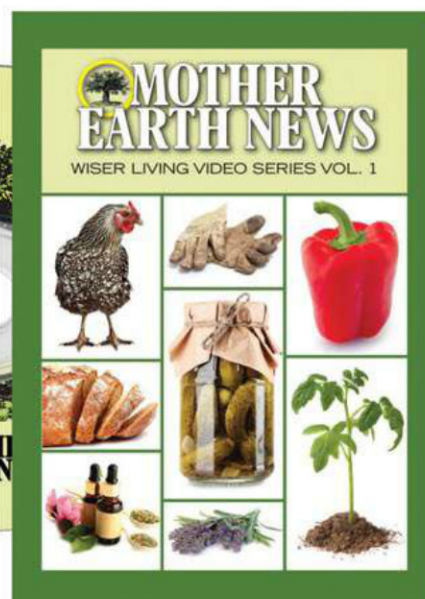
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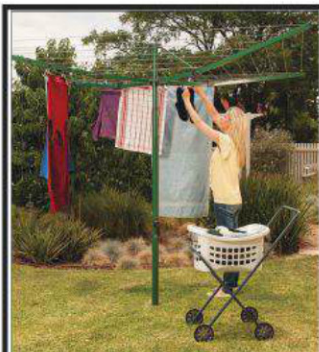
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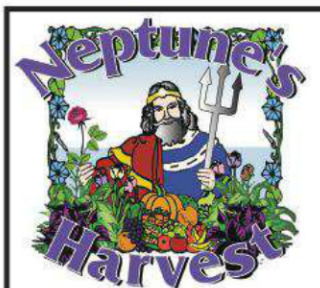
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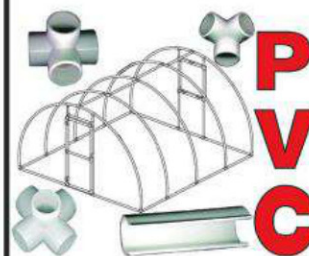
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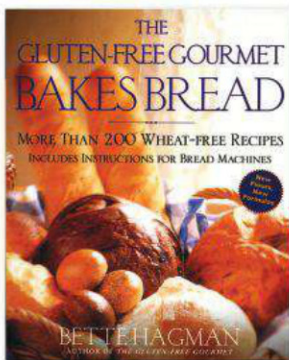
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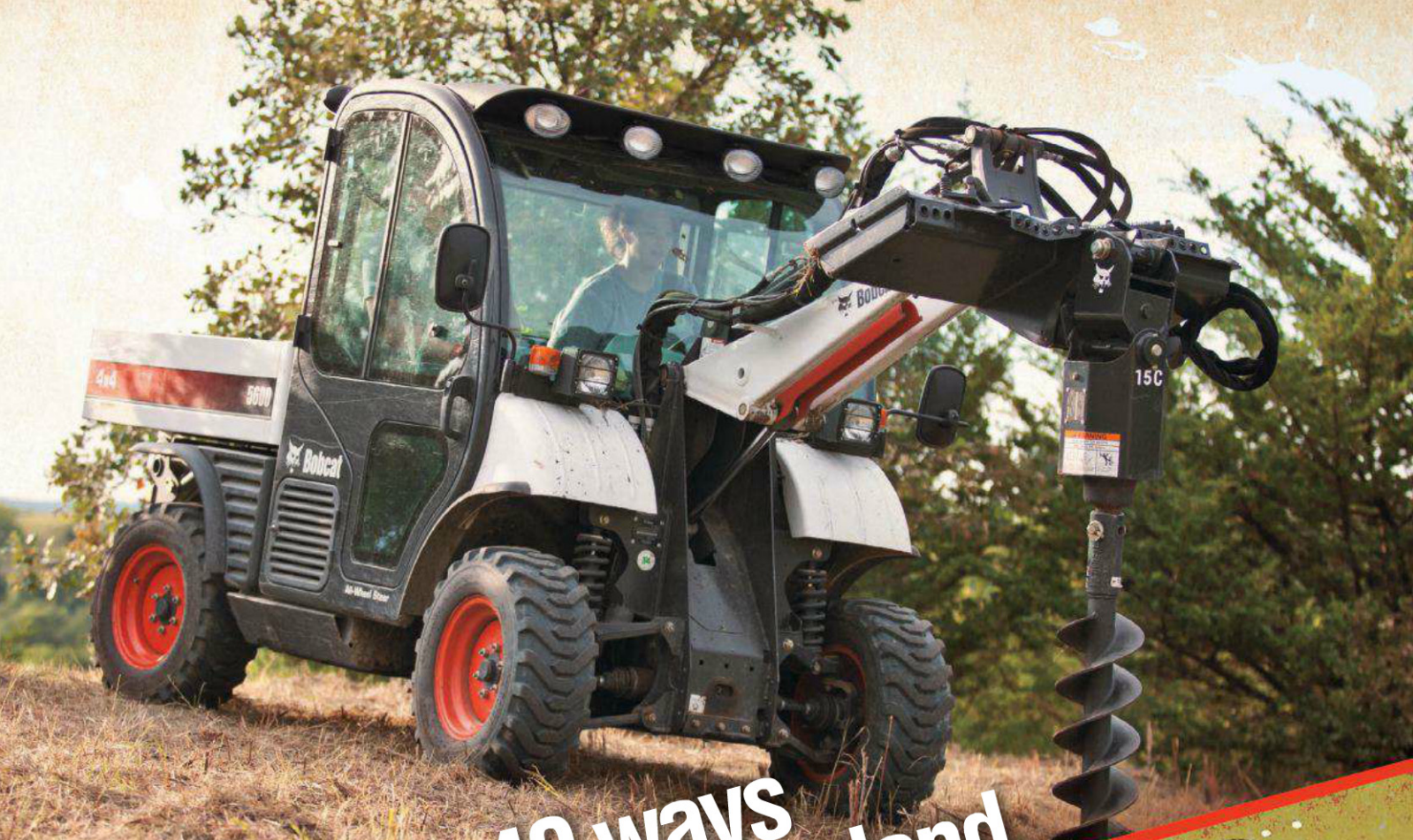
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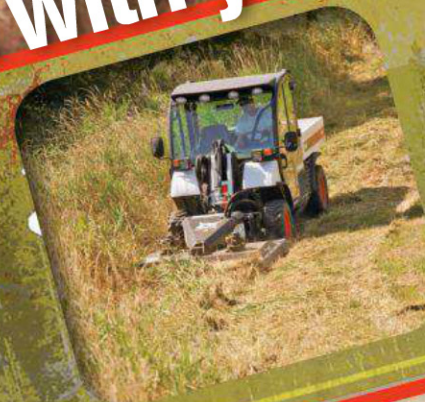
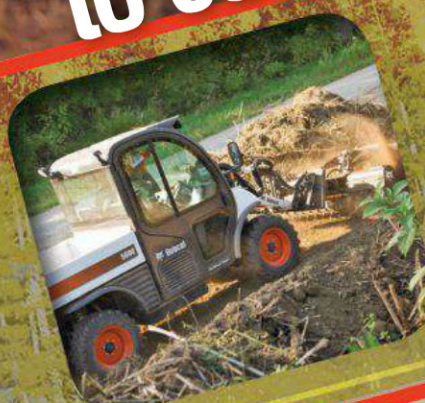
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