



CHAPTER 1

A Growing Movement

PLANTS HAVE INGENIOUS WAYS to produce and disperse their seeds without any help from mankind. They are capable of adjusting to their surrounding conditions and climate to ensure the continuation of their species. Once we humans came into the picture and started domesticating plants, expressing control over agriculture, we began to save seeds. In the process, crops were gradually changed in ways we thought would benefit us; we started selecting for size, color, timing, hardiness, etc. Farmers would save their own seed and trade with their neighbors. Beginning about 1790, the Shakers began selling vegetable seeds. They were among the first to do so, and were certainly the first to sell them in paper envelopes. Inevitably, more seed companies began operations and people willingly stopped saving seeds in exchange for the convenience of buying them. At first, the seed companies they bought from were small companies selling seed regionally. Eventually, the small seed companies were bought out by larger corporations that marketed seed nationally.

Handing the safekeeping of our seeds over to corporations is sort of like what's happened with soup. Soup is such an easy and natural thing to make from leftover ingredients and bones. Once canned soup came

on the market, many leftovers and bones went to the compost pile or worse yet, to the trash, without having another go-around on the dinner table. Soup eaters were put at the mercy of whatever the soup companies wanted to include, which might be an overload of salt or other unnecessary and harmful ingredients. Not only did we give up control over a basic food in our diets, we lost the goodness extracted from all those bones and leftovers. But perhaps even more importantly, we lost the knowledge of how to make soup. In the growing of plants, we have the ability to reap the benefits of all they have to offer, but when we stop short at saving seeds, we are at the mercy of whatever is offered for sale. Sometimes our favorite varieties are discontinued — gone forever unless we save the seed ourselves.

The large seed companies are looking to sell seeds to as wide a demographic as possible, so varieties that do well only in limited areas are discontinued. That's the way big business does things. The corporations that now own the majority of seeds did not start out as seed companies, but as chemical companies. They market seeds that go well with their chemicals. In 2009, ten companies accounted for 73 percent of the global commercial seed market. Three of those companies alone controlled 53 percent of the global market. Monsanto, the world's largest seed company and the fourth largest pesticide company, controls 27 percent of the total global commercial seed market.¹

Large corporations have been buying seed companies since the 1970s.² Furthermore, they have modified the genes of some crops by inserting genes that are not even the same species. The possibility exists that something is genetically added to a variety that produces allergic reactions in some people, among other horrors. Those crops are designated as GMO (genetically modified organisms) or GE (genetically engineered). Making matters worse, presently GMO foods are not required to be labeled as such. Monsanto is the most well known for GMOs, particularly with their crops engineered to withstand glyphosate, the active ingredient in Monsanto's Roundup. Roundup Ready crops can be sprayed with the herbicide to kill weeds around them, but the crop won't be damaged. It will be covered with herbicide, but it will survive. Weeds adapt to persist in the environment and are adapting to

Roundup in the form of superweeds that are not affected by the herbicide, requiring other measures to be taken.

Monsanto crops also include Bt corn and cotton. Bt (*Bacillus thuringiensis*) is a bacterium that produces crystal proteins (cry proteins), which are toxic to many species of insects. Bt has long been an option for organic growers to apply selectively to their crops for insect control. However, with these GMO crops, Bt is in every cell of the plant, creating an overload to the ecosystem and to our bodies. This insecticide cannot be removed by washing or peeling when it is part of the Bt crop and will add to the accumulation of insecticides in our bodies when we eat the food. Insects that Bt was intended to control have adapted to it, just as the weeds have adapted to Roundup. In addition, where Bt did its job of controlling certain insects, secondary problems arose, with new insects moving in.³

GMO corn does not improve nutrition. DeDell Seeds, located in Canada and one of the few “GMO-Free” seed corn companies, offers a study⁴ that shows the nutritional differences between GMO corn and non-GMO corn. According to the study, non-GMO corn has 437 times

The Safe Seed Pledge:

“Agriculture and seeds provide the basis upon which our lives depend. We must protect this foundation as a safe and genetically stable source for future generations. For the benefit of all farmers, gardeners and consumers who want an alternative, we pledge that we do not knowingly buy, sell or trade genetically engineered seeds or plants. The mechanical transfer of genetic material outside of natural reproductive methods and between genera, families or kingdoms, poses great biological risks as well as economic, political, and cultural threats. We feel that genetically engineered varieties have been insufficiently tested prior to public release. More research and testing is necessary to further assess the potential risks of genetically engineered seeds. Further, we wish to support agricultural progress that leads to healthier soils, genetically diverse agricultural ecosystems and ultimately healthy people and communities.”

the calcium as GMO corn! GMO cotton has also not lived up to the promises made to growers by Monsanto, particularly in India. (More about that in Chapter 10.)

In 2000, I had the pleasure and privilege to hear Dr. Vandana Shiva speak at the PASA (Pennsylvania Association for Sustainable Agriculture) Conference. She is a scientist and environmentalist from India who has dedicated her life to fighting patented and GMO seeds and promoting organic farming. Dr. Shiva founded the organization Navdanya⁵ to further her work. Navdanya promotes non-violent farming, which protects biodiversity, the Earth, and small farmers. This organization works toward conserving seeds with climate-resilient properties, including 4,000 rice varieties and 195 wheat varieties, plus other cereals, pulses, millets, pseudocereals, oilseeds, and medicinal plants. The existence of Navdanya and many other enlightened seed companies proves you don't have to settle for seeds brought to you by large corporations. Some seed companies have even signed the Safe Seed Pledge to "...*not knowingly buy or sell genetically engineered seeds or plants.*" Look for that information in their catalogs or on their websites.

Hybrid vs. Open Pollinated Seeds

You will find some seeds designated as hybrids. Hybrids are a cross between two parents of different varieties of the same species to develop a variety with desirable traits that the parents don't have. You can save the seeds from a hybrid plant, but when you grow them out, you won't necessarily get plants with the desirable characteristics. For those special characteristics, you need to go back to the seed company each year for hybrid seeds. For a seed company that is in business to make a profit, that's good business. Varieties with the designation *F1* near the name are hybrids.

I grow open pollinated plants. The seeds saved from those varieties will breed true, as long as I have taken precautions to prevent them from cross pollinating with something else. That's the tricky part — knowing what will cross with what and keeping them separate. Depending on the method of pollination (self, insect, or wind), plants of the same species could cross with each other. It is best to begin your seed saving

with self-pollinators. Chapter 7 contains more information, including the skill level involved with each crop. You will find books on seed saving that will help you with those details (and more) in the “Resources” section of this book.

Heirloom varieties, sometimes referred to as heritage varieties, are open pollinated. Some small seed companies specialize in open pollinated seeds. They can stay in business because so many people don’t want to be bothered to save seeds; however, once you buy them you can grow them out and save them yourself. As I mentioned before, seeds evolve with their conditions. Buying seeds that have been grown far away means your seeds have to start new each year, with the seeds having to adjust to your climate. If you or someone relatively near you save seeds each year to plant back, those seeds are already conditioned to do better in your garden.

Sometimes open pollinated varieties are intentionally crossed to make new varieties. The first generation would be an F1 hybrid, but if it is selectively grown out for seven years (or so), it could become a stable open pollinated variety. An open pollinated variety can itself be worked with, selecting for specific traits that are already present, although not yet uniform, until the desired traits are stable. You can even do this in your own garden! It basically consists of just pulling up any plants that don’t have the characteristic you want. You will find books on plant breeding in the “Resources” section to help you through the details.

Some seed companies spend much time and money breeding varieties with special traits and, in the spirit of making the most of the research that has gone into developing new varieties, some varieties have *PVP* designations. *PVP* stands for *plant variety protected*. The Plant Variety Protection Act went into effect in December 1970. “Its purpose is to encourage the development of novel varieties of sexually reproduced plants by providing their owners with exclusive marketing rights of them in the United States.”⁶ *PVP* varieties are protected for 20 years (originally it was 18).

I first became aware of the *PVP* designation when I was a market grower. For a couple years I had grown Romulus, a variety of romaine lettuce with an open head. I liked the open head because it was easy to

clean for my restaurant customers. Although there appears to be many open-headed romaine varieties on the market today, at that time it was the only one I could find. When Romulus wasn't offered in the seed catalog one year, for reasons I can't remember, I decided to grow it out from seeds left from the previous year. It was my first experience growing lettuce to seed, and I was pleased with my harvest of four ounces of seed. When the seed catalogs arrived that next winter, I saw Romulus listed by another seed company with the letters PVP beside it. When I discovered what that meant I was worried about what it meant for me — if I wanted to continue as a law-abiding citizen. I found out that I could save my own seeds and grow them out; I just couldn't sell the seeds or give them away. I was growing it in the 1990s. The PVP protection expired for Romulus in 2010, making it fair game for any seed company to propagate and sell. It was a great romaine variety, but you will have a hard time finding it today. What you *will* find are new varieties that the seed companies have control over. A seed company that has developed a PVP variety puts resources into marketing it and keeping the variety strong while they have an exclusive right to it. By the time the PVP expires, they have developed new varieties; these are given the same special attention, and nothing is done to further the development of the expired variety. That's business for you.

You will likely come across these PVP varieties when you see varieties with novel claims. The seed companies are required to label them as PVP, so you can be on the lookout for them (although when I first bought Romulus I didn't see a PVP label). You can find which varieties hold PVP designations now and in the past by accessing the Certificate Status Database⁷ maintained by USDA's Plant Variety Protection Office.

Some seed varieties are covered by a *utility patent*. You are *not* permitted to save the seeds of those varieties for replanting yourself.⁸ Utility patents last for 20 years from the date of filing with the United States Patent and Trademark Office.⁹ If a plant is a PVP variety or is covered by a utility patent, that information will be mentioned in the seed catalog that carries it. Read variety descriptions carefully when ordering from a seed company.

Grassroots Seed Saving and Sharing

We can opt out of participating in what big business has to offer. We can save our own seeds and share them with others. Seed Savers Exchange in Decorah, Iowa, began with that very idea. Diane and Kent Whealy wanted to keep the seeds of Diane's grandparents in production and share them with others. From that humble beginning grew the widespread network of seed savers that exists today. In Canada, Seeds of Diversity, formerly known as the Heritage Seed Program, is a volunteer organization that conserves the biodiversity and traditional knowledge of food crops and garden plants. Through the *Seed Savers Exchange*



CREDIT: JAROD CONNER

Yearbook and Seeds of Diversity's *Member Seed Directory*, members of these organizations can obtain seeds from each other, making available thousands of varieties that are no longer found elsewhere.

In the past few years, people have realized the importance of preserving seeds and have begun to organize seed libraries. Seed libraries are a fast-growing movement to foster seed saving, allowing gardeners to be involved in the most basic part of the production of their food. Seed *banks* are repositories that hold seeds for the future. Seed *libraries*, on the other hand, are dedicated to getting seeds to as many gardeners as possible to be grown out each year — allowing the varieties to be preserved, while at the same time adapting as needed to the local climate and conditions.

The libraries house the seed, provide resources, and offer classes teaching patrons to save seeds. The gardeners save seeds and give some back to the seed library. Getting seeds back that have been grown properly — without cross pollinating with something else — is a concern for a seed library. If cross pollination occurs, however, it can open the way for a new regional variety to develop. A market gardener friend of mine who lived in Montpelier, Virginia, saved cucumber seeds one year; when he grew them out the next year, the cucumbers happened to be white, rather than green. They still tasted like cucumbers, so he labeled them Montpelier Whites and sold every one. Stay open to new possibilities.

We usually think of a library as a brick-and-mortar building where we can borrow books or use the Internet. It keeps resources safe, but available when we need them. We borrow books from a library, but we have to bring them back in a timely manner. When libraries offer seeds, how does that work?

Seeds “borrowed” from seed libraries are not expected to be returned anytime soon. The idea is to plant the seeds and grow them to maturity, hopefully saving and bringing back as many or more than you “borrowed.” Seeds are returned at the end of the season. But things don't always work out as planned. The weather doesn't cooperate, insects or other predators take out the plants, your seed saving skills are not what you thought they were, and the list goes on. The founders of seed libraries anticipate that not everyone will be able to bring seeds back. They

know that others will be able to bring back more than they borrowed. There are many ways that individual libraries are set up, and I will be telling you about them. If you have never saved seeds before, don't let that stop you from participating. Everyone has to start somewhere. Sometimes seed libraries are located within traditional book libraries, but that's not the only place you'll find them.

The first seed library to form was BASIL — Bay Area Seed Interchange Library — which began in 2000 at the Berkeley Ecology Center in Berkeley, California. BASIL is sponsored by the Ecology Center and run by volunteers. Sascha DuBrul came up with the idea of a seed library when he wanted to find a home for seeds that were left when the University of California, Berkeley, closed its campus farm. (The property was to be used for cooperative research with Novartis, a Swiss biotechnology corporation.) Christopher Shein was the farm manager for a one-acre plot at the farm that had been used by an organic farming research class to grow food and seeds to share and to preserve heirlooms. Shein and Terri Compost worked with DuBrul to establish the seed library. DuBrul eventually migrated to upstate New York where he spread his enthusiasm for seed sharing to Ken Greene, a librarian at the Gardiner Public Library. Greene started a seed library there in 2004. In 2008, it became the Hudson Valley Seed Library and moved to Accord, New York, operating on a different model altogether under the direction of Greene and his partner Doug Muller. You will be hearing more about the Hudson Valley Seed Library in Chapter 10.

Projects evolve to suit their communities. If something doesn't seem to be working as envisioned, it can be changed to make it a more viable activity. In 2007, Caitlin Moore started the Olympia Seed Exchange in Olympia, Washington. Within a year, she was joined by Claire Ethier, and later by Casey Fabing. Originally begun as a website, it has changed and evolved over the years and now operates by hosting monthly seed exchanges at different locations around town, teaching classes on seed saving, and participating in local and regional farming and seed-related events.

SPROUT Seed Library was established about 2006 in West Marin, California. SPROUT, an acronym for Seed and Plant Resources

OUTreach, provides seeds and plants to gardeners who, in turn, grow out select plants for seed and return some to the library for others to borrow. The SPROUT library has a portable component to it. SPROUT offers classes and seed saving resources.

About 2008 the Portland Seed Library was organized, hosted by the Northeast Portland Tool Library, which has its home in the Redeemer Lutheran Church in Portland, Oregon. By the end of 2010, the Seed Library of Los Angeles (SLOLA) was formed using The Learning Garden at Venice High School as its base.

Influenced by a permaculture design course she took (taught by Christopher Shein), Rebecca Newburn co-founded the Richmond Grows Seed Lending Library (Richmond Grows) with Catalin Kaser in 2010. Newburn wanted the seeds to be more accessible to people, and came up with the idea of putting them in an actual public library, independently of what Ken Greene had done in New York. Her goal was to make a replicable model for others to follow. The home for Richmond Grows is the Richmond Public Library in Richmond, California. You



will be hearing more about Richmond Grows in Chapter 4. Anyone researching how to start a new seed library probably already knows about Richmond Grows through its website www.richmondgrowsseeds.org. Although some information will continue to be there, the new go-to place for seed library information is www.seedlibraries.net, also managed by Rebecca Newburn. Newburn is a middle school science teacher, and her enthusiasm for seed saving has moved into her classroom curriculum. Since 2010, seed libraries have sprung up at a steady rate, with the pace quickening in 2012 and growing faster each year. You can find a list of known seed libraries, referred to as Sister Seed Libraries, at www.seedlibraries.net.

In the News

Seed libraries are newsworthy events. In March 2013, seed libraries were the subject of a segment on the *NBC Nightly News*. That was the same month the seed library opened at J. Sargeant Reynolds Community College in Goochland, Virginia. My daughter, Betsy Trice, had been influenced by an article in *Acres USA* the previous year and, with cooperation from the college library and donations of seed from seed companies, made it happen at the college. That article, “Sowing Revolution: Seed Libraries Offer Hope for Freedom of Food,”¹⁰ by Bill McDorman and Stephen Thomas was the result of a gathering of seed savers at the National Heirloom Exposition in September 2011. Word gets around. Ordinary people catch an idea from somewhere, whether from TV, in print, or from a conversation with someone, that sparks something within them to act. Without too much trouble, you can find Internet postings and news articles about start-ups of new seed ventures. People are coming together to help each other save and share seeds, taking control of the most basic part of their food supply. The more seeds are shared, the better they are preserved in the public domain.

Find Seeds Native to You

Native Seeds/SEARCH is a nonprofit conservation organization based in Tucson, Arizona, that has been collecting and dispensing seeds of crops indigenous to the southwestern United States and northern

Mexico since 1983. Native Seeds/SEARCH also offers seeds of crop varieties that are not traditional to the Southwest, but that can contribute to regional food security. It has become a major regional seed bank and a leader in the heirloom seed movement.

What is indigenous to your area? It may be that some of the crops and the history that you want to see preserved originated with immigrants who arrived with seeds in their pockets, coat hems, and hatbands from their homelands. Sometimes the only connection immigrants have with their heritage once they have been transported to a new country is through food, which ultimately means through the seeds that grow it. The stories connected to the seeds are often just as important as the seeds themselves. There is always a story that serves to connect us to what has gone before. In this new wave to save seeds, we should be sure to also save the stories.