

NOTES ON SAVING SEEDS

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Miss Gladys McGee's Heirloom Turnips

When our family moved to Potsdam, NY in 1973, our back fence neighbor was Miss Gladys McGee, a spunky lady in her late 70's. She had been the Potsdam Town Clerk and a piano teacher.

Gladys had a little garden where she grew **turnips** like I had never seen before. They were large [up to 4½ pounds, I later learned], with long tapering light green necks. She said her father had saved the seeds, and so had she.

When Gladys died in the fall of 1977, there was one fine, big turnip left in her garden, and I knew she was saving it for seed. (Turnips go to seed the second year.) I figured she would have wanted someone to rescue it, so I did.

I kept the turnip in a plastic bag (loosely closed) in our refrigerator that winter, and the next spring planted it in a big pot of compost. I kept it right outside our back door where the woodchucks wouldn't nibble it.

I've grown these turnips and saved the seeds ever since. For a couple of years, I offered them through Seed Savers Exchange. Through another SSE member, I learned that they are botanically rutabagas. I was surprised to learn this because these are not yellow-fleshed, but white, with mild, very slightly sweet flesh – when they are grown in good soil with plenty of moisture.

I've also sold the seeds at the Potsdam Food Co-op when I have enough. Some years, I bring one or two turnips in for the winter, just in case the ones I leave in the garden become food for mice or voles. If I think of it, I mulch the long necks – but maybe that's just giving cover to little rodents.

Well-grown roots will give you some nice leaves for cooked greens in late fall and early spring, and still have the oomph to produce flowers (also edible) and seeds.

When the seed pods turn dry and tan, brittle and rattly, I carefully cut the whole stems and gently put them in a paper sack. The pods will not spring open, but will fall open when bumped, shaken or squeezed.

Turnip seeds are viable about five years when stored in a paper envelope, and perhaps longer when buried in the soil, waiting to be exposed by tilling. So I don't try to harvest all the seeds, as I like to have them volunteer.

Here is the little – the very little – I know about the history of Miss Gladys McGee's turnips:

If they had a name, I don't remember her telling me. [It was I who named them after her.] I just remember "turnips"; and she said her father had saved the seeds, and so had she. And her father had had a music store on Market Street.

From the St. Lawrence County Archives, we have found that Gladys' father was John T. McGee and he was a co-owner of the Willis-McGee Music Store. John T. McGee was born in 1863 and died in 1934. Gladys' family lived in Potsdam from the early 1900's; and her family had deep roots in the county, beginning with her great-grandfather, William McGee, who was born in Canada around 1796 and came to the United States "at an early age." He and his wife, Amelia, were among our early settlers. Their home was in Louisville, a few miles from the St. Lawrence River up here in the far northwest corner of New York State.

This tells us a little about the McGee family, but it can only hint about where the turnips might have come from. Early settlers also came here from New England; and the seeds could have been handed down from family, relatives, neighbors or friends.

Since these are really **rutabagas**, why weren't they called rutabagas? Because the name "rutabaga" was not yet available hereabouts. It didn't come into written English until 1799 (in England, I assume) when William McGee was a little boy (in frontier Canada).

Rutabagas themselves apparently did not exist before the late Middle Ages, when some sort of hybridization between some kind of **cabbage** and turnip is believed to have happened. Miss Gladys McGee's turnips have the white-fleshed roots of turnips, the smooth leaves of cabbage (not the scratchy leaves of turnips) and some of the nice blue-green of **Kale** leaves (without the pronounced curliness of Kale). It should be noted that while rutabagas can be yellow or white, so can turnips. And the reddish purple of turnip necks can color the flesh of rutabagas in rare cultivars.

Turnips, on the other hand, were cultivated by the ancient Greeks and Romans. The word "turnip" has been in use (in writing) since 1533.

In England, and Ireland, rutabagas have been called **Swedish Turnip**, **Russian Turnip**, **Swede**, **swede**, and **turnip**. The name rutabaga is from a Swedish dialect (rotabagge), but the Swedes now call them **Kolrot** (literally cabbage root). In Canada and some places in New England, it's just "turnip."

My vote, if I were asked, would be, if these were ever offered in a catalog, to list them under Rutabaga, and give the variety as Miss Gladys McGee's Turnip.

The title of this essay could be misleading, so I'll

Miss Gladys McGee's turnips were not the first seeds I had saved. Many years ago, I saved the seeds of large **cherry tomatoes** which were the only thing growing on the sludge at the Lexington, Kentucky sewage treatment plant. Cherry tomatoes normally have two seed chambers. Once in a while, there would be a tomato with three seed chambers, and it would be a little larger than the two-chambered.

Over the years, as I kept planting seeds from the largest tomatoes, there eventually appeared four-chambered fruit which were still larger. It was not consistent, but it was interesting and gratifying.

I also saved seeds from the largest, juiciest Roma paste tomatoes. I know, Romas are bred to be dry; but they were very prolific, and I wanted to combine the juiciness I prefer with the abundance of fruit.

Then **early blight** (*Alternaria solani*) got so bad in our garden that I gave up on tomatoes for several years, till I read in *HortIdeas* [<http://users.microtech.com/~gwill/>], (July 2002) that Juliet tomatoes are resistant to early blight. And indeed they thrived in our garden!

A couple of summers ago, there was a volunteer "**Juliet**" in our garden which was indistinguishable from the Juliets I had bought at Agway. By the way, the Juliet label modestly refrains from bragging about its resistance to early blight.

We are cautioned not to try to save the seeds from hybrid plants, but in this instance the offspring of a hybrid tomato did just fine.

A gardener friend told me this year (2010) he had twenty times more tomatoes from his Juliets than any other variety. (Fishermen exaggerate... gardeners don't.)

So... what might happen if you ever had a three-chambered Juliet tomato and saved the seeds...?

It was my habit to save the tomato, or tomatoes, which ripened first, for seed.

We grow **pole Roma beans** on our back fence. Leaves outside and above the fence are for the deer, but still we get a crop. I always let some pods stay on the vines to mature and dry. If the pod is intact and mature, and if it is above the snow and mud, then the seeds will be safe inside it all winter and ready to plant and grow in the spring, early to mid-May. Yes, that is early here, but if I'm lucky (and I have been thus far) my beans get a head start.

Of course, it is wise to harvest bean seeds and keep them safe indoors over winter. I just enjoy knowing that nature has a good system. I expected squirrels or somebody to eat the beans during the winter, but that has not happened so far. And when the deer eat the bean leaves, they carefully avoid eating the bean pods. At least this year. I have no idea whether they are being nice to me, or whether they really don't like the bean pods.

When to Collect Seeds

Before you gather any kind of seeds, be certain they are ripe. Always ask yourself how it happens in nature. The plant holds onto its seeds as long as it needs to, to give them all the nutrients and strength and protection they need to stay safe

till it is time to grow, and then to germinate and grow. So the plant knows when it's time to release its seeds. The **milkweed** pod splits open. Little windows under the roof of a **poppy** seedpod open, turning the pod into a pepper shaker.

The best time to collect seeds is just as soon as they are ripe. At that point the fruit will shut off its connection with the seed and, in most cases, physically let it go, sort of the way a leaf is cut off from its twig in the fall.

The longer you delay harvesting, the more seeds you are apt to lose to natural dispersal, or birds, or insects, or rot.

To tell when a seed pod is ripe, look first at the flower stalk (which has become the seed stalk). If it has faded from green to tan, then you know it is no longer transporting food and water to the ovaries. The seeds are ready, or nearly ready, to be on their own. (They might still be absorbing the last bit of goodness from the pod.)

Next, look for openings in the pod (it it's that kind of pod). The little windows of the poppy pod mentioned above may be open, but the pod might not yet be completely dry. You can let it dry before you cut it, if it is not apt to be bumped into; or you can cut the pod with several inches of stem, and put it upside down in a cottage cheese carton to finish drying if needed. Don't put too many pods in the carton. It's important to have good air circulation. Set the carton in a warm, dry, airy place, and a couple of days later shake the carton to release the seeds.

You can squeeze milkweed pods to see whether they are ready to split, and if so, go ahead and gather them. Otherwise, they need to be harvested the very minute the pods open, or the silk parachutes will quickly dry and blow away.

I have read that **sage** plants should be replaced after maybe four years. My sage bush is probably thirty years old, with a trunk more than an inch in diameter, and two extra trunks which resulted from layering. I bent those two long branches down and buried part of each stem in a shallow trench, and weighed each down with a smooth grapefruit-sized rock.

I protect the sage bush in winter with evergreen branches, burlap or whatever I can find. I never prune my sage bush because I want to be sure it blooms. I check the progress of the developing seeds by looking inside the pair of open sepals. When the twin seeds have deepened from light green to dark brown and the flower stems are dry, I harvest them. Squeezing the seeds out of the sepals, one flower at a time, is a comfortable thing to do when I really want listen to the radio or when I am visiting with someone who doesn't mind if my hands are busy. When I'm finished, I need to scrub the strongly fragrant sage resin from my fingers.

Crumbling dry **catnip** seed heads will also leave one's hands in need of scrubbing. As with sage, there seems to be a concentration of resin in the flowering parts. So after separating out the catnip seeds, I save the dried flowers for stuffing cat toys. (Catnip mice made from old blue jeans will last many years.)

Lemon balm seeds ripen while the sepals are still green. I harvested mine in early October (before frost) 2010, cutting the whole stems and putting them in a paper grocery bag and shaking them out. If only all seed-collecting were so easy!

The feet of old nylon stockings can be slipped over seed heads to catch the seeds which are apt to be released unexpectedly, like **bleeding heart**; or if you expect to be away from your garden when seeds are due to ripen; or if birds are apt to beat you to the seeds, like small **sunflowers**, I've also done this with **swamp milkweed**, **turtlehead**, and **wild lobelia**.

A friend of mine once tried to protect her crop of ripening **figs** from birds (this was in Georgia) by tying a small plastic bag over each fig. The bagged figs all rotted. The same thing would happen to ripening seed pods if the air could not get to them (and heat could not escape). Plants keep transpiring (giving off water) as long as they are green, till they are literally dried out.

Don't leave the stockings on the seed heads any longer than you need to, especially if there's been a long, rainy spell. And any insect eggs there were laid before the stocking was put on might have had a chance to hatch. You can be sure that those eggs were laid there because the momma insect knew her babies would thrive on a diet of young seeds.

I have not tried using paper sacks to protect seed heads. (I have saved plenty of old nylons over the years, and they are re-usable.) Cotton socks would probably not dry out fast enough.

I've also used panty hose legs to cover a head of **lupine** seed pods to keep the seeds from being flung far and wide before I could harvest them. Generally, though, I watch the pods after they turn gray and dry, and when the first pod on the stem has split open and twisted its two sides, squeezing and shooting the seeds, I cut the whole stem and put it in a large paper grocery bag, and close the top. I wish the pods would empty themselves after I gather them, but usually I have to do it, one by

one. This is a job for when things slow down in winter.

Perennial **Bachelor's Button** gives you only a few hours to collect its seeds. The seed head opens and exposes the seeds, then squeezes them out and they drop to the ground. Only one or two may remain for a day or so, packed down in the heart of the flower head. So, when the sun gets warm, make your rounds.

Elecampagne seeds also leave quickly. One day the seed head will be so tight that you couldn't dislodge the seeds if you tried. A day or two later, it will have opened and flattened and become slippery, so the seeds, with their little fluffy tops, just slide right off.

Baptisia seeds will rattle in the pod when they are ripe. The pods will stay closed for most of the summer, but the quality of the seeds will deteriorate as mold and insects do their work. Also, I prefer not to have *Baptisia* volunteer in the garden, so I try to collect the seeds when they are ready.

A note about the **Mustard family**, Cruciferae (**Mustard Greens, Turnip, Rutabaga, Radishes, Arugula, Kale, Cabbage**, etc.): Their seeds may be ready to grow before we would consider them ripe. I had read this, but didn't know how true it was till I put a lot of **Garlic Mustard** (an invasive weed) that had young seed pods, in my compost pile (which was not "hot"), and for three years or so I have had garlic mustard growing where I spread that compost.

Of course, this does not mean I intentionally harvest crucifer seeds early. I want to give them every advantage they might get from ripening naturally.

Forget-me-not flowers bloom a few at a time from the bottom of the stem to the top. By the time the last flower at the tip has faded, many of the seeds near the bottom of the stem will have shattered. So I collect whole handfuls of forget-me-not flower stems, cutting them with scissors, while the last few flowers are still open. I put them in a paper shopping bag for two or three days to dry, then shake out the seeds. There will be a good percentage of green seeds among the black ones, but all are perfectly viable. Even seeds that did not shake out will volunteer where I toss what is left of the plants.

I'm especially fond of **Johnny Jump-Ups**. There were some in our garden when we first came here, and I introduced some yellow violas and some different Johnny Jump-Ups from a neighbor's garden, and the DNA intermingled most joyously, resulting in a seemingly endless variety of color combinations.

I save as many Johnny Jump-Up seeds as I can. When you see the pod open with its three little canoes packed with neat rows of seeds, RIGHT NOW is the time to pick it. The next time you look, the seeds are apt to be gone, especially if it's the warm part of the day. Pick the pod with a long stem and get it as fast as you can into a paper sack from which the seeds cannot escape. If you hold the seed pod closed tight in your hand, you might even feel it move in your fist. The pods, as they dry, squeeze the seeds with such force that they are thrown as far as five feet away. (I have measured this.) Hence the name "Johnny Jump-Up."

So, use a paper sack with no possible escape routes, turn the top down three times and secure it with a clothespin or paper clip. Set it where dry air can reach it. Every once in a while you'll hear a little 'tick' as a seed is shot against the paper. I collect the pods a few at a time as they ripen all summer long, and add them to the sack.

You can also watch for Johnny Jump-Up pods that are getting ready to open. They are the ones which are plump and full and whose stems have straightened their necks (which were bent when the flowers bloomed) and have pointed their tips skyward, waiting to open the next fine sunny, warm afternoon. I have observed that they just sit there on rainy, cool days waiting for better weather for seed-throwing. These ripe pods can be picked, with long stems, and put in your paper sack.

Johnny Jump-Up seeds from my garden are different colors, cream color to tan. This seems to have nothing to do with seed maturity, but rather it is related to the color of the flowers.

I also notice variation of color patterns on seeds of wild **Canadian Lupines** (which bloom in a variety of colors) and false wild blue indigo (*Baptisia*) - whose flowers look all the same to me.

Sweet Annie has surprised me. It waits till September to bloom, but it is quite hardy, and its branches and leaves keep working, ripening seeds till finally around Thanksgiving I cut the plants and put them in paper grocery bags to dry a few days so they can drop their seeds when I squeeze them. The seeds are very small, nearly white, and plentiful. Don't give up just because all you see at first is dried flowers and leaves. The seeds are definitely heavier and will be there in the bottom corner of the pan when you sift the crumbled ferny leaves and little dried flowers. The part that stays behind can be used for sachets. The seeds are viable only one year.

On a sunny day in midwinter, I've seen a dusting of seeds spread over the smooth snow under a dry, still-fragrant Sweet Annie plant.

Sweet Annie seeds germinate late in the spring, many hundreds of them. I like to have a few plants here and there for their spicy exotic fragrance.

There are a few **Cardinal Flower** (*Lobelia cardinalis*) plants in a part of our garden which stays moist and gets some afternoon shade. I grow them for the hummingbirds and for seed. The seed pods mature one or two or three at a time on each stem, starting with those lowest on the stem. As each little pod splits open on top, I carefully snip its stem (which might still be green) with my little embroidery scissors and drop it into a small glass which already has *Lobelia cardinalis* on a slip of paper. A few weeks later when all the harvest has been collected and dried, I dump the pods into a fine sieve held over an old eight-by-eight inch aluminum pan and give them a good shaking, and also check the glass for stragglers. I pour the seeds from the corner of the pan into a small glassine envelope, fold it over and put it in a paper envelope. **IMPORTANT:** plastic bags do not work for tiny seeds. Static electricity makes them cling, and this is just plain maddening.

Harebell seeds (*Campanula rotundifolia*) are collected the same way, a few pods at a time as they mature.

Columbine is straightforward. When the pods are dry and open so you can see the seeds, just cut the stems, and put them upside down in a quart cottage cheese carton or a glass jar. If you squeeze a columbine seed head, gently of course, and the segments open a little, it's safe to harvest just a little early.

I enjoy having **Balsam Apples** (wild cucumbers) on the garden fence, for their fragrant white flowers and their soft, spiny seed pods. I find their seed dispersal intriguing. The fruits hang from a slender vine. When they are ripe, the bottom (the blossom end) cracks open and the edges curl back, and four large, earth-colored seeds slip out, lubricated by a slightly slippery liquid. I keep an eye out for newly-opened pods, snip them off and squeeze the seeds out, then drop the empty pods on clean mulch and somehow – I don't know how – they are skeletonized; which is prettier than it sounds;. If I don't catch them early, I still check opened pods which might have one or two seeds left. Blue Jays like to find them too.

Seeds that fall easily out of a seed head are the ripe, healthy ones. The seeds you have to rub out or squeeze out are probably infertile. This applies to chives, **Echinacea**, **Black-eyed Susan** and no doubt others. So you can save yourself the trouble of going after every last seed and then winnowing out a lot of infertile seeds.

The earliest and latest seeds of the season may not always be as robust and well-grown as those ripening at the peak of the season.

Wherever possible, it is important to save seeds from a lot of plants, so you are keeping as much of the gene pool as possible. With Miss Gladys McGee's Turnip, there was no way I could have done that. Fortunately, the strain seems to be vigorous.

Farmers and gardeners in indigenous cultures are careful to save and plant not only the biggest and fattest seeds of any given variety, but also the odd or wimpy-looking ones, which might be carrying genetic material that the better-looking seeds do not have, and which will help preserve and carry on genetic diversity.

This should, of course, not preclude selection for characteristics we like, such as the earliest fruiting, largest, best-tasting, healthiest, most resistant to disease or to insects, most pleasing color or fragrance....

Mints are expected not to come true from seed. However, I have a nice peppermint that I grew from seed. You just grow a bunch of baby plants and as soon as they're big enough to be fragrant, you rogue out the ones you don't like. To save mint seeds, carefully snip off the flower heads as soon as they turn dry and brown. Shaking in a colander should release the seeds.

Rhubarb will grow from seed and is said to be "highly unreliable." If there's a chance for disappointment, there's also a chance for a pleasant surprise, and it doesn't cost money. Just time and space.

It is common practice to cut off the flower heads of rhubarb; and indeed to "dead-head" all sorts of flowers the minute they have faded. But since I want flowers to go to seed, I can't help cringing at the thought of dead-heading. I know it is done to conserve the energy of the plant and encourage growth or bloom the following year, or the current year, depending on the kind of plant, but I trust the wisdom of the plant and respect what it "wants" to do. It obviously "wants" to make seeds to ensure its own survival, and if it has the wherewithal to do so, it will; if not, it won't.

Seed Longevity

I like to sprout dry beans before I cook them. Sprouted beans take less time to cook, and are more digestible. Seeds that cannot sprout are dead, of course.

I sort the **beans**, rinse, and soak overnight in good water at room temperature, till plump. Pour into a colander, for better air circulation than in a jar. Rinse two or three times a day. I recently did this with **chick peas** that had been stored in a glass jar in our 50 degree basement for nine years, and got 100 percent germination.

Seed viability is adversely affected by high temperatures and high humidity. If you can't keep your stored seeds dry and relatively cool, then refrigerate them in a tightly-sealed glass jar. Seed to Seed has details. See below.

If for some reason you must harvest seeds when they are damp from rain or dew, then immediately put them where they will dry quickly. I like to spread them one layer deep, not touching each other, on a dish towel. Do not let them get too warm. If the temperature is too hot for humans, it's not good for seeds either.

If you are handy with using a pendulum, you might want to try it for determining whether seeds are alive. It is no substitute for sprouting seeds in damp paper towels, but it is quick and easy for those who have the talent.

Seeds retain their viability longer if they are buried in the earth than if kept in envelopes. If you have ever turned over the soil in your garden and watched the weeds come up, that's what has happened. Some of those seeds might have been decades old. **Poke** seeds can stay alive forty years in the soil.

My garden is unkempt enough that there are weeds whose seeds I do not want to let grow. I gather those seeds and bake them in a big cake pan at 200 degrees till I'm sure they're dead. Then they go in the compost pile. If the pile happens to have a hot load of fresh mown grass, raw seeds go right in the middle of the grass, and are killed by the heat.

The more surplus vegetation there is in my garden, the more green material for compost and mulch, and the richer and healthier the soil.

There are also plants I'm happy to have self-sow: annual **Poppies**, **Dandelions** (for greens, and the roots for tea), **Radishes**, **Lambs quarters**, **Redroot pigweed**, **Mustard greens**, **Low mallow**, Miss Gladys McGee's turnips, **Coriander**, **Parsley**, **Violet** (nutritious flowers and leaves), **Lupine**, **Catnip**, **Sweet Annie**. My daughter-in-law leaves her **Larkspur** to self-sow. And Johnny-Jump Ups! And anyone who grows **Dill** may add it to the list.

Our garden is home to countless colonies of ants of several species. There's one big grass-covered hill of field ants, but most of the colonies are under paving stones of paths between garden plots. I haven't taken time to really observe the ants, but I believe they are eating a lot of small seeds. If I did not beat them to **harebell**, **maiden pink** and **columbine** seeds (If I did not gather them before they scattered), those seeds would be lost. Very rarely I find seedlings of **wild ginger** or **bloodroot** or **Dutchman's breeches** that I assume ants have "planted."

No critter ever ate my Johnny Jump-Up seed pods before chipmunks moved in. Voles (meadow mice) live in the garden and I assume they eat seeds.

One winter I stored **Virginia bluebell** seeds in damp vermiculite in the refrigerator. When spring came, I found they had already germinated, alas, in the dark, and had used all their resources looking for light, and they didn't make it.

House Plant Seeds

Most house plants are propagated vegetatively, by cuttings or offsets, but there are a few interesting exceptions that I've enjoyed experimenting with.

I have grown a few kinds of house plants which produce fertile seeds without pollination: **Moses in the cradle**, **Kenilworth ivy**, **Ice plant**, **Jewels of Opar**, **Kalanchoe rotundifolia**. A friend once had a **Croton** which produced seeds – but we don't know whether they were fertile.

In my experience, Moses-in-the-boat (**Rhoeo**) seeds have germinated only in the summer. The same has been true of ice plant seeds which were stored more than a couple of years. [This ice plant is like my mother grew sixty years ago: "Baby Sun-Rose."]

I have had good luck pollinating the flowers of **Orchid cactus** (*Epiphyllum*), **Amaryllis** and **Chinese hibiscus**. The reproductive organs are easy to see and to reach. This is something I never really learned from the diagrams in biology books; but when you have the flower in real life and see the several yellow powdery parts, and the single stem-like thing with a sort of bulbous end that sticks way out, there you have it. You put the powdery stuff on the bulbous sticky place, and voila! you have pollinated a flower.

In order for a plant to produce flowers and seeds --that is, to reproduce—there has to be something sexual going on.

The flower is the sexual reproductive part of the plant. The flower holds the “sperm” and the eggs.

The powdery stuff, of course, is the pollen, which performs the function of the sperm.

The bulbous sticky place is called a stigma. When fresh, living pollen lands on the fresh, sticky stigma, a little tube starts growing down from the pollen grain into the stigma, through the flesh of the

female part of the plant to the eggs in the ovary. The pollen tube is helped along its way by receiving nourishment from the plant tissues it grows through, on its way to deliver the “sperm” to the egg(s) in the ovary, where fertilization happens.

After the eggs are fertilized, the ovary nourishes the fertilized ova (eggs), which are now seeds, until they reach maturity. The ovary has become a fruit, specialized for the protection and ultimate dispersal of its seeds.

This is an over-simplified outline.

I have used a feather or a geranium leaf to transfer pollen. I don't think a Q-tip works as well, because the cotton does not so readily release the pollen. Suzanne Ashworth, author of Seed to Seed, uses an artist's paint brush.

By the way, in our cool basement, Orchid cactus fruits take nearly a year to ripen. (They turn reddish.) I have not tried planting the seeds.

Prickly pear cactus fruits are occasionally sold in grocery stores as a novelty around Thanksgiving time. You can spit out the seeds as you eat the fruit, and plant the seeds, and they are easy to grow. BUT prickly pear is a terrible houseplant because its spines are wicked and are so easily embedded in human flesh. It's better to buy a packet of cactus seeds.

You might also see **passion fruit** in the produce section. I let the fruit over-ripen and dry out. (I'm not sure this was necessary. No, I never even tasted the fruit.) There were a lot of seeds and I planted a few and they grew some passion vines. Though I didn't give them enough light to bloom, I enjoyed the nice fresh look of their leaves and their rampant rambling.

I had a neighbor once who grew plants from the seeds of **star fruit**. The leaves reminded me of meadow rue, sort of lacy.

If the pollen and stigma (the sticky place) are not so accessible, which is the case with **Cyclamens** and some tomatoes – if you wanted to grow tomatoes indoors – then you can shake the flowers gently from side to side to release the pollen, and hope it lands where it's supposed to. Be sure to jiggle the flowers as soon as they open and every day after that, so you'll have a better chance of getting them when the pollen and stigma are fresh and in their prime. If either pollen or stigma is dry, pollination and fertilization cannot happen.

Once in a while, one of our Cyclamen plants will give us a seed pod, and the seeds do grow. They need 50° and dark to germinate, and germination is sporadic. (This is a survival technique, not a drawback.)

I've recently read that tomatoes that are pollinated by bees are more flavorful than those from flowers that were mechanically jostled.

Begonias, **Rosary vines**, and **Geraniums** can be set outdoors in the summer and bees will pollinate them. Geraniums occasionally make seeds. Some Begonias have male flowers and female flowers on the same plant. You can try pollinating them, if you're growing them indoors. I've done this successfully.

Ferns grown as houseplants are likely to be hybrids and produce infertile spores.

You may have cut into a **grapefruit** or other citrus fruit late in the season (in the spring) and found seeds that were green inside or even beginning to sprout. Have you ever held a piece of fruit up to the sunlight and seen the light shining through the fruit? Chlorophyll could not have developed without that sun penetrating the flesh of the fruit. I believe there are

one or two other kinds of seeds that can be green inside.

Anyway, those green citrus seeds are raring to grow, and must be planted before they dry out; and it's easy to do. Though you won't be growing citrus fruit on your windowsill, unless you buy grafted Kumquats or Meyer lemons, you will still have a pleasing plant with shiny robust green, green leaves that are lightly fragrant when rubbed. There will be thorns, but they are not ferocious.

If you buy potted citrus plants, you can look forward to marvelously fragrant flowers; but greenhouse-grown citrus must be watched carefully for many months for mealy bugs or scale insects which came along as undetected eggs. You avoid that worry when growing your own plants from seed.

In our garden there are a couple of **miniature rose** bushes which I started from seeds thirty-some years ago. The flowers are only very vaguely fragrant if at all (Epsom salts might help, a couple of tablespoons in a gallon jug of water) – but they are obviously tough; immune to black spot; and eager to bloom all summer and then produce pea-size red hips which stay on the bushes all winter. Seeds from these hips are easy to plant, and the seedlings can go on to be nice house plants, at least initially free of the aphids which can come along when rose cuttings (torn off at the base of a side branch) are brought in and rooted in water, on the windowsill.

Whether indoors or outdoors, suppose you've been keeping your eye on a stalk with developing seed pods and the stalk gets broken. If it's not severed and not wilted, you can try splinting it. No kidding. Some kids in a high school greenhouse class taught me this.

If the stalk is broken off, and hasn't wilted beyond hope, put it in water (deep water) and set it in the shade till it perks up. Then put it in full sun, preferably outdoors, and the seeds have at least a chance of continuing their development. The more leaves, the better, of course; but the green stem and seed pod also have chlorophyll. The top priority of the plant at this point is producing viable seeds. [At other times, it might be survival.]

Cleaning the Seeds

Sifting: I've collected sieves with different sizes of holes, and also a colander. I sift most seeds twice: first to hold back the larger chaff and let the seeds through; then to hold the seeds and sift out the finer dust. It may take some experimentation to find the right sieve for each kind of seed. Sifting will leave you with nearly-clean seeds, but in most cases you will also need to winnow them.

Winnowing: This conjures up, for me, a picture of folks in olden times tossing wheat (which has been trampled by animal hooves) into the air so the wind can blow away pieces of stems and husks.

For winnowing I use an old aluminum cake pan. 9" x 17" x 2½", or 7" x 11" x 1½". Oblong is preferable. No glass, no Teflon or other coating, no enamel.

I put my sifted seeds in the cake pan and blow on them. There is a knack to winnowing. You want to blow the chaff away but not the seeds. Here I have a mental picture of trying to teach a young child to blow on a spoonful of hot soup without spraying the whole table.

If you think you're going to feel unsure about how hard to blow on seeds and chaff, you can spread a newspaper or a sheet under the pan to catch any seeds that might get blown out, until you get a feel for how hard to blow. I've done this a lot and still I sometimes blow too hard. I prefer to winnow outdoors on a calm, dry day.

Tilt the pan a little, with the lower end toward you. Blow on the seeds with a long, steady, gentle breath, starting at the lower end (nearer to you, where the seeds will have slid) and blowing toward the upper end (away from you). At the same time, it will help if you gently move the pan from side to side to help dislodge the detritus you want to blow away.

Just a gentle breeze is enough. You want to move the seeds when you blow on them, so the chaff will be freed and blow away to the far end of the pan where it will be stopped by the side of the pan – if it reaches that far. After each blowing, you can use your fingers to move the chaff to a far corner and with your thumb push it up and out of the pan. After a while you can switch ends and blow the other way.

Along with the chaff, you may also notice some seeds that blow to the far end of the pan. If you are not blowing too hard (and moving all the seeds) then the ones that do move will be the immature, empty seeds which you want to discard along with the chaff. The full ripe seeds will slide or roll back to the lower end of the pan. This is why metal is better than glass or

Teflon. You need the slight friction of the metal surface to keep everything from sliding back.

If you roll some of the “discard” seeds between your thumb and forefinger, they may crumble. If you can easily squeeze, bend, or crumble a seed, it’s essentially empty and could not have grown. Mature, viable seeds will be full and plump, with strong, rigid seed coats.

Sifting separates seeds by size. Winnowing separates them by weight.

Labeling

Just as soon as I collect any kind of seeds, I label them. I’ve long since given up trying to trust my memory, even for a short period of time. Besides the label on a slip of paper along with the seeds, I sometimes add a seed pod or maybe a dried flower petal as further confirmation. I also like to jot down seed harvest dates and later copy that information into my garden journal.

Since many kinds of seeds are ready to harvest when I’m busiest in my garden, I often postpone cleaning them till things quiet down in the fall. I give them “a lick and a promise,” as my Grandma used to say (as in “I haven’t done a lick of work”) and write on the envelope in pencil “not cleaned,” then erase the “not” when they’re done.

Drying Seeds

I’ve touched on this elsewhere, but maybe I should repeat that seeds should not be stored before they are dry enough to prevent the growth of mold. All you need to do, perhaps, to learn this lesson, is to open a plastic bag or jar of bean seeds you carefully shelled and thought you had dried, only to find them musty and moldy. Maybe the lid was not air tight or the plastic bag had a pinpoint hole, or the seeds were not dry enough through and through. Unimpeded sunlight (through an open window) can help dry seeds as well as kill pathogens. (Thank you, J. L. Hudson.) (See below.)

I have planted moldy Cyclamen seeds, and they grew just fine. The seeds were relatively fresh and the mold had not penetrated the seed coat. I am not saying it’s a good idea to let seeds mold. It’s a very bad idea. What I am saying is don’t give up too easily. I didn’t have many Cyclamen seeds and they would have been hard to replace, so it was worth trying to grow them.

Storing

After sifting and winnowing, you can tilt the pan so the good seeds come to a corner, which is easy to pour from, and tip the seeds into a suitable envelope. The envelope must have tightly glued (or taped) corners, all four corners. Coin envelopes do well. Glassine envelopes are good for very small little seeds.

If you’re certain that the seeds are dry, you can store the larger ones in plastic bags, but, as I noted elsewhere, not the littlest seeds. In general, I prefer paper envelopes or sacks. Our northern New York climate is dry enough that I don’t worry about humidity affecting their longevity; and room temperature seems to be okay for most seeds. Delicate, short-lived seeds can be stored in the refrigerator. Our basement is too damp for seed storage, and our attic would be too hot in the summer.

While seeds are in storage, they’re not just sitting there in suspended animation in their little envelopes. They’re still metabolizing. The higher the temperature - and humidity - the higher the metabolic rate. (Plants generally grow faster in hot, wet weather. It’s the same thing.) If that metabolic rate can be slowed down, the life of the seed will be prolonged.

Identification

More than once, I have been asked, “You know that plant you gave me, the one with the green leaves...?” If we are going to learn the names of plants, we have to pay attention. Notice the shapes and arrangements of leaves. Gently rub a leaf. Feel its texture. Does your rubbing release a fragrance? Smell the flowers. Count the petals. Feel the petals. Plants like to be touched – especially by children.

Spend time at nurseries, greenhouses, and gardens. Read catalogs. Grow your own plants from seed, so you know firsthand their life histories and their needs. Keep labels on your house and garden plants until you have learned their names by heart.

Especially if you are going to give seeds away or sell them, they must be accurately named. I have used all sorts of seed catalogs, nature guides, and (my favorite) Gray’s Manual of Botany, though it may not be for the faint of heart. If you

keep at it, you can usually find scientific names (and some are fascinating if you have a Latin dictionary).

Many years ago I brought some wild lupine seeds home from Baddeck, Cape Breton Island, Nova Scotia. I planted them and began selling their seeds at the co-op. Then I realized I had their name all wrong, so for the next few years, I noted that they had been “formerly incorrectly sold as.” I’m still not entirely certain about the species, but I do know they’re lupines and I knew where they came from and I’ve never grown any other lupines they could have crossed with. So I call them Wild Canadian Lupine, which is incomplete - but more or less accurate. They might be naturalized, not technically wild. This works for the Co-op, but it wouldn’t do for a commercial catalog.

Whatever you do, do not guess. And do not make up a name. At worst, that could be illegal, and at best – misleading and confusing. Mistakes can be perpetuated a long time.

I have been selling a thus far unidentified perennial poppy, which is the color of orange sherbet, so that’s what I was calling it – until I found another “orange sherbet” poppy in a catalog. So now I call mine “perennial semi-double orange poppy.”

If you’re selling seeds wholesale, you may be asked to provide a herbarium specimen of the plant. This is work, but it’s just good business.

Saving seeds to sell is not a way to get rich quick. There is a lot of time, work, and clutter involved. Unless you have something that is rare, and in demand, wholesale prices are generally low. Selling heirloom seeds through Seed Savers Exchange is thoroughly enjoyable if you have time to fill orders.

Other Sources of Information

At the top of the list of books I hope you will borrow, or buy, is Suzanne Ashworth’s Seed to Seed: Seed Saving and Growing Techniques for Vegetable Gardeners (Second Edition, 2002) published by Seed Savers Exchange. Suzanne Ashworth covers pollination, maintaining varietal purity (isolation, hand pollination), rouging, seed cleaning and storage, testing for viability, and then goes into detail for every kind of vegetable commonly (or uncommonly) grown in the United States. She is meticulously careful, explaining in exact detail what to do and how to do it and why, as well as what not to do and why not. This book can save you from many pitfalls.

It is because Suzanne Ashworth has already covered vegetable seeds, and because I save only a few vegetable seeds, that I have said so little on the subject.

Seed to Seed deals only with vegetable seeds. I am not aware of such books dealing with herb or flower seeds; but the principles and practices Suzanne Ashworth details are pertinent to other seeds as well.

If you really want to get involved with growing your own out-of-the-ordinary plants from seed, I recommend Seed Germination Theory and Practice (1993), available for \$20 from Dr. Norman C. Deno, 139 Lenor Drive, State College, PA 16801. Dr. Deno has also published two supplements.

For growing wild flowers from seed (or otherwise propagating them), an excellent, beautifully illustrated reference is the New England Wild Flower Society Guide to Growing and Propagating Wildflowers of the United States and Canada, by William Cullina (Houghton-Mifflin, 2000).

It’s always a good idea to research the germination requirements of seeds. Otherwise you might find out too late, for instance, that seeds you’ve been saving (like buckeyes or acorns or bleeding heart) should have been planted very soon after they were released from the plant, before they had time to dry out and die.

Park’s Success With Seeds by Ann Reilly (Published by Geo. W. Park Seed Co., 1978) is a classic. It does not cover saving seeds, but it gives requirements for dark or light, stratification (damp chilling), over 450 species of flowers, vegetables, herbs and a few fruits. Its photographs of young seedlings might come in handy.

We are accustomed to colorful packets of seeds appearing on racks in stores in late winter, and seed catalogs arriving in the mail in December. These easily available seeds are usually also easily grown, if we pay attention to requirements for light or dark, or a certain temperature range for germination. A very few require or benefit from nicking and soaking.

But there’s another world out there, of interesting, rare, exotic plants which can also be grown from seed, some of which have more complicated or challenging requirements for germination. This is the world of J. L. Hudson, Seedsman, P.O.

Box 337, La Honda, CA 94020. His Ethnobotanical Catalog of Seeds is just a dollar, 5½” x 8½” in size, small print, no color photos, hour upon hour of fascination. Website: www.JLHudsonSeeds.net. He has excellent information on seed longevity, germinating seeds, history and uses of plants, as well as (on request) collecting seeds.

For identifying cultivated plants, J. L. Hudson recommends The Standard Cyclopedia of Horticulture; Hortus II; The Royal Horticultural Society Dictionary of Gardening; and Exotica.

I often refer to Thompson and Morgan’s seed catalog, especially older copies which might have plants that have since been discontinued. These are mostly cultivated varieties.

For growing – and saving – seeds of woody plants, a superb reference is Seeds of Woody Plants of North America by James A. Young and Cheryl G. Young (Dioscorides Press, 1992).

If you are interested in growing heirloom vegetables and/or saving their seeds, by all means contact Seed Savers Exchange, 3094 North Winn Road, Decorah, IA 52101; www.seedsavers.org, phone: 563-382-5990. There is also a Flower and Herb Exchange at the same address.

Membership in Seed Savers Exchange (and/or FHE) is not limited to people who have heirlooms to share. There are usually some members who would welcome other gardeners’ help preserving their rare, old plants, and if there’s an old plant you’re looking for, you can ask other members for help finding it. Besides excellent “members-only” publications, SSE also has a beautiful catalog for the general public.

And, of course, there is the Internet, which might well be your first stop anyway.

In Closing –

As you can probably tell, I have great fun saving seeds. I hope you do too.