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SAVING SEEDS: THE GARDENER'S GUIDE TO GROWING & SAVING VEGETABLE & FLOWER SEEDS (revision of '78 Growing & Saving Veg. seeds), Marc Rogers, '90, 185 pages 6x9 (wide margins), \$10 + \$2.75 p&h in '92, Garden Way, 105 Schoolhouse Road, Pownal VT 05261. 800-827-8673. Free catalog of 250 + titles: gardening, animals, cooking, crafts, building.

With petunia seed over \$10,000 and tomato over \$2,500 per pound, Marc Rogers concluded that seeds aren't cheap. Seed saving can cut costs, and reduce dependence on seed companies. And, by careful selection "you can produce plants best suited to your climate and your growing conditions." This book gives directions for saving seeds of 48 vegetables and 61 flowering ornamentals.

"Watch your plants throughout the growing season.... It is the whole plant, rather than an isolated fruit, that you should consider...." Save seed from early-bearing plants, to encourage that trait. Mark your seed producing plants with a ribbon, or stake, so they're not accidentally harvested.

Seeds picked before they're mature won't have enough stored nourishment for a good start, or even to last the winter. (Seeds "carry on their basic life processes even while dormant, but at a very low rate.") Fruits, such as tomatoes, peppers, and eggplant, should be allowed to get "a bit overripe, before seed is collected." Harvest melons for seed and eating at the same time.

Tomato and cucumber seeds separate from the pulp easier after fermenting in a little water. Stir a few times daily to discourage mold. The good seeds will sink to the bottom. After 4-5 days rinse them and spread to dry,

"Most seeds, in most climates will dry adequately for home storage if spread on paper towels or newspapers in an airy place for a week." Turn seeds and replace paper several times if necessary. Larger seeds take longer. If conditions are damp and you use artificial heat, don't go over 100(better 90) F.

Fungi are almost inactivated at 50 F, and bacteria at under about 18% moisture, therefore, "keep your stored seeds dry and cool. ... Long-term storage in the refrigerator or freezer is your best bet ..."

Silica gel (at drug, camera, craft, or hardware stores) may be used as a desiccant. Most "is treated to turn color when it has absorbed its maximum of moisture." It may be repeatedly oven-dried for reuse.

"It's hard to go wrong growing peas or beans for seed", thus they are perfect for beginning seed savers to start with, says Marc.

Scientific as well as common names are given for all plants. Address and catalog price given for 50 seed companies, large and small. The U of MN's Source List of Plants is mentioned as listing "over 20,000 varieties...commercially available in N America." For info about the Seed Savers Exchange, Marc says to send a SASE to RR3 Box 239, Decorah, IA 52101. Their 418 page Garden Seed Inventory (\$17 1/2 ppd) describes 5,000+ non-hybrid veg. varieties from 240 catalogs. County extension agents may know of local/regional seed exchanges.

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Review by Julie Summers, who's also in DWELLING PORTABLY (sample \$1, POB 190-sr, Philomath, OR 97370); SURVIVALIST SIG (sample \$1 1/2, POB 20188-js, Cleveland, OH 44120); & COLTSFOOT (wild edible plants, sample \$2, RR1 Box 313A-js, Shipman, VA 22971).

-One thing I have had some trouble with, John, is keeping foods that are
-stored in the edible state.

Pat and I don't seem to have any problem with freezer storage. We put away 49 pints of spaghetti sauce last summer and to date it is still quite tasty. She can be a good cook when she doesn't think about it. ;+]
We did use the ultra heavy weight freezer bags. The peaches and strawberries have also done well. The store bought stuff seems susceptible to the freezer burn. Some of the pre-prepared items like frozen pizza, lasgna, dinners, etc. etc. only seem to last a short time. My fresh homemade pasta freezes well. ;+} It also goes down the gullet well. I know, I know.... don't break my arm Ha ha ha But, the fresh stuff we have put in the freezer seems to hold up better than the stuff out of the supermarket. Why for sure I don't know... %-\

-Frozen food doesn't seem to last past just a couple of months...(freezer
-burn, you know.) Do you have any information on the life of canned,
-frozen or dried foods?

In the morning, I'm going to mail a disk to John with several text files on this stuff. Pat bought me a hand scanner for Christmas (don't be fooled tho. It was really so I could incorporate some tables out of some reference books into a term paper for her schooling) %+} I've been able to include the pictures in .PCX format. So, if you have a graphics viewer, you'll even have the pictures and drawings that were in the articles.

BackHome Magazine
Fall 1993
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ENSURING YOUR GARDEN'S FUTURE
by Anita Evangelista

Have you experienced the horror of "seed shock"? That's the reaction of many gardeners to the cost of vegetable seeds these days. Whether you're perusing catalogs or checking seed packs in a local store, prices for these garden starters seem to have hit a new high. Some I've noted: \$2.19 for 1.5 grams of leek seed, \$1.95 for 500 milligrams of zinnia seed, and \$2.45 for 20 seeds of winter squash. At such rates, a pound of any type of seed sells for several times the cost of an equal weight of .999 fine silver!

But don't despair; you can just about eliminate such expenses by obtaining seed from your own plants. Though some sources may lead you to believe that access to the process is concealed in esoteric agricultural jargon, saving seeds from year to year is as straightforward as gardening itself. And not only will you save a bundle of hardearned cash next year, but you'll also fill your garden with plants specifically adapted to your region and growing methods. What's more (as I'll tell you about shortly), you'll be perpetuating a bit of living history.

SEED SAVING BASICS

Begin next year's garden this year by selecting the plants that will provide your seeds. Pass by the hybrids, no matter how much you may prefer these types of plants. A hybrid is the product of a selective crossing of two (or more) unrelated strains of a plant; say, a variety of tomato that develops a thick, strong stem crossed with a type that

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produces extra-large fruit. The resulting F1 hybrid, or first-generation cross, will display the best traits of both parent plants. Hybrids are generally more vigorous than either parent, a desirable characteristic.

Seeds from these crossbreds, however, will not produce true to type. The new plants will "revert" to something like the parents, or possibly like an ancestor of one or both of the parents. In the case of tomatoes, the seed of hybrid fruit often reverts to a cherry tomato-type plant.

Instead, save seed only from open pollinated -OP- plant varieties. The OPs aren't as common in seed catalogs as they were a decade ago, but they're frequently available in such old favorites as 'Golden Bantam' corn and 'Rutgers' tomato. OP seeds reproduce true to type year after year, given a little help and wise guidance from their gardener.

A few OP varieties are self-fertilizing, with individual flowers on the plant providing their own genetic material. Such plants include beans, lettuce, peas, and tomatoes. This means you can grow several varieties of each - for example, Romano, Kentucky pole, and wax beans - in the same garden, and the plants will not crossbreed.

Other common OP plants produce seed through fertilization either by wind or insects. These include corn, beets, cabbages and other brassicas, carrots, melons, cucumbers, radishes, spinach, squash, pumpkins, and turnips. For such types you have three options to prevent accidental crossing. You can plant only a single representative of the group; you can stagger plantings so that seeds of crossable types mature at different times; or you can hand-pollinate and hand-protect the individual plants that have been selected to produce seeds.

There is a fourth option that may appeal to the adventurous; letting plants of a particular type cross freely. For example, you could plant in proximity two types of cucumber; an eight inch slicing variety and a tiny gherkin. The next year's harvest could be very disappointing, or you

could produce a truly desirable new vegetable.

Keep only seeds from plants that have done particularly well in your garden: those that are resistant to local insects and weather conditions and that have the best-tasting fruit. After several years of saving seeds from your own "line", you will have developed plants that are uniquely and individually adapted to your growing methods and region.

Store saved seeds in glass jars and keep them in a freezer. Make labels for the different seeds, but keep these inside the jars; otherwise, they'll fall off. On the labels include the year of harvest and the specific variety (i.e., 1993 'Longkeeper' tomato) and any interesting traits of growth that might help you in the future.

Seeds stored in freezing temperatures should remain viable for several years. It's not unusual, though, to find that only half a batch of home-collected seeds will grow, so always keep more than you expect to need. It's a good practice to plant at least some of your stored seed every year, to keep supplies fresh. But never plant all the seed of one type; if the crop fails, you won't have any to fall back on.

Generally, vegetables are harvested at peak condition; in doing so, the seeds-to-be -- as fruit -- are removed before they are ready for saving. When saving fruit for seed, you need to allow it to reach its ripest condition before picking it. The optimum conditions for saving the seed of both annuals (plants that produce seed during the first year) and biennials (plants that require two years growth to produce seeds) are given below.

ANNUALS

BEANS: Pick freely from your plants until later in the season (leaving

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ripe beans on the vines early on may cause production to stop). Let the last pods dry while they're still hanging on the plants. If the weather is too damp and the seeds begin to mildew, pull the entire plants by the roots and hang them upside down in a sheltered area until the pods are completely dry. Crack out the seeds, and store them in glass jars with tight lids. Some folks add a bay leaf per jar to repel bugs.

CORN: Plant only a single variety, or stagger plantings so that the varieties mature at different times. Serious corn growers advocate saving seeds from no less than 100 ears, so that a number of different plants are represented in your genetic seed stocks. But it's better to save seed from just a few ears than to not save any at all. Select only cobs that represent the best of your corn: hardy plants, strong and upright in the wind, ears filled out, little or no insect damage, husky kernels. Let the corn dry in the husk on the plant; bring it indoors before the weather turns damp. Remove the husks and hang the cobs to dry until the kernels are slightly loose. Shell them, and store them.

CANTALOUPE: There are many varieties of these aromatic melons, including the familiar orange-fleshed supermarket type, green-fleshed supermarket type, green-fleshed muskmelons, and even a small, hardy indigenous North American sort called "mango melon" or "vine peach". These all cross freely. (See the section on pumpkins for information on hand-pollination) Select several early fruits to eat from these plants. Remove the seeds, rinse them, and dry them on a plate before storing them.

CUCUMBERS: If you have several plants, save seeds from the first fruit on one and the last fruit from another. If you have just one plant, you'll have to save seed from the last fruits, for if the cukes aren't picked, the plant will stop fruiting. Let a couple of large, healthy cukes remain on the vine until the fruit has turned a golden color. Peel and mash the whole cucumbers. Cover them with water, and let this stand at room temperature for several days; it will become pretty smelly. Pour off the liquid as well as the goo floating in the water. Viable seeds will have

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settled to the bottom of the container. Spread the seeds on a plate to dry before storing them.

PEAS: Treat the same as beans.

PUMPKINS, and WINTER and SUMMER SQUASH: These all come from four species of the Cucurbita genus. Crossing within species is possible, so you should plant only one variety from each one. Cucurbita_Pepo includes acorn, cocozelle, crookneck, and scallop squash, pumpkins, and zucchini. C_Maxima includes banana, Hubbard, buttercup, and turban squash. C_Moschata covers butternut and "cheese" squash. And C_Mixta includes cushaws. So you could confidently plant an acorn squash, a Hubbard squash, and a butternut squash without any crossing.

Suppose you want to grow pumpkins and zucchini, both members of C_Pepo. Then what? You could separate the plantings by several hundred feet, which will slow down pollinating insects. Or you could hand-pollinate female flowers. To do this you detach a male flower (it will have a slender base), and carefully tear away the flower "petals" so that only the long anthers and stem remain. Swab this across the newly opened female flower (with the tiny fruit at the base), to distribute pollen.

Use several male flowers on each female. Gently tape the female flower shut, and you're done.

If the Cucurbita species cross and produce fruit, the results will be perfectly edible and often quite interesting.

POTATOES:

0000oooooppsss, I thought that one was done.. I guess I'll have to pull that issue back out and finish it off. ;+}

If Pat would just give me some time to get MY stuff done on the confuser

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instead of doing her stuff, I'd probably have even more goofs like that.

Any way, now with the scanner the info is starting to roll in. TTYL

The WEE Scot
Paul
KC5AIQ

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August/September 1993
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Growing Seeds
by Andy Van Hevelingen

In my garden, most of the annual herbs such as borage and love-in-a-mist reseed themselves without any intervention on my part. Many of the herbaceous (nonwoody) perennial herbs also tend to reseed with reckless abandon. I'm sure anyone who has grown lemon balm, feverfew, chives, elecampane, pennyroyal, fennel, or sweet violets knows only too well the multitudes of seedlings these plants can generate and the area they can claim as their own. The only reason I might collect seeds from such plants would be to give them away or to control their rampant spread. The woody perennial herbs such as lavender, rosemary, and the thymes are more restrained in self-seeding and produce far fewer offspring. I normally propagate these herbs vegetatively rather than by seed, however.

Some herbs don't self-sow freely, some cast their seed far from the parent plant (even, like the butterfly weed and dandelion, on the wind), and some are difficult to propagate by cuttings or root division. It is from these groups that I collect seed for propagation in later seasons.

GENERAL HARVEST METHODS

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In late summer, I begin checking the garden for signs of seed development. The withering or dropping of flowers indicates that seeds have begun to form. After that milestone, I watch for flower stalks that have dried and turned brown and seedpods that have turned from green or yellowish brown to brown, gray or black. The vast majority of herb seeds are brown or black when ready to harvest.

A reliable test of seed maturity is a light tap on the dry flower stalk. If any seeds rattle or are dislodged, they are ready for harvest. Also, watch for birds eating the seed heads (as they do reliably on my _Agastache_ plants). This is an obvious indication not only that the seed may be mature (though some birds will eat green seeds) but that you'd better get out there and harvest it. If the seeds are small or contained in pods so that their maturity isn't outwardly visible, as in the sages (_Salvia_spp._) or anise hyssop (_Agastache_foeniculum_), I select a dry, brown flower stalk and remove some of its seeds; if they're dark brown or black, it's time to harvest them.

I harvest seeds late in the day after a few days of dry weather to ensure that all plant parts are dry. If the foliage or seed head is wet when picked, it will not dry quickly and is likely to mold. Few sights are more disappointing than a bag of seed heads that have turned to compost.

Cut the entire seed head or part of the flower stalk that contains seeds, avoiding any part of the plant that is still green, and place it in a large paper bag, cardboard box, or wooden bowl. Place only one kind of seed in each container, and label each with the name of the herb it contains.

Occasionally, I come across seed heads that are covered with aphids. I harvest them anyway but then place them in the freezer for a few days to kill the aphids. This doesn't seem to harm the viability of the seed.

COLLECTING FROM SPECIFIC PLANTS

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The first couple of years I grew pink gas plant (*Dictamnus albus* 'Rubra'), I collected the seedpods in a small, open basket and was mystified when I later found the pods open but no seeds in the basket. I discovered that the seedpods pop open when they dry, and the seeds are expelled forcibly. I now collect gas plant seed when the pods begin to turn brown but before they've opened, and I put them in a closed paper bag. I can hear the seeds as they hit the sides of the bag. Some gardeners collect gas plant seeds by placing a paper bag or a piece of netting or sheer pantyhose over the immature seed heads while they're still on the plant, and attaching it to the stem with a twist tie.

The ripe seedpods of butterfly weed (*Asclepias tuberosa*) split open to expose great multitudes of seeds lodged in a cottony mass for wind dispersal, much like dandelion seeds. When the first pod on a plant splits open, I harvest all the pods on that plant and, as with gas plant, put them in a closed container.

Seeds of many plants, including honeywort (*Cerinthe* spp.) and borage, mature along the flowering stem until hard frost kills the plant. Borage will easily self-sow, but our winters are too hard for the honeywort, and so after the plant has been in flower for a while, I inspect the lower ends of the flower stalks daily. I pick any mature black nutlets carefully to avoid disturbing the upper end of the stalk, which is still flowering and contains immature seeds.

AFTER-RIPENING AND DRYING

Few seeds will germinate if planted immediately after ripening on the plant. I therefore leave the seed heads I've collected in their containers a few weeks until the seeds have dried and ripened completely. After the seed coat has dried and hardened, the embryo slowly loses moisture and also undergoes chemical and other physiological changes. The seed needs to be kept in a dry, warm place with good air circulation; I prefer the garage,

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as any hitchhiking insects can escape without entering the house. If you're pressed for time, you can remove the seeds from the dry pods or seed heads and clean them immediately after harvest, but then give them a few weeks of open-air drying before storing them in airtight containers.

The main danger in storing seeds in an unheated garage or barn is the high humidity that several days of rain can produce. Seeds and other plant parts will take up the moisture from the air and thus become more susceptible to disease. By the time the fall rains start (usually in early September in north-western Oregon), I will have taken all my seeds inside the house and started the next tasks: checking them carefully for insects, then cleaning them.

The only seeds that I find at all difficult to extract are those of licorice. The two hard seeds are contained in a small pod that's covered with stiff, fine bristles like tiny slivers. I used to open each pod individually by pressing my thumbnail down on the pod seam, hoping my thumb was callused enough to prevent penetration by a spine. I finally wised up and now place the tough pods between newspapers and walk on them with heavy boots first, which tends to rub off the bristles as well as break open some of the pods. The seeds, dark green when mature, are tough enough to withstand this treatment.

CLEANING

Seed is cleaned by separating it from the plant material (chaff) that was harvested with it. By the time I get around to cleaning my seed, much of it has already separated from the plant in handling and is lying on the bottom of the bag. In other cases, vigorously shaking the dried flower spike will separate the seeds from the plant. Sometimes it may be necessary to "milk" the seeds out with a gentle squeeze at the base of the pod. However, experience has taught me not to try to collect every single seed, just the ones that separate easily from the plant. Those that have been injured or have not fully developed may not separate easily and

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should be thrown away; the wound that occurs when an under-developed seed separates from the plant can be the first point of entry for fungal infection during storage.

Freeing large seeds from the chaff is easy enough; I just pick them out with a knife or tweezers. I pluck really large seeds, such as those from lovage, angelica, and sweet cicely, directly off the seed heads individually and avoid the issue of cleaning altogether.

For small seed, such as that of summer savory, winnowing is the easiest method for separating the chaff from the seed. There are many ways of doing this and a lot of room for creativity. Each year, we dedicate a board meeting of the Hardy Plant Society of Oregon to seed cleaning for our seed exchange. Members bring an amazing array of aluminum pie plates, knives, clippers, wooden bowls, colanders, cookie sheets, homemade screens and magnifying glasses, and use them in many clever ways to extract the seed from the chaff. Some folks scoop small amounts of round seeds (basil and clary sage) with their chaff onto a tilted cookie sheet; the seeds roll down, and the chaff stays put. Screens can also be helpful in cleaning. Start with a mesh size just large enough to allow the seeds to fall through when they are brushed lightly across the screen, then use a slightly smaller mesh that will hold the seeds but allow smaller material to be brushed through.

No matter what ingenuity you bring to the process, though, seed cleaning can sometimes be tedious. I have no special tools for the job, just a pair of tweezers, lots of patience, and perhaps a captivating television show. I spread newspapers on a table, dump out small amounts of seed, and manually pick out the seeds, throwing the chaff into a bag beside me.

STORAGE

The container you choose for storing the cleaned seed should be relatively airtight. Baby food jars or other small, lidded jars are good for seed

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storage. I use plastic margarine tubs, and I write the name of the herb and the year on a piece of paper taped to the lid. I leave the lids off for a few days to ensure that any excess moisture is gone, and then I snap the lid on tight.

Check stored seeds periodically for mold and insect damage. Clumping of seeds when the container is slowly tilted and rotated may indicate mold. Other signs include a black, sooty color and perhaps a moldy smell. If you suspect mold, dump the seeds on a sheet of white paper, then pour them back into their container and look for black, downy dust on the paper. If there is any mold, throw away the entire container of seed.

Fine dust at the bottom of a container may indicate the presence of insects, and further examination is wise. Most storage pests are larvae that are large enough to see without a hand lens, and their webs are usually visible in a container of seed. If you find or suspect an infestation, freeze the seed for a couple of days to kill the insects. Dry ice can also be used to kill insects in stored seed. Simply drop a piece into the container, then replace the lid lightly. The insects either die from the cold or suffocate when the dry ice sublimates into carbon dioxide. CAUTION:: Don't screw the lid tightly on a jar containing dry ice, as the jar will explode.

The optimum storage temperature for seeds ranges from 35 deg to 65 deg F, and humidity should be low. (a refrigerator is an excellent place to store seeds if you have enough space.) Seed stored under these conditions can remain viable for at least 2 and sometimes as long as 15 years, although with every additional year in storage seed viability will decrease.

Seeds must never become completely dry: the tissues within the seed must retain at least a small amount of moisture to remain alive. Some seeds with hard coats are able to withstand desiccation to a moisture content as low as 5 per cent of their total weight, while others with fleshy reserves

may tolerate desiccation only to 60 per cent. Seeds stored in a paper packet take up and lose moisture within a range of 5 to 20 per cent of their total weight in response to the humidity of the surrounding air; seeds in the open air take up and lose moisture even more rapidly. These frequent fluctuations can seriously impair seed viability.

SEED TYPES AND CHARACTERISTICS

Most herb seeds are small and dry and have a hard, dark brown or black seed coat. They typically are long-lived: seeds of sweet basil often are viable for seven years or more under proper storage conditions. Many such seeds, especially those of biennial and perennial herbs, may require a period of cold or of dry storage to induce dormancy before they will germinate.

A few herbs, such as angelica, lovage, sweet cicely, and parsley, produce moist seeds. The seeds tend to be large and have fleshy, spongy inner tissues because of their large storage reserves. Such seeds are short-lived: they tend to dry out over time; this process is accelerated under improper storage. Cold storage in the refrigerator or freezer not only helps maintain the viability of moist seeds but also induces dormancy in those that require it for germination.

An ANNUAL herb completes its life cycle in a growing season, which is typically a year. After flowering and setting seed, the original plant dies. Most annual seeds have no special requirements for germination; once ripe and dry, they will germinate if given sufficient warmth and moisture.

A BIENNIAL plant completes its life cycle in two growing seasons or years. Most biennial herbs belong to the parsley family (Umbelliferae). They include caraway, parsley, and angelica. Such plants should be grown either from fresh seed that has been dried thoroughly and then planted immediately in early fall or from seed that has been stored in the cold to

ensure high germination.

PERENNIAL plants live for more than two years. All perennial herbs produce dry, hard seed except for French tarragon, horseradish, and true peppermint, which do not produce viable seed and must be propagated vegetatively. Gardeners may become frustrated trying to propagate perennial herbs from seed because many perennial seeds contain chemical inhibitors, or dormant embryos, or have impermeable seed coats or other characteristics that prevent germination unless the seeds are specially treated.

VIABILITY TESTING

I find it fascinating to see a seed develop into a living plant, but it's extremely frustrating when I plant a large number of seeds and only a few germinate. I try to use my own collected seed as much as possible because I know its history and can attest to its parentage, but often I must rely on commercial seed companies, friends, and seed exchanges through garden societies and botanical gardens (see sidebar "Desperately Seeking Seeds?") In all cases, unless I test the seed for viability, I have no idea whether it is alive, has been properly stored, and has met its dormancy requirements for germination.

Testing seed is not hard to do: just take a sample (perhaps two dozen seeds) and place it on a pad of wet tissue or moistened paper towel in a closed container and see how many germinate, and how quickly. However, not all seeds are alike; germination for some may depend on the presence or absence of light, and the actual spectral quality of the light, and/or the temperature, including the fluctuation between night and day temperatures, and some seeds may require pretreatment in order to germinate.

SCARIFICATION

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Some seed coats, such as those of hibiscus seeds, are initially almost impermeable to water or air. To promote germination, you must open or soften the seed coat by either nicking it with a knife or sanding it lightly with a file or sandpaper. Extreme care should be taken to cut through or abrade only the seed coat and not injure the embryo. As soon as the seed coat is penetrated in this way, the embryo is susceptible to fungal infection, and the seed must be planted immediately.

SOAKING

The hard seed coats of herbs such as parsley need to be softened to allow adequate water uptake and air exchange. Placing such seed in hot (not boiling) water and letting it stand for between 6 and 24 hours will help leach out any chemical inhibitors, shortening the germination time. Sow the seed immediately after soaking.

STRATIFICATION

In seeds such as those of sea holly (*Eryngium* spp.), the moist cold of winter causes physiological changes that are necessary for germination. To mimic this cold period, soak the dry seeds in warm water (170deg-210deg F) for 12 to 24 hours. Sow them immediately into a moist planting medium in an airtight container (I often use resealable freezer bags). Place the container in the refrigerator or freezer for three to five weeks. I put sweet cicely seeds in the fridge and angelica seeds in the freezer, but either fridge or freezer will yield about the same result. Empty film canisters with their tight-fitting lids work very well for stratifying small amounts of seed.

PROPAGATION AND PARENTAGE

As a commercial wholesale herb grower, I still regard growing herbs from seed with mixed emotions. There is no easier way to propagate annual herbs and most biennials. However, continued seed propagation of

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cultivars or hybrids, if not done selectively, can result in the eventual loss of important genetic qualities of the original parents. I recall reading in old herb books about a dwarf purple basil that I believe is now lost, and I know of a commercial grower whose Purple Ruffles basil mostly came up with green spots this year. The popular lavender cultivar Munstead has been propagated by seed for years and is probably far different from the original strain.

To maintain the characteristics of the parents, cultivars of perennial herbs should be vegetatively propagated. Those grown commercially from seed must be selected for varietal characteristics; seedlings that don't measure up should be discarded. Many annuals can be propagated from cuttings, and some growers use this as a means of maintaining a variety.

I feel that we, as gardeners, have a responsibility to try to preserve "old-fashioned" plants, and I applaud seed foundations that are establishing genetic seed banks for heirloom plants in an attempt to perpetuate certain varieties so that we won't be left with an odd lot of hybrid seedlings.

DESPERATELY SEEKING SEEDS??

A careful harvest will often produce far more seeds of a particular plant than one garden needs. Somebody somewhere is sure to want those extra seeds and might be able to repay the generosity with a few precious seeds of a plant that you've been searching for. A seed exchange group can help make those connections.

Seed swapping is an old idea that probably started between neighbors chatting over the backyard fence. Seed exchanges operate in much the same

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informal way -- putting people in touch with one another so that they can use what they have to get what they want. They are generally grassroots groups affiliated with local or regional gardening organizations and open only to their members.

Many of these exchanges are champions of biodiversity, preserving the genetic heritage of heirloom and traditional seeds by the simple means of passing them on.

One of the largest of these groups, the Seed Savers Exchange, of Decorah, Iowa, in recent years decided, for space reasons, to cut herbs and flowers out of its annual listings of vegetables. A separate exchange spun off, this one devoted exclusively to flowers and herbs. It's called the Flower and Herb Exchange, 3076 N. Winn Road, Decorah, Iowa 52101.

Membership, which costs \$5 a year, includes an annual catalog with names, addresses, and descriptions of available herb and flower seeds, cuttings, and bulbs. Members contact each other directly and include a small fee to cover mailing costs. The fee for a sample of seeds is slightly higher for members who don't have seeds to trade.

Several national magazines also publish seed exchange information as reader services for their subscribers, and herbs are frequently found among the offerings. For example, National Gardening (180 Flynn Ave., Burlington, VT 05401) has a column in each issue for its seed-swapping subscribers, as does Organic Gardening (Rodale Press, 33 E. Minor St., Emmaus, PA 18098).

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by Anita Evangelista

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But don't despair; you can just about eliminate such expenses by obtaining seed from your own plants. Though some sources may lead you to believe that access to the process is concealed in esoteric agricultural jargon, saving seeds from year to year is as straightforward as gardening itself. And not only will you save a bundle of hardearned cash next year, but you'll also fill your garden with plants specifically adapted to your region and growing methods. What's more (as I'll tell you about shortly), you'll be perpetuating a bit of living history.

SEED SAVING BASICS

Begin next year's garden this year by selecting the plants that will provide your seeds. Pass by the hybrids, no matter how much you may prefer these types of plants. A hybrid is the product of a selective crossing of two (or more) unrelated strains of a plant; say, a variety of tomato that develops a thick, strong stem crossed with a type that produces extra-large fruit. The resulting F1 hybrid, or first-generation cross, will display the best traits of both parent plants. Hybrids are generally more vigorous than either parent, a desirable characteristic.

Seeds from these crossbreds, however, will not produce true to type. The

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new plants will "revert" to something like the parents, or possibly like an ancestor of one or both of the parents. In the case of tomatoes, the seed of hybrid fruit often reverts to a cherry tomato-type plant.

Instead, save seed only from open pollinated -OP- plant varieties. The OPs aren't as common in seed catalogs as they were a decade ago, but they're frequently available in such old favorites as 'Golden Bantam' corn and 'Rutgers' tomato. OP seeds reproduce true to type year after year, given a little help and wise guidance from their gardener.

A few OP varieties are self-fertilizing, with individual flowers on the plant providing their own genetic material. Such plants include beans, lettuce, peas, and tomatoes. This means you can grow several varieties of each - for example, Romano, Kentucky pole, and wax beans - in the same garden, and the plants will not crossbreed.

Other common OP plants produce seed through fertilization either by wind or insects. These include corn, beets, cabbages and other brassicas, carrots, melons, cucumbers, radishes, spinach, squash, pumpkins, and turnips. For such types you have three options to prevent accidental crossing. You can plant only a single representative of the group; you can stagger plantings so that seeds of crossable types mature at different times; or you can hand-pollinate and hand-protect the individual plants that have been selected to produce seeds.

There is a fourth option that may appeal to the adventurous; letting plants of a particular type cross freely. For example, you could plant in proximity two types of cucumber; an eight inch slicing variety and a tiny gherkin. The next year's harvest could be very disappointing, or you could produce a truly desirable new vegetable.

Keep only seeds from plants that have done particularly well in your garden: those that are resistant to local insects and weather conditions and that have the best-tasting fruit. After several years of saving seeds

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from your own "line", you will have developed plants that are uniquely and individually adapted to your growing methods and region.

Store saved seeds in glass jars and keep them in a freezer. Make labels for the different seeds, but keep these inside the jars; otherwise, they'll fall off. On the labels include the year of harvest and the specific variety (i.e., 1993 'Longkeeper' tomato) and any interesting traits of growth that might help you in the future.

Seeds stored in freezing temperatures should remain viable for several years. It's not unusual, though, to find that only half a batch of home-collected seeds will grow, so always keep more than you expect to need. It's a good practice to plant at least some of your stored seed every year, to keep supplies fresh. But never plant all the seed of one type; if the crop fails, you won't have any to fall back on.

Generally, vegetables are harvested at peak condition; in doing so, the seeds-to-be -- as fruit -- are removed before they are ready for saving. When saving fruit for seed, you need to allow it to reach its ripest condition before picking it. The optimum conditions for saving the seed of both annuals (plants that produce seed during the first year) and biennials (plants that require two years growth to produce seeds) are given below.

ANNUALS

BEANS: Pick freely from your plants until later in the season (leaving ripe beans on the vines early on may cause production to stop). Let the last pods dry while they're still hanging on the plants. If the weather is too damp and the seeds begin to mildew, pull the entire plants by the roots and hang them upside down in a sheltered area until the pods are completely dry. Crack out the seeds, and store them in glass jars with

tight lids. Some folks add a bay leaf per jar to repel bugs.

CORN: Plant only a single variety, or stagger plantings so that the varieties mature at different times. Serious corn growers advocate saving seeds from no less than 100 ears, so that a number of different plants are represented in your genetic seed stocks. But it's better to save seed from just a few ears than to not save any at all. Select only cobs that represent the best of your corn: hardy plants, strong and upright in the wind, ears filled out, little or no insect damage, husky kernels. Let the corn dry in the husk on the plant; bring it indoors before the weather turns damp. Remove the husks and hang the cobs to dry until the kernels are slightly loose. Shell them, and store them.

CANTALOUPE: There are many varieties of these aromatic melons, including the familiar orange-fleshed supermarket type, green-fleshed supermarket type, green-fleshed muskmelons, and even a small, hardy indigenous North American sort called "mango melon" or "vine peach". These all cross freely. (See the section on pumpkins for information on hand-pollination) Select several early fruits to eat from these plants. Remove the seeds, rinse them, and dry them on a plate before storing them.

CUCUMBERS: If you have several plants, save seeds from the first fruit on one and the last fruit from another. If you have just one plant, you'll have to save seed from the last fruits, for if the cukes aren't picked, the plant will stop fruiting. Let a couple of large, healthy cukes remain on the vine until the fruit has turned a golden color. Peel and mash the whole cucumbers. Cover them with water, and let this stand at room temperature for several days; it will become pretty smelly. Pour off the liquid as well as the goo floating in the water. Viable seeds will have settled to the bottom of the container. Spread the seeds on a plate to dry before storing them.

PEAS: Treat the same as beans.

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PUMPKINS, and WINTER and SUMMER SQUASH: These all come from four species of the Cucurbita genus. Crossing within species is possible, so you should plant only one variety from each one. Cucurbita_Pepo includes acorn, cocozelle, crookneck, and scallop squash, pumpkins, and zucchini. C_Maxima includes banana, Hubbard, buttercup, and turban squash. C_Moschata covers butternut and "cheese" squash. And C_Mixta includes cushaws. So you could confidently plant an acorn squash, a Hubbard squash, and a butternut squash without any crossing.

Suppose you want to grow pumpkins and zucchini, both members of C_Pepo. Then what? You could separate the plantings by several hundred feet, which will slow down pollinating insects. Or you could hand-pollinate female flowers. To do this you detach a male flower (it will have a slender base), and carefully tear away the flower "petals" so that only the long anthers and stem remain. Swab this across the newly opened female flower (with the tiny fruit at the base), to distribute pollen. Use several male flowers on each female. Gently tape the female flower shut, and you're done.

If the Cucurbita species cross and produce fruit, the results will be perfectly edible and often quite interesting.

POTATOES:
SEED STORAGE

Are those seeds any good which you had left over after planting your garden last spring? Most packets now cost 25 cents or more, compared to a dime only a few years ago. So, it would be a nice saving if you could plant this spring those which you did not use last year.

Many kinds of garden seeds remain viable for several years. Therefore, check your supply carefully before you make out your new order.

The germination percentage you secure from old seeds

depends in part on the conditions under which they are stored. The best way to keep most seeds from year to year is in a tight jar in your home refrigerator. We appreciate that such space usually is not available.

The second choice is to store your seeds in a tight container in a cool basement. Seeds may lose viability quite rapidly in the warm temperatures of the average home.

In general, garden seeds may be divided into three groups, in terms of their longevity. Short life span seeds should give satisfactory germination for one or two years. Medium life span seeds usually will remain viable for three or four years. Long life seeds should grow after storage of five to six years and sometimes longer.

Accurate information on the longevity of flower seeds is hard to find. Based on limited observations, the following should be considered as short life span seeds: astor, candytuft, cleome, columbine, honesty, kochia, phlox, salvia, strawflower, and vinca.

Some of the more common flowers with long life seeds are alyssum, calendula, centaurea, coreopsis, cosmos, marigold, nasturtium, nigella, petunia, salpiglossis, scabiosa, schizanthus, sweet pea, verbena, viola, and zinnia.

Most vegetable seeds have rather long life, but there are a few important exceptions. For example, corn, leek, onion, and parsnip seeds have short life spans. Those with medium longevity include beans, beet, carrot, Swiss chard, mustard, pepper, pumpkin, and tomato. The seeds of other commonly grown vegetables will usually grow quite well even when five or more years old.

You may test the germination of your seeds by placing a definite number on moist blotter paper in a dish or pan covered with plastic or glass to maintain a high humidity. Place your seed containers in a warm location and count those which germinate in 10 to 14 days. From these figures you can easily deter-

mine the percentage germination and adjust the thickness of planting accordingly.

Plant your old seeds more thickly than you do fresh ones. If the seeds are at or beyond the above suggested ages, plant them about twice as thick as usual. Scatter them in a band in the row rather than in a narrow dense line.

LL> 1) Is it OK to store tomato and pepper seeds in the freezer?

It is, provided the seeds are first DRIED to about 8% moisture content and then are sealed in an airtight container - e.g., a glass jar for canning purposes (with a screw-on metal lid) and a rubber gasket between the jar's rim and the lid.

The best set of DETAILED directions for saving vegetable seeds are in the 1991 book Seed to Seed by Suzanne Ashworth (ISBN 0-9613977-7-2) published by the Seed Savers Exchange. It's a 222-page, 8 1/2 x 11-inch in size and is \$20. You can get it from the Seed Savers Exchange, Route 3, Box 239, Decorah, Iowa 52101 or Pinetree Garden Seeds, Box 300, New Gloucester, ME 04260, 207-926-3400.

LL> 2) Where does one buy dessicant to put in seed storage containers
LL> to absorb moisture and prevent mold?

Your best bet will be a color-indicating desiccant like silica gel. You can purchase it by mail-order either from the SOUTHERN EXPOSURE SEED EXCHANGE, P.O. Box 158, North Garden, VA 22959, 804-973-4703 (orders only!!) or TERRITORIAL SEED COMPANY, 20 Palmer Ave., Cottage Grove, OR 97424, 503-942-9547 (orders only!!). I suggest you first try to buy some locally from a chemical supply dealer first. Mail-order shipping rates on this item usually tends to be rather high.

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LL> * Forwarded from "Herbs-n-Such" * Originally by Steve V.

LL> Johnson * Originally to All * Originally dated 17 Jan 1993,

LL> 11:24

LL> I have heard that there is a "seed bank" somewhere to promote

LL> the use and preservation of plants native to north america,

LL> which does sales and trading of these native resources...

LL> I also have five acres of natural wooded habitat in southern

LL> Indiana in which I would like to re-install some native species.

LL>

LL> Can anyone help to put me in touch with a native seeds network

LL> or seed bank?

One such place is:

Native Seeds/SEARCH 2509 N. Campbell Ave. #325, Tucson, AZ (What, no zip?)

They specialize in SW seeds, so they may not be the source you are looking for.
However, I bet they could point you in the right direction.

Try also: See Savers Exchange, R.R. 3, box 239, Decorah, Iowa 52101 (Ask for a
copy of their free brochure and enclose a stamped, self-addressed long envelope)