

# Seed Saving Guide for North Florida



## **Seven Seed Saving Suggestions**

### **1. Know if your plant makes seed where you grow.**

Plants are limited in their ability to produce seed, depending where they grow. Even if you can grow it easily as a vegetable, it may not be successful at reaching seed maturity. Many biennial plants including brassicas and root crops require extended cold periods to produce seed and won't be successful in Southern climates. Similarly, very long season crops will freeze before making seeds up north. Only practice, observation and asking other growers will let you know what is possible in your area!

### **2. Is it hybrid or open-pollinated?**

Generally, we don't save seeds from (F1) hybrids, as their seeds will not grow "true to type". Hybrids are great for growing, but not usually for seed-saving (unless you are adventurous and want a plant breeding project!). If the plant is open-pollinated, as long as you don't let it cross-pollinate, you can save seeds "true to type"!

### **3. Watch for cross-pollination!**

To keep a variety pure, you must plant it in isolation from other crops it can cross-pollinate with. Knowing the scientific name will help you know with whom it will mingle, because only crops that are the same species have the ability to breed together. For example, *Cucurbita moschata* includes both Seminole pumpkin and Butternut squash. If they flower at the same time within proximity to one another, they could cross thanks to our pollinator friends. But cross-pollination is the start of new varieties and can be very exciting. It all depends on what your goals are.

### **4. Do you have space for that many plants?**

Some crops require many flowering plants at the same time in order to maintain good genetics. If you are

growing too few, over time the quality of the seed and the crop will decline. Crops going to seed may take more room in the garden, as they can get very tall and heavy, and perhaps require extended care.

### **5. Save from the best!**

Always save from plants that show favorable characteristics including vigor, health, productivity, taste, and conformity with what the variety is supposed to look like. Pass on desirable traits to the next generation, not bad ones. You get to shape your crops towards your interests! How fun!

### **6. Save information, not just seeds!**

It's really important to keep good notes including planting and harvesting dates, disease and pest issues, overall growth patterns, and use in the kitchen. These are helpful to you later, as well as to those you share your seeds with. Take lots of photos!

### **7. Make those seeds last!**

The average garden seed can last in decent storage for 2-10 years. Each year they lose some viability especially if storage conditions are poor. Four words to remember: COOL. DARK. DRY. STABLE. These can be hard to achieve in the humid Southeast, but try your best to achieve them, especially DRY! For every 1% drop in moisture content, storage life of a seed doubles!! Store dried seed in labelled paper bags or envelopes and inside a sealed container, preferably one with a rubber seal or gasket.

## ***Planning a Garden for Seed Saving***

Seed saving can be integrated into your garden practice with some careful considerations and planning. But it can also be accidental and opportunistic, which is great too! Some basic knowledge is powerful and will make you a better seed saver and gardener. It is as much an art as it



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is a science. Don't be overwhelmed, just learn by practicing and making mistakes. Celebrate the victories!

Here are some considerations to ponder as you learn to integrate seed production into a food garden.

## Start Simple

For new gardeners and/or seed savers, start with an easier to save crop to learn the process. **Tomatoes, peas, beans and lettuce** don't typically cross-pollinate and so you can grow fewer plants and more varieties.

Some plants require extra time and space to fully mature to seed. That's not always available in a home garden. Wee little lettuces for example, can tower to 4' in full glorious blooms and seeds, leaning over with their accumulated weight.

Some plants are **out-crossers** meaning they require cross-pollination with others of the same species, sometimes in very high populations. This keeps their genetics diverse and strong. Some actually have mechanisms in place to prevent them crossing with themselves - requiring others for any seed production at all.

But not everyone wants to have 80+ mustard plants in a small home garden! Some crops like this will be less desirable or even feasible for home gardeners to save. There are some work-arounds though. For example, you could grow only 20 mustard plants one year, save all the seed and the following year, grow a mix of that seed from the 20 plant population and the original seed. Continue saving and mixing in this way.

Regardless of what you grow, **saving from the largest population of plants as possible, is always a best practice** for improved seed and plant quality.

## Purity or Promiscuity?

Cross-pollination is a concern if your goal is to keep a loved variety pure. Planting Seminole Pumpkin in the same garden (or neighborhood) as Butternut squash for example will likely result in hybridization, because they are the same species (*Cucurbita moschata*). This is only a bad thing if you are trying to keep the Seminole pumpkins pure.

You can grow more than one of the same species of highly out-crossing plants by using **isolation distancing** (see Table 1), or by **restricting the flowering** of those plants you are not intending to save seed from. For example, you can grow two different varieties of Asian greens that are both *Brassica rapa*. Save from one, and harvest for food before the other has a chance to flower. *It only matters if they are flowering at the same time!* Of course this only works for those crops whose flowering is not required for edible harvests (i.e. leafy greens, herbs). Hand-pollinations and bagging flowers can be used too, but requires more time and close attention to detail.

Some growers practice **landrace plant breeding**. This is the art and fun of letting lots of varieties of the same species cross with one another to create new and diverse varieties. Over time as you save from only those that thrive under your conditions, you develop new and very adapted, resilient crops. This is how Joseph Lofthouse who farms in the desert climate of Utah, has created several new varieties that thrive on his farm. His very harsh growing conditions have been unforgiving on most commercially available varieties, so he made his own! This is a great approach for home gardeners, so you don't worry so much about trying to isolate in small spaces.



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## Supplies

Additional supplies, although very basic are sometimes needed to stake heavy seed-bearing plants, and to process, dry and store seeds. When you are just getting started you probably won't need much from what you already have in your kitchen. But as your practice grows, getting the right tools will make the work easier and more efficient.

## Seeds, Food or Both?

For some crops you can't always have your cake and eat it too. For example, you can't eat an entire lettuce plant, or harvest from it heavy-handed over a few months and expect to save its seeds. But you can eat a watermelon, tomato or pepper and save its seeds!

Eggplants, summer squash, cucumbers, okra, peas, and beans require extra time on the mother plant to reach full seed maturity. But you can eat the other fruits/pods on the plant while saving from just a few selected ones you let grow longer. This will somewhat slow the production of your plant, as she diverts energy in making seeds, rather than more fruit.

## Select the Best and Eat the Rest!

When you save seeds remember to always be picky. Select from plants that have performed the best throughout their season, or have a specific quality you are trying to preserve. Our top two criteria are flavor and vigor. Does it taste great and grow well? Yes?! Save it! There is no reason to save seeds from a plant that didn't perform well or that you don't enjoy eating.

This is the precise time when your growing practices should deepen, and make you a more observant participant in the process. Did a particular plant or group of them do poorly because they just happened to be in a challenging part of your garden, that you may not be

aware of? Or because the plant variety itself was just not a winner? Make sure you're not assuming it's the plant's fault when maybe it's yours! Here are some quick tips when thinking about the selection process.

1. If possible, start with way more plants than you want to save seed from and/or eat. Figure out optimal population size recommendations for a number to shoot for (see Table 1). As the season progresses, remove the plants that are not doing so well before they have a chance to flower. By the end of the season, considering losses from bugs, squirrels, and your dinner, you still have a good size population of plants to save seed from.
2. Save from individual plants that have the qualities you adore the most. If you like the flavor, texture, shape, productivity, slow bolting or color of something in particular, be sure to save seeds from that plant. For example, we always save from lettuce plants that bolt the latest and don't taste bitter (unless you like bitter!) Think about how you can easily distinguish those plants- bright flagging tape or orange fiberglass driveway marker poles are our favorite.
3. Look for odd-balls that are unique (or in the seed lingo world, the "off-types") and if you think they are cool, save them separately and be sure to label them. This could be the start to creating a new variety! We're doing this now with a very deep orange-fleshed calabaza to see if we can eventually get most of them to have this desirable quality.
4. Sometimes, it's as easy as only saving from the plants that stayed alive long enough to produce



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seeds. If your tomatoes all bite the dust before you have ripe ones to eat and save, but one plant makes it- well that's a keeper and it was your only option anyhow!

5. Be sure to label all your seeds when they come out of the garden. You think you will remember but I guarantee you won't! If you start selecting for special things too- label and keep separate!! Masking tape and sharpie work the best for nearly every situation.

## **Seed Processing**

There are two main categories of seed harvesting: wet and dry.

**Wet:** seeds are encased in a fleshy fruit. This includes tomatoes, peppers, watermelon, ground cherries, cucumbers, pumpkins, etc. Extracting and cleaning the seeds often requires scooping out seeds, cleaning, and rinsing to separate from the fruit.

For wet seeds the basic process is to harvest your fruits and simply scrape out, scoop, separate and rinse the seeds from the fleshy bits. There are of course nuances with each crop type. Tomato seeds should be fermented before drying and storing, and we recommend it for squash too. It cleans them up nicely and removes potential pathogens and mold. Bad seeds float to the top, heavy viable seeds sink.

**Dry:** seeds may be encased in a dry pod like okra, beans, peas, brassicas (broccoli, collards, arugula etc.) and peanuts. Or they may be exposed right on the plant like corn, grains, herbs, and flowers, where they easily fall from the plant or require some quick handling to catch them.

Dry seeds all vary, but can be as easy as waiting for seeds to dry and mature on the plant and gathering them. Sometimes with our humidity and rain, pulling seeds indoors early to dry under a fan is necessary. There are lots of instructional videos online to see how others process their seeds. We've included some in our free Southern Seed School page that are our favorites.

## **Seed Drying & Storage**

The most important thing is to get your seeds DRY, the ultimate challenge in the humid Southeast. Humidity is the #1 killer of seed longevity. Just leaving them on our counters to admire in the house is not ok unless you are planning to plant those seeds the following season. For any length of storage whether a month or years, getting them into a **dry and stable** environment to rest is critical. Especially if you want to preserve them for a few years or share with others.

Many garden seeds will be fine for **3-10 years** if you can get them cool, dark, dry and stable. Anything different will encourage decay, and sometimes devastating outbreaks of weevils and other seed pests. We have found excellent germination rates on seeds many years old because we have kept them well. This means you can save some crops only once every few years rather than every year..

For larger seeds like a pumpkin, if you can easily snap it in half, it is pretty good and dry. You've done well! Get them in a tight jar, label and store. If it bends or resists a snap, you have more work to do.

For seeds like corn or beans, if you put one seed on a hard floor and smash it with a hammer and it shatters, it is pretty good and dry. You've done well! If it smooshes, you have more work to do!



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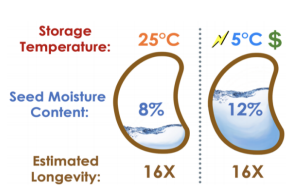
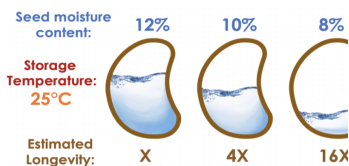


Very small seeds tend to dry fairly well in ambient conditions compared to large ones, but still benefit from a full dry down. They are too small to snap or smooch.

Aim for **35% relative humidity or lower**. Our ambient conditions in Florida range throughout the year from 50%-100% depending on the season! Seeds will equilibrate with their environment, and high seed moisture content is terrible for seed longevity. We borrowed this graphic from our friends at Dry Chain America. Lower temperatures are good too, but not as effective as lower moisture content.

## Relationship between seed moisture content and longevity

Low seed moisture content maximizes seed viability and shelf life. Every 1% decrease in seed moisture content or 6°C decrease in storage temperature the storage life of the seed is doubled.



## Low seed moisture content x low temperature during storage

Seeds with low moisture content can be stored at ambient temperatures. A similar seed longevity benefit can be achieved by lowering the moisture content and storing seeds at ambient temperatures instead of using refrigeration. Substantial savings with energy input and when compared to cold storage.

Some of our simplest tools for the job:

- **Box fans** are great for blowing over your seeds for a few days to get bulk material dried down. Often we have a huge mound of mustard or bean seeds we've pulled from the field that need to dry more before we can pull the seeds off and start cleaning them up. We place them in front of box fans and rotate the pile every day.
- We pile seeds over a **tarp or sheet** to collect the falling seeds keeping them off our dirty floors.
- Drying wet seeds on a **paper plate or coffee filter** that is labelled are the only two kinds of paper we recommend. All other types end up with seeds stuck to the paper which is a huge

pain! We collect an assortment of **flour sack towels and cloth napkins** that work wonders and are very affordable! Every day as seeds dry you can easily scrape them free and move them around till they are fully dried.

- **Mason jars** or other tight fitting jars and containers with a rubber seal are inexpensive and infinitely reusable. Keeping out air and moisture are important, thus the rubber seal or gasket. If you have a vacuum sealer you can remove the air from a plastic storage container or jar and get even more longevity. We like clear jars because we can stick drying beads and indicator tape inside to help us gauge our dryness, and look at our pretty seeds! However they must be kept somewhere dark since continual light exposure is not recommended.
- **Humidicator tape**. This simple and inexpensive roll of tape can be cut off into small pieces and put inside your seed storage jars, giving you a color indicator of how dry they are.
- **Hygrometer**. We keep a couple of these hygrometers around, one in the open air just as a frame of reference for our ambient conditions, and one inside our seed storage room or containers, so we know how dry it is in there.
- **Drying beads**. We have used silica beads over and over again for years. Place beads inside a mesh bag and inside a tight jar with your seeds. Approximately the same weight of beads to seeds. Usually you put either the beads or seeds inside a mesh bag to easily separate them. With a humidity strip also placed inside the jar you can watch the humidity drop. Beads are removed when seeds are dry, and you can replenish them by baking in the oven. A safer and more environmentally friendly option are clay zeolite beads, but they can be harder to source.





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Once your seeds are dry, they can safely go inside a tight fitting container somewhere **cool, dark, dry and stable**. A home refrigerator is really not necessary and in fact may cause more harm if improperly stored. They tend to be humid and the continual opening and closing of the door is a lot of fluctuating temperature and humidity. Well dried, in a sealed jar in the back would be acceptable.

A home freezer is great, preferably in the back where conditions are more stable. A dark closet, or under the bed in an air-conditioned home is also good.

If you freeze your seeds, when removing them let the container come to room temperature BEFORE opening the jar. The dried out seeds will act like sponges for moisture so let them rest and thaw, then open. If you are very quickly just getting out a small sample to return the rest to the freezer that's fine. Hurry

These are all tips to extend the life of your seeds. If you only have a few and are planting them the next season, it might not be necessary to strive for such perfect storage conditions. That said, even with fresh seeds we've noticed big germination differences between seed handled and stored well shortly after harvest and those that have not.

## **Have Fun!**

Remember this. Although you have been given a lot of information here and it may seem overwhelming, seed saving is an ancient and intuitive practice. Humans have been doing this for thousands of years without degrees in plant biology or breeding! Be curious and brave. You will make mistakes. That's OK, it's how we learn. Have fun and don't sweat the details. Take lots of notes and photos. You and the seeds will work together beautifully.

## **Resources:**

The Seed Garden: The Art and Practice of Seed Saving by *Seed Savers Exchange*.

Seed to Seed by *Suzanne Ashworth*.

Breeding Your Own Vegetable Varieties by *Carol Deppe*.

The Organic Seed Grower by *John Navazio*.

Southern Exposure Seed Exchange has many free resources available online.

Organic Seed Alliance has numerous free growing, breeding, and trialing publications available online.



*"A seed makes itself. A seed doesn't need a geneticist, hybridist, publicist or matchmaker. But it needs help. Sometimes it needs a moth or a wasp or a gust of wind. Sometimes it needs a farm and it needs a farmer. It needs a garden and a gardener. It needs you."*

~Janisse Ray The Seed Underground



Table 1: Crop specific seed saving for Florida. SI = Strongly Inbreeding, MI=Mostly Inbreeding, MO=Both Inbreeding and Outbreeding, MO=Mostly Outbreeding, SO=Strongly Outbreeding. For population size three numbers are offered: viable seed (not ideal), variety maintenance (better) and genetic preservation (best).

Species	Crop Common Name	Pollination Method	Breeding	Isolation Distance	Population Size		
					Viable Seed	Variety Maintenance	Genetic Preservation
<i>Abelmoschus esculentus</i>	Okra	Self, insects	BIO	500-1600ft	1	5-10	25+
<i>Amaranthus spp.</i>	Amaranth, Callaloo	Wind	BIO	650-1,300ft	1	5-25	50
<i>Anethum graveolens</i>	Dill	Insects	SO	800ft-1/2mile	5	20-50	80+
<i>Brassica juncea</i>	Mustard Greens	Insects	SO	800ft-1/2mile	5	20-50	80+
<i>Brassica oleracea</i>	Broccoli, Collards, Cauliflower, Kale, Brussels sprouts	Insects	SO	800ft-1/2mile	5	20-50	80+
<i>Brassica rapa</i>	Broccoli Raab, Chinese cabbage, Japanese greens, turnip	Insects	SO	800ft-1/2mile	5	20-50	80+
<i>Capiscum spp.</i>	Peppers	Self, insects	MI	300-1,600ft	1	5-20	50+
<i>Citrullus lanatus</i>	Watermelon	Insects	MO	800ft-1/2 mile	1	5-10	25+
<i>Coriandrum sativum</i>	Cilantro	Insects	SO	800ft-1/2mile	5	20-50	80+
<i>Cucumis melo</i>	Melon	Insects	SO				
<i>Cucumis sativus</i>	Cucumber	Insects	SO	800ft-1/2mile	1	5-10	25+
<i>Cucurbita argyrosperma</i>	Squash and gourds	Insects	BIO	800ft-1/2mile	1	5-10	25+
<i>Cucurbita maxima</i>	Squash: Winter and Pumpkin i.e. <i>Turban, Banana, Kuri, Kabocha, Hubbard</i>	Insects	MO	800ft-1/2mile	1	5-10	25+
<i>Cucurbita moschata</i>	Squash: Winter and Pumpkin i.e. <i>Butternut, Calabaza, Seminole, Cheese</i>	Insects	MO	800ft-1/2mile	1	5-10	25+
<i>Cucurbita pepo</i>	Squash: Summer, Winter, Pumpkin and Gourd i.e. <i>zucchini, crookneck, patypan, acorn, spaghetti, delicate, cocozelle, some pumpkins</i>	Insects	MO	800ft-1/2mile	1	5-10	25+
<i>Eruca sativa</i>	Arugula	Insect	SO	800ft-1/2mile	5	20-50	80+
<i>Fagopyrum esculentum</i>	Buckwheat	Insects	BIO	800ft-1/2mile	5	20-50	80+
<i>Foeniculum vulgare</i>	Fennel	Insects	BIO	800ft-1/2mile	5	20-50	80+
<i>Helianthus annuus</i>	Sunflower	Insects	BIO	800ft-1/2mile	5	20-50	80+
<i>Hibiscus sabdariffa</i>	Roselle/Jamaican Sorrel	Self, insects	BIO	500-1600ft	1	5-10	25+
<i>Lactuca sativa</i>	Lettuce	Self	MI	10-20ft	1	5-10	20+
<i>Lagenaria siceraria</i>	Gourd	Insects	BIO	800ft-1/2mile	1	5-10	25+
<i>Ocimum basilicum</i>	Basil	insect	SO	800ft-1/2mile	5	20-50	80+
<i>Petroselinum crispum</i>	Parsley	Insects	SO	800ft-1/2mile	5	20-50	80+
<i>Phaseolus lunatus</i>	Bean, lima	Self, insects	MI	160-500ft	1	10-25	50+
<i>Phaseolus lunatus</i>	Bean, runner	Self, insects	BIO	160-500ft	1	10-25	50+
<i>Phaseolus vulgaris</i>	Bean, common	Self	MI	10-20ft	1	5-10	20+
<i>Physalis grisea</i>	Ground Cherry	Self, insects	BIO	300-1,600ft	1	5-20	25+
<i>Physalis philadelphica</i>	Tomatillo	Insects	BIO	800ft-1/2mile	5	20-50	80+
<i>Psium sativum</i>	English Garden Peas	Self	MI	10-20ft	1	5-10	20+
<i>Raphanus sativus</i>	Radish	Insects	SO	800ft-1/2mile	5	20-50	80+
<i>Solanum lycopersicum</i>	Tomatoes	Self, insects	BIO	10-50ft	1	5-10	20+
<i>Solanum melongena</i>	Eggplant	Insects	SO	300-1,600ft	1	5-20	50+
<i>Spinacia oleracea</i>	Spinach	Wind	SO	800ft-1mile	10	20-50	80+
<i>Vicia faga</i>	Bean, fava	Self, insects	BIO	160-500ft	1	10-25	50+
<i>Vigna unguiculata</i>	Bean, cowpea	Self, insects	BIO	10-20ft	1	10-25	50+
<i>Zea mays</i>	Corn	Wind	SO	800ft-1/2mile	10	50-120	200+