# A GUIDE FOR FLORIDA FARMERS: SAVING WINTER SQUASH SEEDS

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## INTRODUCTION

This publication is for small-scale farmers who primarily sell produce to local markets and are interested in saving seeds for personal use or local distribution. The information provided is curated from the experiences of market farmers and small-scale seed growers in North Florida, where the growing climate is subtropical, characterized by a long warm and humid growing season, and a shorter, cooler season with occasional frosts. This publication specifically focuses on managing winter squash crops for seed production, and assumes that farmers are already familiar with growing practices. Some of the details may be far more than a farmer needs, but are provided for those approaching this at all levels of interest and skill in seed saving and adaptive selection/breeding practices.

Winter squash are commonly grown on Florida farms and saving seeds from these plants is relatively straightforward with a few additional considerations. This article will focus on saving seed from *C. moschata* species varieties, since they tend to be best suited to Florida's subtropical climate and pest and disease pressures. This includes a variety of tropical pumpkins, Seminole Pumpkin, Butternut, and others. However much of the information can also be applied to the other squash species.

When *C.moschata* seeds are mature and viable, the fruits are also ready for consumption and market. Therefore, growing for seed requires little additional work for the grower. Since good quality seeds remain viable for many years when stored properly, growers may only need to save seeds every few years depending on their goals. For farmers interested in learning about seed contracts with seed companies, expected seed yields, and other more commercial seed growing topics, detailed information is available in the publication by Dr. Mehmet Öztan, *Fundamentals of Commercial Seed Production in West Virginia*.

**South Anna Butternut growing well among bananas in mid June at The Family Garden in Gainesville, Florida.**

## GROWING WINTER SQUASH TO BOTH SAVE SEED AND SELL FRUIT

All the usual efforts involved in field preparation, cultivation, harvest, and post-harvest handling of winter squash remain consistent when saving seed. **When winter squash seeds are mature and viable, the fruits are also ready for consumption and market. Therefore, growing and harvesting a squash crop for seed and produce at the same time can require little additional management up to the seed extraction stage.** If a farmer is growing seed for on-farm use they likely will only need to extract seed from a small fraction of the crop. Since good quality seeds remain viable for many years when stored properly, growers may only need to save seeds every few years depending on their goals.

*C.moschata* is typically a long season crop at 100 or more days from planting to harvest. Timing and methods of plantings that have proven successful for growing should be maintained, and will vary among growers from the northern panhandle to the more tropical southern parts of the state. However, farmers must take care to avoid cross- pollination between different varieties of the same species.

## SQUASH SPECIES AND ISOLATION DISTANCES

There are four species of squash commonly grown for market:

1. *C. moschata* includes Seminole Pumpkin, Cuban Calabaza, Butternut Squash, Chinese Tropical Pumpkin, and other tropical pumpkins; widely grown in Florida and well suited to the climate.
2. *C. pepo* includes Acorn, Delicata, and Spaghetti and other various winter squashes, as well as most summer squash; also widely grown.
3. *C. argyrosperma* includes striped green Cushaw, and Mexican varieties grown for the edible seed, and is less commonly grown.
4. *C. maxima* includes Kabocha, Hubbard, and Buttercup; tends to be the least well suited to Florida's climate and pest pressures.

**It is important to verify the species names of all the squashes being grown, as different varieties within the same species can cross-pollinate.** For example, if these varieties are grown near each other and their flowering time overlaps, there is a high probability they will be cross-pollinated by bees. While this is not an issue if squash is being sold for food, it is a concern for seed saving.

**To prevent cross-pollination, general guidelines suggest isolation distances between varieties of 800 feet to ½ mile** - however these are not strict rules. Many factors, such as local pollinator populations, other plants available for pollinators between the crops of interest, and physical barriers like forests or buildings, can influence the necessary distance. With Florida's longer growing season and the general adaptability of *C. moschata* to our climate, it is possible for a farmer to stagger the planting times of different varieties, creating natural isolation through timing differences of flowering. As an additional precaution, selecting the earliest fruits from the first crop and the last fruits from the second crop can help with time isolation. One challenge of later planting times, despite this crop's adaptability to Florida's climate, is the increased risk of pests, which has been observed on farms with late-season plantings. Regular inspection for caterpillars and implementation of a spray program may be needed if plants are established later in the season.

While not common, there are some interspecies crossing situations to consider. *C. moschata* can pollinate *C. maxima* to a small extent, but generally not the other way around. *C. argyrosperma* and *C. moschata* can pollinate each other. A small amount of isolation (300 feet) makes these crosses unlikely. Crossing between *C.moschata* and *C.pepo* is unlikely, making it possible to grow these species next to each other without concern (for example, Butternut squash and Acorn squash, zucchini, yellow squash).

Maintaining sufficient genetic diversity for the crop is important. Save seed from at least 20 fruits or 20 plants. Diversity gives future seed stewards more to work with in the face of variable conditions.

## PEST ISSUES

Early in the season as young plants are becoming established, farmers may find value in protecting plants with insect netting like *Proteknet*, instead of spraying. Once squash have grown bigger, and start setting down secondary roots where their vines sprawl and touch the soil, the netting can be removed. A disadvantage to this is that any early selection against pest prone plants is not possible. This all depends on the farmers goals for seed saving, stewardship, and development of the crop. A farmer wishing to really advance pest resistance as an important quality may choose not to spray or cover. But this may result in lower yield, which may not be an acceptable trade off for a market farmer.

One challenge with later planting dates that result in squash growing through the summer months while Florida farmers take a short vacation, is that quiet fields often mean more curious and bold rodents. Each farm's strategy will vary to prevent this and may include: cats and dogs on patrol, planting in more open and exposed areas where predators can see them (as opposed to planting along a shadier/protected edge), trapping, or other deterrents proven to work. Earlier plantings that allow harvests to occur before the summer break, are probably the best prevention.

## INTER-SPECIES CROSSING

Although uncommon, there are known interspecies crossings between *C. moschata* and *C. maxima* or *C. moschata* and *C. argyrosperma*. This is primarily a concern for farmers selling seed and should be considered when planning farm layouts with multiple species. The shorter season of some *C.maxima* may result in minimal flowering time overlap with longer season varieties like *C.moschata*. If cross-pollination does occur, it may be evident in the seed quality, as few viable seeds will be produced. It is therefore recommended that these varieties be separated as much as possible if one is to be saved for seed.

The squashes pictured here are the result of what is assumed the accidental crossing of Jamaican Cushaw *(C.argyrosperma)* with Seminole Pumpkin (*C.moschata*) that were grown in the same field. Seeds were saved from the cushaw and grown out many years later - this was the surprising result! All the squash were edible and unique, providing an opportunity to make selections and move forward with a new variety, or stop and go back to "pure" seeds of each variety. We learned that it is absolutely possible for these two species to cross-pollinate!

## POLLINATION AND FRUIT DEVELOPMENT

**Squash plants require insect pollination to set fruit**, which is typically accomplished by various bee species, wasps, and even beetles. A healthy population of native pollinators on or near the farm can significantly aid in a successful harvest. The reliance on insect pollination means that it is easy for varieties of the same species to cross-pollinate if they are growing within the foraging range of local pollinators. If a farm has few pollinators, daily hand pollination may be necessary, but this process is both time-consuming and very time-sensitive.

Each squash plant has separate male (pollen producing) and female (pollen receiving) flowers. Male flowers are typically more abundant and bloom earlier than female flowers. Each flower is distinct and recognizable among the Cucurbit family (watermelons, cucumbers, summer squash, gourds etc.), with differences in flower size and shape depending on the crop. The female flowers have an immature fruit at the base, which develops into a mature fruit once pollination and subsequent fertilization occur. Cross-pollination between different plants is typical, but flowers on the same plant can self-pollinate at a rate of about 30-35% (McCormack 2010).


**Bees don't discriminate - all squash flowers are attractive and thus easily pollinated! This is the inside of a female Bellevue Butternut flower.**

# HARVEST AND POST- HARVEST HANDLING

## WHEN TO HARVEST

Winter squash are typically ready for harvest when the stems turn brown and woody, or shrivel off the main vine. The rind should be firm and not able to be dented by a fingernail. Generally, fruits are fully developed and seeds are mature about 50 days after anthesis, or flower opening (Davidson 2023). However this timeline can be difficult to follow as a guideline since new flowers continue developing for an extended period and vines become entangled, making it challenging to differentiate between them. **Visual qualities of the fruit are the best indicators of harvest maturity.** Ideally, mature fruit in the field should be left on the vine for an additional 20 days to further ripen. If this is not possible due to timing, space constraints, or risks such as sunburn, rain, or rot - harvest the fruits and move them to a covered area for curing and storage.

Towards the end of the season, fruits may sunburn if the leaf canopy has declined significantly, which can negatively affect seed quality due to increased fruit temperatures. In such cases, harvest these earlier to protect both the fruit and seed quality. Ideally the leaf canopy will still be sufficient to protect the fruit from the intense Florida sun.

**Fruits harvested too early and immature may contain underdeveloped seeds**, which will be evident during seed processing. While seeds can continue to mature in an immature harvested fruit, this process depletes the nutrient reserves in the flesh, thereby reducing its eating quality (Loy 2011).

Brown wood-like and dried stems indicate a good time to harvest these Seminole Pumpkins.

## POST HARVEST HANDLING

Winter squash are known for their long shelf life and can last for several months in a climate controlled environment. This is why they are called winter squash, not because they are grown in the winter but because they are stored long enough to be eaten throughout the winter months. **Curing and long-term storage are critical practices that should already be in place on any farm growing and selling winter squash.** These processes are essential not only for improving the eating and keeping quality of the fruit, but also for enhancing seed quality. About 5 weeks to 6 months after harvest, fruits stored in the proper condition have seeds with improved germination, vigor, and overall quality (OSA 2018). The length to which various squash can tolerate storage without eventually losing flesh and seed quality will depend on the variety and storage conditions. Research on winter squash in Virginia has noted that some varieties greatly increase in eating quality over time and have excellent keeping qualities, while others lose quality fairly quickly and should be eaten within 10 weeks of harvest date (Frost 2017). It is important that the farmer learn about and observe the nuances with each variety they cultivate to understand ideal storage conditions.

## CURING

**Once fruits are fully mature, they should be cured at high temperatures (80-90F) and high relative humidity (80%) for a minimum of 20 days and maximum of 6 weeks** (Aerts and Mossler 2002, McCormack 2010). In Florida, these conditions can be easily achieved in a covered barn during the harvest season. Efforts to increase air flow, such as minimizing stacking and using fans, are ideal during curing time. If curing in lower temperatures, the curing period will take longer. It is also important to take measures to prevent rodent damage during this time.

Nat Bradford's winter squash curing set up in Sumter, South Carolina. Wooden shelves with adequate spacing for air flow are protected from sun and rain by a metal roof. The Dutch Fork Pumpkin is an heirloom variety of *C.moschata* developed in this region and stewarded by farmers like Nat.

### LONG TERM STORAGE

After curing, squash are prepared for long term storage. **Fruits should be loosely packed into breathable and stackable crates that can be stored in a walk-in cooler set between 50-60F**, or in an air conditioned room to rest in ambient conditions. If stored in a walk-in cooler with other vegetables, they should not be located near ripening fruit like tomatoes, avocado, banana, melons, peaches, persimmons, and most tropical fruits, as these produce ethylene which shortens the squash's shelf life (Florkowski et al 2014). Do not store squash at temperatures below 45F, as cumulative cold damage can occur, leading to rot.

## SELECTION OF FRUIT QUALITY AND OTHER TRAITS

Selection of a variety over many seasons, is a powerful tool that can improve eating and keeping quality, shape, and yield, among other things. It can also be a lot of work. It's possible that a variety is exactly what the farmer needs, or close enough. In this case simply saving seed with little attention to selection is sufficient. It is best to familiarize oneself with a variety before delving into intensive selection to prevent accidentally selecting for one trait at the expense of another.

Distinguishing individual plants becomes impossible as the season progresses, and vining plants intertwine. For farmers interested in really advancing the resilience of their crop, and willing to accept the short term cost of gaps in the field and potentially a decreased yield - **less vigorous plants should be removed early when they are distinguishable.** Some of the variation between plants may be due to field variation - keep the best plants for each area even if some are below average for the field as a whole. To avoid unwanted gaps from removal which may become weedy and unproductive, plant extra and then thin as the seedlings grow, only keeping the best ones.

If the primary selection criteria is for desirable fruit qualities, there are many the farmer may select. For example, the Bellevue Butternut variety saved by Tommy Simmons is highly diverse in terms of fruit shape, size, and color - offering many opportunities for selection to match the farmer's preferences. If the farmer has no specific preference, they may choose "mass selection" - saving seeds from as many different fruits as possible. If the farmer prefers specific traits such as size or shape, those fruits should be marked for seed saving. K**ey qualities to consider include size, shape, flesh color, flesh quality, size of seed cavity, flavor, and shelf life.** A Sharpie mark on the fruit's flesh or a visible flag tied to the stem can help with identification. This can be done in the field or after harvest. If working on a farm with many other people, **a clear system for marking seed versus sale fruit is critical.**

**STOCK SEED** is the best seed, identified by the selection criteria used by the farmer. This is the seed held back for for personal future use and continued stewardship, and adaptation. However, when trying to grow large quantities of seed to share and/or sell, saving seed from fruits that are good but not necessarily the best, is important. Keep stock seed for replanting, and distribute or sell the rest. Others will benefit from such careful stewardship in future years as the variety improves in your care.


Squash with flagging tape applied in the field for easy identification during harvest of fruits destined for seed. Storage crates marked with masking tape and marker separating other crates that are available to sell at market, makes it easy for other farm staff to know these are not for sale.

## INDIVIDUAL PLANT SELECTION

It is possible to select from individual plants, but this is more time consuming and only appropriate for farmers really dedicated to more quickly improving a variety. It takes a lot of work! One approach is to space plants widely and train them separately. Another approach is to trace each fruit back to the base of the plant it came from. This is easier for diverse populations when the fruits from each plant tend to have somewhat of their own distinctive look. But even with more uniform varieties, it is possible. Space the plants somewhat widely, at least 3-4 feet in the row. Selecting by plant can be very helpful for evaluating yield and ripening times. It also means fewer fruits need evaluation, instead just sampling 2-3 from each plant. Otherwise, it is impossible to tell which individual plants are the most productive, or when their fruits are mature.

Typical planting density for market production makes it impossible for individual plant selection! In this case, select your best seed from the best fruit.

## NEXT LEVEL SEED SAVING: DEVELOPING NEW VARIETIES!

**Farmers can develop new varieties and improve existing ones without any formal education or experience in plant breeding.** Two examples include Bellevue Butternut and South Anna Butternut, which started with the same initial parent plant material but achieved different outcomes due to the farmers' distinct goals.

The **Bellevue Butternut** developed in Archer, Florida, is believed to have originated from an accidental cross of the Seminole Pumpkin and Waltham Butternut in a compost heap. Farmer Tommy Simmons allowed the plants to keep growing, saving seeds each year from the healthiest plants that survived the season with minimal supervision and cultivation in the certified organic, mostly non-irrigated fields The fruits show considerable variation in size and shape, as seen in the photo below. This provides a lot of potential for other farmers to select preferred traits from the fruits.

Bellevue Butternuts are primarily selected for vigor and not shape or size which is evident in the diversity of shapes!

The **South Anna Butternut**, developed at Twin Oaks Farm in Louisa County, Virginia, was an intentional cross of the same two parent varieties, Seminole Pumpkin and Waltham Butternut. Edmund Frost had a specific goal to develop a squash with the vigor and superior flavor of the Seminole Pumpkin but with customer-preferred butternut shape. Over a period of 10 years, Edmund has been selecting for downy mildew resistance, productivity, flavor, eating quality, long storage time, and butternut shape. He has achieved these goals and released seed to the public through Common Wealth Seed Growers. The variety is stable and open-pollinated so farmers can begin saving their own local seed stocks. This variety has been grown by farmers in Gainesville, Florida with great reviews for the vigor, productivity, flavor, and customer appeal. Edmund continues tweaking this variety, making additional crosses with other *C.moschata* varieties to discover new combinations that will survive southeastern growing conditions.

South Anna Butternut was intentionally selected for Butternut shape and resulted in most of the fruits having that trait, leaving out the more round Seminole shapes.

***"Funding for farmer-led breeding and research projects is an effective (and cost-effective) way to accomplish goals of improving availability of seedstocks appropriate to regional conditions, and to organic management. We recommend that more farmers become involved in and seek funding for this work."*** ***~Edmund Frost 2017***

## NEXT LEVEL SEED SAVING: FRUIT COLOR AS AN INDICATOR OF NUTRITION!

While it is generally accepted that *C. moschata* are highly nutritious, there is considerable variation between varieties and even individual fruits within a variety, particularly ones with considerable diversity. This is an opportunity for a farmer to intentionally make selections for tastier (and by association), more nutritious squash. Consumers tend to prefer deeply colored orange flesh, which is associated with higher beta-carotene concentrations (Robinson and Decker-Walters 1997). Fruit color difference is notable between individual Bellevue Butternut squash both externally and internally in the below photos. Number 8 on the left, is likely to have higher nutrition, sweetness, and flavor - a better candidate for seed saving than number 5.


Sweetness can be evaluated by taste alone. But it may be impossible or undesirable to sample every fruit, and this is where a handheld Brix meter can be helpful. These inexpensive tools measure the percentage of total soluble solids in a sample, including the sum of sucrose, fructose, vitamins, minerals, amino acids, proteins, and other solids that relate to a plant's nutritional value. Brix readings are obtained by freezing small samples and then pressing a drop of thawed juice onto the Brix meter. According to Johnny's Seeds, a reading of **10 is adequate, but 11 and higher** is representative of a high quality squash. This may be a step beyond what most farmers are interested in, or have time for. Visual, taste, and smell inspections are likely sufficient for assessing flesh quality.

## SEED PROCESSING AND STORAGE

The following process is intended for small-scale operations processing seeds by hand, versus mid to large-scale operations that use mechanical seed extractors. While hand processing is more time-consuming, it allows farmers to carefully inspect individual internal fruit quality and ensures the leftover flesh can be eaten. In contrast, mechanical seed extractors macerate the fruit, preventing selections for the best fruits and diminishing the flesh so it is only useful for animal feed or compost.

### SEED EXTRACTION

To extract seeds, cut the fruits in half to reveal the seed cavity. Using a large spoon (a grapefruit spoon works particularly well), scoop out all the seeds and place them into a large bucket or bowl. Alternatively some growers use a shop vac which is helpful for quickly extracting the seeds while reducing the amount of pulp mixed in.

### SEED CLEANING

Squash seeds are often more difficult to clean than other vegetable seeds. Because many of the good seeds don't sink in water for most varieties, **the method of pouring off the floating pulp described in most seed saving publications, is not sufficient for separating good from bad seeds.** Instead, consider using 1/4" and 1/2" and hardware cloth screens. The 1/2" screen lets the seed through (into a bin) and catches bigger pieces of pulp. The 1/4" screen catches the seeds, and makes it possible to push and spray much of the pulp through the screen. For both sizes of screen, put the seeds on the screen and spray forcefully with a hose nozzle, while also agitating and mixing them by hand or with a spoon.

**This step is the final opportunity to assess fruit quality and decide which seeds are worth saving.** Fruits that have been selected for external qualities, such as rind color, shape, and size, are next examined for internal flesh quality. If the flesh quality appears poor (i.e. pale in color, thin, stringy, large seed cavity, etc.) the farmer may discard the seeds and eat the squash. If individual fruits stand out, write down those qualities and keep seeds separate. Otherwise, bulk all high-quality seed and stock seed, discard the rest.

## TO FERMENT OR NOT?

Opinions vary on the need for fermentation of the seed. Some literature recommends briefly fermenting the seeds, similar to how tomato seeds are handled (Navazio 2012) to reduce harmful pathogenic bacteria on the seed coat and release placental material attached to the seed, which makes them easier to clean. Others do not recommend fermenting seeds at all, suggesting that it's risky and can damage the seed. If done, it should be for **less than 24 hours** (McCormack 2010). Recent communications with other seed growers revealed that the **general consensus is not to ferment squash seeds as it reduces seed quality** (this is not true for other cucurbits like cucumbers and melons). The farmers at Possum Hollow Farm allow fermentation for a few days with no apparent negative effects. To ferment, mix the seeds and pulp, adding a bit of un-chlorinated water only if there is not enough liquid to suspend the seed. Let the mixture sit, covered with breathable fabric, stirring a few times before ending fermentation. Rinse the seeds vigorously several times with a hose, pouring off liquid and fleshy bits, until mostly clean seeds remain. Many seed saving resources suggest that floating seeds are less viable and should be discarded. However, they should be inspected before discarding, as we have found this to not always be true. Smaller, transparent, and empty seeds can be discarded. If they feel firm to the touch, do not discard. A small table or screen of ¼" hardware cloth is helpful to perform a final spraying of the seeds over it, removing any last bits of fleshy chunks and allowing water to drain out.

## SEED DRYING

Washed and strained seed should be dried as quickly as possible. Spread the seeds in a single layer on screen-bottomed trays or absorbent fabric (not paper, as it sticks). Seeds should be shuffled around daily to prevent sticking and increase air flow. Due to the high ambient humidity in North Florida and the presence of rodents and birds, air drying outdoors is not recommended. For short-term storage and personal use, drying seeds indoors in an air conditioned space is adequate. A home dehydrator may be used effectively especially for larger seeds, but **temperatures should be kept below 100F** to prevent damaging the seed (Motis 2010). For optimal storage, place silica beads or clay zeolite beads in roughly equal volumes in a sealed container with the dried seeds to further reduce moisture. Place the beads in a breathable mesh bag so they are easy to separate from the seeds. Squash seeds are large enough to perform a crude snap test for dryness. If you can cleanly snap a seed in half, it is likely dry enough for storage. If the seed bends, it needs further drying. Store dried seeds in a paper bag or envelope inside an airtight and leak-proof container like a mason jar or plastic container with a rubber gasket lid, in conditions that are **cool, dark, dry, and stable**. At this point, if drying beads were used, they can be removed. For more detailed information about seed drying and storage, see *Seed Drying and Storage in Hot and Humid Climates*.

Proper drying and storage is crucial for all farmers, whether preserving purchased seeds for future seasons or saving seeds from a season's harvest. Seed quality and longevity are greatly affected by how well seeds are dried and stored. Seed will quickly deteriorate if not properly dried and left in less than ideal storage conditions (i.e.light, humid, warm, unstable, etc.).

**Properly stored squash seeds can last for many years.** In Working Food's seed bank, seeds stored at low relative humidity (below 30%) and a consistent temperature of 72°F have maintained germination rates above 80% for 7 years. This tracks with other sources that suggest a 6 year lifespan (Connolly and Lawn 2011, Buttala and Siegel 2015). Fully dried and frozen, they will likely last much longer.

## COST OF SEED PRODUCTION

The costs of production will vary greatly by farm reflecting the practices and circumstances of each: their size, salaries, efficiencies, and inputs. Generally, winter squash like those represented by *C. moschata* are a low input crop to produce. Plastic mulch is not necessary due to the quick growing and ground covering nature of the crop. This crop roots along its stem as it sprawls, which is one of it's key features that helps it withstand devastating production impacts from root knot nematodes. Plasticulture would prevent this, and furthermore is costly to install and remove, and is not recyclable. Compost and fertilizer amendments are fairly minimal, and weeding may only be needed early in the season when plants have not yet covered the soil. Harvesting and post harvest labor take the most time.

On one small farm in North Florida, the process was tracked for the 2024 growing season from seed sowing to seed saving. The estimates given below represent growing 1,000 feet of Bellevue Butternut on 4' centers with 6' apart between plants and labor costs of $20/hour. The regenerative farm uses organic practices but is not certified.

| | |
|---|---|
| Total cost of production (seeding, transplanting, weeding, spraying organic pesticides, harvesting, post harvest handling, seed saving, and all inputs including fertilizers, compost, and sprays) | $1,555.00 |
| Total pounds harvested (estimated by average crate weights) | 3,272 |
| Total pounds lost to rodents, rot, or other causes | 1,022 |
| Total pounds selected for seed saving | 205 |
| Total pounds available for sale (after loss and seed saving) | 2,045 |
| Gross revenue (total pounds for sale at market for $2/pound) | $4,090.00 |
| Net revenue | $2,535.00 |
| Cost attributed to seed harvest (9% of total) = 3lbs of seed | **$199.53** |

Considering the low inputs to produce this crop, especially when compared to other spring and early summer crops that take much more time and energy, farmers were pleased with the output. Money was made, the squash were available for market for a period of about 5 months due to their long keeping quality, and enough seeds from the best fruits were saved to last for many more years, with the option to share or sell the extra seeds. Improvements in following years will be taken to avoid the huge loss to rodents and rot.

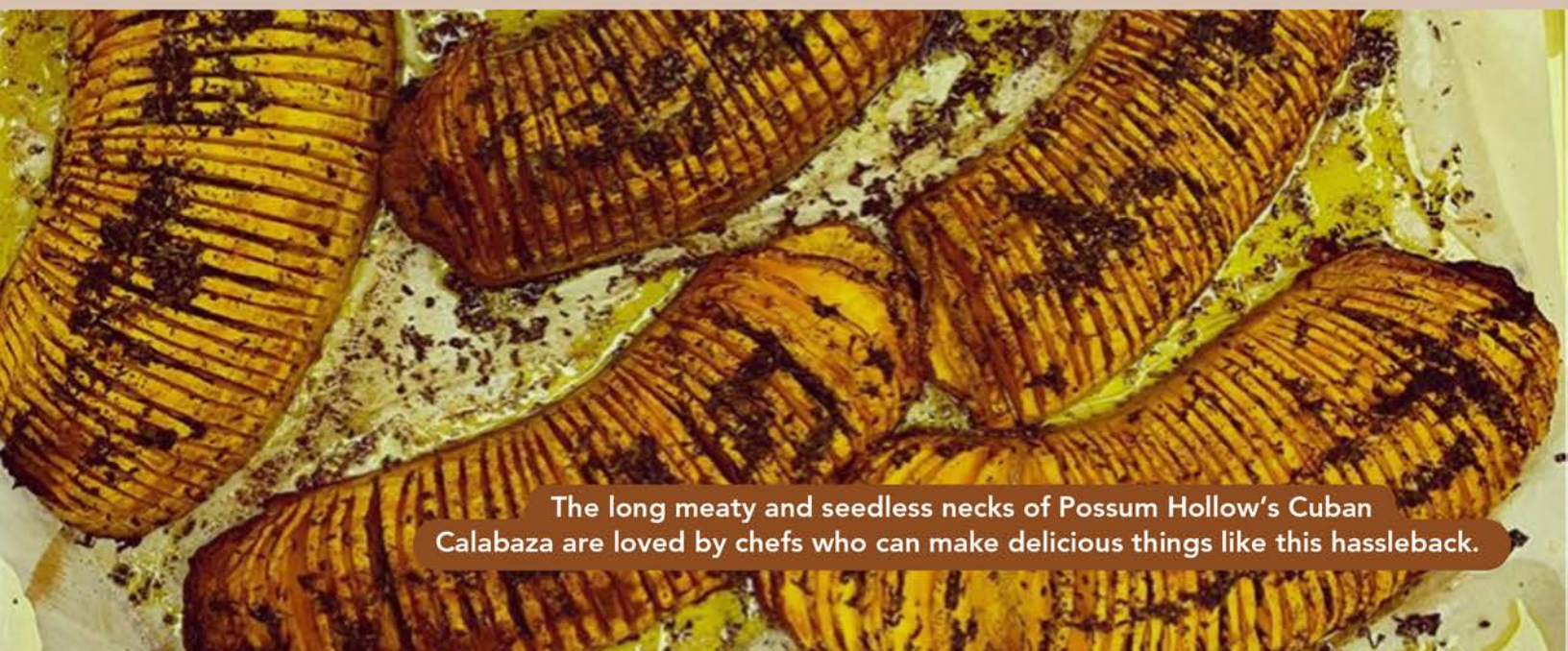
## CROP HIGHLIGHT: POSSUM HOLLOW FARM & THEIR CUBAN CALABAZA

Joe and Trace of Possum Hollow Farm have been saving seeds from their signature Cuban Calabaza (*C.moschata*) for many years. These squash are very large, sometimes up to 40 pounds! It works well on their farm so they have opted to grow no other *C.moschata* due to the high likelihood of cross-pollination. The long, seedless necks make them ideal for cutting into smaller, one-pound portions for farmers' market sales, allowing the farmers to save the seeds from selected varieties without losing revenue. Remaining whole squash are sold to restaurants that appreciate the time-saving advantage of the large seedless necks.

Each spring a 150' row is planted, with fruits harvested from June to July. The crop is then terminated, even though it could potentially keep producing. Multiple traits are selected for each season to maintain the farmers' own seed stock. In this way, the Calabaza has become a reflection of the land and their stewardship practices.

It is impossible to differentiate individual plants during the growing season, as they quickly turn into a mass of entangled vines. The farmers assume that high quality fruit is more likely to come from a healthy parent plant, and therefore indirectly select for plant vigor. Fruits are examined after roughly five months in storage for traits like extended shelf life, long necks (a customer preferred trait), deep orange flesh, and overall exterior aesthetic like rind color and blemishes. They use a simple ranking system of stars, writing notes on each seed bag from individual fruits. Later in the season when they have more time, they assess how much seed stock they have and discard any extras. Next season, seeds are grown from at least a few different squash.

Since squash are open-pollinated by bees, there will always be some undesirable fruits due to natural cross-pollination. The farmers accept this variability, preferring a diverse population that is co-selected by Mother Nature. After about 10 years of selecting for darker colored fruit, they still get about a 50/50 split of dark and light colors, but the necks have become more prominent over time. By consistently saving from the preferred fruits, the crop is always moving in the direction chosen by the farmer and local conditions. Less desirable fruits are still marketable and do not need uniformity to succeed. "***This is what a farmer with no time can do!***" says Joe of his work with this Calabaza.



**The long meaty and seedless necks of Possum Hollow's Cuban Calabaza are loved by chefs who can make delicious things like this hassleback.**

## SUMMARY

Winter squash of the *Cucurbita moschata* species is a dependable and productive crop for Florida farmers, with significant potential for increased production and use, despite its current status as a minor crop. Saving the seeds is compatible with market crop production because market ready fruits and seeds are both mature at the same time. Farmers can easily manage this crop with little extra investment in time. By saving seeds, farmers can secure stock for future plantings without purchasing new seeds, while improving open-pollinated varieties for adaptation to local conditions and preferences for fruit quality.

Two primary considerations are the cross-pollination potential with other *C. moschata* varieties, and the time required for seed processing. Cross-pollination will likely limit farmers to growing only one variety at a time unless they aim to breed new *C. moschata* varieties, in which case encouraging cross-pollination is beneficial. The time required for seed processing will vary depending on the farmer's objectives, but the process is relatively straightforward.

The reward is substantial with a high volume of seeds produced, ensuring a future crop. The cost to produce winter squash varies by farm and practice, but is generally low due to the plant's vigorous growth, low cost of production, and ease of cultivation compared to other crops that require pruning, trellising, weeding, and pest management. With a little extra attention to detail, a farmer can participate in an age-old practice of stewarding a crop that reflects their farm's unique location, cultural practices, and personal preferences.

Bruce and Huxley survey a harvest of Seminole Pumpkins at Lost Valley Farm.

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SOUTHERN SARE
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