

**How We Grow Certified Organic Pumpkins & Winter Squash**  
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Our Farm Background in Organic Winter Squash , Pumpkins, Gourds

This farm was established as an organic farm in 1971, by Howard, when he settled in Southern Vermont. The original focus was growing diverse produce sold wholesale or at farm market. Currently do direct to store delivery in 4 states focusing on greenhouse grown potted plants March through June and into July. We continue with fall-harvested organic produce, mainly garlic, onions, winter squashes, and raspberries certified organic by NOFA-VT (Northeastern Organic Farmers Association Vermont) since 1978. We will go over what we currently do, but keep in mind each farmer must learn to adapt their approach to their unique set of circumstances and use what works best for that location, that soil, as well as the equipment at hand.

Why Organic? To Protect Our Topsoil. Why Winter Squashes? – We Know How

Organic growing is a way of farming that replenishes topsoil and preserves topsoil and aquifers from contamination. Organic techniques that protect and build topsoil that we use on this farm include: crop rotation, incorporation of organic matter into the soil, mulching, low-impact pest and disease control, field sanitation, cover-cropping. We grow winter squash, pumpkins and gourds, because their harvest season is late summer, and because it is an American food native to our landscape, historically adapted to bridge the food gap between fall and spring.

Varieties We Grow

We look for flavor, yield, vigor, Powdery Mildew Resistance (PMR), marketability. We grow vining and bush varieties. The following squashes are typically part of our mix: Butternut (Waltham, trial bush varieties), Acorn (High Mowing's Reba or Johnny's Jet), Delicata JS (Johnny's type/High Mowing type – *not* Cornell Bush type), Kabocha (Johnny's scarlet Sunshine), Blue Ballet Hubbard, Red Kuri, Buttercup (Burgess), Spagetti, Dumplings ("Sweet" or "Sugar" Dumpling and Carnival), Pie Pumpkins (Baby Pam). We also do Halloween Pumpkins (Howden and PMR Varieties like "Cider Jack") and an everchanging mix of gourds that includes minipumpkins (ribbed and smooth, orange and white).

Why Transplant Instead of Direct Seed?

We choose transplants over direct seeding into the field for several reasons. A vibrant transplant has a two week head start on a seed planted the same date, and have a better chance than seeds do against set back from cold wet springs. In our experience, transplanting gets less blanks in the row, as with proper care most transplants take, whereas seeds can fail to germinate or seedlings can die off in imperfect (hot *or* cold) outdoor weather conditions. Further, while the transplants are rooting, we have ten extra days of field weed control, and we try to cultivate the field one last time between rows with the tractor.

Propagation - Plug Size, Timing, and Temperature

We use a 50 count plug tray on heated benching. Speedling trays and 804 packs work well also. 50s are easier to count *and* the root size is large enough to hold the plants a few extra days if we are late. It takes us about 10 days to produce a ready to go transplant with a a 50 count size, a bit longer in a larger size. Avoid holding the plugs too long, but there is some forgiveness that will

allow you to wait for proper planting conditions. If holding the plugs longer than 10 days, you might give a supplemental feeding with Daniel's Pinnacle or other organic liquids. The benching is set to 70 degrees to ensure prompt and even germination. We use hot water tubing controlled by a thermostat, and done in sectors. We assume 2 seeds a plug, and over 95% germination. We seed extra plugs to hold in reserve, and refill blanks in the field that way.

#### Propagation – Soil Mix

We fill our plug trays with a ready-to-use organic mix, which we are able to buy by the truckload for our potted plant side of the business. This grow mix is composed of certified compost, peat, perlite, and micronutrients. We like to use bagged mix for consistency and portability. Bulk mix can become infested with airborne weed seeds if sits around uncovered. We add Actino Iron to this potting mix, because it promotes healthy root development. Fill the plug trays with this.

#### Propagation – Seeding

Insert 2 seeds up to a ½ inch below plug surface of each of the cells of your plug tray. Mist finished tray so evenly damp. Cover tray with clear dome lid. Covers promote even heat retention and protect against drafts that cause erratic germination. Monitor moisture and temperature of covered trays carefully on sunny days. At night and on cloudy days keep covers on; but during heat of sunny days prop up or temporarily remove. Remove completely once germination is well begun, or baby plants will quickly get too warm and stretch. Let grow on in the greenhouse about a week, then harden off

#### Propagation – Hardening Off

3-5 days before setting into the field, and watching the forecast, set start trays outside to adjust to the outdoors before planting. Choose a location protected from excessive cold, sun, or wind. Be prepared to temporarily bring in (or cover) the trays if the weather turns extreme. Skipping hardening off increases chances of setting back your crop. Don't forget to monitor tray moisture, (especially around edges). Direct sun causes faster evaporation than sun filtered through plastic. If the worst happens, don't give up - they can recover from what looks like certain death! Just add water and wait. The plants that survive up to this point are hardy survivors at our farm.

#### Make Raised Beds

Our soil is typical upland soil, described as sandy loam with some rocks thrown in to keep us honest. Our squash beds are typically over 200 feet long and spaced 6 to 7 feet apart center on center. Each bed has one row of plants down the center with 24" spacing. So we plan on 100 feet per 50 count tray and assign the acreage accordingly. We make raised beds, because raised beds improve drainage and reduce damage from cold rainy weather and raised beds hold more warmth. A Rain Flo bed-maker makes a 6" high bed.

#### Irrigate

To prevent transplant shock and plant setback monitor field soil moisture for a few weeks. We always water in at planting time (by hand), and sometimes a second time if dry, hot weather. That, and mulching, has been enough, and the rest is up to nature. One can use irrigation tape laid in the bed as insurance against dry spells, but it is not necessary for us. Adequate and consistent water does promote growth and health while lengthy dryness can set back harvest dates and make the fruit smaller and yield lower. When we water in we usually fortify the drink with something like Daniel's plant food or fish emulsion.

#### Mulch

We recommend mulch! Mulch keeps weeds out, keeps moisture in, moderates soil temperature, protects topsoil (from wind/rain). We use black plastic mulch. Some years we run out of mulch before the end of a row but set the plants out anyways. The resulting yield difference always

reminds us why we use the mulch. We use 4 foot wide mulch and lay it with a mulch layer that makes raised beds with more than a 3 foot surface width.

### Spacing

Holes are punched into the plastic mulch every foot down the center of the row, using a tractor and a water wheel. That gives us flexibility. Most plants will be set in every 24" down the row, but larger vining pumpkins are spaced every 36". We might make the between row spacing 8 foot on center for that area of the field. Large vined varieties get the extra room to allow easier tractor cultivation between the rows. First week of June we set out over 2,000 plugs of squash and pumpkins by hand this year. The good thing is, we know low tech can work!

### Basic Techniques to Reduce Insects, Diseases, Molds

Visually inspect every tray for insect infestation before bringing to the field, because you don't want to carry the squash bugs that found your trays while they were hardening off into your field. As soon as possible after planting and watering, place hoops over the beds and cover them with Remay or Agribon (ideally the same day – days do matter to). The Squash Bug is insect enemy number 1. The Cucumber Beetle is insect enemy number 1 ½. Remember mechanical blockage doesn't work if not sealed, so check edges when regularly walking the field to monitor for pests and disease. If well done, very few insects will get under. Row covers protect against late frosts as well as pest infestation. Keep row covers on until plants are established. Remove them when plants are too big to stay underneath. We left covers about a month until July 4th. Many fruit had already set in spite of cold and wet, and vining was beginning. After plants are exposed, and as needed based on monitoring, we spray with a combination of Entrust, pyganic, and M-Pede. (This season we needed 4 applications.) Field rotation also helps reduce bug population (and molds and disease). Rotate out of squashes for at *least 2 years* before replanting them. We might follow a season of squash with one of onions or garlic followed by one of cover crops. Finally since we cannot eliminate bugs, we regularly scout the planted rows for signs of hot spots and while we're scouting, we look for signs of molds like Powdery Mildew. For mildew we alternate sprays of Oxidate with Copper sprays (Nu-Cop). We use an air-blast type sprayer (Solo). Good coverage is essential.

### Basic Techniques to Reduce Weeds

Regular and prompt cover cropping reduces weed seeds in the soil over years. They can't get established. When weeds sprout after making the raised beds, we cultivate between the beds with a tractor. We make sure the area is clean prior to planting out. After row covers are on, it is impossible to tractor cultivate, so we cultivate with our 30 year old rototiller (still going strong!) between the beds as weeds sprout again, careful not to catch the fabric. Once the row covers are removed, vines spread out quickly, foliage meets between rows, blocking out weed growth.

### Cover Crops and Soil Sanitation

Complete your harvesting in time to allow establishment of a good cover crop before winter. We clean up our fields fast, removing all plastic mulch, and most remaining non-marketable fruit. We disc the field well, burying all debris. Then as soon as possible we plant cover crops, first a mix of oats and field peas and we also use winter rye as we get closer to late fall. Cover crops capture the available nutrients (especially nitrogen) and hold it for the following year's crops. Why let your fertilizer float away? Building organic matter and protecting the soil from erosion and the beating of the rain is a primary job for a passionate farmer, so cover crops, compost, year-old cow manure, and organic amendments are routinely added to our fields to improve fertility, tilth, and PH.

### Harvest!

We start micro harvesting mid August any varieties or spot locations that are ripe and ready. Spot harvest ripened fruit weekly enough to fill orders. Only pick fully ripe fruit!. Sell quality! Let other growers sell on price. In September we finish full-scale harvest. Squashes and pumpkins are picked and stored and sorted. Pick carefully (use clippers to cut fruit off stems/don't yank off) and don't bruise or nick the fruit (don't throw into the pickup). We wash the fruits with a ½ % Oxidate treatment to prevent mold, let them dry, and box them. Store in a cool, dry location. Congratulations for a job well done!