

Do Any Sweet Potatoes Grow Well in NY?

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Sweet potatoes are a tempting crop. People are fond of sweet potatoes and locally grown ones can command strong prices at farmers markets. They have few diseases and tolerate foliar insect feeding well. While they do need lots of potassium and water, they yield best on very little nitrogen. Plus, being from an entirely different crop family, they do a good job breaking up disease cycles in a rotation. Sweet potatoes are, on the whole, an attractively low-maintenance, low-agronomic input crop.

Sweet potatoes are a difficult crop to grow in Western NY. They are a very long day crop. Most varieties take 100-120 days to mature and it isn't always clear if the days to harvest estimates are for southern or northern climates. It isn't the absolute length of growing season that causes such problems – we have 120 days here. It is that the crop is very tender and requires 100-120 days of mild weather, meaning we're sitting on the edge of crop's consistently feasible, economic-risk acceptable production zone.



Early season challenges

Planting must wait until soil conditions are consistently over 60 degrees, though there is better success if you can wait until the soil stays above 65 degrees. The soil must be warm so the unrooted vine cuttings that sweet potatoes are grown from (called slips) can develop roots. Slips slowly dry out and consume their energy reserves from the moment they are cut until they grow sufficient roots to take up nutrients and water from the soil. This process takes several to ten days after transplanting to complete. Growers need fresh slips that move quickly through shipping and farmers must be able to plant them very shortly after arrival in order to maximize their yield potential.

Most transplant producers will not start to mail sweet potatoes slips to NY until the last few days of May, when ambient temperatures minimize the risk of chill damage during shipping. Several times growers haven't received their slips until mid-June. Growers have no control over when their plants will arrive. This unpredictability can cause substantial problems for NY growers. If slips arrive too early, growers must try to keep them in good condition until the ground warms. If they arrive too late, growers may not have enough time and heat units to raise a marketable crop.

Realistically, many WNY sweet potato growers will plant around June 5-10 and could need to harvest around September 15-20. That's only 100-105 days. Even using black plastic mulch, we barely have enough time for most commercial varieties to develop to the USDA grade #1 marketable size.

Late Season Challenges

Sweet potato tubers are extremely cold sensitive. Roots can be damaged if they are exposed to temperatures below 55 degrees and can be rendered unmarketable if they experience temperatures in the mid-40s. Chilled tubers can look fine externally but develop an internal ring of black discoloration.

Somewhat insidiously, the foliage can tolerate colder conditions than the roots, deceiving growers into thinking that an unexpectedly cool night didn't damage their crop. This means that sweet potato harvest must occur well before frost, at least 2-3 weeks shorter than our regular growing season.

If the season is long enough to produce the standard sized tubers you see in the grocery store, there are additional post-harvest losses to contend with. Sweet potatoes are very susceptible to post-harvest rots. Rots can start from a single tuber and progress through the storage period, potentially destroying a large percentage of the harvest. Trust me, these decays are plenty nasty – they spread easily, smell, and develop extra special textures.

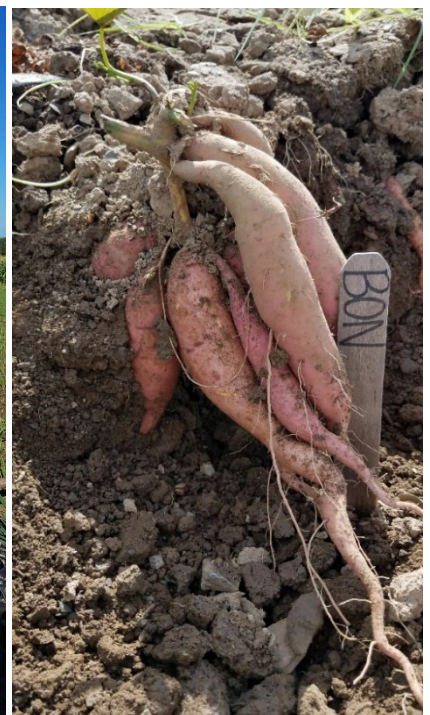
To avoid rots, sweet potatoes must be handled very carefully during harvest to not break the skin. They then need curing under high temperature and humidity with good airflow. Don't skimp on the airflow, you'll do better curing in many shallowly filled, airy crates than you will in bins piled a foot deep. After curing, the sweet potatoes need to go through a 4-6 week storage period before marketing. This delay is necessary to promote the tubers' conversion of the starches into sugars. Sell too soon and you'll have disappointing product.

Anything good to report?

Luckily, there are new varieties under development that could resolve these major barriers and make sweet potatoes a viable crop here. With the support of a NESARE Partnership Grant, the Cornell Vegetable Program worked with Matt Agle of Henry W. Agle and Sons to conduct a sweet potato variety trial in Eden Valley, Erie County this summer. This area has gravelly soils that warm more quickly than other production areas and enjoys long autumns protected from cooler temperatures by nearby Lake Erie. In other words, this site offered maximum season length for sweet potatoes. We planted June 8th and harvested on September 16th and October 5th.

Building off work conducted by Chuck Bornt of CCE's ENY Commercial Horticulture Program and with the guidance of Don Labonte, Louisiana State University's (LSU) sweet potato breeder, **we tested six sweet potato varieties for regional production suitability.** Note the difference between day to harvest estimates in the south (LSU) and how much longer we need locally. In addition to examining yield potential, Matt Agle tested production techniques related to weed control, irrigation scheduling, vole/mole deterrence, harvest techniques, and curing methods.

Left: Matt Agle shows a set of 'Bellevue' sweet potatoes during harvest, 100 days after planting. Right: A partially dug set of 'Bonita' showing tuber size and shape and illustrating



the variety's strong dual-set habit (one at the crown, one the bottom of the slip).

THE VARIETIES

Bellevue

A market standard designed for the USDA #1 and jumbo production. Variety is commonly grown in Northern Europe and the Northeast. It is intermediate resistant to Rhizopus fungal rot and very susceptible to bacterial rot. Wide range of expected days to harvests from 90-120 days, local estimates indicate 100-110 days. Orange (copper hue) skin & orange flesh.

LSU developmental variety #18-100

An unreleased variety in the final stages of development, #18-100 shows signs of being an early maturing variety with good flavor. Days to harvest unknown, was estimated at 90-100 days for our region, based on growth tests in the south. Rosy-orange skin & orange flesh.

Radiance

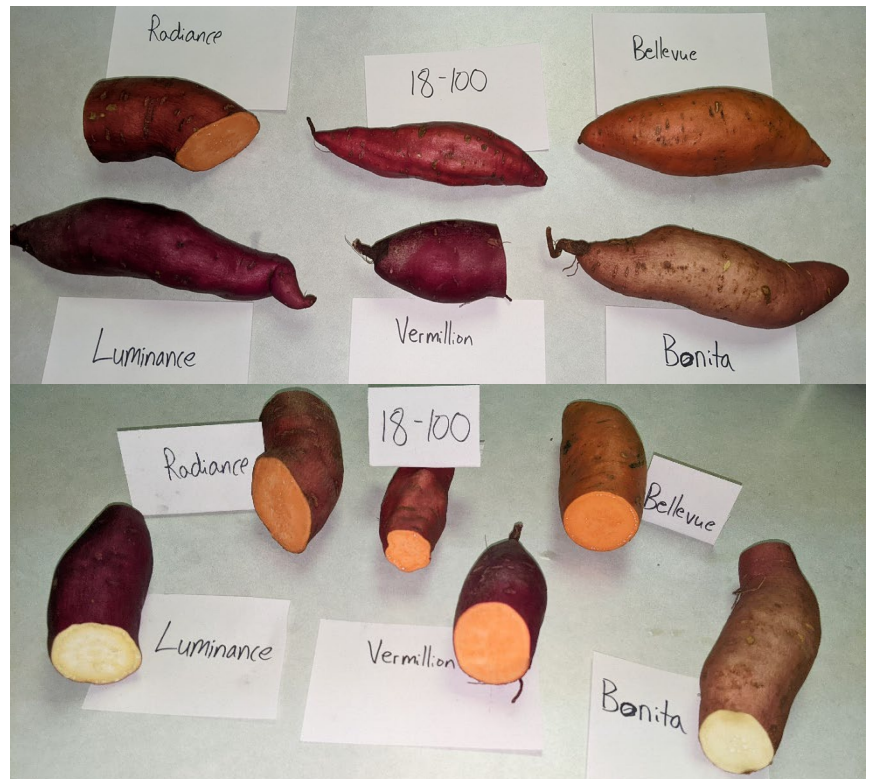
This is one of two varieties developed by Vineland on the Niagara peninsula of Ontario, Canada in collaboration with LSU. Vineland promotes the variety as early yielding and therefore capable of greater yield potential than standard varieties that are not regionally adapted. Commercially available in Canada and under license in the US. Intermediate rhizopus resistance and susceptible to bacterial rot. LSU and estimates 105-110 days, other (more local) sources indicate 118-122 days. Orange-on-orange.

Bonita

A market standard option for producing sizable, on-grade "white" sweet potatoes that consistently matures faster than similar varieties. Rhizopus susceptible. Rated at 110-115 days in both southern and local estimations. Tan skin & white flesh. Luminance Another regionally adapted variety produced by Vineland in Canada and LSU. Just becoming available in the US. 120 days to harvest. Purple skin & yellow-white flesh.

Vermilion

A niche market variety produced by LSU that tends to produce a little longer and skinner rather than fat blocky sweet potato. Intermediate Rhizopus resistance, bacterial rot susceptible. Estimated at 120 days by LSU and similar approximations locally. Red-purple skin & orange flesh.



(At Right: The six trialed varieties post-storage, washed, and ready to cook.)

THE FINDINGS

While we were unsuccessful in identifying a variety that fully met commercial production needs for gravelly silt loam soils in WNY, we did gain many valuable production insights. **Importantly, we harvested the two shorter-day varieties (Bellevue & 18-100) after 100 days and harvested the remaining varieties at 119 days.**

- **Bellevue** and **18-100** had some mature plants at harvest but on the whole needed more than 100 days given our local 2023 conditions. 18-100 needed more time than Bellevue.
- **Bellevue** and **18-100** still produced the greatest amount of marketable yield and outperformed the other varieties, despite being harvested too soon.
- **Bellevue** and **Bonita** produced the greatest proportion of on-type, non-stringy tubers.
- **Bonita** was a rotter. Had Bonita not rotted, it would have yielded similarly to Bellevue.
- **Bonita** tended to make two distinct sets of marketable roots; one at the crown and one at the bottom of the slip. This required more careful and deeper digging to avoid damaging the spatially distributed sets. A third, undersized, third set was common further down the root.
- **Radiance** and **Vermilion** produced a large proportion of stringy tubers, despite growing in a low-N environment and receiving adequate water during the first month of production.
- **Vermilion** was also prone to storage rot.
- **Luminance** scuffed easily at harvest and subsequently experienced a high level of storage rot.
- **Good airflow** during curing is as important as maintaining temperature and humidity.
- Maintaining a **one-pass clean cultivated border** around the entire trial and keeping surrounding field edges mown successfully deterred rodents and kept weeds down.



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