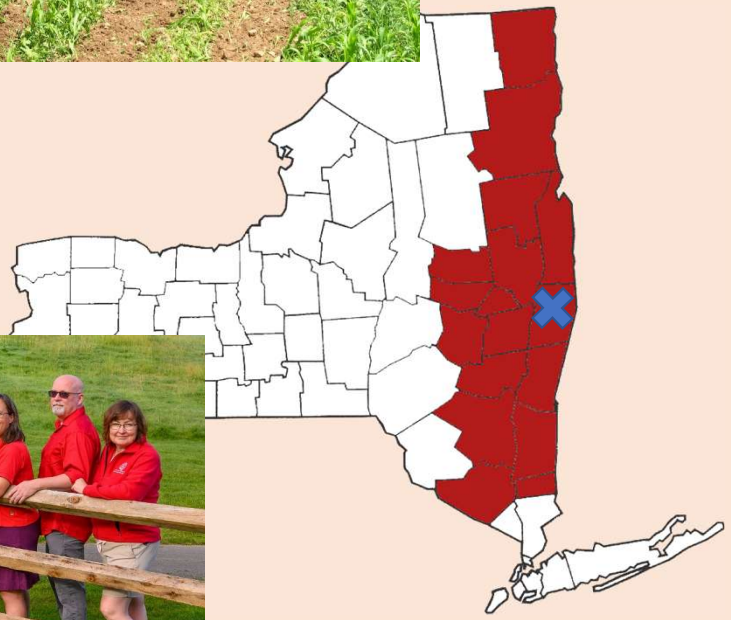
Sweet Potato Variety Evaluations, Slip Production and Slip Evaluation Trials from 2019

Cornell Cooperative Extension | Eastern NY Commercial Horticulture Program

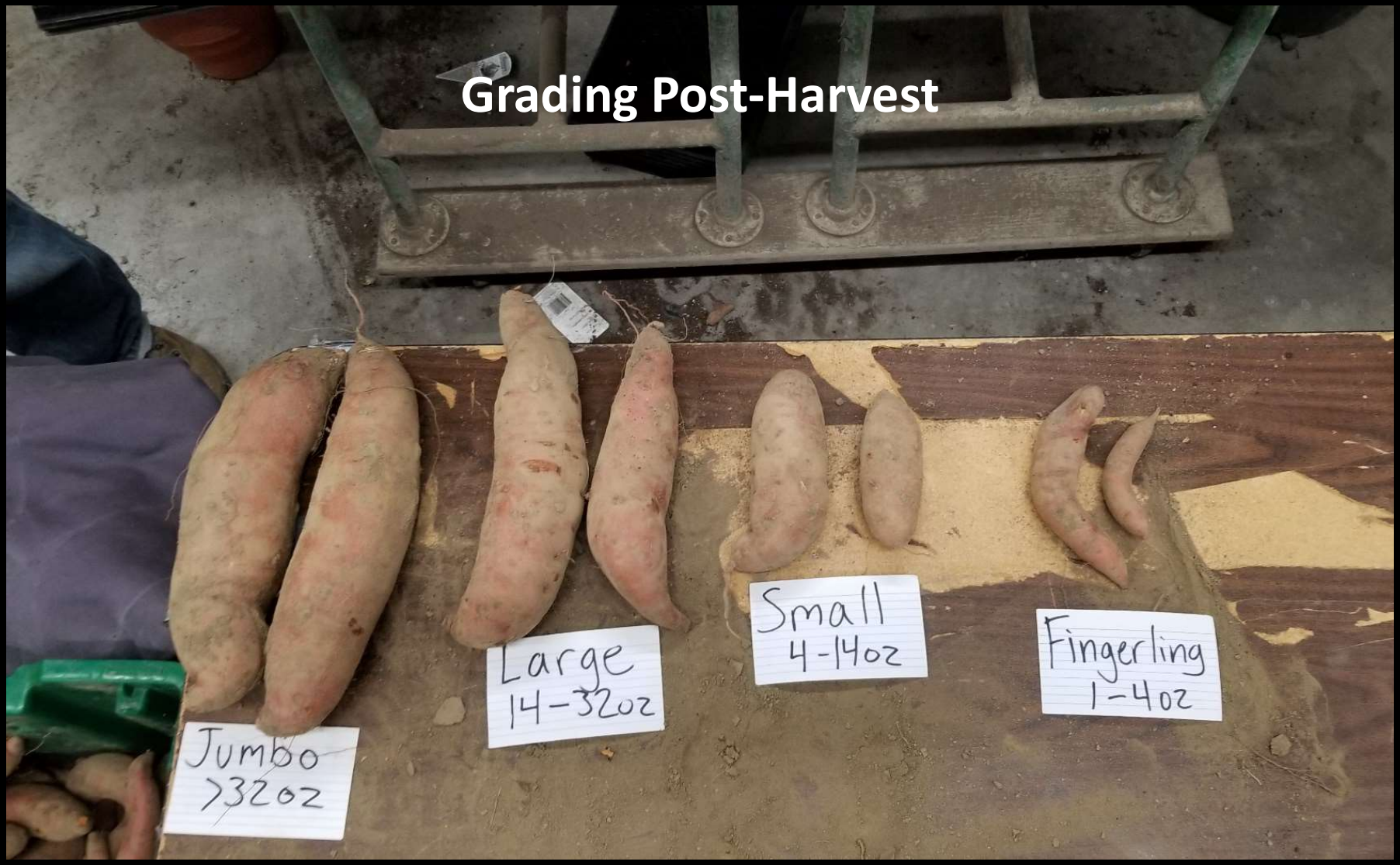
The **Eastern New York Commercial Horticulture Program** is a Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in 17 counties.



Trial Information

- Variety trial
  - Most varieties were from Jones Family Farms and LSU
  - Two locations – Orange County, NY and Columbia County, NY
  - Most varieties have one row and two rows planting configurations
- Slip production trial
  - We grew slips from roots in a greenhouse to determine cost and quality of production in NY and planted them out with the variety trial
- Quality of slip planting
  - Slips from one variety were graded into three sizes and planted out

Grading Post-Harvest




Covington
1x
NY- COVINGTON
B-14
1x1
Covington
2x
Covington
NY 2x
B-14
x2
2.0 CUBIC FOOT

Information About Variety Trial

- Planted on 6.5 foot center raised black plastic mulch.
- All slips were planted 12 inches apart in-row, with the 1 row centered in the plastic and the 2 rows being approximately 18 inches apart
- Planted 6/7/19: Bonita, Covington, Orleans, Averre, Bellevue, NC-531, Burgandy
- Planted 6/12/19: NY Covington
- Planted 6/13/19: Murasaki, sized slip trial
- Planted 6/19/19: 14-31, B-14 (Beauregard), 445
- Vines terminated and roots harvested 10/15/19
- 25 foot sections were planted and 10 feet harvested and graded

B-14 (Beauregard)

- Sourced from Louisiana State University
- 2 row was highest yielding in the Columbia County trial with 41,921 lbs marketable yield per acre
  - 1 row was fourth highest yielding in the same trial with 35,510 lbs marketable yield per acre
- Seems to have some storage issues by mid-January, some rotting of roots when we pulled some out of storage
- Standard sweet potato color, reddish skin, orange flesh
- Large rounded roots

NY Covington

- Grown from G1 roots in a greenhouse in Columbia County
- In Columbia County, 2 row was second highest yielding with 40,401 lbs marketable yield per acre
  - 1 row was third highest yielding with 39,182 lbs marketable yield per acre
- In Orange County, 2 row had highest marketable yield per acre at 43,488 lbs
  - 1 row produced 28,169 lbs per acre
- In this preliminary trial, these slips doubled the lbs per acre from shipped slips of Covington (will get into details later in presentation)
- Produced long, slender and clustered roots that were easy to harvest

Averre

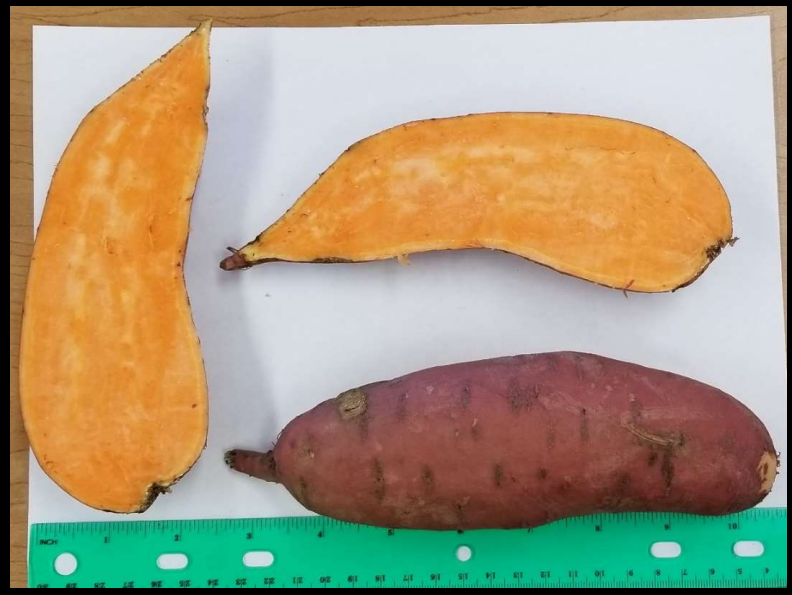
- Sourced from Jones Family Farms
- Standard sweet potato color, reddish skin, orange flesh
- 2 row yielded 5th in marketable yield, with 27,332 lbs per acre. 1 row yielded 19,526 lbs per acre
- Nice shaped roots, few misshapes. Most culls were mechanical damage
- In Orange County, 2 row was 4th in marketable yield, 31,882 lbs per acre

Bonita

- Sourced from Jones Family Farms
- White skin and flesh
- Not as sweet as a standard sweet potato
- Produces long narrow roots, with some being intestine like
- 2 row production was sixth highest marketable yield with 23,370 lbs per acre
- 1 row produced 14,547 lbs per acre

Covington

- Slips sourced from Jones Family Farms
- Standard sweet potato color, reddish skin and orange flesh
- One row Covington outyielded 2 row although not by much, they were 7th and 9th in the marketable yield with 19,794 and 19,011 lbs per acre
- Produced more round and shorter roots



445

- Sourced from Louisiana State University
- Produced few very large roots
- Limited slips received so only a two row trial was planted
- Standard sweet potato coloring, reddish skin and orange flesh
- Skin has a slight netting to it
- Produced the most jumbo roots of all varieties despite being 10th in marketable yield with 17,592 lbs per acre
- **87% of marketable roots were either large (14-32oz) or jumbo (>32oz) with 49% large and 38% jumbo**

Bellevue

- Sourced from Jones Family Farms
- Orange skin, orange flesh
- Lots of misshapes, mostly C-shaped curves and forks
- May be due to alternate root stock, appeared different than Bellevue produced by the farmer from a different shipment of slips
- 2 row yielded 15,125 lbs per acre while 1 row yielded 6,323 lbs per acre

14-31

- Sourced from Louisiana State University
- Limited amount of slips received so only a 1 row trial was planted
- Purple skin and purple flesh
- Skin heavily marked, appears to be a variety trait but looks more like scab and may affect marketability
- Produced small, slender roots
- Produced 13,735 lbs per acre

Burgundy

- Sourced from Jones Family Farms
- Dark red skin, dark orange flesh
- One of the lowest yielding in both 1 and 2 row production in Columbia County, 5,511 and 9,849 lbs per acre respectively
- Produced small, narrow roots
- Culls were primarily misshapes and mechanical damage
- In Orange County, 2 row was 3rd in marketable yield with 32,274 lbs per acre

Murasaki

- Sourced from Jones Family Farms
- Purple skin with some netting and bright white flesh
- Produced a lot of long, slender, unmarketable roots
- Culls were entirely misshapes
- One of the lowest marketable yielding varieties, 1 row yielding 8,723 lbs per acre and 2 row yielding 5,586 lbs per acre

Orleans

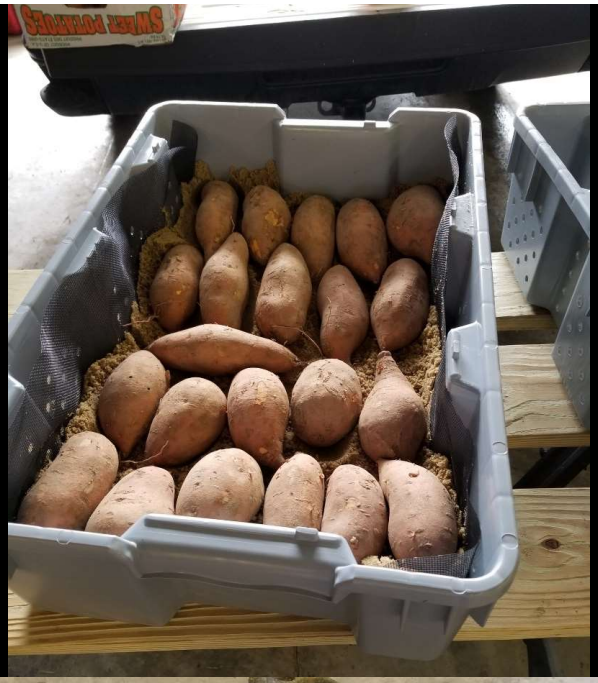
- Sourced from Jones Family Farms
- Reddish skin, light orange flesh
- Some serious misshapes, c's and knobs
- Very short, round and thick roots
- 2 row marketable yield was 11,972 lbs per acre and 1 row was 10,988 lbs per acre
- Produced shorter, rounder roots
- 2 row in Orange County was 2nd in marketable yield with 38,865 lbs per acre

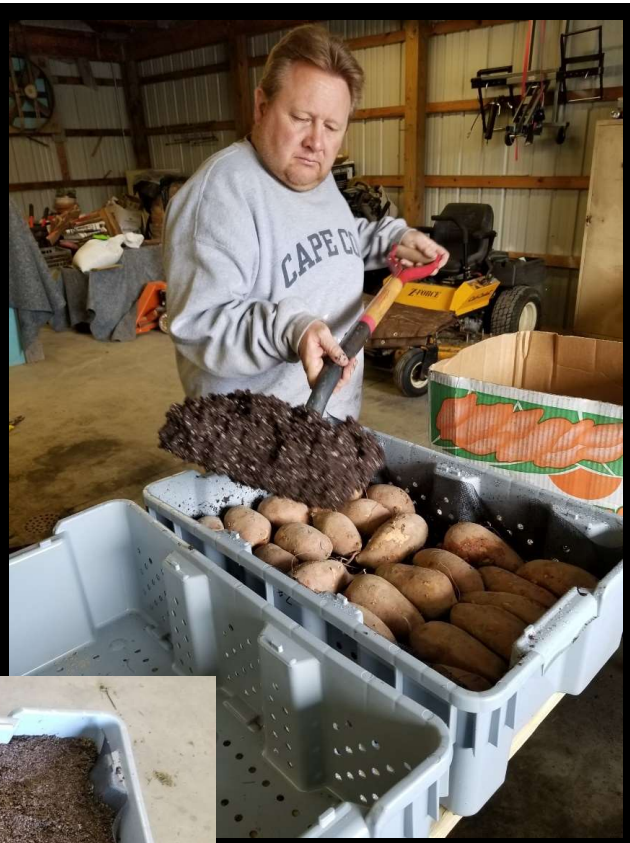
NC-531

- Sourced from Jones Family Farms
- Had some skin issues, almost scaly or like scab
- Standard sweet potato color, reddish skin, orange flesh
- In Columbia County, 2 row produced 10,523 lbs marketable yield but 1 row was lowest yielding with 2,726 lbs per acre
- In Orange County, it was lowest yield with 2 row producing 6,752 lbs marketable yield per acre and 1 row producing 3,671 lbs marketable per acre

Trial 2: NY Slip Production Trial

- Purchased G1 **roots** from Jones Family Farms
- Planted roots in four different soil mediums on May 3rd in harvest totes lined with hardware cloth to keep medium in container
  - Soil mediums were sand, wood shavings, BM mix, 50/50 BM mix and sand
  - 2 inches of medium was placed in the bottom, roots placed on it and then more medium put in until roots were covered
  - 20-28 roots fit in each tote
- Totes were placed in a greenhouse on a heat mat with temperature set to 90 degrees F
- Roots were watered when dry and slips were cut directly before field planting on 6/12/19
- Greenhouse walls were up and so slip production may have been slower due to less available air heat
- Roots were also not “pre-warmed” which might have moved them along a bit


SWEET POTATOES


CAPE


NSF



Slip Growth

- BM mix and 50/50 BM/sand produced the most slips the fastest
- We harvested 80-150 slips out of each tub and planted them out into the field same day as cutting
- They were planted 5 days later than the shipped Covington slips
- Took roughly 40 days from planting roots to harvesting slips

Harvest

- NY grown Covington produced double the marketable yield of the shipped Covington slips
- Both single and double rows were 2nd (40,401) and 3rd (39,182) in total marketable yield – only B-14 (Beauregard) was higher (41,921)
- Roots were more uniform, longer and straighter
- We think since NY slips had shorter internodes, the roots were clustered closer to the surface of the soil

Things to do a little differently?

- Stick to one growing medium – ProMix or a potting soil appears to be the best
- I think woodchips also might work but they dry out quickly?
- Use more media to cover the top of the roots – would like to have a **finished** layer on top of at least 2” (media settles down after being watered)
    - Would help maybe get slightly taller slips?
- Can we get multiple cuttings?
    - Plant first cutting allow to regrow and plant second planting a couple weeks later?

Benefits of Producing Local Slips

- First, we did not lose one slip – 0 replants!
- No lag time in growth – caught right up to cooperator's slips planted almost 2 weeks earlier!
- Plant at your discretion – no need to worry about the weather, labor etc.
- Get the variety you want, when you want it – no more worrying if supplier will actually ship you what you ordered when you want it!
- Yield and possibly root quality?
- Costs?

Economics

Summary	Number slips to plant 1 acre	Total cost Southern Slips (shipping plus slips)	Total cost Producing NY Slips (shipping plus roots)
slips required per acre (15" single row)	5362	663.76	663.44
slips required per acre (15" double row)	10,724	1327.52	1326.88
slips required per acre (12" single row)	6702	829.64	829.24
slips required per acre (12" double row)	13,404	1659.28	1658.48

Trial 3: Slip grading trial

- Murasaki was the variety used
- Slips were planted 6/13/19
- **Small** slips had 2-3 nodes with small diameter and very short. Average length was 3.5 inches.
- **Medium** slips have at least 3-4 nodes and had an average length of 6.7 inches.
- **Large slips** had at least 7 nodes and were at least 11 inches with an average of 12 inches.
- Slips were planted at 12 inch spacing in 1 row in 25 foot sections but were not replanted after planting. A 10 foot section was harvested

% Plants per Category/handful	
Large	68%
Medium	13%
Small	19%

A total of 82 plants for this purposed was used (one of my handfuls)

Treatment	Average # plants at harvest*	Percent survival
Large	25 plants	100%
Medium	20 plants	80%
Small	10 Plants	40%

*Out of a total of 25 plants

# Plants per Category/1,000	
Large	680
Medium	130
Small	190
Total	860

Example of what would be in a typical box of 1,000 plants.

Need to have more replications of the counts – but just to give you some idea……

Plot	Average Marketable Weight per acre (lbs)
Large	6,340
Medium	5,825
Small	1,647

Conclusions

- Most likely not worth planting the smallest slips since they are likely to die and need replanting
- Medium and small slips generally produced less marketable roots and smaller average sized roots.
- This trial will be repeated with a different variety in the future.

Thank you to our cooperators, Samascott Orchards and Morgiewicz Produce, Jones Family Farm and Don Labonte from Louisiana State University

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