

Sweet Potato Yield and Consumer Preference for Thirteen Varieties Grown Organically in Virginia



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Abstract

Growers are interested in knowing the yield and marketability of sweet potato as both variables determine profitability of the sweet potato enterprise. A study was carried out at Virginia State University's Organic Research and Demonstration site located at Randolph Farm, Petersburg, Virginia, to determine the yield and consumer preferences of 13 varieties of sweet potato. These were Beauregard, Bellevue, Bonita, Burgundy, Covington, Hayman, Murasaki, O'Henry, Orleans, Porto Rico, Purple, Stokes, and Vardaman. The experiment was laid out as a complete randomized design with three replications established on 20-ft rows with 24 by 48 inches intra- and inter- row spacing, respectively. The slips were planted on June 18, 2015 while digging of roots was done at 105 and at 120 days after transplanting (DAP). During the growing period, the beds were watered twice each week for two hours per irrigation event using a drip irrigation system, and no fertilizers or pesticides were used. The total yield ranged from 6,897 lbs/ac for Hayman to 17,860 lbs/ac for Bellevue at 105 DAP, and 6,824 lbs/ac for Vardaman to 17,860 lbs/ac for Bellevue at 120 DAP. For the consumer preference, the most desirable characteristics were reported for Burgundy (8.4) while the least desirable characteristics were reported for the purple varieties (4.6 to 4.7) based on the data that was reported. We conclude that this information will be useful to current and potential sweet potato growers for planning their production enterprises.

Introduction

Sweet potato, *Ipomoea batatas*, is a tender, warm-weather vegetable that requires a long frost-free growing season to mature large, useful roots. It is a native to Central and South America and is one of the most important food crops in tropical and subtropical countries. The roots and tender shoots are eaten as a vital source of nutrients. Commercial production in the United States is mainly in the southern states, particularly North Carolina and Louisiana. Sweet potatoes, which are related to the morning glory, grow on trailing vines that quickly cover the soil, rooting at the nodes along the way. Bush varieties with shorter vines are available for situations where space may be limited. Though orange-fleshed varieties are most common today, white or very light yellow-fleshed types were once considered the finest types for sophisticated people. Some white-fleshed types are still available, though they may be hard to find outside the Deep South. For their ornamental value, sweet potatoes are often grown as ground cover or in hanging baskets, in planters and even in bottles of water in the kitchen. Cut-leaf types exist that are particularly attractive. The sweet potato is rich in vitamin A. It is not related to the yam, though in the marketplace the two names are often used interchangeably. The true yam, *Dioscorea* sp., is an entirely separate species that grows only in the tropics.

Methodology

- The study was carried out at Virginia State University's Organic Research and Demonstration site located at Randolph Farm, Petersburg, Virginia.
- The study objective was to determine the yield and consumer preferences of 13 varieties of sweet potato.
- The experiment was laid out as a complete randomized design with three replications established on 20-ft rows with 24 by 48 inches intra- and inter- row spacing, respectively.
- The slips were planted on June 18, 2015 while digging of roots was done at 105 and at 120 days after transplanting (DAP). During the growing period, the beds were watered twice each week for two hours per irrigation event using a drip irrigation system, and no fertilizers or pesticides were used.

Results

The total yield ranged from 6,897 lbs/ac for Hayman to 17,860 lbs/ac for Bellevue at 105 DAP, and 6,824 lbs/ac for Vardaman to 17,860 lbs/ac for Bellevue at 120 DAP. For the consumer preference, the most desirable characteristics were reported for Burgundy (8.4) while the least desirable characteristics were reported for the purple varieties (4.6 to 4.7) based on the data that was reported. We conclude that this information will be useful to current and potential sweet potato growers for planning their production enterprises.



TABLE 1: CONSUMER PREFERENCE FOR THE 13 VARIETIES OF SWEET POTATOES

Variety	Color		Texture		Shape		Flavor	Tender-ness	Ease of prepa-ration	Aroma		Juiciness	Taste	OVER ALL
	Raw	Cooked	Raw	Cooked	Raw	Cooked				Raw	Cooked			
BEAUREGARD	9	9	5	8	9	9	9	8	5	5	5	8	7.4	
BELLEVUE	9	9	5	8	9	9	9	5	5	5	5	1	6.7	
BONITA	3	8	7	8	7	4	4	8	5	9	4	7	6.2	
BURGUNDY	8	9	8	9	8	9	9	9	5	9	9	9	8.4	
COVINGTON	7	7	7	8	7	4	7	8	7	3	7	6	6.5	
HAYMAN	-	-	-	-	-	-	-	-	-	-	-	-	-	
MURASAKI	-	-	-	-	-	-	-	-	-	-	-	-	-	
O'HENRY	-	-	-	-	-	-	-	-	-	-	-	-	-	
ORLEAN	8	8	5	9	4	8	9	7	2	9	9	2	6.7	
PORTO RICO	8	4	7	7	8	8	7	8	5	5	3	2	6.0	
PURPLE	4	2	5	8	3	8	7	5	5	5	2	2	4.7	
STOKES	4	2	5	8	3	8	7	4	5	5	2	2	4.6	
VARDAMAN	-	-	-	-	-	-	-	-	-	-	-	-	-	

<p>Beauregard Has a light rose or copper skin, dark orange flesh, and is uniformly shaped. Has good yield and stores well. It has been widely accepted by farmers and has relatively high yields with very little cracking. It has red-orange skin and orange flesh with good shape. Matures in 105-110 days.</p>	<p>Bellevue Has an attractive copper skin. It has an outstanding shape in lots of different soil types. It also has an attractive orange flesh, which stays bright orange after baking, with little or no discoloration. It has a good flavor once it is stored and stores well. Matures in 90-100 days.</p>	<p>Bonita Has a light tan skin with a pink cast at harvest. It fades to tan in storage. The flesh color is white with a tinge of yellow. It has uniform shapes with good yields of #1's. Normally matures in 90-100 days.</p>	<p>Burgundy Has a deep orange flesh and deep red skin. The skin is attractive but yet very different from our other varieties. Burgundy is very similar to Evangeline, relying more on sucrose in contrast to maltose to give it the extra-special taste. Matures in 90-100 days.</p>	<p>Covington Has rose-colored skin and moist orange flesh. Covington is very uniform in shape with exceptional results. A high-quality eating variety, it has rose-colored skin that is slightly darker than Beauregard with a moist, orange flesh. Normally matures in 110-120 days.</p>	<p>Hayman Has a white-skinned and white flesh. The sweet potato was developed on the Eastern Shore of Maryland. It is generally smaller than other varieties and has a denser, sweeter flesh, with a tan outer skin. Matures in 110-120 days.</p>	<p>Murasaki Is a 'Japanese type' sweet potato that has a reddish-purple skin and a dry white flesh having a 'nutty' flavor. The roots are elliptical, and are characterized by their white flesh, high dry matter, and purple skin. Matures in 100-120 days.</p>	<p>O'Henry Has a different look from the other darker-skin varieties. It is a white-skinned, cream-fleshed sweet potato that cooks up drier than other sweet potato varieties. The leaves are green and heart shaped while its large tubers grow in a compact cluster underneath the plant helping to make harvesting easier. Matures in 90-100 days.</p>	<p>Orleans Is an orange flesh, light rose skinned sweet potato. It is a twin to 'Beauregard' in many ways. Skin and flesh color are similar to 'Beauregard' but it is more uniform in shape hence an improvement in "rank". Matures in 105-110 days.</p>	<p>Porto Rico Is an old-fashioned sweet potato that is perhaps the sweetest of all varieties. A vine-type variety, it is known for its great taste, making it an excellent baking and cooking potato. Roots are a light copper color with moist, reddish-orange flesh. Matures in 115-120 days.</p>	<p>Purple True to its name, the Purple Sweet potato has dark purple flesh and skin. It is one of the hardest roots and gives a generous harvest at season's end. Roots are starchy, dry, slightly sweet, and store well; good in savory dishes and mixed mashes. Matures in 90-100 days.</p>	<p>Stokes Stokes Purple® are a special sweet potato variety with purple skin and bold purple flesh that intensifies when cooked. Aside from its unique bold color, the Stokes Purple® Sweet Potato differs from other sweet potatoes in its flavor and texture, offering a favorably dryer, denser, and richer taste with well-balanced sweetness. Matures in 90-100 days.</p>	<p>Vardaman Is a bush variety with deep orange flesh. Perfect for the limited-space garden, where its beautiful deep red and green foliage makes it equally attractive as an ornamental. It is considered the best short-vined variety for eating. Matures in 110-120 days.</p>
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