

Evaluation of Ten Sweet Potato Cultivars in Southwest Michigan

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Objective

To evaluate the performance of 10 readily available sweet potato cultivars under southwest Michigan growing conditions.

Summary

Significant differences were found between the 10 cultivars in total yield, and yield of number one, jumbo, and cull roots. Total yield ranged from 6,628 ('Bunch Porto Rican') to 18,425 ('Carolina Ruby') pounds per acre. Number one yield ranged from 1,595 ('Bunch Porto Rican') to 6,848 ('Centennial') pounds per acre. 'Georgia Jet' had the highest number of culls (10,313 pounds per acre) due primarily to cracking. 'Carolina Ruby,' 'Centennial,' 'Covington,' 'Red Japanese,' and 'Beauregard' can be recommended for commercial production in Michigan.

Methods

Fertilizer

Prior to planting, 0-0-60 and Solubor were broadcast and incorporated at 300 and 20 pounds per acre, respectively. Pre-plant nitrogen was supplied through a hairy vetch cover crop planted August 2007. After planting, the trial was fertilized with 4-0-8-2(Ca) through the drip system. Fertigation began on June 16 and ended on September 2, resulting in 91 pounds per acre nitrogen and 182 pounds per acre potassium.

Weed Control

Weeds in the row were controlled using black plastic mulch. Between row weeds were controlled by hand hoeing.

Planting

The trial was planted June 3 on raised, plastic-mulched beds with drip irrigation. Beds were 6 inches high and on 5.5-foot centers. Plants were set in the row 12 inches between plants with 30 plants per plot. The trial was planted and analyzed as a completely randomized design with three replications. All entries were obtained from George's Plant Farm (www.tatorman.com) in Martin, Tennessee.

Plant Care

The trial was drip irrigated as needed. No pesticides were applied.

Harvest and Data Collection

The trial was harvested September 12 and graded into three categories: jumbo (roots more than 3 inches in diameter and/or more than 9 inches long), number one (roots 3 to 9 inches long and

1.75 to 3.5 inches in diameter), and cull (primarily cracked and small roots).

Results

Temperatures during the 2008 growing season were lower than recent years. After the trial was planted there were three days in June when temperatures stayed below 70°F. Therefore, little vegetative growth occurred during June. It was not until July 15 that temperatures went above 90°F. There were only three days above 90°F during the entire season – typically there would be 12 days above 90°F. Harvest could have been delayed for two weeks and yields may have been somewhat greater but the decision to harvest September 12 was caused by predicted cool temperatures, especially at night. So the 2008 season provided a real test as to which cultivars could produce in a marginal climate such as southern Michigan.

Despite the cool season, total yields of the 10 cultivars ranged from 6,628 to 18,425 pounds per acre (Table 1). ‘Carolina Ruby’ and ‘Georgia Jet’ were comparable in total yield at 18,425 and 17,298, pounds per acre respectively. ‘Carolina Ruby’ had 38% of its yield as jumbo roots (7,068 pounds), and 60% (10,313 pounds) of ‘Georgia Jet’ roots were graded as culls, primarily due to cracking. ‘Georgia Jet’ was the only entry that had a significant amount of cracking. Yield of number one roots ranged from 1,595 pounds per acre for ‘Bunch Porto Rican’ to 6,848 pounds per acre for ‘Centennial.’ ‘Carolina Ruby,’ ‘Covington,’ ‘Red Japanese,’ and ‘Beauregard’ were similar to ‘Centennial’ in yield of number one roots.

The 5.5-foot row spacing was dictated by the width of our bed shaper. A 30-inch between row spacing is more typical for bare ground commercial production. The black plastic helped with weed control and certainly was helpful in early season growth when the temperatures were cool. Closer spaced rows with or without plastic would probably give higher yields.

The ten varieties had a wide range of characteristics. Some have a bush-type growth habit (‘Vardeman’ and ‘Bunch Porto Rican’), while others have a vine-type habit. ‘Red Japanese’ has dry flesh while others have moist flesh. ‘Carolina Ruby,’ ‘Georgia Jet,’ ‘Covington,’ and ‘Red Japanese’ have a red-colored skin. ‘Centennial,’ ‘Beauregard,’ and ‘Vardeman,’ have orange skin, and ‘Nancy Hall’ and ‘White Triumph’ have white skin and white flesh. ‘Red Japanese’ also has white flesh. Reported maturity dates for the entries varied from 80 to 110 days.

‘Centennial’ has been the standard for sweet potato production in Michigan and was the variety used by growers when Michigan had a commercial industry several years ago. ‘Centennial’ continues to be a strong performer under Michigan conditions. However, other varieties are also good performers and should be evaluated by growers wanting to supply the market with a locally grown product. Of the 10 cultivars evaluated, five can be recommended for production: ‘Carolina Ruby,’ ‘Centennial,’ ‘Covington,’ ‘Red Japanese,’ and ‘Beauregard.’

Table 1. Yield of 10 sweet potato cultivars in pounds per acre at the Southwest Michigan Research and Extension Center, Benton Harbor, Michigan in 2008. Plant density was 7,920 plants per acre.

Variety	Total Yield	Yield No. 1 ¹	Yield Jumbo ²	Yield Cull ³
Carolina Ruby	18,425	5,583	7,068	5,775
Georgia Jet	17,298	4,345	2,640	10,313
Centennial	12,623	6,848	1,416	4,359
Covington	12,361	5,596	3,121	3,644
Red Japanese	11,949	5,280	1,953	4,716
Beauregard	11,096	5,019	2,324	3,754
Nancy Hall	9,983	3,383	0	6,600
White Triumph	9,254	4,359	0	4,895
Vardeman	9,048	3,850	0	5,198
Bunch Porto Rican	6,628	1,595	0	5,033
Isd=0.05	3,271	2,361	2,568	2,096

¹Roots 3 to 9 inches in length and 1.75 to 3.5 inches in diameter.

²Roots more than than 9 inches in length and more than 3.5-inches in diameter.

³Cracked and small roots.