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Sweet Potato Cultivar Trial

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Abstract
A trial of eight sweet potato cultivars was conducted on irrigated sandy soil at the Muscatine Island Research and Demonstration Farm, Fruitland, IA, to determine potential yield and root quality.

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Introduction

A trial of eight sweet potato cultivars was conducted on irrigated sandy soil at the Muscatine Island Research and Demonstration Farm, Fruitland, IA, to determine potential yield and root quality.

Materials and Methods

Bare root plants of eight cultivars were acquired from Evans Plant Company, GA, and George's Plant Farm, TN, and transplanted to the field on June 4. Soil type was coarse loamy sand and the trial was irrigated with overhead sprinklers as needed. Plots consisted of 10 plants spaced 12 in. apart in rows spaced 42 in. apart in a plant density equal to 12,446 plants/acre. Trial design was a randomized complete block with three replications. Preplant fertilizer (60 lb nitrogen, 60 lb P_2O_5, and 210 lb K_2O per acre) was broadcast and incorporated by chisel plowing and disking. Additional nitrogen was sidedressed on July 1 at rate of 65 lb/acre. Weed control was achieved by cultivation and applying Dacthal W-75 herbicide on June 17. One replication of the trial was harvested on each of three consecutive dates (August 25, September 8, and September 28) to observe the effect of harvest timing on root yield. Plots were harvested by mowing off the tops of plants and lifting the roots with a tractor-pulled root digger. Roots were then hand harvested for grading and data collection.

Results and Discussion

Although the trial wasn't established in the field until June 4, warm temperatures and abundant rainfall supported rapid vine growth and by the end of August marketable sized roots had developed. The three harvest dates revealed that total, jumbo and No. 1 yields increased as harvest was delayed allowing more time for root filling. Average total yield for all plots on August 25 (only 82 days from transplanting) was a 16,501 lb/acre, but waiting until September 8 increased total yield to 22,140 lb/acre and waiting until September 28 increased it to 29,062 lb/acre. The commercially desirable No. 1 yield also benefited from delayed harvest increasing from 9,761 to 13,079 to 16,423 lb/acre on August 25, September 8 and September 28, respectively. These results show, at least under 2010 growing conditions, that roots can be dug as early as late August but waiting until mid to late September will provide highest yield. Relative cultivar performance was similar at all dates—the best yielding cultivars at the early harvest were also the best yielding at the late harvest. Data from the three harvest dates were combined for summary presentation in Table 1.

The best producers of commercially desirable No. 1 roots were Covington, Hernandez, Red Jewel and Beauregard. These cultivars had nice plump roots with moist orange flesh. Georgia Jets produced the highest total yield but roots were variable in shape with large growth cracks making them unattractive for marketing. Centennial and Vardaman produced rather long unattractive roots. Porto Rico was the lone entry with whitish colored roots and although it had decent shape, the roots tended to be small and marred by surface rot. Color photos of the trial cultivars can be viewed on our website at: www.mirdf.ag.iastate.edu/pages/sweet_potato.html

Table 1. Sweet potato cultivar total, No. 1, jumbo and cull yield in pounds per acre.

Cultivar	Total yield	No. 1 yield[a]	% No. 1	Jumbo yield[b]	% Jumbo	Cull yield[c]
Georgia Jets	32,838	13,451	41	10,819	33	5,324
Covington	29,796	17,007	57	7,363	25	5,426
Beauregard	22,330	15,106	68	3,249	15	3,975
Red Jewel	21,812	15,244	70	3,215	15	3,353
Vardaman	21,017	9,644	46	6,049	29	5,324
Hernandez	20,394	15,832	78	588	3	3,974
Porto Rico	18,631	9,713	52	968	5	7,950
Centennial	13,723	6,706	49	4,252	31	2,765
Trial Mean	22,568	12,838	58	4,563	20	5,167
LSD .05%	9,122	4,228		2,726		1,923

[a]No. 1 = roots 3 to 9 in. long and 1.75 to 3.5 in. in diameter.
[b]Jumbo = roots longer than 9 in. and/or diameter greater than 3.5 in.
[c]Cull = cracked, poor shape, or small roots.

Table 2. Sweet potato cultivar root descriptions and comments.

Cultivar	Root descriptions and comments
Georgia Jets	Red skin, bright orange moist flesh, variable shape, growth cracks.
Covington	Red skin, bright orange moist flesh, nice smooth roots but some were curved or bent.
Beauregard	Red skin, dark orange moist flesh, attractive smooth shape.
Red Jewel	Red skin, dark orange moist flesh, attractive smooth shape.
Vardaman	Tan skin, dark orange semi-moist flesh, very long rough shaped roots.
Hernandez	Copper skin, dark orange semi-moist flesh, tear-drop shape.
Porto Rico	Tan skin, whitish semi-moist flesh, some root surface discoloration.
Centennial	Copper skin, orange semi-moist flesh, long rough roots.