

# Sweet Potato Variety Trial and Response to Irrigation in Central Kentucky

Timothy Cooling, Department of Horticulture

## Introduction

Sweet potatoes are growing in popularity in Kentucky. They represent a profitable and low-input crop that can be easily grown in many parts of the state. As more growers are looking to sweet potatoes as a new crop, there is a need for a review of production practices as they pertain to Kentucky. Important questions for growers include which varieties to grow and whether to irrigate. There are large differences in the productivity of sweet potato varieties. Therefore, we chose to test three common varieties in Lexington, Kentucky, to determine the yield potential of each. In addition, we tested the effect of drip irrigation on the productivity of the variety Beauregard during the summer of 2009.

## Materials and Methods

Sweet potato cuttings of three varieties were obtained from Jones' Farms in Bailey, North Carolina. The varieties tested were O'Henry, a white-fleshed sweet potato, and two orange-fleshed varieties, Beauregard and Covington. Cuttings were planted on 2 June 2009 at the University of Kentucky Horticulture Research Farm in Lexington. Cuttings were planted on rows spaced 44 inches apart using a tobacco setter with 10-inch in-row spacing. A starter fertilizer was used when planting the cuttings. Cuttings were planted into flat beds on bare ground. Each bed was approximately 275 feet in length. Fifty pounds of N were applied as a broadcast using 19-19-19 prior to planting. All cuttings were irrigated immediately after planting to ensure a uniform plant stand. Areas between and within rows were hand-cultivated for weed control. No fungicide or insecticide sprays were made during the season.

The effectiveness of drip irrigation was evaluated on the variety Beauregard. Those rows receiving supplemental drip irrigation were irrigated when tensiometers, buried at a depth of 12 inches in each row, read 60 to 70 cbar. Three replications of each irrigation treatment were tested. Plants were typically irrigated for six to eight hours, or until tensiometers in the irrigated rows read 10 cbar or less. This resulted in six irrigation events during the 2009 growing season. Sweet potatoes were harvested 14 September 2009 using a sweet potato flip plow. Fifty-foot sections of each row were graded and weighed according to USDA standards.

**Table 1.** Total yields, yields of USDA No. 1 and No. 2, percent No. 1, percent culls, and yields of extra large sweet potatoes for three varieties, irrigated and non-irrigated sweet potatoes grown in Lexington, Ky., in the summer of 2009.

Variety	USDA No. 1 (bu/A) <sup>1</sup>	USDA No. 2 (bu/A)	Marketable Yield (bu/A)	Percent No. 1	Percent Culls <sup>2</sup>	Extra Large <sup>3</sup> (bu/A)
Beauregard	409 a*	84 a	493 a	83% a	29% a	53 a
O'Henry	218 b	78 a	295 b	74% a	33% a	0 b
Covington	179 b	71 a	251 b	72% a	33% a	0 b
<b>Irrigation</b> (Beauregard)						
Irrigated	437 a	70 a	507 a	86 a	31% a	67 a
Non-irrigated	380 a	99 a	478 a	80 a	27% a	39 a

<sup>1</sup> Yields are calculated assuming 44-inch row spacing and a 40-pound bushel weight.

<sup>2</sup> Culls are calculated as a percentage of the root weight of culls (including extra large) divided by total harvested weight.

<sup>3</sup> "Extra large" is not an official USDA designation but commonly refers to roots that are too large to be considered No. 1 or No. 2 according to USDA standards.

\* Means in the same column followed by different letters were significantly different at  $P > 0.05$  as determined by Duncan's multiple range test.

## Results and Discussion

Beauregard had the highest total marketable yields and yields of USDA No. 1 sweet potatoes (Table 1). Beauregard produced yields of 409 bushels/acre of USDA No. 1 sweet potatoes, while O'Henry and Covington had yields of 218 and 179 bushels/acre, respectively. There were no differences in yields of USDA No. 2 sweet potatoes. Beauregard had the highest percentage of No. 1 sweet potatoes at 83%. This is somewhat surprising as this variety typically has a large number of No. 2 sweet potatoes. The percent culls ranged between 29 to 33% and were not affected by variety. Beauregard had yields of 53 bushels/acre of "extra large" sweet potatoes, while O'Henry and Covington did not have any. Although "extra large" is not an official USDA designation, many growers use the term to describe sweet potatoes that are larger than the USDA designations for No. 1 and No. 2 sweet potatoes. Typically, extra large sweet potatoes are difficult to market.

Irrigation did not significantly affect yield of Beauregard sweet potatoes (Table 1). The summer of 2009 was unusually wet, however. Further research is required before we can determine if there is an economic benefit to irrigating sweet potatoes in Kentucky.

## Acknowledgments

This research is funded from a S. Region SARE On-Farm Research Grant. The author also would like to thank the Morgan County Cooperative Extension office and ANR Agent Sarah Fannin for providing the sweet potato plow for harvest.