

# Spring Onion Cultivar Evaluation in Central Kentucky

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## Introduction

Although onions are grown on a limited basis in Kentucky, they represent a potentially profitable crop for those who grow them. Farmers who are currently growing onions in Kentucky generally limit plantings to just a few acres. However, by using retail markets and produce auctions to sell their product, these growers are able to command prices ranging from \$0.40 to \$0.50 per pound. This represents a profit potential of many thousands of dollars per acre. A variety trial was conducted using primarily medium and long day cultivars to determine which varieties would be best suited for farmers in Kentucky.

## Materials and Methods

Eleven onion varieties were seeded into 200-cell trays on January 11, 2008. Seedlings were greenhouse grown and fertilized with 150 ppm N of 20-10-20 twice weekly. Seedlings were transplanted on April 2 into flat beds spaced on 6-foot centers on the University of Kentucky Horticulture Research Farm in Lexington, KY. Black plastic mulch (4 feet wide) and drip tape were put down prior to planting. Each bed contained five rows of onions spaced 6 inches within and between rows. Plots contained 200 plants each (20 feet) and were separated from adjacent plots within the same row by 6 feet. This would result in a per acre population of 72,000 plants. The varieties were arranged in the field in a randomized complete block design with four replications of 200 plants each. Approximately 50 lb N per acre was broadcast prior to planting using ammonium nitrate. Supplemental potassium and phosphorous were not necessary according to soil tests. Starting two weeks after transplanting, N was applied at a rate of 20 pounds per acre through the drip irrigation. This continued every other week until approximately 80 lb N acre had been applied through the drip irrigation. Lorsban 15G was applied at planting to control onion maggots. Thereafter, Pounce was sprayed for thrips control in June and July. No fungicides were sprayed. Varieties were harvested starting July 2 and continuing through July 30. Varieties were weighed and graded according to USDA size and quality standards for onions. Ten bulb subsamples were taken and sliced to determine the percentage of bulbs with multiple and percent dry matter. Statistics were performed using SAS statistical software. Data was tested for normality, and transformed if necessary. Results were considered significantly different if  $P < 0.5$ .

## Results and Discussion

The yellow skinned varieties with the largest marketable yields included Expression, Peso, and Candy, all yielding more than 800 units/A (Table 1). The majority of the bulbs produced by these varieties were either colossal or jumbo. A white variety, Super Star, also yielded well. Two red varieties, Red Line and Red Beauty, tended to produce a larger percentage of medium bulbs. Both red varieties also had the highest levels of dry matter and tended to have thicker outer scales. Two large bulb varieties, Walla Walla and Ailsa Craig, produced lower marketable yields than expected. In a separate study, these two varieties were planted in the fall and overwintered

in central Kentucky, producing reasonable yields of very large bulbs. However, while both varieties continued to produce large bulbs, their marketable yield was down due to a high number of culls that were the result of the presence of several diseases in these cultivars when planted in the spring. Perhaps these two cultivars are better suited to fall planting and overwintering in Kentucky, while other varieties such as Expression, Peso, and Candy are better suited to spring planting.

**Table 1.** Days to harvest, total yield, colossal, jumbo, medium, small, and cull onions given in 50-pound-bag units per acre; as well as percentage of doubles and dry matter for 11 varieties of onion. Varieties are ordered based on total marketable yield (highest to lowest)<sup>1</sup>.

Variety	Days to Harvest <sup>2</sup>	Total Marketable Yield	Colossal	Jumbo	Medium	Small	Cull (%) <sup>3</sup>	Multi-Center (%) <sup>4</sup>	Dry Matter (%)
Expression	113	885 a	138 abc	511 ab	230 bcd	5 bc	1.5 c	12.5 cde	6.5 def
Peso	120	874 a	164 ab	551 a	156 cde	3 cd	4.3 c	2.5 de	7.0 cde
Superstar	110	830 a	129 abc	499 abc	199 bcde	4 bcd	1.8 c	0 e	7.0 cde
Candy	110	810 a	159 ab	507 ab	142 de	2 cd	3.8 c	2.5 de	8.0 bc
Sweet Spanish	122	752 ab	69 bcd	451 abcd	227 bcd	6 bc	3.0 c	15.0 ab	7.8 cd
Olympic	100	630 bc	25 d	364 bcde	234 abcd	6 bc	2.5 c	35.0 ab	8.3 bc
Red line	113	626 bc	17 d	315 de	288 ab	6 bc	6.8 c	25.0 bc	11.0 a
Walla Walla	113	623 bc	194 a	332 cde	96 e	1 d	29.0 b	47.5 a	6.0 ef
Red Beauty	113	589 c	2 d	240 ef	338 a	8 b	1.5 c	7.5 de	9.3 b
Ailsa Craig	120	427 d	55 cd	270 e	100 e	2 cd	51.8 a	7.5 de	5.3 f
WI 131	92	363 d	0 d	95 f	254 abc	15 a	2.3 c	15.0 dc	5.5 f

<sup>1</sup>Treatments followed by different letters are statistically different with  $P < 0.05$ .

<sup>2</sup>Onions yields are based on populations of 72,000 plants per acre and presented in units of 50 lb bags/acre.

<sup>2</sup>Days to harvest from transplanting.

<sup>3</sup>Percentage culls were based on weight.

<sup>4</sup>Percentage of doubles is the number of bulbs with multiple (growing points) centers in ten bulb samples from each rep.