

# 2007 Sweet Spanish Onion Variety Trial

M. D. Orzolek  
Dept. of Horticulture  
The Pennsylvania State University  
University Park, PA 16802

**Plot Size:** Four row/bed, 6.0 feet long with 6-inch x 6-inch spacing, 48 plants per replication.

**Transplanting Date:** April 24, 2007

**Production System:** Raised bed with black plastic mulch and two rows of drip tape, high flow 0.45 gal./min./100 ft. at 12-inch orifice spacing.

**Herbicide Application:** One post-emergence application of Chateau at 1.0 oz./A.

**Fungicide:** None.

**Insecticide:** One application of Spintor at 5.0 oz./A for onion thrip control on July 6, 2007. Also, injected Root Power at 2.0 pts./A plus Molybdenum at 0.5 pts./A on July 6, 2007

**Fertility:** Broadcast and incorporated 80 lbs./A N, 60 lbs./A P, and 120 lbs./A K and one application of calcium nitrate injected in the drip system for a total of 25 lbs./A N.

**Harvest Date:** August 9, 2007.

**Drying:** Bulbs from individual plots were placed in 100-pound potato burlap bags and placed on benches in a 30-foot x 96-foot high tunnel covered with two layers of row over for 7 days.

**Dates Graded:** August 20-27, 2007.

**Design:** Randomized complete block with three replications.

Varieties	Seed Source	Bulb Color
1. Candy*	SW	yellow
2. Condor*	AT	yellow
3. NuMex Arthur	New Mexico State U.	yellow
4. NuMex Freedom	New Mexico State U	yellow
5. NMSU 05-52-2	New Mexico State U	yellow
6. NMSU 05-52-4	New Mexico State U	yellow
7. NMSU 05-53-4	New Mexico State U	yellow
8. NMSU 06-80-3	New Mexico State U	yellow
9. NMSU 06-80-4	New Mexico State U	yellow

\*Eagle from American Takii has been discontinued.

*Continued on next page*

<b>Varieties</b>	<b>Seed Source</b>	<b>Bulb Color</b>
10. NMSU 06-83-2	New Mexico State U	yellow
11. Expression*	SW	yellow
12. Exacta*	SM	yellow
13. 9003G*	AT	yellow
14. Milestone	AT	yellow
15. Medallion*	SK	yellow
16. Ovation*	SK	yellow
17. Mt. Whitney*	SK	white
18. Vaquero	NU/NH	yellow

\*Eagle from American Takii has been discontinued.

## Results

Growing conditions in 2007 were more ideal for sweet Spanish onions grown on raised beds with plastic mulch and two rows of drip tape than the last four growing seasons — warm and dry. Varieties were transplanted in mid-April, about 4 weeks earlier than normal. In 2007, onion transplant tops were cut and maintained at a 4-inch height in the greenhouse prior to transplanting in the field. Twenty-five pounds of N were injected into the drip irrigation tape over a 7-8 week period after transplanting. Onions were irrigated at least twice a week for 3 to 4 hours per application. While weed control was good to excellent the first 10 weeks after transplanting, rain in late June resulted in significant weed populations (especially grasses) between the onion rows. The single application of Chateau significantly reduced weeds and increased harvesting efficiency. There was a significant onion thrip population that developed in early July; however, the foliar application of Spintor and the injection of Root Power at 2.0 pts./A plus Molybdenum at 0.5 pts./A (Stoller Chemical) into the drip tape on July 6, cleaned up the thrip problem within 2 days and kept the onions thrip free.

The highest marketable onion bulb yield was obtained from the following varieties: Exacta, Medallion, Ovation, and Expression compared to Candy or Condor (current sweet Spanish onion standards in Pennsylvania Table 1). The pungency ratings for the onion varieties in 2007 were remarkably low, all below 5.0 mM of pyruvic acid, which describes a mild sweet onion flavor (Table 2). Exacta, NMSU 05-52-2, NMSU 05-52-4, Medallion, Ovation, and Expression produced the highest percentage of large/jumbo onion bulbs that were 3.0 inches in diameter or larger. Mt. Whitney was the only white onion variety evaluated in the 2007 trial. Mt. Whitney has beautifully white skins and a round to oblong shape. Yield of this variety was similar to Candy, with an acceptable soluble solids level and low pungency.

**Table 1.** *The marketable yield of eighteen Spanish onion varieties evaluated at the Horticulture Research Farm, Rock Springs, PA – 2007.*

<b>Variety</b>	<b>Total MKT Yield T/A<sup>x</sup></b>	<b>Avg. Bulb. Wt. lbs.<sup>y</sup></b>	<b>% Large<sup>z</sup></b>	<b>% Non-MKT</b>
Candy	22.4	0.80	73.9	0.0
Condor	23.6	0.90	72.8	0.1
NM Arthur	19.7	0.70	62.1	5.9
NM Freedom	19.8	0.70	55.6	8.5
NMSU 05-52-2	25.8	0.90	90.0	1.5
NMSU 05-52-4	28.5	1.10	91.1	1.0
NMSU 05-53-4	22.6	0.80	69.3	2.9
NMSU 06-80-3	21.1	0.80	74.1	1.0
NMSU 06-80-4	26.3	1.00	84.7	2.2
NMSU 06-82-3	23.5	0.90	80.3	1.0
Expression	32.8	1.20	91.4	2.8
Exacta	37.7	1.40	89.9	2.9
9003G	23.8	0.90	76.3	3.9
Milestone	22.1	0.80	81.8	0.0
Medallion	31.9	1.20	95.5	0.0
Ovation	35.1	1.30	95.0	1.0
Mt. Whitney	22.7	0.90	76.3	4.7
Vaquero	23.3	1.00	75.3	4.3

<sup>x</sup>The total marketable yield is based on an onion population of 50,000 plants/A including jumbo and colossal bulb sizes.

<sup>y</sup>The average bulb weight in pounds included all bulbs greater than 2.5 inches in diameter.

<sup>z</sup>The percentage of large bulbs included all onion bulbs greater than 3.0 inches in diameter.

**Table 2.** *The percent harvest, soluble solids and pungency rating of 18 Spanish onion varieties evaluated at the Horticulture Research Farm, Rock Springs, PA – 2007.*

Variety	% Harvested <sup>x</sup>	% Soluble Solids <sup>y</sup>	Pungency <sup>z</sup>
Candy	96.7	6.4	2.9
Condor	86.7	8.2	4.1
NM Arthur	93.9	5.1	1.9
NM Freedom	98.5	5.6	3.1
NMSU 05-52-2	98.1	6.2	3.6
NMSU 05-52-4	93.8	5.9	3.8
NMSU 05-53-4	92.3	6.0	2.5
NMSU 06-80-3	85.2	6.5	3.5
NMSU 06-80-4	95.2	5.1	3.4
NMSU 06-82-3	90.8	6.2	4.0
Expression	95.0	7.0	3.5
Exacta	95.0	6.5	3.0
9003G	91.2	8.1	4.3
Milestone	95.0	7.8	3.5
Medallion	91.2	6.6	3.6
Ovation	96.5	6.6	4.0
Mt. Whitney	88.1	6.0	3.2
Vaquero	81.9	6.5	3.9

<sup>x</sup>Percent of onion bulbs that were harvested from the 48 onion plants in each plot.

<sup>y</sup>The percent of soluble solids as measured by Waters Agricultural Laboratories, Camilla, GA.

<sup>z</sup>Pungency was measured by determining the pyruvic acid content of the bulb by Waters Agricultural Laboratories, Camilla, GA. Onions may be classified as to pungency according to the following scheme:

Very mild sweet onion: 1-4 mmoles pyruvic acid/kg weight of bulbs

- Mild sweet onion: 5-7 mmoles
- Intermediate pungency: 8-10 mmoles
- Pungent: 11-15 mmoles
- Very pungent >15 mmoles