

2008 Sweet Spanish Onion Variety Trial

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Plot Size: Four-row bed 6.0 feet long with 6 x 6 inch spacing — 48 plants/rep.

Transplanting Date: April 22, 2008.

Production System: Raised bed with green IRT 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, 2008. Also injected Root Power at 2.0 pts./A plus Molybdenum at 0.5 pts./A on July 6, 2008.

Fertility: Broadcast and incorporated 80 lbs./A-N, 60 lbs./A-P₂O₅, and 120 lbs./A-K₂O prior to making raised beds. Applied through the drip irrigation system 20 gallons of Total Feed (12-0-1) from May 6 through May 27 on a weekly basis.

Harvest Date: July 25 through August 1, 2008.

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 seven days.

Date Graded: August 5 through 12, 2008.

Design: Randomized Complete Block with three replications.

Lab Analysis: Sent 10 bulb samples of all onion varieties to Waters Agricultural Lab, Camilla, GA on September 16, 2008 for soluble sugar and pyruvic acid analysis.

Varieties	Seed Source	Bulb Color
1. Candy*	SW	yellow
2. Condor*	AT	yellow
3. NMSU 07-33-3	New Mexico State U.	yellow
4. NMSU 07-33-4	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 07-32-3	New Mexico State U	yellow
8. NMSU 07-52-2	New Mexico State U	yellow
9. NMSU 07-32-4	New Mexico State U	yellow
10. NMSU 06-33	New Mexico State U	yellow
11. NMSU 07-35-3	New Mexico State U	yellow

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Varieties	Seed Source	Bulb Color
12. Expression*	SW	yellow
13. Exacta*	SM	yellow
14. T-433*	AT	yellow
15. T-439	AT	yellow
16. Medallion*	SK	yellow
17. Ovation*	SK	yellow
18. Arcero	NH/NU	yellow
19. Vaquero	NH/NU	yellow
20. Cimarron	NH/NU	yellow
21. Granero	NH/NU	yellow
22. Joaquin	NH/NU	yellow
23. Montero	NH/NU	yellow
24. Pandero	NH/NU	yellow
25. Sabroso	NH/NU	yellow
26. Sequoia	NH/NU	yellow
27. Evolution	DP	yellow
28. Generation X	DP	yellow
29. Mesquite	DP	yellow
30. Tequila	DP	yellow
31. Menarchos	SM	yellow
32. XON 3027	SM	yellow
33. XON 670W	SM	white
34. Rosita	SW	pink
35. Tropeana	BC	red

Results

Growing conditions in 2008 were less than ideal for sweet Spanish onions grown on raised beds with plastic mulch and two rows of drip tape compared to the last four growing seasons — cool and dry. Varieties were transplanted in late April, about three weeks earlier than normal. In 2008, onion transplant tops were cut and maintained at a 4-inch plant height in the greenhouse prior to transplanting in the field. Onions were irrigated at least twice a week for three to four hours per application. No herbicide was applied to the field since the dominant weed present after transplanting onions was volunteer buckwheat. As the onions grew larger, especially in June, significant grass and a few broadleaf weeds were growing between and in the rows of onions. The entire field of onions was hand weeded the week of June 2, 2008.

The highest marketable onion bulb yield (more than 25 T/A) was obtained from the following varieties: Exacta, Montero, Cimarron, Expression, and Candy (current sweet Spanish onion standard in Pennsylvania, Table 1). The pungency ratings for the onion varieties in 2008 were remarkably low, all below 3.4 mM of pyruvic acid which correlates to a mild sweet onion flavor

(Table 2). The average pyruvic acid value for all 35 varieties in 2008 was 1.94 and soluble sugars of 6.37. The highest soluble sugar level was recorded in Tropeana, a red variety. In 2008, Exacta, Cimarron, Expression, and Candy produced the highest percentage of large/jumbo onion bulbs that were 3.0 inches in diameter or larger. XON 670W was the only white onion variety evaluated in the 2008 trial. XON 670W has beautifully white skins and a round to oblong shape. Marketable yield of this variety was lower than Candy, with similar soluble solids and pungency levels. Of the New Mexico State University entries evaluated in 2008, NMSU 7-32-3 produced the highest marketable yield, and largest bulb size of the nine entries evaluated.

Table 1. The marketable yields of 35 Spanish onion varieties evaluated at the Horticulture Research Farm, Rock Springs, PA — 2008.

Variety	Total MKT ¹	Avg. Bulb. ²	% Large ³	% Non-MKT
	Yield T/A	wt. oz.		
Candy	26.8	15.0	89.4	2.1
Condor	24.4	13.9	76.3	5.8
Expression	26.3	14.5	90.2	0.6
Ovation	24.0	13.2	72.1	2.1
XON 3027	24.6	13.6	67.9	2.7
Joaquin	23.3	13.3	78.6	2.2
Cimarron	26.9	14.8	89.0	1.5
T-433	24.7	13.6	61.0	9.8
T-439	24.5	13.5	70.2	3.5
Montero	25.3	13.9	62.5	22.9
Manarchos	22.1	12.5	71.6	2.8
Tequila	19.2	10.6	44.4	6.9
Pondero	22.0	12.1	57.7	10.2
Granero	21.1	11.6	49.9	6.9
Evolution	19.1	10.8	40.6	7.1
Generation X	18.2	10.6	42.3	6.6
Vaquero	22.8	12.8	69.6	4.9
Arcero	20.3	11.6	57.7	7.1
Mesquite	18.3	10.3	41.2	12.8
Sabroso	20.3	11.2	37.1	6.3
Exacta	25.3	14.5	87.7	2.1
Sequoia	18.6	10.4	59.1	1.5
XON 670W	20.8	12.2	57.8	3.8
Rosita (pink bulb)	21.6	12.1	66.2	2.7
Tropeana (red bulb)	16.6	9.1	36.0	2.7

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Table 1 (continued)

Variety	Total MKT ¹	Avg. Bulb. ²	% Large ³	% Non-MKT
	Yield T/A	wt. oz.		
NMSU 05-52-4	24.8	13.7	74.2	6.3
NMSU 06-33	22.6	13.2	77.3	2.9
NMSU 07-32-3	24.0	13.2	81.3	4.2
NMSU 07-33-3	21.7	12.4	70.6	0.0
NMSU 07-32-4	23.6	13.2	74.0	2.7
NMSU 07-35-3	21.6	12.1	57.0	3.6
NMSU 07-52-2	21.1	11.9	72.8	2.1
NMSU 07-33-4	22.1	12.5	73.5	2.8
NMSU 05-52-2	22.0	12.2	67.9	1.5
Medallion	24.3	13.5	76.8	0.6

¹The total marketable yield is based on an onion population of 50,000 plants/A including jumbo and colossal bulb sizes.

²The average bulb weight in pounds included all bulbs greater than 2.5 inches in diameter

³The percent large bulbs included all onion bulbs greater than 3.0 inches in diameter.

Table 2. The soluble solids and pungency ratings of 35 Spanish onion varieties evaluated at the Horticulture Research Farm, Rock Springs, PA — 2008.

Variety	% Soluble ¹ Solids	Pungency ²	% Marketable Bulbs ³ 10 Weeks in Storage
Candy	7.1	1.7	35.3
Condor	7.2	1.9	76.6
Expression	5.0	1.6	75.5
Ovation	6.1	1.9	61.4
XON 3027	5.6	1.6	71.4
Joaquin	6.9	2.2	89.8
Cimarron	6.1	1.6	66.7
T-433	4.9	1.3	61.4
T-439	7.0	2.0	87.0
Montero	8.0	1.4	92.7
Monarchos	5.7	1.8	88.6
Tequila	7.1	2.7	69.4
Pondero	7.5	1.6	74.5
Granero	6.5	2.3	94.0

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Table 2 (continued)

Variety	% Soluble ¹ Solids	Pungency ²	% Marketable Bulbs ³ 10 Weeks in Storage
Evolution	5.5	1.1	87.7
Generation X	6.4	1.8	84.9
Vaquero	6.0	1.5	98.0
Arcero	6.6	1.8	92.6
Mesquite	5.4	2.2	88.2
Sabroso	7.7	1.9	90.9
Exacta	5.8	2.2	52.5
Sequoia	6.0	3.4	63.9
XON 670W	6.4	1.7	9.1
Rosita	6.8	1.8	73.6
Tropeana	8.6	2.6	90.4
NMSU 05-52-4	6.1	1.7	37.5
NMSU 06-33	6.3	1.1	42.2
NMSU 07-32-3	6.1	2.2	80.4
NMSU 07-33-3	6.0	2.2	72.2
NMSU 07-32-4	7.0	2.3	67.4
NMSU 07-35-3	6.5	2.3	80.5
NMSU 07-52-2	5.5	2.2	78.4
NMSU 07-33-4	6.2	2.6	71.7
NMSU 05-52-2	5.7	2.1	70.3
Medallion	5.5	1.5	62.5

¹The percent soluble solids as measured by Waters Agricultural Laboratories, Camilla, GA.

²Pungency 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

³All varieties were stored in 40-pound cardboard onion boxes containing 34-73 bulbs per variety (avg. 47) based on bulb size in a potato storage for 10 weeks with an average daily temperature of 48°-50°F.