

# A “Sweet” Deal

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The national trend in onion consumption is toward sweet onions with low pyruvic acid and high sugar (up to 15%). These onions are mild flavored, large and have a short storage life. They are used fresh, slightly cooked in stir fry recipes or cooked in appetizers and other recipes where mild flavor is preferred. Short storage life and need for continual supply requires US production areas change during the season and some importation. Current US production is from Georgia, Texas, California, Colorado, Oregon, Washington and Idaho and imports come from Central and South America.

Michigan’s onion industry is based primarily on a long day, pungent onion capable of long term storage. Michigan’s climate, soils and production history make it a candidate for sweet onion cultivation – providing identification of proper varieties. Michigan growers have the knowledge, equipment, storage and marketing channels for successful production. Availability of sweet onions from Michigan would begin in August and continue into early winter - a time when supplies are low or they are shipped considerable distances.

Many sweet onions take a long time to mature (100+ days) and bulb in response to short days. Therefore, they are more suited to production in southern states where they are fall planted for a spring harvest. There are long day types; however, they must be planted from transplants to get them to mature. To determine which varieties may be adapted to Michigan, readily available long day, sweet onion cultivars (Table 1) were planted at the Southwest Michigan Research and Extension Center in Benton Harbor, Michigan and evaluated for yield, quality and storage ability.

The site was a Spinks sandy loam and was prepared by broadcasting and incorporating 0-0-60, 33-0-0 and Cal-Fortified at 350#, 150# and 100# per acre. Transplants of six sweet and two pungent cultivars were obtained from a commercial supplier and set in the field 5/2/2007 into double rows 12” between rows and 4” in the row. Double rows were on 5.5’ centers. Each plot consisted of a 10’ long double row of 60 plants (47,520 plants/acre). After planting, fertilizer was applied through the drip system as 10 gallons/acre Nitro Formula (17-0-0-5-1.5Mg-Zn-B) on 6/11 and 20 pounds/acre Urea Mate (5-10-27+micronutrients) on 7/9, 7/16 and 7/23/2007. Three pounds/acre actual nitrogen was also applied 5/14/2007 in combination with Lorsban. Total seasonal nitrogen was 76#/acre. A single drip tape with 4” emitter spacing with a flow rate of 0.25 gpm was placed on the soil surface down the middle of the double row (Figure 1).

Bulbs were pulled 8/3/07 and lined in the row for curing. By the time they were removed from the field on 8/7 they had received 5.44 inches of rain, temperatures of 83 to 90°F and 93 to 96% night time relative humidity. These conditions led to significant neck rot for some entries. Bulbs were graded on

8/22 and put in storage at approximately 60°F until 10/17 when they were moved to approximately 35°F. They were evaluated on 10/23 for storage condition.

Three entries were quickly identified as superior; Sweet Spanish, Super Star and Mars (Table 1). All three had high total yield and yield of colossal and jumbo bulbs. More importantly they all had low cull yields and storage ratings of 96% (Mars), 83% (Sweet Spanish) and 74% (Super Star) good bulbs.

Ailsa Craig was the highest yielding entry with some super colossal bulbs but the high rate of culls makes it questionable for production in Michigan. Ailsa Craig, Walla Walla and Candy all had a significant amount of cull production. This may not have been the case given more normal weather conditions and/or a quick removal from the field. All three had a tear drop shaped bulb with a thick neck which may have led to greater neck rot symptoms. Those with reduced neck rot all had a round shape with a tight neck (Figure 2).

Yield of all entries could be improved by increasing plant density and earlier planting. Reduction of cull bulbs could be accomplished by quickly removing bulbs from the field. Storage conditions could also be improved increasing storage life. They were not given ideal storage conditions in an effort to enhance storage problems.

Skin color for Sweet Spanish is yellow, Super Star is white and Mars is red. These three provide Michigan growers with a suitable variety in all three colors. White varieties should not be grown in organic soils since the soil will stain the skin.

Copra and Mars are not sweet onions. Mars was included because of its color and Copra as a check variety for comparison. Texas 1015 was the only entry totally unsuited for production in Michigan.

It is hoped a trial with more cultivars can be conducted in 2008. A direct seeded trial should also be done to determine if any cultivars can be grown to maturity from seed - greatly decrease economic inputs.



**Figure 1.** Drip irrigation tape used to supply water and nutrients to the 2007 onion trial.

**Table 1.** Yield in hundred weight/acre of eight onion cultivars at the Southwest Michigan Research and Extension Center, Benton Harbor, Michigan in 2007.

Variety	Color	Total Yield	Super Colossal	Colossal	Jumbo	Medium	Small	Cull
Ailsa Craig	Y	443	13	30	140	8	.4	251
Sweet Spanish	Y	400	0	32	218	76	27.5	45
Super Star	W	379	0	22	271	9	.6	75
Walla Walla	Y	375	3	36	38	5	.5	292
Mars	R	369	0	12	323	9	.2	25
Candy	Y	329	0	11	119	47	19.7	132
Copra	Y	327	0	0	189	102	20.4	15
Texas 1015Y	Y	52	0	0	7	26	13.5	6
<b>Lsd=.05</b>		<b>110</b>	<b>10</b>	<b>31</b>	<b>55</b>	<b>19</b>	<b>10.5</b>	<b>98</b>

Color: Y = yellow; W = White; R = red.

Super colossal = 4.5"+; Colossal = 4-4.5"; Jumbo = 3-4"; Medium = 2-3"; Small = 1-2" and cull bulbs.



**Figure 2.** Seven onion varieties grown at the Southwest Michigan Research and Extension Center, Benton Harbor, Michigan in 2007. Texas 1015 not shown.