



Texas Wintergarden Watermelon Variety Evaluations: 1996-2000

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BOTTOM LINE

● Five year evaluations indicate that Big Stripe was the highest yielding hybrid producing an average marketable yield of 86,095 lbs/A. As a group, the triploid (seedless) cultivars produced higher yields than the hybrids. Several of the seedless cultivars produced in excess of 100,000 lbs/A in given seasons.

Introduction

Texas Cooperative Extension has been conducting statewide watermelon trials in the major watermelon production regions of Texas since 1990. This report summarizes the results obtained from the trials conducted in the Wintergarden region from 1996-2000. Hybrid and triploid varieties are rapidly replacing open pollinated varieties. Seedless sales are estimated to account for nearly 35% of the total watermelon sales. Once considered as a holiday desert item, watermelons are now available almost daily. Traditionally grown as a dry land crop, watermelons are now being grown with intensive management and irrigation. Consequently, if a grower is to remain a viable player in the watermelon production arena he will need to adapt new varieties and production practices in order to keep

up with the competition for limited markets.

Experimental Approach

The Wintergarden trials were conducted in commercial watermelon fields. The variety evaluations were made using a randomized complete block design with three replicates per entry. Each replicate contained five plants spaced 2.5 or 3.0 feet apart within the row; a Mechanical Transplanter^R adjusted to set plants 2.5 ft. apart was used in '96-'98; a Kenco^R 3 foot waterwheel transplanter was used in '99-'00. The trials were established on 80 in. wide, black polyethylene mulched, raised plant beds. Supplemental water needs were met via drip irrigation (drip tape with 12 in. emitter spacing plowed in approximately 4-6 in. deep and 6 in. off-center prior to mulching). Transplants were commercially grown by Peterson's Nursery of San Antonio. In order to observe potential resistance, minimal effort was made to control pest problems. Yield was obtained from a once-over harvest. Fruits were graded according to size and marketability. The fruit size grades were based on average fruit weights as follows: >30 lbs per fruit (ppf); 25-30 ppf; 20-25 ppf; 15-20 ppf, and, 10-15 ppf. All undersized, defective and rotted fruits were considered culls.

Results and Discussion

1996: A total of 21 hybrid and 17 triploid varieties and/or advanced breeding lines were evaluated at Willoughby Farms near Batesville. The trial was established on 11 April and harvested on 27 June. Marketable yield for the hybrid entries ranged from a low of 41,436 lbs/A with the line SF 1408, to a high of 90,358 lbs/A with the cultivar 'Patriot'. Five hybrids were found to produce yields exceeding 80,000 lbs/A ('Patriot', 'Big Stripe', 'Desert Storm', 'Summer Flavor 420', and, WX7). The cultivar 'Big Stripe' was observed to produce exceptionally large fruit. Forty-five % of it's marketable yield fell into the > 30 ppf class. The line SF 460 appears to be a late maturing variety because 90% of it's fruits were culled due to being undersized at harvest. As a group, the seedless entries produced higher yields than did the seeded hybrids. Only 3 of the 17 seedless entries failed to produce marketable yield above 80,000 lbs/A. Four of the cultivars, 'Tri X Shadow', 'Gem Dandy', 'Premier', and 'Summer Sweet 5544' produced marketable yields in excess of 100,000 lbs/A. All of these cultivars have typical 'Tri X 313' fruit-type except Tri X Shadow. No serious disease or insect pests were noted in this trial.

1997: Twenty-eight hybrids and 19 seedless entries were included in this trial also conducted at the Willoughby Farms location.

Unfortunately, no yield data was obtained due to excessively wet condition and vandalism of the trial.

1998: Twenty-five hybrids and 17 seedless cultivars were tested at Ward Farms near Carrizo Springs. The trial was transplant established on 16 April and once-over harvested on 29 June. Similar evaluation techniques employed in the 1996 trial were used. Overall yields were lower in 1998 than in 1996. However, as in 1996, the seedless entries, as a group, produced higher marketable yields than the hybrids. The hybrid yields ranged from 19,486 (CF 1402) to 49,840 ('Big Stripe'), whereas, the seedless yields ranged from 32,619 lbs/A ('Revolution') to 62,538 lbs/A (CS4830). It is evident that the lower yields in '98 were due to smaller fruit size. 'Big Stripe' only produced 2% of its yield in the >30 ppf size class as compared to 45% in 1996. No other hybrid was found to produce fruit in this size category in 1998.

1999: A total of 43 entries were evaluated in this trial, 25 hybrids and 18 seedless. This trial was conducted at Tiro Tres Farms near Crystal City. The transplants were field set on 15 April and the fruit harvested on 7 July, 1999. The 1999 growing season was characterized as being unseasonably wet. Fourteen inches of rainfall was received during the month of June. Normally only 18-20 inches of rainfall are received per year in this area of Texas. As a result, considerable vine death, sun-scalding and fruit rot was evident. Still, total marketable yields obtained in this trial were exceptionally high. It should be noted that in this trial fruit showing sun scald were not culled since this disorder was a factor of the vine death. Fruit rots resulting from wet conditions ranged from 0% ('Stargazer') to 55% (WX 18). Projected yields ranged from 42,559 lbs/A (WX 18) to 91,071 lbs/A ('Pinata'). Yields exceeding 80,000 lbs/A were obtained from 'Pinata', 'Big Stripe', and 'Stargazer' which produced 91,071 lbs/A, 90,606 lbs/A and 81,926 lbs/A respectively. It may

be questioned as to why high yields were obtained in spite of the high percentage of fruit rots. This can be explained by the fact that all fruits are removed from the vines and graded in a once over harvest. As a result, a large number of undersized, rotted or immature fruits were still harvested. 'Summer Sweet 5244' and TriX 'Carousel' produced over 100,000 lbs/A in '99. The seedless varieties, as a group, were less affected by belly rot. No seedless entry exhibited more than 30% rotted fruit. All but two cultivars, 'Tri X Triple Sweet' and 'Summer Sweet 5244', were found to have less than 20% rotted fruit.

2000: This evaluation was also conducted in cooperation with Tiro Tres Farms at their Crystal City location. Twenty hybrids and 18 seedless lines were included in this evaluation. All hybrids, except 'Sentinel' produced marketable yields over 50,000 lbs/A. For some unknown reason, plant survival of this variety was extremely low. As a result of the few surviving plants, 6% final plant stand, a limited number of fruits were produced. Four entries, 'Big Stripe', 'Summer Flavor 800', W5023, and 'Legacy' produced marketable yields of 113,925 lbs, 113,199 lbs, 103,040 lbs and 100,500 lbs/A respectively. These are outstanding yields in any season. However, when considering that 2000 was an extremely dry season these yields can be considered exceptional. Only nine inches of irrigation water were applied via the drip system to these plots. It also points out the value and yield potential that the plastic mulch/drip irrigated production affords. When using the yield obtained with 'Big Stripe', the water-use efficiency (the volume of applied water to produce one pound of fruit) an efficiency of 2.145 (27,154-gal/in water x 9 applied inches/113,925 lbs fruit) occurred. The seedless yields were equally as impressive as the hybrid yields. Over one-half of the entries produced yields over 70,000 lbs/A. 'Revolution', a long All Sweet type

yielded 110,660 lbs/A. This cultivar is one of the first of the long seedless types to become available to producers. With the popularity of watermelon on salad bars, long seedless melons should find a ready market. Other high yielding seedless cultivars were 'Millionaire', 'Constitution', WX 55, 'Summer Sweet 5244' and 'Summer Sweet 5544'.

During the period 1996-2000, 101 varieties (58 hybrids and 43 triploid/seedless types) were evaluated. Varieties and/or advanced breeding lines were submitted for evaluation at the discretion of participating seed companies. Although this period covers five years, data reported was derived from four seasons due to a crop failure experienced in 1997. The results of these evaluation indicate that of the hybrids 'Big Stripe' was the highest yielding across all seasons by producing an average marketable yield of 86,095 lbs/A. Other consistently high yielding hybrids were Pinata and Stars-N-Stripes. The cultivar 'Gem Dandy' was the only seedless entry occurring in all seasons of these evaluations. This cultivar produced an average marketable yield of 73,589 lbs/A. Other consistently high yielding seedless cultivars were Tri X shadow and Tri X 313. As a group, the seedless cultivars produced higher yields than the hybrids as a group. Several of the seedless cultivars produced in excess of 100,000 lbs/A in a given season.