Appendix A.04

GRAPE TOMATO VARIETY AND HARVEST EFFICIENCY TRIAL – 2003

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Introduction

Grape tomato production increased in 2001 by almost 150% in volume and 133% in dollar sales. Brisk sales have continued from 2002 and 2003. This tomato market segment is the fastest growing niche having a potentially high profit margin when retail prices range from $2.00 - 3.00 per clamshell pint. The Santa Hybrid F1 is the primary variety used. This vigorous and indeterminate growth crop presents a problem in cultural approaches and in labor costs in our region. The third year of this study compares five different cultural methods in use by New Jersey growers and measures total yield, total fruit and the respective times needed to harvest.

Material and Methods

Santa Hybrid F1 seeds were sown in the greenhouse on March 28, 2003, in 48-cell trays containing a peat-vermiculite media. The plants were maintained in the greenhouse until one week before transplanting when they were placed in a protected outside area for hardening off. Plasticulture beds on 6' centers were prepared with drip irrigation placed down the center. On May 27, the transplants were hand-planted in single rows spaced 30' apart between plants.

Experimental Design and Harvesting Method

The five cultural methods were:

1. Sprawl
2. 4' trellis with wooden stakes and Florida basketweave system, strung every 2'
3. 8' stakes sunk 2' in the soil with single plants tied every 2' vertically
4. 4' tomato cage – 18" diameter, cone shaped
5. 5' tomato cage constructed of rebar with a 30'diameter cylinder shaped

Four replications of each cultural method were randomized throughout the test. Five harvest teams composed of two people each rotated through each culture and were timed as to harvest completion. There were two harvests timed in total – August 19 and September 3. Each individual harvest was measured and graded.

Results and Discussion

Due to a very cool, damp spring and wet windy summer, maturity of all vegetables was delayed and yields were reduced compared to normal seasons. The two harvests in this study showed a significant difference in yield among harvest periods.

Summing over all cultural treatments, the later harvest in September bore almost three times as many fruit weighing approximately three times as much.

The following table compares the unanalyzed totals for the five treatments as to total yield in pounds, total number of fruit and harvest time needed to pick one pound of grape tomatoes.

Treatment	Total yield – lbs.	# Fruit	Harvest time – lbs/minute
Sprawl	05.09	482	0.51
Trellis	12.94	780	0.82
Tall Stake	08.91	832	0.79
Cage - small	11.79	1147	0.75
Cage – large + stake	19.50	1487	0.95

From this data it was clear that the sprawl treatment yielded from two to three times less than the other cultural treatments and it took almost twice as long to harvest one pound of red tomatoes. The sprawl method not only had the lowest yield again this year, the longest time to harvest but the highest percentage of unmarketable fruit.

The trellis, tall single stake and small cage were intermediate in yield and in time to harvest. The effect of the wind, which reached 50 miles per hour on several days, was the main reason that yields were reduced compared to the previous season. The large cage and stake were more secure and weathered the storms better to provide the highest total yield and the shortest period of time to harvest.