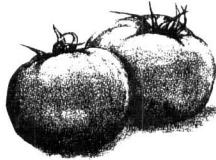


Harvesting and Handling



by M. Sherman

Maturity at harvest

The United States Department of Agriculture Grade Standards for Fresh Tomatoes recognizes six official color designations: green, breaker, turning, pink, light red, and red. The Florida tomato industry is based primarily on harvesting tomatoes at the mature-green stage. Problems arise in determining maturity at harvest because it is difficult to distinguish immature-green tomatoes from mature-green tomatoes. If tomatoes are harvested before the mature-green stage, they will fail to ripen normally.

All of the following have been used as external indicators of maturity in green-picked tomatoes: 1) **size** — attainment of a minimum size which varies with cultivar; 2) **shape** — well rounded, not angular; 3) **color** — some cultivars turn whitish green and others show cream-colored streaks at the blossom end; 4) **surface** — having a waxy gloss and a skin not torn by scraping indicates a more developed cuticle; and 5) **stem scar** — the presence of brown corky tissue on the stem scar in some cultivars (7).

A fruit's internal appearance is a much better indicator of maturity in the green stage, but this is a destructive test. A representative sample of fruit can be cut and classified based on their internal appearance (Table 6). This information can then be used as an index to the maturity of the crop for scheduling harvest.

In actual practice Florida growers use a combination of these factors to determine when the crop is ready to harvest. Most delay harvest until a small percentage of fruits are showing color in the field. Then pickers are instructed to harvest fruits larger than some minimum size. In addition, effective Dec. 1, 1986, the United States Dept. of Agriculture signed an order raising the minimum size of tomatoes that could be shipped out of the regulated area, as defined in the Florida Tomato Marketing Order, to 2 8/32 inches in diameter. This regulation will help prevent the marketing of low quality immature-green fruits.

Table 6. Maturity classes of green tomatoes^z.

Class	Internal appearance	Average number of days to reach the 'breaker' stage during 68°F storage.
Immature-green	No jelly-like material in any of the locules; seeds are cut by a sharp knife upon slicing the fruit.	More than 10
Partially mature-green	Jelly-like material formed in at least one, but in less than all the locules; seeds are well developed.	6 to 10
Typical mature-	Jelly-like matrix in all locules; seeds are not cut by a sharp knife upon slicing the fruit.	2 to 5
Advanced mature-green	typical mature-green with some internal red coloration.	1

^zAdapted from reference (1).

Harvesting systems

Currently all fresh market tomatoes are harvested by hand in Florida. Pickers place the fruits into plastic buckets which hold 40 to 50 pounds of tomatoes. In most areas, pickers carry the filled buckets to field trucks and empty fruit into pallet bins or gondolas. Pallet bins hold between 800 and 1200 pounds of fruit and gondolas hold between 16,000 and 24,000 pounds of fruit. The pickers may have to walk as much as 50 yards to empty their buckets.

In a newer system used where tomatoes are grown on the ground, a conveyor-type harvest aid, spanning about 12 rows of tomatoes, travels just ahead