Wirebound containers are best adapted to hydrocooling. The appearance of fiberboard cartons can be enhanced by graphics printing and oversized containers of this type are best adapted to slush-icing.

Grade

Commercial fresh market corn is graded United States Fancy, United States No. 1, and United States No. 2, that require a minimum cob length of 6, 5, and 4 inches, respectively. Permissible processing grades are United States No. 1 and United States No. 2 with a minimum cob length covered with undamaged kernels of 4, and 3 inches, respectively. Cobs may be clipped for all grades except United States Fancy. Unclassified consists of ears which have not been classified in accordance with any of the foregoing grades; "unclassified" is not a grade within the meaning of the standards. Wide ranges in ear length and diameter result from differences in production areas, season, and cultivar.

Vacuum cooling is the most rapid method to precool corn; however, the corn must be wetted first to increase the efficiency of the process. Crated corn can be vacuum cooled from 85 to 40°F in about 30 minutes. Failure to properly wet the corn can result in a 1 percent moisture loss for each 10-degree drop in corn temperature; therefore, denting of kernels may occur.

Hydrocooling by showering or immersion in water is the most common precooling method for sweet corn. Effectiveness of this cooling method depends upon low water temperature (32 to 34°F), maximum surface contact of water with corn, and sufficient time for heat removal. Crated corn may take over an hour in a hydrocooler to cool to 40°F. Many hydrocoolers are now capable of handling palletized crates, stacked four or five layers high. Large overhead spray nozzles must be capable of discharging a large volume of water over the palletized crates to efficiently remove heat. Corn toward the center of the pallet is most difficult to adequate cool. Hydrocooling corn in bulk is more efficient than hydrocooling crated corn due to improved contact between water and corn. However, some rewarming of the corn will occur during the subsequent packing.

Slush-icing is another method to precool corn. A mixture of ice and water is pumped into each crate and field heat from the corn is most effectively removed by the water, thus allowing the residual ice to continue the cooling process. As with hydrocooling, effectiveness is a function of surface contact with cold water and sufficient time for heat removal. Oversize cartons are required for slush-icing to permit sufficient quantity of ice for residual cooling. Carton size should be sufficient to hold 60 ears and about 25 pounds of ice.

Precooling

Rapid removal of field heat from sweet corn (precooling) is especially critical to retard deterioration. Maximum quality retention can be obtained by precooling corn to near 32°F within an hour after harvest and holding ears at that temperature during marketing. Corn can be kept in marketable condition (appearance) for 5 to 8 days at 32°F but shelf life is reduced to 3 to 5 days at 40°F and not more than 2 days at a temperature of 50°F.

After precooling, top icing of wirebound crated corn is desirable during transport or holding to continue cooling, remove heat of respiration and keep the husks green and fresh. Corn intended for local market benefits from precooling but will remain edible for a day or two after harvest if kept cool. Keeping the husks wet will aid by evaporative cooling and retain the fresh appearance of husks.

Corn may be adversely affected by exposure to ethylene; therefore, it should not be stored with fruits and vegetables that are known to produce ethylene, such as muskmelons and tomatoes.

With proper grading and precooling, postharvest diseases and disorders of sweet corn are of little consequence during marketing.