Sugar Quickly Lost

Sweet corn, ready for harvest, contains approximately 6 percent sugars. If no precooling or refrigeration is provided, approximately 60 per cent of these sugars are lost during the first 24 hours after picking, principally through the conversion of sugars to starch. Because of this rapid loss of sugars, and therefore eating quality, at warm temperatures, it is extremely important that sweet corn be precooled as soon as possible after harvest and be provided with some means of refrigeration until it reaches the consumer's table.

Four test crates of sweet corn were immersed in ice water for about one-half hour.

During 1954, the University of Arizona, in cooperation with the Crystal Ice Company, Phoenix, conducted tests to compare the common method of cooling sweet corn with ice water (often called hydro-cooling) to the new method of vacuum cooling.

Four test crates of sweet corn were immersed for 25 minutes in tanks containing ice water. The temperature of the water varied from 33 to 46°F, depending upon the position of the ice in the tank.

The average temperature at the center of the cobs before ice-water cooling was 87.2°F, and after cooling was 58.3°F. This represents a temperature drop of 28.9° during the cooling period — an average loss of 1.3° per minute.

The average temperature of the sweet corn in four other crates was 89.5°F just before being placed in the vacuum tube and after 18 minutes under vacuum, the temperature of the corn at the center of the cob was 37.8°F. This temperature reduction of 51.7° averages 2.9° per minute. The sweet corn lost 5.2 percent of its original weight due to moisture loss, apparently for the most part from the husk portion, during the vacuum cooling process.

Vacuum-cooled Less Attractive

Throughout the storage period, the corn which had been cooled in ice water had the freshest and most attractive husks. The husks of the vacuum-cooled corn were the least attractive because of the loss of moisture during the vacuum cooling process. However, the commercial shipments of sweet corn from Arizona which were vacuum cooled, were received at eastern markets with comments of praise for the high quality of the corn.

At one vacuum-cooling plant in the Salt River Valley, facilities have been installed so that the corn can be sprayed with water before entering the tubes and, therefore, possibly lose less moisture at the expense of the husks during vacuum cooling. During transit, the moisture from the melting ice in the railroad car may also replace some of the moisture lost from the husks.

Rapid cooling makes more marketable

Sweet Corn

By J. K. Stewart

Department of Horticulture

During the spring of 1954, Arizona vegetable growers shipped 13 cars of sweet corn to eastern markets from the Salt River Valley.

Corn in three of these cars was precooled by the vacuum cooling method commonly used only for the lettuce crop. The most common method of precooking sweet corn is to immerse it in ice water and be provided with some means of refrigeration until it reaches the consumer's table.

Until recently, it was felt that only leafy vegetables could be properly cooled by this method. Tests by the University of Arizona, however, have shown that the temperatures of sweet corn at the center of the cob can be lowered to desirable temperatures by the vacuum process.

Ranch Day at the University

The University of Arizona Department of Animal Science will conduct the first of what is expected to be an annual RANCH SCHOOL at the campus in Tucson, April 14-15. Professor Ernest B. Stanley, department head, has a program arranged that will feature lectures in the forenoons and demonstrations during the afternoons. Staff members from several departments of the College of Agriculture will participate. Registration will begin January 14. No special program will be arranged for women, but they are welcome to join the men at the regular sessions.

High quality sweet corn produced in the Salt River Valley; new crop for vacuum cooling.