Storage, Shipping And Precooling Of Stone Fruits

L. D. Hunter

The ability to hold stone fruits for even a week or ten days makes it possible for the canner or processor at the peak of the harvest season to receive fruit faster than it can be processed. Most stone fruits will, even under best storage conditions, soon show some deterioration, with the amount and rapidity depending largely on the condition of the fruit when received.

Storage Temperature

The storage temperature and humidity generally recommended for peaches, apricots, plums and cherries is 32° to 35°F., with a humidity of 80-85%.

As a number of weeks in experimental storage at 32° the flesh of well matured peaches frequently became mealy, the apricots remained normal or else reddening was materially retarded. It has been reported that storage did not occur, peaches stored at 30° and ripened at 50° were often of distinctly better quality than those stored at 32°.

With all stone fruits, unless it be changed, storage temperatures between 30° and 40° for any length of time have proven unsuitable.

One of the first signs of deterioration in peaches, nectarines and apricots is loss of flavor—followed perhaps by a discoloration of the flesh. This loss of flavor may be noticeable even after a period of ten days.

In some of our experimental lots of peaches, quality still existed after a storage period of four weeks at 30°. After six weeks, fruits at 30°, even though of good external appearance, were thoroughly spoiled.

Apricots

Well matured apricots in a few instances have been held with fine flavor longer than six weeks, but browned of the flesh occurred on the fifth or sixth week.

Peaches

Well matured peaches frequently became mealy in experimental storage at 32°. The internal difference was noted in this respect between samples held at 30° and 40°.

(Continued on page 3)

Comparative Tests On Plowed And Unplowed Soil For Sugar Beet Seed-bed Preparation

L. D. Hunter

Results of trials over a period of four years show that nothing is gained in the production of sugar beets by plowing the soil in seed-bed preparation provided sterile culture killed all the weed growth. In this study, plowed and unplowed plots proved to be essentially the same in yield, sugar content, purity, and number of beets per acre; the volume weight and pore space of the soil; penetration rates of the irrigation water; and the shape of the beets.

Where weeds infest the surface soil, plowing may be practical for burying their seeds deep and thus eliminating some of the weed growth the next year.

Under certain other conditions, such as where a blow plow exists, deep tillage or plowing may be necessary. Flow passes interfere with the penetration of irrigation water and sometimes cause rotting of the beet root.

Plowed, but was stored to the depth of two to four inches with a spring tooth harrow or disk to kill all growing weeds before the crop was planted. The soil was plowed 12 inches deep in the late fall or winter. The sugar beets were planted the latter part of February in the spring, according to weather conditions. Except for keeping cultivations to a minimum for weed control, the cultural operations after planting were the same as those practiced in the area adjoining the experimental plots.

Yield of Beets and Sugar

The difference in mean yield for the treatments, 0.44 tons of sugar beets, was not statistically significant.

Local Hay Are Subjects Of Comparative Study

Arthur Shultis

To compare methods and costs of harvesting alfalfa hay in California, a survey was conducted by the Bureau of Agricultural Economics in 1945.

In California, over 100 records were collected on alfalfa hay harvesting, in Madera County, where most methods are used in the Central Valley were available for study.

Mowing and Raking

These methods vary in quality and 79 tractor mowers were in the study. The average mowing time for a 5-foot horse-drawn mower, averaged 9.6 hours per acre.

The average total cost of tractor- drawn 6-foot mowers was 71c per acre.

Where 7-foot tractor-drawn mowers were used, the total average cost per acre was 71c.

In cases of horse-drawn drop "knoke the total cost per acre averaged 7c less.

The cost of the 10-foot track- drawing multi-dish, averaged 7c per acre.

Loose Hay

Transportation of loose hay from windrows to storage was studied in cases of pitching on and off, pitching on and unloading mechanically, and the use of a hay loader in the field with mechanical unloading at storage.

In cases where horse-drawn wag- on loads were used with the pitch on and off, the output averaged 0.7 tons per hour at a total cost of $4.44 per ton. Where the wagons were tractor- drawn, the output was 0.8 tons per hour at a total cost of $4.85.

(Continued on page 3)

Control Of Vapors In Storage Essential For Prolonging Life Of Avocados And Citrus Fruits

J. B. Biale

In the past, the life of avocados and citrus fruits has been considered sufficient to permit them to be shipped to market after harvest and before ripening. Recent studies have shown that much could be done to improve the quality and life of these fruits, and to increase the marketability of the less desirable types.

Avocados, with a storage life of six to eight weeks, ripen in storage to such an extent that they can be shipped and ripened in the market for consumer consumption.

Citrus fruits, with a storage life of two to four months, ripen in storage so that they may be shipped and ripened on arrival in the market.

(Continued on page 3)

Fertilized Legumes Aid Following Crop Of Non-legumes

John P. Conrad

Fertilizers containing no nitrogen may increase the growth of legumes such as alfalfa, clover, vetch, and pea, which contain relatively high amounts of nitrogen. This is possible because bacteria contained in nodules on the roots of legumes fix the free nitrogen of the air. This makes the non-legumes unavailable to most other plants.

The addition of fixed nitrogen supplied by the decay of the residues of legumes for a few years may give greater yield to the following crop of non-legumes.

Until recently the possible magnitudes of the increases in yields of legumes and of the following non-legumes for many agricultural conditions in California had not been recognized. Nor had the particular fertilizing combinations for maximum yields of non-legumes of a given locality been determined.

A number of experiments in one area of Ventura County a few years ago indicated that the carriers of sulfur markedly increased the growth of the following non-legumes for each locally determined.

In this study, plowed and unplowed treatments were employed which included the following combinations:

Field Trials

As sulfur alone could not be expected to increase the yields of legumes in every location throughout the state, about 10 exploratory trials to determine local definitions by the research were conducted during the past seven years on storage problems of avocados and citrus fruits.

It was found that increased yields of fixed superphosphate supplying phosphorus, nitrogen contained in soil; and fixed nitrogen supplied by legumes or by symbiosis with legumes in every location throughout the state.

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Control Of Vapors In Storage Essential for Prolonging Life Of Avocados And Citrus Fruits

One of the factors which is of utmost importance in the life of avocados and citrus fruits in storage is the presence or absence of certain chemicals which are evolved naturally or artificially by action of the climatic factors or as by-products of decay. The presence of certain vapors may extend the life of the two commodities, while the presence of others may result in the complete destruction of the same.

The absorption of active vapors by bromine is well known. Vapors from ignited charcoal will also pass through the body of the fruit, and there is considerable evidence that the absorption of such vapors is of considerable value in prolonging the life of such fruits as apples, pears, peaches, and cherries.

It is evident that the presence of moldy fruit, which is exposed to the air, will cause the air to be tainted with active vapors which will adversely affect the fruit undergoing storage.

Vertical Cabinet Type Electric Sterilizer Tested For Lethal Effect In Bacillus I. Milk Cans

Tests were made on a vertical cabinet sterilizer heated by fire strip, to determine the lethal effect on Bacillus I., and to see if the equipment was satisfactory.

The cabinet has dimensions of 30" depth, 35" width and 35" height, and is fitted with three inches of mineral wool all around, which reduces the heat to about 50" at the top and 100" at the bottom. The cabinet is heated by a series of lamps, and the heat is kept at 150" for 10 minutes. The cabinet is constructed of 1/8" steel plate and has a net storage space of 50 cubic feet.

The temperatures which have a total connection load of 2250 watts are in the range of 145" to 150" at the top and 100" at the bottom.

Finishing the Sterilization of Fruits

The finishing of the sterilization of fruits, whether in storage or out of storage, is an important factor in the storage of these commodities. The sterilization is generally accomplished by placing the fruits in a container of moldy fruit and circulating air through the container, either with or without the use of a fan. The air is then filtered through a filter or passed through a solution of bromine.

Hydrocooling

Hydrocooling is infinitely more rapid than cooling in air and is now employed commercially with a number of vegetables. In this process, the vegetables are washed, rinsed with cold water and placed in the sterilizer and heated. The temperature is usually maintained at 150" for three hours and the bacteria counts made and compared with the untreated controls.

Proper Temperatures Important In The Storage, Precooling, And The Shipping Of Stone Fruits

Though a good start has been obtained in the past, there is still much to be done to secure the maximum benefits for the various areas of the state.

Poultry Nutrition Proves Helpful To Humans

A brief report concerning the search for a successful formula for poultry brooders is given below. The results of the investigations of chickens, both as to the growth and production of eggs, provide the basis for the theoretical interpretation of the observations. Nutritional research has made possible the formula for a synthetic diet that would supply completely the nutritional requirements of chickens for growth and reproduction.

Vitamin K

The same test which on project 677-D-2 was started, and within a few weeks was discontinued. The chickens were allowed to consume the powdered food and scientists working in the Division of Poultry Husbandry in California have reported the absorption of an unknown vitamin.

Pyridoxine

Pyridoxine is another vitamin factor to be discovered in the progress of Project 677-D-2. A scientist working on the project conducted parallel investigations with rats. He made certain findings which he applied to the experiments in progress with the poultry diet. His observations in his rat studies were confirmed. This vitamin was first isolated and the first description made of the nutritional manifestations of its deficiency. Lack of sufficient pyridoxine in the diet of the chick is indicated by such symptoms as weakness, nervousness, and convulsions.

Pantothenic Acid

Pantothenic acid was investigated to determine if this vitamin in the diet of chickens caused the production of eggs with low hatchability. Dead embryos had characteristic defects, such as dwarf size, degeneration of the kidneys, deformed down, and evidence of edema and anemia.

In 1937 California poultrymen reported an epidemic-like prevalence of egg deformities, and this vitamin was confirmed as the cause of the deformities. Lack of pantothenic acid in the diet of the chick is indicated by such symptoms as weakness, nervousness, and convulsions.

Biotin

Biotin is a vitamin of the B complex which is necessary for the growth of bacteria. It is also necessary for the growth of plants and animals. The human body can produce a small amount of biotin, but an adequate supply is not possible without an adequate diet.

Investigations of biotin established

(Continued on page 4)