

Dried Prunes

effect of harvesting time on the yield and quality under study

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Yield and quality of prunes will vary with the harvesting date according to results obtained from studies made during the 1947 and 1948 seasons in the Sacramento Valley.

The midseason, a period of about 10 days, gives not only the highest yield to the grower, but also the best quality fruit from the standpoint of flesh quality.

Many factors such as growing area, year, fertilization and irrigation practices affect the crop. Most growers agree that the time of harvest is also a factor, determining the size of the crop, but there is considerable disagreement as to the best harvesting time. Less attention is usually paid to the effect of harvesting time on the quality of the dried product.

Studies were undertaken by the College of Agriculture, to determine more accurately what the effect of harvesting time was on the yield and quality of dried prunes.

The work was started with Sacramento Valley prunes because the fruit in this area does not form an abscission layer and hence does not drop from the tree when it reaches maturity, as is the case in the Santa Clara area. It is customary to knock the fruit from the trees by shaking with poles or mechanical devices and consequently the grower must decide on the best time for harvesting, or whether

to harvest in one, two or more pickings. Although a low drying ratio indicates a high yield of dried prunes from the fresh product, it is not safe to depend on this. Later on in the season the fruit dries partially on the trees and even though moisture is lost and the fruit becomes apparently sweeter—by concentration of the solids—the low-drying ratio does not mean a higher yield of dried fruit, but simply that part of the drying already took place on the tree.

It was felt that the best criterion of yield was to measure the change in total solids—or dry weight—per prune, based on an analysis of at least several hundred prunes at different times of harvest. It was assumed that the total number of prunes developing on the trees in an orchard remained approximately the same until harvesting time.

In the present investigations samples were taken twice a week during 1947 and once a week during the 1948 season from specially reserved trees in two different orchards for the two years. The first samples were collected when the fruit was definitely green and the last samples when mushy ripe to shriveled. Of each sample the average weight per prune, average moisture and sugar content were determined. The average total solids content was easily calculated as the difference

of 100 minus the average moisture content. By knowing the average total solids in per cent and the weight per prune, the average total solids per prune was calculated.

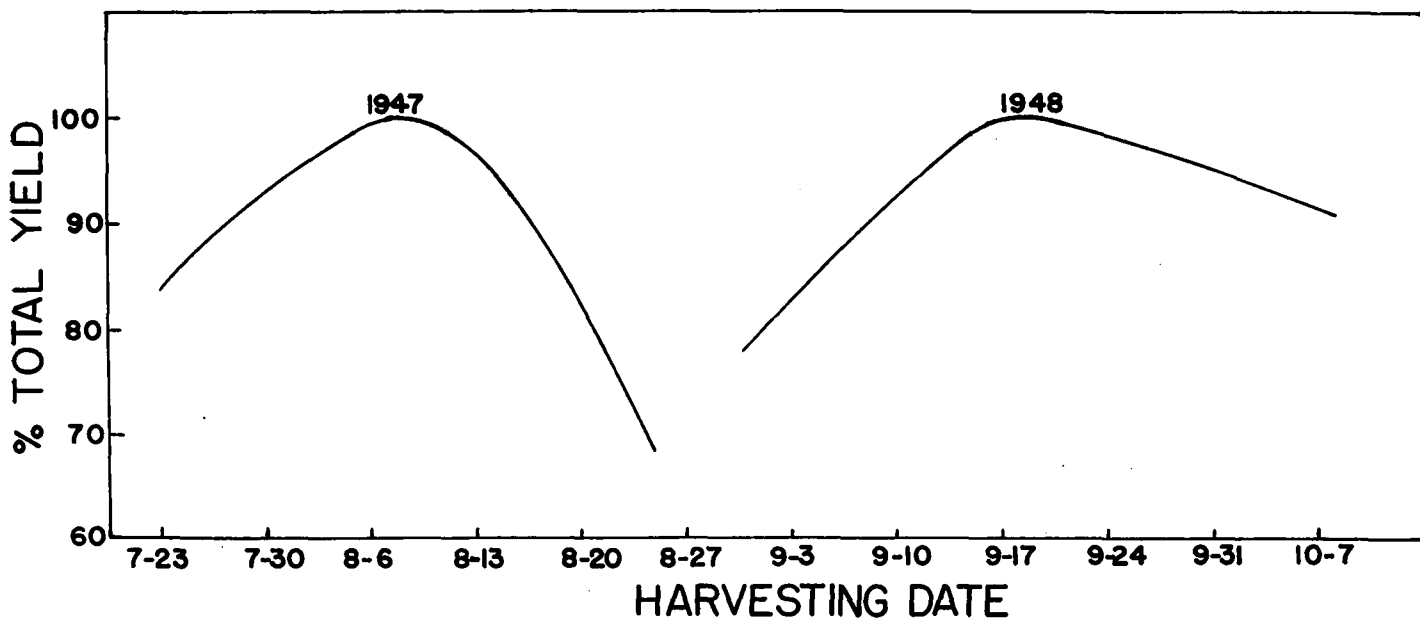
When the total solids per prune reach their maximum the yield of the dried product will be the greatest. It was found that the total solids per prune increases up to a given period of time and then decreases. This can be seen in the accompanying graph which shows the percentage of maximum yield obtainable with different dates of harvest in the 1947 and 1948 seasons. It shows strikingly the great variation from year to year in harvesting season.

Of equal importance is the quality of fruit obtained at the various harvesting dates. A portion of the weekly samples was dehydrated to 20% moisture. In order to minimize changes the fruit was kept in freezing storage until all samples were collected. They were then placed in storage at 60° F.

A true picture of the flesh color can not be seen unless the flesh is removed from the skin. The illustration on the next page shows the comparatively light-colored flesh early in the season. In the very early fruit the chlorophyll was apparent giving the flesh a slightly greenish tinge. Later this disappeared and still later the flesh became progressively darker with an increasing number and size of gas pockets. These pockets as a rule are not the result of yeast fermentation or other microbiological spoilage, but are apparently caused by certain physiological changes in the fruit flesh itself, after aging. The formation of gas pockets in prunes made from overripe fruit is not limited to Sacramento prunes.

The results so far obtained show clearly that yield as well as quality of prunes

Effect of Harvesting Date on the Yield of French Prunes, 1947 and 1948 Seasons



from the Sacramento area will vary with the harvesting date.

The problem confronting the grower is to determine this period without going into more or less complicated analyses of weights and moisture content.

The best practical rule seems to be to harvest the fruit when it is of good attractive eating quality; when the skins are still smooth, the flesh firm and yellow—the fruit is juicy and has not yet started to dry or soften much. In the Sacramento Valley prunes reach such a condition from one to two weeks earlier

The 1947 Season in the Santa Clara District

Appearance before dehydration	Percentage of the dried product showing gas pockets
Reddish smooth skin	8.6
Dark smooth skin	8.3
Red smooth skin	7.4
Dark smooth skin (large fruit)	11.1
Slightly shriveled dark skin	56.0
Dark large fruit with shriveled skin	41.4

than is customary to harvest at present. Allowing the fruit to remain on the tree, only produces an apparent increase in sugar content by evaporation, which concentrates the sugar. Quality as well as total yield suffers by later harvesting.

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1948
 Aug. 30
 Sept. 6
 Sept. 15
 Sept. 22
 Sept. 27
 Sept. 30
 Oct. 8



Cross sections of prunes harvested at dates shown. Color darkens and sponginess increases as dates advance. Lightest color and no sponginess indicate best flavored fruit. The sections at the extreme right are fruit flesh removed from the skin.