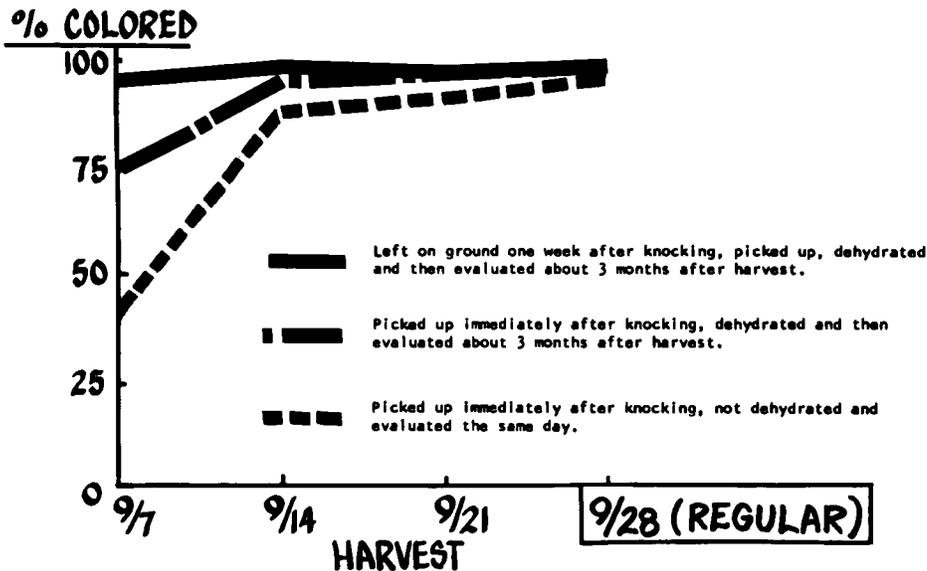


# EARLY HARVESTING OF ALMONDS

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Graph 1. Changes in color of the almond kernel pellicle are shown in relation to harvest date, method of handling, and artificial dehydration—Nonpareil, 1964 (average of two orchards).



Harvesting almonds after most hulls have dehisced, but two to three weeks before the nuts become essentially dry on the tree, did not appear to affect yield in this study. Adverse effects on kernel and shell quality were evident, however. Allowing the almonds to dry on the ground for a few days to a week after knocking reduced or eliminated at least some adverse effects of this earlier harvesting on quality.

**A**LMOND HARVESTING has become largely mechanized during recent years. Nuts are now allowed to become almost completely dry before knocking, and consequently can be harvested later than when they are knocked onto canvas sheets for hand harvesting. Although later harvesting has many advantages, knocking almonds somewhat earlier

also has possible benefits. By starting earlier, harvesting and hulling equipment may be operated more efficiently over a longer period of time, and the harvest labor peak could be spread. It is also possible that harvesting could be completed before fall rains occur, and that worm damage might be reduced. This study was initiated to establish the relationship between time of harvest and yield, nut quality, need for dehydration, ease of knocking, and number of stick-tights (nuts with hulls that adhere tightly to the shell). To provide a basis for evaluation, this study included an examination of the changes associated with nut maturation.

In 1964 the Nonpareil, Ne Plus Ultra, and Mission (Texas) varieties were studied in Merced County. In 1965, studies were conducted with the Nonpareil variety in Merced County and with the Mis-

sion variety on the Davis campus of the University of California. In most cases four consecutive harvests were made at weekly intervals. The last test harvest generally coincided with the beginning of regular harvest for the particular orchard. The test harvest dates occurred after most of the hulls had split and during the time the nuts were losing moisture and the hulls were separating from the shells.

## Yields

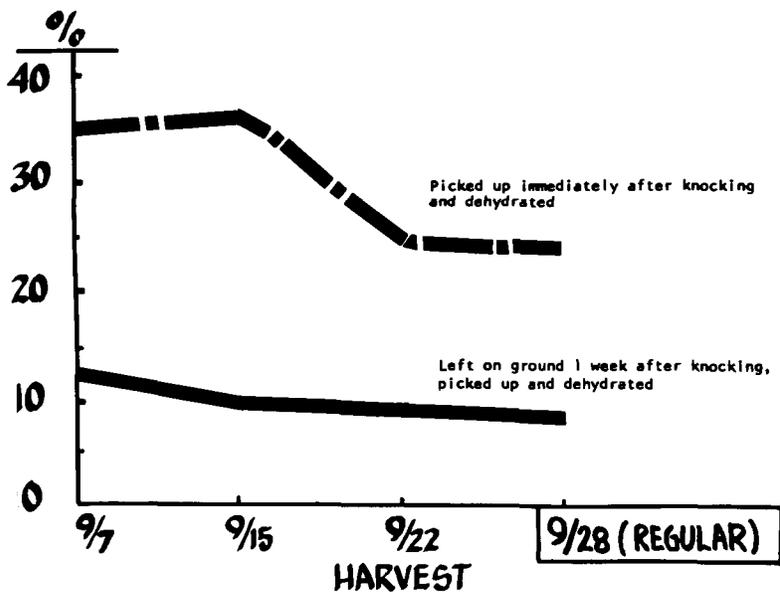
Kernel weight, kernel thickness, and shelling percentage were compared for nuts obtained at the four harvest dates to determine the effect of time of harvest on yield. No real differences in any of these factors were noted in nuts obtained within two weeks of regular harvest. However, two small samples collected several weeks earlier had kernels that were lighter in weight and shriveled.

## Quality

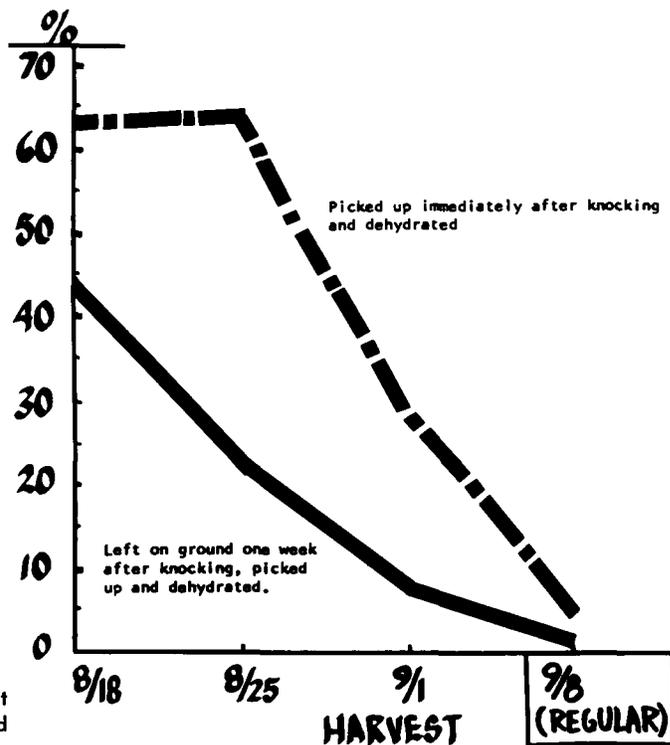
In 1964, Nonpareil trees knocked three weeks prior to the regular harvest date had less than half of the kernel pellicles (skin surrounding the kernel) fully colored (graph 1). However, after dehydration in the shell, approximately 75% of the pellicles were fully colored when examined about three months later. When such early-harvested nuts were knocked, allowed to dry on the ground for one week, and then dehydrated, more than 95% of the pellicles were colored. In both years, nuts from all three varieties collected within two weeks of regular harvest had pellicles which were essentially fully colored when dehydrated.

During this evaluation, the kernels were handled individually and rubbed through the evaluator's fingers, and many of the kernels lost at least part of their pellicle. In 1964, this factor was particularly prevalent with the Ne Plus Ultra variety (graph 2) and was also present,

Graph 2 (below). Changes in the tendency of almond kernels to lose at least part of their pellicles are shown in relation to harvest date and method of handling—Ne Plus Ultra, 1964.



Graph 3 (right). Changes in the tendency of almond kernels to lose at least part of their pellicles are shown in relation to harvest date and method of handling—Nonpareil, 1965.



but to a lesser degree, with the Nonpareil and Mission varieties. In 1965, many kernels of both the Nonpareil (graph 3) and Mission varieties showed this condition in early-harvested material. As the regular harvest date approached, this factor generally decreased. Allowing the almonds to dry on the ground for three to seven days reduced this loss of pellicles.

Many almonds of these varieties collected two weeks early had shells with a blotchy, light appearance. This condition, also, decreased as the regular harvest time approached. Generally, very few blotchy, light appearing shells were found in early-harvested almonds that were allowed to dry on the ground three to seven days prior to gathering.

The percentage of wormy kernels in the Nonpareil samples for both years was so slight, generally 3% or less, that no valid observation for this factor could be made. In the other two varieties, wormy kernels were not a problem at any harvest date.

Harvesting almonds earlier than one to two weeks before the regular harvest period had some effect on quality. Allowing the nuts to dry on the ground for at least several days prior to picking up seems to reduce the number of uncolored kernel pellicles, the loss of pellicles, and the number of blotchy, light appearing shells.

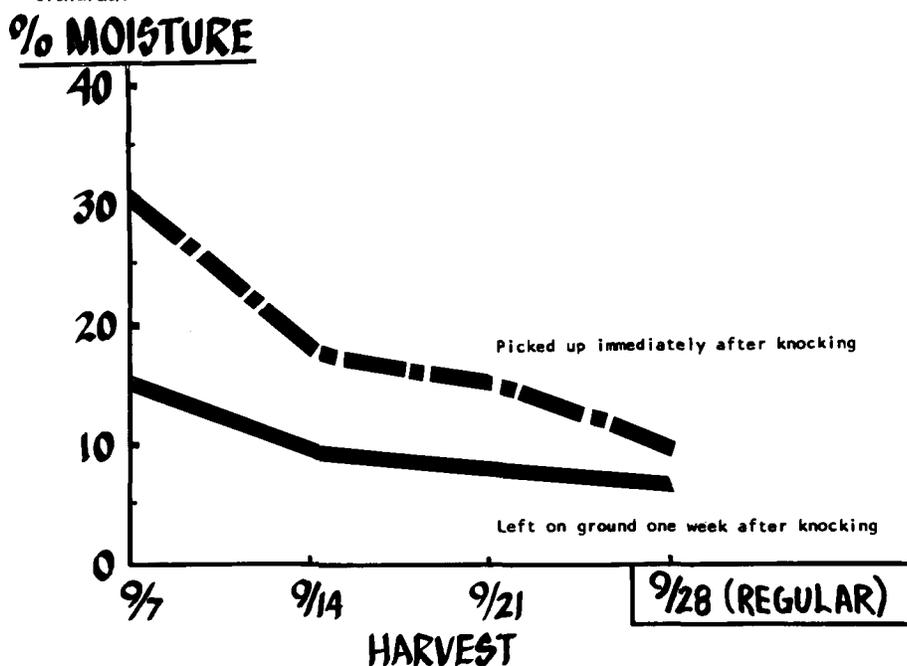
Leaving the nuts on the ground up to one week considerably reduced the

amount of drying needed at the early harvest dates (graph 4). In fact, the Nonpareils in both 1964 and 1965, needed little or no supplementary dehydration within two weeks of regular harvest, if the nuts had lain on the ground for one week prior to picking up. A limited amount of dehydration may be needed with earlier harvests; however, the amount of drying required, and the neces-

sity for it, depend on the season and weather conditions.

In these tests, ease of knocking increased with ripening. However, nut removal one to two weeks earlier was not much more difficult than removal at the regular harvest time. Harvesting done prior to this time was more difficult, the percentage removal was low, and the time required to knock nuts from a tree in-

Graph 4. Changes in moisture content of almond kernels during maturation are shown in relation to harvest date and methods of handling—Nonpareil, 1964 (average of two orchards).



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creased. The limiting factor in early harvesting of almonds could be the efficiency of nut removal from the tree without causing limb damage.

On the early harvest dates for the Ne Plus Ultra and Mission varieties, many sticktights were found, particularly after the nuts had dried on the ground for one week. A lower percentage of sticktights was observed in samples collected at the later harvest date. Sticktights were not a problem in the Nonpareil variety.

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