

# Is Walnut Drying Time Affected by Ethephon?

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When the growth regulator ethephon is applied to walnuts at maturity and when packing tissue between kernel halves turns brown, hull dehiscence and nut loosening are advanced. Harvest can generally begin 7 to 10 days following treatment, which may be 1 to 3 weeks before normal harvest. The possible advantages of an earlier harvest are: improved kernel quality, less insect infestation, greater nut removal, greater hullability, and a more efficient harvest. In the course of University of California experiments and subsequent grower use of ethephon, reports have appeared claiming both longer and shorter nut drying times. The purpose of our investigation was to measure nut drying time after ethephon treatment.

Two orchards in the southern San Joaquin Valley (Payne and Hartley) and one in the Sacramento Valley (Ashley) were selected for testing. At nut maturity, the nuts were sprayed with 500 ppm ethephon. Large samples were taken from test trees at time of treatment and 4 days later. On these sampling dates most nuts had stick-tight hulls which were removed completely. These were weighed and

dried. Reweighing established percent moisture, thus uniformity among trees in the experiment. Harvest samples were taken at the earliest date hull dehiscence was adequate and 80 percent nut removal could be obtained. One hundred randomly harvested nuts, 20 each from five trees, were weighed individually, held in nylon mesh bags and placed in a dryer at 107° F. While drying, the individual nuts were weighed at regular intervals until a constant weight was reached. These data were used to determine rates of drying

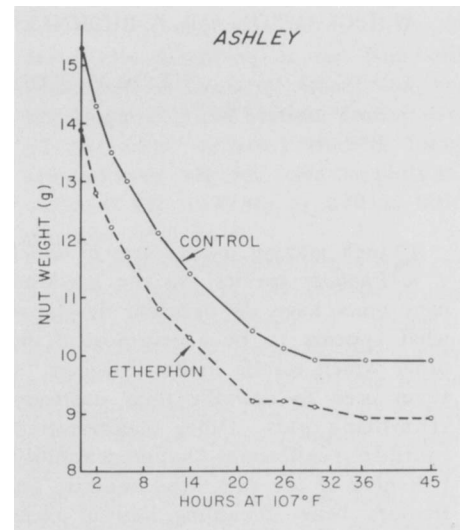


Fig. 3. Rate of drying for Ashley walnuts following pre-harvest foliar spray of ethephon compared with no treatment (control).

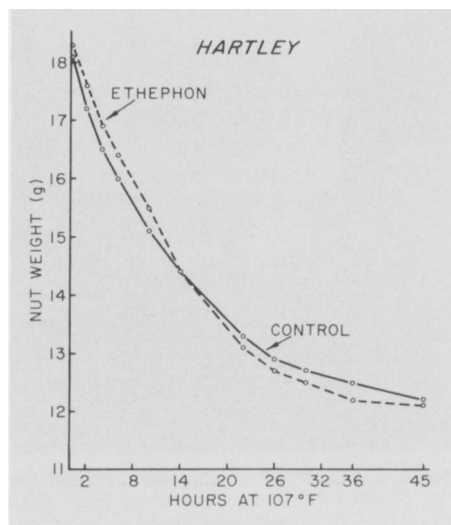


Fig. 2. Rate of drying for Hartley walnuts following pre-harvest foliar spray of ethephon compared with no treatment (control).

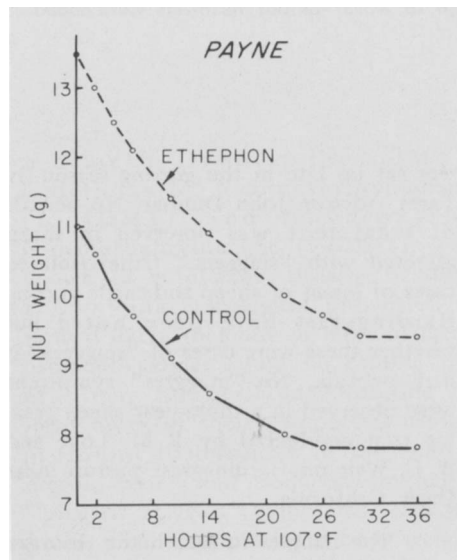


Fig. 1. Rate of drying for Payne walnuts following pre-harvest foliar spray of ethephon compared with no treatment (control).

between non-treated controls and ethephon treatments. The final moisture percent of the nut samples was determined at the conclusion of each experiment, using the Cenco Moisture Balance.

The random harvest nut samples of Payne, Hartley, and Ashley walnuts entered the dryer at different average weights (figs. 1, 2, and 3). Note that in each case, however, the rate of drying was nearly the same regardless of treatment or variety. In about 36 hours the nuts were no longer losing weight. When dried to a constant weight, including shell and

kernel, the percent moisture remaining was not notably affected by treatment with ethephon. (Of the three varieties tested, treated Hartleys retained .4 percent more moisture than those untreated, while treated Ashleys retained .1 percent more. Treated Paynes, on the other hand, contained .4 percent less moisture than untreated.)

Field treatments of ethephon neither increased nor decreased time needed to dry the nuts. Growers have been aware that wetter nuts require more drying time; these experiments support this observation. Growers continue to report that ethephon treated nuts require less drying time. These observations probably result from ethephon treated nuts, with open hulls, partially drying on the tree. Regardless of ethephon treatment, delaying harvest of nuts is not recommended because of subsequent loss in kernel quality.

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