AMBIENT AIR DRYING OF WALNUTS

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Small scale field trials were conducted during the fall of 1977 to determine the feasibility of drying walnuts with ambient (unheated) air. A total of seven tests were conducted in Butte and Tulare counties comparing quality and drying times of unheated versus heated air drying. The tests indicated no detectable difference in quality (color, mold, insect damage) between the two drying methods. They also demonstrated that when drying was done in pallet bins with similar air velocity in each system the ambient drying required three times more fan operation time. If the air velocity is reduced it is expected that ambient air drying would take even longer, although it would probably be more economical in the long run. Ambient air drying appears to have the potential of reducing total energy costs (gas and electricity) by 90% over conventional heated without reducing quality.

It is envisioned that a full scale set up would dry the nuts in perforated floor grain bins. These bins are a less expensive method of holding the nuts than present drying bins. Drying time would, of course, be longer than three times normal drying time because of the increased depth of nuts. However, a preliminary economic analysis indicates that even if a grower had enough bin capacity to hold his entire crop, ambient air drying would still be cheaper than conventional drying. This type of holding capacity would also allow much faster harvesting and consequently the potential for significantly higher nut quality. The previous results obtained this year and potential benefits of ambient air drying indicate that research should continue to develop and prove this system.