HARVESTING

AMBIENT AIR WALNUT DRYING

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We continued to gather data on the time it takes to dry with unheated air. Four ambient air drying tests were conducted this fall. Two of the experiments were done at an orchard in Woodland, and two at an orchard in Rio Oso.

The experimental dryer was constructed of 15 inch diameter PVC pipe, and was 10 feet high. It held about 350 pounds of wet walnuts. A centrifugal fan moved air through the dryer at approximately 120 feet per minute. Air temperatures were measured at the fan inlet and at 2.5 foot intervals in the bed. Ambient air dew point temperature and wet bulb temperatures were also measured. All temperature data were recorded at 10 minute intervals on a digital data logger. The entire unit was mounted on a Fairbank's scale; and the weight change was measured two times a day. Mechanical problems with the scale invalidated most of the readings for the first test.

Test results again showed that time to dry to 8% moisture is greatly influenced by daily air temperature and humidity. The initial moisture contents and time to dry for the last three tests were 17.9% and 50 hours; 16.6% and 98 hours, 11.5% and 45 hours, respectively.

The computer simulation model was tested against each of the drying tests. As in last year's tests, it performed adequately; predicting final moisture content within 2%. It should serve as a valuable tool for designing fixed bed dryers. Given local air temperature data, it can be used to predict drying time for any initial moisture content and air flow rate.