

ECONOMIC PERFORMANCE OF ALTERNATIVE PREPLANT FUMIGATION TREATMENTS FOR ALMONDS

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An economic analysis was completed of alternative preplant fumigation treatments for almonds based on the trial results. The fumigant alternatives included were Chlorpicrin, Methyl Bromide 98% plus Chlorpicrin 2%, Telone II, Telone C 35, and 50/50 Methyl Bromide plus Iodomethane. The treatments were further broken down into full floor treatments versus strip treatments (38% of the orchard floor) and tarped versus non tarped treatments. There was also a control with and without the tarp. The analysis involved calculating the application costs and the costs of the materials at the rates applied. The application rates varied with materials. All other production costs were equivalent across treatments and so were not included in the analysis.

The costs of the materials, tarp and application were obtained from local input suppliers. Iodemathane is not available commercially and so it was not included in the economic analysis. Per broadcast acre, the Methyl Bromide with Chlorpicrin was the highest cost at \$2,200 per acre, Chlorpicrin at \$2,000 per acre, Telone C35 at \$1,800 per acre, and Telone II at \$620 per acre. Of course, the strip treatments reduced the cost per acre to about one third of the cost per orchard acre by reducing the percentage of the orchard floor treated. The cost of the tarp, VIF included the material and installation for a total of \$500 per orchard acre. Only the strip treatments used tarps. Consequently, the highest cost treatment was the Methyl Bromide Chlorpicrin combination and the lowest cost was Telone II strip without the tarp.

Yield responses were measured as the cumulative yields from 2006 to 2008 in pounds per acre and also 2008 only. For Chlorpicrin, the highest yields were for the strip without the tarp, for Telone C35 Telone II, and the Methyl Bromide Chlorpicrin combination the highest yields were for the full floor treatment. A cost benefit analysis was performed based on the average annual yield increase for each of the treatments over the control and the cost of the treatment per acre. The cost per pound of increase in yield was calculated for each of the treatments. This approach allows for ranking the performance of the treatments without assigning a market price to the almonds. This is important because the price received is highly variable from year to year. If the market price per pound is greater than the calculated cost per pound of increase, then the treatment is profitable to adopt. If it is lower, then it will cost more to attain

the yield increase then the income from the yield increase. The most efficient treatment is the one with the lowest cost per pound of yield increase.

The most efficient treatment was the Telone II strip at a cost of \$.32 per pound of increase followed by the Chlorpicrin strip at \$.50 per pound. The Telone C 35 strip and the Telone II strip with tarp had similar costs per pound of increase at \$.77 and \$.75 per pound respectively. The Methyl Bromide Chlorpicrin mix with strip application and the Telone 35 full floor application both had a cost per pound of increase cost of \$1.00 per pound. The strip treatment was the most cost effective for Telone II, Telone 35 and the Methyl Bromide Chlorpicric combinations due to the significantly lower treatment cost even though the yield was lower with the strip than the full floor treatment. In contrast, for Chlorpicrin, the strip reduced the cost but also increased the yield also making the strip the most efficient. The additional cost of the tarp was not cost effective for any of the treatments.