ECONOMIC FEASIBILITY OF ALTERNATIVES FOR POSTHARVEST DISINFESTATION OF CALIFORNIA DRIED FRUITS AND NUTS

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Logistic and cost considerations were evaluated for alternative postharvest insect controls in California dried fruits and nuts. Currently, fumigation with methyl bromide (where quick turnaround is needed) or slower acting hydrogen phosphide is used. Irradiation and generated low oxygen atmosphere (GLOA) have been proposed as technically feasible alternatives. The economic evaluation of alternatives for typical small and large processors of California almonds, walnuts, prunes, and raisins showed the following:

Hydrogen phosphide is the least expensive alternative to methyl bromide. Disadvantages of using slower acting hydrogen phosphide include longer re-entry time which would require additional physical plant. The competitive disadvantage of delay in shipping early-season walnuts is a significant consideration.

GLOA is slower acting than hydrogen phosphide and requires additional costs to modify procedures and physical plant. Costs will be higher for plants that cannot be modified for GLOA, since in this case new storage facilities will be needed.

There does not appear to be any economic incentive for irradiation, since even the most favorable cost estimates for irradiation are similar to the highest costs for GLOA. The most favorable applications for irradiation are disinfestation treatments during processing at large volume plants. Irradiation is not cost-competitive for smaller processors because of the high fixed cost for radiation sources, extensive shielding, and trained operators. Irradiation is not cost-competitive for in-storage treatments because of the high cost of moving the crop in and out of storage.