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Project No. 82-Q9

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Project: Almond Diseases
Aflatoxin Monitoring Program

Objective: (1) To continue the program of monitoring aflatoxins in various almond projects.
(2) To continue participation in an aflatoxin analytical check program in cooperation with the USDA, FDA, DFA and various independent laboratories.

Part 1 - Aflatoxin Monitoring

Progress: The monitoring program, which has been continued since 1973, is intended to demonstrate the concern of the almond industry in policing itself and, more importantly, monitoring the yearly trend of removing aflatoxins from edible products intended for human consumption. This monitoring program, as always, remains extremely important to: (1) demonstrate the industry's concern for maintaining a high quality product free of aflatoxins and (2) provide regulatory officials with the opportunity to direct their resources to more likely areas of food contamination.

Type Sample	Samples Collected	Number Contaminated	Level ppb
SelecteNuts*	79	2	34, 4.0
Mfg. Stock*	31	2	21, 1.0
Hulls*	9	1	2.2
Oil Stock*	0		

The 1982 survey will be completed in February 1983, except for the oil stock. The oil stock part of the survey will be completed as it becomes available.

Part 2 - Check Sample Program

The Smalley Subcommittee aflatoxin check samples in corn meal, cottonseed meal, and peanut meal are in progress and will be completed during the first part of 1983.

Project No. 82-09 William L. Stanley, 1982
Tree and Crop Research, Part 2

Methyl Bromide/Malathion Residue Studies

A series of tests was planned and initiated with Preston Hartsel and Howard Nelson at the Stored Products Insect Research Laboratory in Fresno to determine the minimum practical methyl bromide dosage levels and exposure times for controlling Navel Orange Worm (NOW) in inshell and shelled almonds. Except for some remaining to-be-run analyses for bromide residues this study has been completed. The study began with small-scale tests to determine threshold conditions and was followed by larger scale (about 2000 lb.) runs under conditions selected from the results of the small-scale tests.

Because of the greater absorption of methyl bromide by the shells than by the kernels it took slightly more methyl bromide to kill all life forms of NOW with shells present - 3/4 pound for inshells, 1/2 pound for kernels alone (dosage per 1000 cu. ft. at 60° F. and 8 hour exposure time).

In the large scale runs no NOW life forms survived at a dosage of one pound per 1000 cu. ft. at 60° F. for 8 hours with kernels and with inshell nuts. In commercial equipment one pound per 1000 cu. ft. is probably adequate for kernels. For additional assurance with inshell nuts, the processor may wish to use 1½ lbs. per 1000 cu. ft.

Under the conditions used for the large scale tests (1 lb. per 1000 cu. ft. for 8 hours) the inorganic bromide residues were quite low:

	Kernels	Inshell*
First fumigation	7 ppm	3 ppm
Second (repeat) fumigation	15 ppm	7 ppm

* Inorganic bromide in the kernel.

Note that with shells present much less inorganic bromide ended up in the kernels.

For kernels, a ten degree rise in temperature results in an increase in inorganic bromide residue of approximately 4 ppm. The increase for inshell nuts will be determined.

A full summary of this work will appear in a fumigation manual in the spring of 1983. A preliminary report has been prepared and is available from the office of the Almond Board of California. To obtain a copy ask for "Update - Methyl Bromide Fumigation of Almonds".

This information should aid handlers in meeting the stringent requirements being imposed by certain foreign regulatory agencies. The unexpected bonus is in the discovery that the fumigation time can be as low as 8 hours, 1/3 the time formerly recommended. In addition, the study includes information on aeration after fumigation which is needed for maintaining safe working conditions.