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 ALMOND BOARD

81-V8
Project No. 81-V8

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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.

The table included with this report shows the percentage of contaminated nuts in select grade, manufacturing grade, and oil stock grade almonds samples in the survey from 1973 through 1981 (1981 Survey complete except for oil stock and almond hulls).

The data from 1973 through 1980 surveys has been discussed in previous reports and thus, will not be covered in this report. The following table contains the data collected by the DFA for the Almond Board in the 1981 survey.

<u>Type Sample</u>	<u>Samples Collected</u>	<u>Number Contaminated</u>	<u>Level ppb</u>
Select Nuts	114	3	27, 40, 6
Mfg. Stock	41	2	30, 26
Hulls*	6	1	1 ppb
Oil Stock*	6	6	23, 29, 50, 70, 77, 78

* Note: Survey not complete

Part 2 - Check Sample Program:

The Smalley Subcommittee aflatoxin check samples in corn meal, cottonseed meal, and peanut meal have been completed; and the results were consistent with previous years.

	SELECT NUTS		MFG. STOCK		OIL STOCK		HULLS	
	<u># Contaminated</u> <u># Sampled</u>	%	<u># Contaminated</u> <u># Sampled</u>	%	<u># Contaminated</u> <u># Sampled</u>	%	<u># Contaminated</u> <u># Sampled</u>	%
1973	0/11	0	10/39	27	NS	NS	NS	NS
1974	0/34	0	8/62	13	13/22	60*	NS	NS
1975	NS	NS	13/100	13	11/11	100	NS	NS
1976	NS	NS	7/56	12	30/50	60*	NS	NS
1977	1/89	1	1/30	1	10/10	100	0/20	0
1978	5/100	5	2/41	4	10/10	100	3/20	15
1979	1/100	1	2/40	5	10/10	100	0/20	0
1980	2/100	2	1/41	2.4	10/10	100	2/21	9.5
1981	3/114	3	2/41	5	**		**	

NS - No Samples Taken

* - Reject Nuts, Not Press Cake Meal

** - Not Completed

A manual "A Guide To Methyl Bromide Fumigation Of Almonds And Almond Products" was assembled in collaboration with Dr. Howard Nelson of the Stored Products Insects Research Laboratory (SPIRL) in Fresno. Copies of the guide can be obtained from the office of the Almond Board. The guide summarizes the results of studies completed recently by Preston Hartsel and Howard Nelson at the SPIRL and by David L. Lindgren and Lloyd E. Vincent at the University of California, Riverside. With respect to the problem of maintaining low inorganic bromide residues, the data given emphasizes the importance of confining methyl bromide fumigation to inshell almonds, keeping the number of fumigations to a minimum (preferably, a single fumigation), and wherever possible, relying on other systems, e.g., Phostoxin, refrigeration, etc. Experiments are being planned for the coming year to provide more complete coverage.

Arrangements were made through Howard Nelson at the SPIRL to provide samples of almonds having required levels of inorganic bromide for animal feeding studies and flavor evaluation of roasted kernels at the Western Regional Research Laboratory in Albany, CA.

Contacts were made with U.S. representatives and observers attending meetings of the F.A.O., the Codex Alimentarius Committees of the World Health Organization and its Joint Meeting on Pesticide Residues (JMPR). There had been rumors that feeding studies under way in the Netherlands might influence a reduction in the recommended Average Daily Intake (ADI) for bromide which, at present, is 1 mg per Kg of body weight (68mg for a 150 pound man). This value is used in determining residue allowances for individual commodities. Dr. Fred Ives, U.S. observer to the November, 1981 JMPR in Geneva reports that no recommendation for change was made. Many European nations, Germany, for example, and third world countries depend on recommendations of the WHO for setting their residue standards.

Alternate systems for insect control are under study. None, so far, appear to match methyl bromide in economy, ease of operation, and required residence time. Among those under consideration are controlled atmosphere (reduced oxygen by burning natural gas or high carbon dioxide), low temperature, microwave, and gamma radiation. Dr. Mathews will speak on the latter two systems tomorrow.

Tests at Stanford Research Institute have shown that methyl bromide (organic bromide) will induce mutation in bacteria (the Ames test). Nearly every compound that has given a positive Ames test has been found to be a carcinogen in subsequent animal studies. It is therefore imperative that fumigated products be given adequate aeration to allow the organic bromide to evaporate, and that adequate precautions be taken to protect plant personnel from exposure to the gas.