Used Proceedings Report for Mosebar-Steffen (Part 1) and Mosebar-Stanley (Part 2) to complete report

1985

Project 85-R12 - Tree and Crop Research
Part 1 - Aflatoxin Monitoring Program

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Objectives: (1) Continue the program of monitoring aflatoxins in the various almond products; (2) Continue participation in an aflatoxin analytical check program in cooperation with the USDA, FDA and various independent laboratories; (3) To determine if aflatoxin is associated with apparently sound kernels from stockpiles of inhull almonds, particualrly those which have either been stacked too wet or have been rained on. Apparently sound kernels are defined as those which would not normally be picked out as rejects with mold and/or worm damage.

Intrepretive Summary: Samples from the 1985 season are presently being collected and the collection of all but the Oil Stock should be complete by early spring. The following samples have already been analyzed.

GRADE	CONTAMINATED SAMPLES
Select Nuts	1 / 21
Manufacturing Stock	1 / 6
Hulls	0 / 25

* The two contaminated samples are at a level of 2.6 ppb and 12 ppb, well below the United States tolerance of 20 ppb.

13TH ANNUAL ALMOND RESEARCH CONFERENCE, DECEMBER 3, 1985, FRESNO

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Interpretive Summary: During the last twelve years, the following Almond samples have been analyzed for Aflatoxin contamination.

Grade	# Contaminated / # Sampled	Percent
Select Nuts	21/848	2.48
MFG Stock	51/586	8.70
Oil Stock	141/183	77
Hull *	16/167	9.58

* Analyzed for only the last nine years

In general, the level of contamination has been below 20 ppb which is the level of tolerance in the United States.

	SELECT NUTS		MFG. STOCK		OIL STOCK		HULLS	
	# Contaminated / # Sampled	%	# Contaminated / # Sampled	%	# Contaminated / # Sampled	%	# Contaminated / # Sampled	%
1973	NS	0	11/50	22	NS	NS	NS	NS
1974	0/34	0	7/56	14	22/34*	64.7	NS	NS
1975	NS	NS	13/100	13	16/16	100	NS	NS
1976	NS	NS	7/55	12.7	30/51*	58.8	1/15	6.7
1977	1/100	1	1/40	2.5	10/10	100	0/20	0
1978	5/100	5	2/41	4.9	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	2.6	2/41	4.9	10/10	100	1/14	7.1
1982	4/ 93	4.3	2/41	4.9	6/ 9	67	4/20	20
1983	3/100	3	2/41	4.9	9/10	90	1/21	4.8
1984	2/107	1.8	1/40	2.5	8/13	62	4/16	25

NS = No Samples Taken
* = Reject Nuts, Not Press Cake Meal

13TH ANNUAL ALMOND RESEARCH CONFERENCE, DECEMBER 3, 1985, FRESNO

Project 85-R12 - Tree and Crop Research
Part 2 - Fumigation Studies

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Project Director: Dr. William L. Stanley (415) 233-5796
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Collaborators: Preston Hartsell and Pat Vail (USDA/HCRL, Fresno); Glenn Fuller, (USDA/WRRC Berkeley); Jim Thompson (Ag Engineering, UC Davis); Gerald Dull (USDA, Athens, Georgia)

Objectives: (1) Determine minimum lethal dosage and fumigation conditions (time and temperature) of different formulations of hydrogen phosphide for navel orangeworm larvae, pupae and eggs. (2) Act as a consultant to Project No. 85-P1 (Sealing Fumigation Facilities) on the chemical properties of sealants being investigated. (3) Assist with research investigating irradiation as a post harvest treatment for almonds, and other nuts and dried fruits. (4) Investigate the potential of a photometer as a means of electronically sorting almonds with concealed damage.

Interpretive Summary: Studies to determine the minimum lethal dosage and fumigation conditions (time and temperature) of different formulations of hydrogen phosphide for orangeworm larvae, pupae and eggs have been initiated by Preston Hartsell at the USDA Horticultural Crops Research Laboratory Fresno. Preliminary data show that eggs are the most difficult stage to kill and that at high temperatures relatively low exposure (dosage and time) to phosphine is needed for kill. Conversely, low temperatures may require a relatively high exposure. These tests are being geared so that it will be possible to monitor fumigation effectiveness (e.g. minimum theshold concentrations at set temperatures and times) using gas sampling-color detector tubes.

Dr. John Labavitch (Project NO. 85-I9 has induced varying degrees of concealed damage under laboratory moisture and heat conditions in a sample of 1985 crop Nonpareil almonds. These almonds will be split and a portion sent to Dr. Gerald Dull (USDA, Athens, Georgia) for photometric analysis. The goal is to photometrically detect concealed damage by either measuring "indicator" chemicals associated with damage (e.g. reducing sugars or phenolics) or measuring the degree of internal browning. The other portion of the sample will be chemically analysed by Dr. Labavitch in an effort to better characterize qualitatively and quantitatively the chemicals associated with damage.

In cooperation with Jim Thompson (Project No. 85-P1 - Sealing Fumigation Facilities), Preston Hartsell is evaluating sorbtion of methyl bromide and phosphine on several sealing materials being evaluated.

CDFA has reviewed the following usage guidelines for lower dosages of methyl bromide on almonds and has determined that these guidelines are not in conflict with current labeling and are therefore acceptable.