

California Department of Food and Agriculture
Environmental Monitoring and Pest Management
1220 N Street, Room A-149
Sacramento, CA 95814

April 7, 1989

**METHYL EUGENOL/NALED MONITORING
AT FRUIT FLY TRAPPING LOCATIONS**

I. INTRODUCTION

In 1988, the California Department of Food and Agriculture conducted a monitoring program which included collecting fruit samples from trees which contained fruit fly traps. Eight samples were analyzed for methyl eugenol, naled and DDVP residues, chemicals used as bait for the traps. One fruit sample contained both methyl eugenol and DDVP residues (confirmed by two analytical methods); therefore, CDFA undertook additional monitoring in the winter of 1988. Results from samples collected were negative but due to seasonal temperature differences between the first and second monitoring periods, it was proposed that additional monitoring be undertaken during the late spring and summer of 1989 to determine whether or not fruit absorbs these chemicals.

II. OBJECTIVE

Our objective is to determine if residues can be found in fruits collected from trees containing fruit fly traps. If analysis confirms the presence of methyl eugenol, naled or DDVP, further sampling for dissipation rate determination may be conducted.

III. PERSONNEL

Fruit sampling will be conducted by the Environmental Hazard Assessment Program field group. Key personnel are:

Bonnie Turner - Project Leader

Sally Powell - Experimental design and statistical analysis

Karen Wiese - Field group coordinator

Nancy Miller - Laboratory liaison/quality control

Duc Tran - Chemical analysis

Public/Agency Contact - Madeline Ames, (916) 324-8916

All questions pertaining to this study should be directed to Madeline Ames.

IV. MONITORING DESIGN/STATISTICAL ANALYSIS

Fruit samples will be collected from three fruit tree species commonly found in the Sacramento area. Fourteen replicates for each species will be collected from separate trees in which baited traps have been placed for a minimum of six weeks. Initial samples (0.50 kg wet weight) will be collected four hours after traps have been re-baited. An additional sample from each tree will be collected 24 hours after re-baiting. All fruit will be collected from an area 31 cm to 61 cm from the trap unless sufficient fruit is not available within this area. In the case of citrus fruit, an additional sample will be collected so that separate analysis of outer skin and inner fruit is possible. Ambient temperature ($^{\circ}\text{C}$) will be recorded at the time of rebaiting and sample collection.

It will be necessary to collect a large number of samples of each type of fruit in order to establish with statistical certainty whether residues exist. Therefore, 14 samples will be collected and if all are found to contain no detectable residue, it can be concluded with 95% statistical confidence that the percentage of all possible samples containing residue is less than 20%. (To conclude with the same degree of confidence that the percentage is less than 10% would require 28 samples, all found to be negative.) Sampling will be conducted as follows:

<u>Species</u>	<u>Sampling Period</u>	<u>Replicates</u>
Apricot	May-August	14
Apple	July-September	14
Citrus	All Year	14+14
Total (56 samples x 2 days x 2 analyses):		224
(plus 2 control samples for each species):		<u>8</u>
Number of analyses:		232

V. SAMPLING METHODS

Fruit will be collected from trees using fruitpickers, placed in 2-liter glass jars, chilled on ice and delivered to the laboratory for immediate extraction. The fruitpickers and trapsetting poles will be cleaned with alcohol and dionized water between samples.

VI. ANALYTICAL METHODS/QUALITY CONTROL

Analysis will be performed by the CDFA laboratory using methods developed from earlier monitoring programs. Separate analyses for methyl eugenol and naled/DDVP are required. Confirmation of positive finds will be made using GC/MS. One solvent blank, 1 matrix spike and 2 replicate injections for 1 positive sample will be analyzed with each extraction set.

VII. TIMETABLE

Sampling Period	May - October, 1989
Extraction/Chemical Analysis	May - November, 1989
Data Analysis/Report	November-December, 1989

VIII. BUDGET

Personnel Expenses:	\$ 700
Operating Expenses:	<u>35,500</u>
Total Cost:	\$36,200*

*Pest Detection/Emergency Projects will provide \$6,200 and Environmental Hazards Assessment Program will provide \$30,000 to cover costs of project.