RESULTS OF COMPARISON OF COLORIMETRIC ORGANOPHOSPHATE DETECTORS WITH GAS CHROMATOGRAPHIC ANALYSIS IN DETECTION OF AZINPHOS-METHYL RESIDUES

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HS-1385 July 25, 1986

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A pear orchard in Sacramento County was monitored for the breakdown of azinphos-methyl residues. The product monitored was Gowan Azinphos-M 50WP (EPA Reg. No. 10163-78 AA). Two applications were monitored. The application rates were 1 lb. active ingredient in 100 gallons of water per acre and 1.5 lbs. active ingredient in 500 gallons of water per acre. Five samples were collected simultaneously at various time intervals after the applications. Each sample consisted of 48 one-inch leaf disks, collected by using a Birkestrand leaf punch. Three samples were analyzed using a conventional gas chromatography method, and two samples were analyzed using the enzyme detector tickets provided by EnzyTec, Inc. All of the sample results reported from the gas chromatography analysis were above the minimum detectable limit of 0.005 ug/cm^2. The lowest sample result was 0.15 ug/cm^2, reported at 39 days after the second application. Correspondingly, all of the sample results reported from the enzyme detector tickets were positive. Table of results attached.

Based on the results of this study, the "enzyme tickets" appeared to adequately detect the presence of azinphos-methyl residues at levels above 0.15 ug/cm^2. The estimated safe level for azinphos-methyl is 1.6 ug/cm^2. It appears that a negative enzyme ticket result is a reliable indicator of safe levels of azinphos-methyl residues on pear leaves. A positive enzyme ticket result could indicate azinphos-methyl residues that are below or above the estimated safe level.

RESULTS

Sample Date Collection	Days Post-Application	Azinphos-methyl Results in ug/cm^2*	x + S.D.	Enzyme Detector Ticket Results**
4/18/86	2	1.45, 1.32, 1.10	1.29 ± 0.18	both positive
4/30/86	14	0.47, 0.54, 0.46	0.49 ± 0.04	both positive
5/7/86	21	0.51, 0.51, 0.50	0.51 ± 0.006	both positive
5/13/86	27	0.35, 0.25, 0.38	0.33 ± 0.07	both positive
5/16/86	30	0.24, 0.28, 0.24	0.25 ± 0.02	both positive

Application rate was 1 lb. A.I. in 100 gallons of water per acre.

5/17/86	3 hours	0.89, 0.65, 0.82	0.79 ± 0.12	both positive
5/17/86	7 hours	0.59, 1.12, 0.66	0.79 ± 0.29	both positive
5/18/86	1	0.77, 0.66, 1.03	0.82 ± 0.19	both positive
5/19/86	2	1.13, 1.05, 0.70	0.96 ± 0.23	both positive
5/20/86	3	0.61, 0.75, 1.03	0.80 ± 0.21	both positive
5/30/86	13	0.91, 0.60, 0.90	0.80 ± 0.18	both positive
6/5/86	19	0.31, 0.20, 0.27	0.26 ± 0.06	both positive
6/13/86	27	0.15, 0.21, 0.17	0.18 ± 0.03	both positive
6/17/86	31	0.19, 0.20, 0.21	0.20 ± 0.01	both positive
6/25/86	39	0.16, 0.16, 0.15	0.16 ± 0.007	both positive

Application rate was 1.5 lbs. A.I. in 500 gallons of water per acre.

*MDL = 0.005 ug/cm^2 azinphos-methyl
**Two samples were taken, one enzyme ticket was run per sample