

II. Pome Fruits

e. Pesticide Resistance

Tentiform leafminer (TLM) - apple

Codling moth (C) - apple

Obliquebanded leafroller (OBLR) - apple

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MONITORING PESTICIDE RESISTANCE IN TENTIFORM LEAFMINER, CODLING MOTH AND OBLIQUEBANDED LEAFROLLER. The pheromone trap assay as described by Riedl et al (1985) for the codling moth was applied with some modifications to tentiform leafminer and obliquebanded leafroller to determine susceptibility to azinphosmethyl in the field. One focus of the research in 1987 was to evaluate how various parameters (type of trap adhesive, pre- and posttreatment environmental conditions, position of insect on trap) affect bioassay results. Additional work with a carbamate and pyrethroid insecticide will follow in 1988. Comparison between the pheromone trap assay and other resistance monitoring methods are also planned for next year.

Tentiform leafminer - Certain parameters which influence the variability of the pheromone trap bioassay technique are discussed. Post treatment temperatures affected the dose response lines of the trapped male moths. At 55° F, the LC₅₀ was 1.64 micrograms/moth which was twice as high than at 60° F and four times as high than at 65° F. Moths bioassayed from 2 commercial sites showed high levels of resistance to azinphosmethyl. Moths from an isolated, abandoned orchard were 200 times more susceptible although approximately 10% of the TLM were resistant.

Codling Moth. The concentration-response to azinphosmethyl was determined for populations from 4 different sites: 2 from pear at OSU's experiment station in Medford, 1 from apple at the MCAREC, and 1 from an abandoned apple orchard in the Columbia Gorge. The LC₅₀ values ranged from 0.028 (abandoned orchard) to 0.166 micrograms/moth (SOES/Medford). These values fall within the range of LC₅₀'s reported in the literature.

Obliquebanded leafroller. Male moths were collected with pheromone traps in a partially sprayed apple block at the MCAREC. Great variability was noted in the size and coloration of trapped moths. This variability in field-collected moths may contribute to considerable heterogeneity in bioassay data. It may be necessary to adjust for size/weight differences or treat only groups of moths of similar size. An LC₅₀ value of 0.128 micrograms/moth was calculated for 24 h-mortality data. Check mortality was 3.7% at 24 h but had increased to 21% after 48 h.