III. Stone fruits

e. Pesticide resistance

Tentiform leafminer (TLM) - sweet cherry, apple

P. W. Shearer
Oregon State University
Mid-Columbia Ag. Research & Ext. Center
3005 Experiment Station Drive
Hood River, Or. 97031

RESISTANCE MONITORING OF THE WESTERN TENTIFORM LEAFMINER. Studies were conducted to evaluate two bioassay methods for monitoring the susceptibility of TLM to various insecticides. The topical application method involved treating male moths with a 0.2 ul solution of technical insecticide dissolved in acetone after male TLM moths were attracted to and adhered to pheromone-baited Pherocon 1C traps. The insecticide incorporated adhesive method, like the topical method, utilized baited pheromone traps to attract moths for testing. The need to treat each insect individually was eliminated because the insecticide was mixed directly into the adhesive. This latter method generally produced steeper dose-response lines and had less check mortality than the topical method when oxamyl, a material TLM are still susceptible to, was tested. Conversely, the topical method was the only technique that produced a meaningful dose-response line for azinphosmethyl-resistant TLM since a higher concentration of this insecticide in solution can be delivered to TLM via a micro-applicator than can be absorbed by each moth from the insecticide incorporated adhesive.

The topical method was utilized to study the following parameters which may affect bioassay results. A post-treatment growth chamber temperature of 60° F produced steeper dose-response lines than 55° F. An inverse relationship between mortality and %RH post-treatment was observed. Both check mortality and mortality from a discriminating dose decreased as the %RH increased. This indicates the need to standardize post-treatment humidity conditions. Regarding adhesive-induced mortality, Tanglefoot killed fewer moths than either Tangletrap or Stikem Special.

Insecticides applied to an orchard prior to trap placement and moth collection influenced bioassay results. It took one week for the effects of an orchard application of a low rate of Vydate L (4.0 oz/acre) to wear off to where check mortality in this block was similar to that obtained from an untreated block. The same was true for a low rate of Guthion 35WP (1.5 lbs/acre).

Negative correlations exist between check mortality and both temperature and %RH in the field prior to trap placement indicating that high temperature and low humidity conditions increase check mortality during certain trapping periods. This means that the variability of bioassay results may be reduced by avoiding trapping during or immediatly after "hot and dry" periods.