

Pesticide Resistance

BASELINE INSECTICIDE TOLERANCES AND CROSS-RESISTANCE IN
CHORISTONEURA ROSACEANA AND *PANDEMIS PYRUSANA* (LEPIDOPTERA:
TORTRICIDAE)

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Insecticide bioassays were conducted with obliquebanded leafroller, *Choristoneura rosaceana* (Harris) (Lepidoptera: Tortricidae), and *Pandemis pyrusana* Kearfott (Lepidoptera: Tortricidae) to determine baseline toxicities to new insecticides and to examine potential cross-resistance with azinphosmethyl. Bioassays were conducted on first-instar larvae, using a leaf disc technique. Insecticides tested included tebufenozide, methoxyfenozide, spinosad, indoxacarb, acetamiprid, *Bacillus thuringiensis*, thiodicarb, azadirachtin, azinphosmethyl, chlorpyrifos, and methyl parathion. Azinphosmethyl-susceptible laboratory populations of obliquebanded leafroller and *P. pyrusana* were used to determine baseline toxicities to the insecticides. Neonates from F₁ generations of two azinphosmethyl-resistant field-collected populations of obliquebanded leafroller were also examined for cross-resistance of several insecticides to azinphosmethyl.

No correlated response was found in azinphosmethyl-resistant obliquebanded leafroller to chlorpyrifos. Correlated responses were found between azinphosmethyl and tebufenozide (2.5- to 2.7-fold) and between azinphosmethyl and methoxyfenozide (12.8- to 26.3-fold). No correlated response was found between azinphosmethyl resistance and spinosad for one field population, however the other population demonstrated significant negatively correlated cross-resistance. Reversion of azinphosmethyl and tebufenozide resistances was also examined. An azinphosmethyl-resistant obliquebanded leafroller population was maintained in the laboratory with no selection for nine generations, and alternate generations were bioassayed for azinphosmethyl and tebufenozide response. Azinphosmethyl resistance declined from 9.2-fold to 2.9-fold over nine generations, while tebufenozide resistance declined from 2.5-fold to susceptibility in seven generations.