

Resistance Management

Management of Organophosphate-Resistant Codling Moth in the Field

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*Keywords:* codling moth, *Cydia pomonella*, resistance management, organophosphate resistance

*Abstract:* A survey of organophosphate resistance was conducted in 2003 to determine levels of azinphosmethyl resistance in codling moth throughout Washington State. Resistance was examined by topically treating field-collected males (captured in pheromone traps) with several concentrations of a selected insecticide. Insecticides examined included azinphosmethyl, esfenvalerate, chlorpyrifos, and acetamiprid. Levels of azinphosmethyl resistance were found to be low to moderate in most fruit-growing areas of the state. However, a population near Manson, WA, was particularly high (8-10 fold resistance). In 2004, field efficacy trials were conducted in Manson to determine the abilities of several insecticides to control azinphosmethyl-resistant codling moth. Several codling moth control programs were applied to large plots and fruit was evaluated for infestation following each generation. Treatments included azinphosmethyl (2 applications per generation at 3 lb), acetamiprid (2 apps/gen at 3.4 oz), thiacloprid (2 apps/gen at 6 oz), chlorpyrifos (2 apps/gen at 2 lb), esfenvalerate (2 apps/gen at 14.5 oz), spinosad (2 apps 1<sup>st</sup> gen, 3 apps 2<sup>nd</sup> gen, all at 6 oz), and a novaluron/acetamiprid tank-mix (1 app/generation, novaluron at 40 oz, acetamiprid at 3.4 oz). Codling moth pressure was moderate in this orchard in 2004, and azinphosmethyl resistance was determined to be 5-fold. All programs maintained damage at harvest at less than 0.3%. It appears that, at this point in time, potential cross-resistance between azinphosmethyl and acetamiprid (or thiacloprid) does not impact codling moth control.