

Resistance Management

Codling Moth Control in Oregon's Hood River Valley: Is it Resistance, Poor Timing, or Less Effective Control Programs?

Allison Walston and Helmut Riedl

Oregon State University Mid-Columbia Agricultural Research and Extension Center, Hood River, OR

*Keywords:* codling moth, apple, pear, organophosphates, resistance, azinphosmethyl, bioassay, phenology

*Abstract:* Pear and apple orchards in Oregon's Hood River Valley have experienced increasing amounts of codling moth damage in the last two seasons. Working with concerned growers and fieldmen, experiments were conducted to determine if resistance to organophosphates (OP) was evident in the valley. Topical bioassays were conducted on male moths collected with pheromone traps in problem orchards where resistance was a concern. Four out of five orchards surveyed exhibited an increase in resistance to azinphosmethyl compared to a susceptible population. Other insecticides such as phosmet and the neonicotinyls will be examined in 2005 for cross-resistance. Potential cross-resistance to insecticides that do not have adulticidal activity, such as the insect growth regulators, will be examined by treating reactivated diapausing larvae. Growers' spray records and pack-out reports were also collected to determine if increased amounts of codling moth damage were a result of poor management practices, incorrect timing of sprays or ineffective control programs. A codling moth egg survey was conducted to help validate the current phenology model and to correlate trap catches to egg laying. Changes in flight patterns within the first codling moth generation have been observed for the past few years. Population density maps were also created using GIS and extensive trapping data from fieldmen to indicate "hot-spots" throughout the valley. Future plans are to create real-time maps to indicate when populations are increasing in a given area and how they change numerically from year to year under different management programs.