

Biology/Phenology

Biology and Management of Bark Beetles in Stone and Pome Fruits

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Abstract: The seasonal life history of bark beetles (Coleoptera: Scolytidae) attacking stone and pome fruits in Washington was studied in 2003-2004. It was apparent that two distinct periods of adult shothole borer (SHB) (*Scolytus rugulosus* (Müller)) activity occur in WA—the first beginning in late April and peaking in late May to mid-June, the second beginning in mid-July and peaking in late July. The pattern first noted in 2003 was observed again in 2004. Ambrosia beetle (AB) (*Xyleborinus saxeseni* [Ratzeburg] or *Xyleborus dispar* [Fabricius]) adult activity was noted throughout the entire growing season. It is likely that 2-3 generations occur each year but there is considerable overlap between them, making clear demarcation of generations difficult. AB activity was first observed in late March in 2004, with a second activity period beginning in early June, and a possible third in July and August. A similar pattern was noted in 2003; however, in that year monitoring traps were not in place early enough to detect the first flight. Monitoring methods have been examined (yellow sticky traps vs. ethanol-baited intercept traps) and yellow sticky traps (un-baited apple maggot traps) seem to be the most appropriate trap to monitor SHB activity but the ethanol-baited intercept traps are necessary to monitor AB activity. An insecticide bioassay method was developed to evaluate candidate insecticides for efficacy and longevity. Many insecticides provided control or suppression of SHB in field-aged bioassays. The pyrethroid Asana was the most active through 21 days after treatment. However, the chloronicotinyls Actara and Assail were also very effective through 21 days. Avaunt and Guthion provided good suppression through 14 days with Malathion having even shorter residual control. Proclaim and Success caused mortality but not at levels expected to provide adequate control. Host suitability tests showed pear, apple and cherry are all suitable hosts for SHB reproduction in the laboratory. In a demonstration plot, orchard sanitation was again shown to be the most important factor contributing to a reduction in SHB densities and damage in live cherry trees.