Biology/Phenology

Spatial and Temporal Distribution of Western Flower Thrips Eggs in Apple Tissues

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Abstract: The precise timing of oviposition has been a matter of controversy in the literature for the past 80 years. The first experiment was designed to describe the location of flower thrips eggs in apple blossoms at different blossom stages. Blossom clusters were collected from the field at pink, king bloom, full bloom, petal fall, 15 mm fruit, and 25 mm fruit. At times when adult thrips were not present (pink, king bloom, 15-25 mm fruit), clusters were artificially infested with adult thrips in the laboratory to prompt oviposition. The calyx was highly preferred before petal fall, and no eggs were laid in potentially damaging areas until full bloom or later. Artificial infestation after petal fall led to substantial numbers of eggs in the fruit. However, adults disappeared from clusters at petal fall so, at the time that developing fruit was highly suitable to oviposition, adults were not present in the cluster. In a second experiment, eggs were stained in fruitlets collected at 10 blossom stages, from tight cluster to 21 days after petal fall. In 2004, oviposition in the fruitlet began at full bloom, but the majority were laid when the fruit size was between 5.6 and 10.9 mm. In 2005, oviposition was first detected at petal fall, then greatly increased between 6.0 and 11.6 mm. In a third experiment, thrips were excluded from flower clusters at different times with applications of Carzol and sleeve cages. Sprays reduced pansy spot on fruit until 2 to 3 weeks after full bloom (about 5.6 mm), after which they were not effective.