Biology/Phenology

EFFECT OF CHLORONICOTINYLs ON REPRODUCTION OF TWOSPOTTED SPIDER MITES

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A study was initiated to determine the effects of chloronicotinyl insecticides on reproduction of the twospotted spider mite (TSM), *Tetranychus urticae*. Two chloronicotinyls (imidacloprid, Provado®, Bayer; and thiamethoxam, Actara®, Syngenta) are currently registered for use in pear, and two are in development (acetamiprid, Assail®, Aventis; and thiacloprid, Calypso®, Bayer). These insecticides are used for control of pear psylla and do not appear to cause mortality in spider mites. Moreover, field observations have detected an association of increased spider mite populations and the use of imidacloprid. Chemically enhanced reproduction was reported by James (1997) for a predatory phytoseiid mite, *Amblyseius victoriensis*, in Australia.

Pear leaf discs were treated topically using a Potter spray tower with 2 ml of an appropriate concentration of insecticide. Four replicates at each of five concentrations, plus a control treatment using water only, were established in each trial. Twenty female TSM were placed on pear leaf discs on wet cotton in a portion cup. Ten males were also added to the treated disc to ensure adequate mating. The numbers of eggs laid by the 20 females were counted under a dissection microscope. Each trial was run for seven days, and eggs were removed from the leaf disc. The numbers of females on each disc were also recorded, and eggs laid per female per day were calculated.

Cumulative oviposition by spider mites over seven days was significantly affected by exposure to chloronicotinyls. Daily patterns were variable, but the trends of chemically enhanced reproduction were consistent.