

Section IV: Biological & Cultural Control

Predation of *Neoseiulus fallacis* (Garman) on yellow spider mite and twospotted spider mite in red raspberry.

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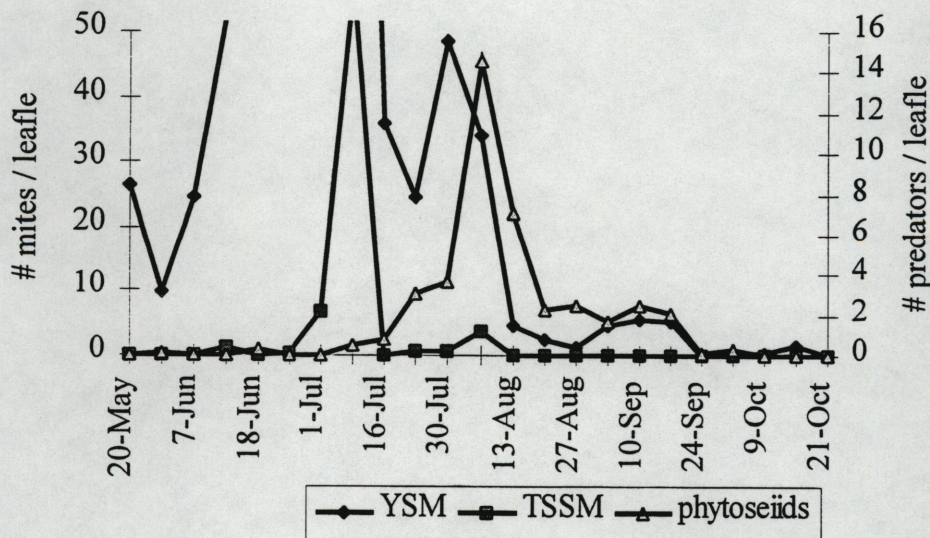
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During 1995, 1996 and 1997 field seasons, studies on population dynamics of the yellow spider mite (YSM), *Eoteranychus carpini borealis* (Ewing), the twospotted spider mite, (TSSM), *Tetanychus urticae* Koch and their predators were conducted in Skagit and Whatcom Counties. Various predaceous arthropods were found. Phytoseiid mites made up more than 90% of the predator fauna. Three species were identified: *Typhlodromus arboreus*, *Neoseiulus cucumeris* and *N. fallacis*. The phytoseiid populations were composed of more than 90% of *N. fallacis*. This predator densities were correlated with the most common spider mites' species ( $P < 0.001$ ). From August to October, *N. fallacis* exhibited a numerical response to spider mite (Figure 1). Because of this late response, natural populations of the predator did not play a major role in regulating the pest populations under economic levels.

Figure 1. Population dynamics of spider mites and phytoseiid mites in a study field in Skagit county





Developmental rates of both spider mite species were linear at the constant temperature ranges studied (15-30 °C) . At 15° C, YSM developmental time was faster than that of TSSM. This may explain the differences observed in the field between the two mite species. YSM occurs earlier and overwinters later than TSSM. The earlier and later occurrence of the YSM in the field is beneficial because it sustained populations of *N. fallacis*.

During 1996 season, the European red mite, *Panonychus ulmi* was found in low numbers. In 1997 season, populations of this mite increased in the northern part of Whatcom County.

