

Dispersal of Twospotted Spider Mite and Its Predatory Mite (Acari: Tetranychidae, Phytoseiidae) Within an Apple Orchard

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Study was conducted to determine dispersal pattern of *Tetranychus urticae* and *Amblyseius womersleyi* within an experimental apple orchard during season. Overwintered adult *T. urticae* movement from the tree trunk to the ground mostly occurred from late March to mid-April with a daily peak activity from noon to 4 p.m. In early season, movement of overwintered *A. womersleyi* from tree trunk to ground vegetation was not detected. *T. urticae* began to move from the ground vegetation to the tree canopy via trunk from early May, and *A. womersleyi* followed the similar pattern of *T. urticae* from early June. On the tree canopy, peak densities of *T. urticae* occurred in mid-late and peak of *A. womersleyi* followed the *T. urticae* peak 1 week behind. Right after the peak of *T. urticae* and *A. womersleyi*, significant aerial movement and downward ambulatory movement of *T. urticae* were detected by aerial sticky traps and sticky traps on the tree trunk. For *T. urticae*, aerial trap catches were highest from the trap facing the east, followed by the west and the north, but there was no directional effect found for *A. womersleyi* in aerial trap catches. Among 3 height treatments (1, 2, 3m), there was no difference found in trap catches for both species. At the end of the season, movement of both mites for overwintering occurred via ambulatory movement through tree trunk or direct drop with falling leaves. Implications of the findings are further discussed relative to mite ecology and its management.