

## 2-18. Population Dynamics and Movement of TwoSpotted Spider Mite, European Red Mite, and Predatory mites in Apple Orchard

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Seasonal fluctuation and movement of phytophagous mites, *Tetranychus urticae* and *Panonychus ulmi*, and their predatory mites were monitored from the early spring to late fall in an experimental apple orchard in 2002 (Top-dong station of National Horticultural Research Institute, Suwon). Leaf sampling, sticky bands encircled the bottom, mid and upper part of the tree trunk, and sentinel plants composed of 10 bean plants below the tree were investigated. Overwintering adult *T. urticae* began to move out from 28<sup>th</sup> March to 7<sup>th</sup> April with a peak from noon to 4 pm in a day. In canopy, mobile *P. ulmi* appeared on mid May with a peak at early June. *T. urticae* population started to build up to peak density of 30~40 mobile mites/leaf around 24<sup>th</sup> July, after then decreased rapidly and reappeared from late September at low density (0.5 mites/leaf). Density of predatory mites on canopy increased following *T. urticae*. In ground vegetation, the same pattern of prey-predator interaction were observed (peak at 14<sup>th</sup> July) in one week advance to that observed in canopy. Trap catch data supported that movement from the ground to upper canopy via tree trunk at this period. Within tree, *T. urticae* distribution has changed from the lower part of a canopy to the upper. Since no major down-ward movement was detected, disappearance of *T. urticae* after 24<sup>th</sup> July peak is suspected largely due to predation and aerial dispersal. Further elucidating study is presented with some discussion of this implementation on mite management.