PHYSIOLOGICAL IMPACT OF TWOSPOTTED SPIDER MITE ON PEPPERMINT

J. DeAngelis, R. Berry, G. Krantz, K. Larson, and A. Marin
Department of Entomology, Oregon State University, Corvallis 97331

Research has focused on physiological stress on Black Mitcham peppermint (Mentha piperita L.) induced by feeding of twospotted spider mite, Tetranychus urticae Koch. Our objective has been to accurately characterize mite-induced host plant stress by monitoring changes in: 1) leaf water relations, 2) photosynthesis, 3) carbohydrate synthesis, and 4) biosynthesis of monoterpenes.

Our results show that: 1) increased nighttime cuticular transpiration causes daytime water stress in injured leaves; 2) photosynthesis is significantly reduced in mite injured leaves; 3) injured leaves have greater amounts of soluble carbohydrates which may be related to an osmotic adjustment mechanism responding to leaf water stress; and 4) increased availability of carbohydrate may promote the energy dependent maturation of oil.