Predators Versus Spider Mites*

Better control of the two-spotted spider mite - a very destructive pest that attacks almost all crops grown in greenhouses - may result from research by USDA entomologists.

A team headed by F. F. Smith is studying the use of predator mites to kill populations of this spider mite, Tetranychus telarius.

The entomologists are most optimistic about the performance of two predator mites - Typhlodromus, a native of the United States, and Phytoseiulus, imported from West Germany - which have been released experimentally to prey on populations of the two-spotted spider mite. Both predators devour the eggs, the immature spider mites, and the adults. In preliminary studies at the Agricultural Research Center, Beltsville, Maryland, use of these predators for spider mite control has been very successful.

Chemical sprays and fumigants employed since 1948 are no longer able to protect greenhouse plants from the two-spotted spider mite. Use of these materials has eliminated susceptible spider mites and left strains resistant to the chemicals.

These resistant mites multiply rapidly in the high temperatures common in greenhouses. The pests complete a life cycle (one generation) in 8 to 12 days. By inbreeding, they tend to develop monogeneous resistant strains. This mite is able to pass on its resistance to its progeny - even though many generations of offspring may never contact chemicals.

The two predators have NOT acquired similar resistance, but studies show that each species CAN tolerate many of the chemicals used against other pests and diseases in greenhouses. The entomologists, however, are attempting to combine use of chemicals with predator control. Careful selection of chemicals for use against other greenhouse pests and diseases can prevent damage to the predators, so they can continue attacking the resistant spider mites.

When the predators exhaust their food supply, they become cannibalistic. Consequently, they must be released anew each year. Smith intends trying to stockpile the predators by keeping them dormant in cold storage, ready for use as needed.

The researchers are also investigating an artificial diet, including pollen and honey, for mass rearing of the predator mites. Much time, space, and labor now needed in growing plants and spider mites as feed for the predators will be saved if an artificial diet can be developed and used successfully.

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* Taken from USDA AGRICULTURAL RESEARCH, May 1961.