

RESEARCH ARTICLE :

A review on natural enemies of phytophagous mites

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BACKGROUND AND OBJECTIVES

Biological control agents (BCAs) have a range of attractive properties that include host specificity, lack of toxic residue, no phytotoxic effects, human safety, and the potential for pest management to be self-sustaining. Many are able to actively locate their prey. BCAs can also be produced locally which can be important in terms of choosing and matching natural enemies to small scale needs. Successful use requires fundamental knowledge of the ecology of both the natural enemy and the pest. When this condition is satisfied, and the agent is used firmly within IPM, then biological control can sometimes be more cost effective than purely chemical control.

A long term example of a classical biological control project using fungi is the program targeting the cassava green mite (CGM), *Mononychellus tanajoa* (Bondar) in Africa. It was in 1988, that exploration for potential natural enemies in Brazil revealed that the entomophthoralean *N. tanajoae* was one of the most important natural enemies of CGM in northeastern Brazil.

The influence of resident predatory and

pathogenic biota on *A. hystrix* population dynamics within grassland systems is largely undetermined. Three *Hirsutiella* spp., including *H. thompsonii* Fisher, and *Verticillium lecanii* (Zimm.) were recorded on half of 40 ryegrass swards examined in the U.K., causing mortality of up to 16% (Lewis *et al.*, 1981).

Predatory mites of the family Phytoseiidae are valued natural enemies that provide effective pest control in greenhouses and on agricultural crops. Mass-reared phytoseiids are occasionally associated with microorganisms and although their effects are not always apparent, some are pathogenic and reduce host fitness. Invertebrate pathogens are encountered more frequently in mass production systems than in nature because rearing environments often cause overcrowding and other stresses that favour pathogen transmission and increase an individual's susceptibility to disease.

The selection of highly virulent fungal pathotypes offers considerable potential for classical biological and microbial control, if commercial production and formulation technology can be developed more fully.

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