



Predatory mites : A potential biocontrol agent

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Mites are arthropods, characterized by having an exoskeleton and jointed appendages among other traits, and are not insects. They belong to the same class as spiders, *Arachnida*. There are over 40,000 recognized species of mites worldwide. The most familiar are the pest mites that feed on plants, such as the two-spotted spider mite (*Tetranychus urticae*) an economically important pest of many crops. There are also many predatory mites that feed on pest mites and small insects. Predatory mites can provide natural pest control by eating unwanted pests. These beneficial mites are one way to maintain pest populations at non-damaging levels, known as biological control. By encouraging predatory mite populations, crops can be protected from excessive pest attack and damage. Predatory mites occur naturally in varied habitats from agricultural fields to small gardens. It is best to encourage native populations through recognized conservation practices. These practices include scouting for pests and predators and using “safer” pesticides rather than broad-spectrum chemicals. It is crucial to choose the mite species appropriate for the environment. Most beneficial mites prefer higher humidity and lower temperatures.

Life cycle: Predatory mites have five stages in their life cycle-egg, six-legged larval stage, protonymph, deutonymph, and adult. Eggs are oval, clear, larger than spider mite eggs (which are round) and typically laid on the underside of leaves. They are laid individually and the larvae hatch in 2-3 days. Adult females consume about two prey per day for about five to six weeks. They deposit an average of 20-33 eggs during their life period. Males consume about one prey per day for about four to five weeks. Predatory mites have multiple generations per year and develop from egg to adult in 6-12 days.

Foraging: Predatory mites are quite versatile in that they can be used in all type of crops. They will attack adult, juvenile and egg stages of many pests, including two-spotted spider mites (*T. urticae*). They will also feed on

other predatory mites and small insects. They consume their prey by piercing and sucking them dry. *Amblyseius* spp. also tend to be generalist while many of them target thrips, and eggs of insects. Many predatory mites supplement their diet with plant pollen, which helps limit their dispersal in the general area where they are resident or released as a biological control agent. The additional food resource and limited mobility allows predatory mites to protect plants from pest mite outbreaks even when pest populations are low.

Augmentation and inoculation: Predatory mites can be purchased through commercial suppliers or biological control laboratories of Agricultural Universities and they also occur naturally.

Augmentation is the practice of timing the introduction of a fresh population of predators to help the current native population keep up with an observed or anticipated flare-up of a pest population. Inoculation is the practice of introducing predators into an area where the population is low or non-existent. When pest spider mite populations are high it is better to apply a pesticide like plant product or insecticidal soap or horticultural oil, before

introducing predators. This should knock the pest mite population down so the predator introduction can be more effective. If a miticide is to be used in a “hot spot” it should be applied before the introduction of the predators-preferably several days before the release. This strategy will improve the effectiveness of the predatory mites. Read the pesticide label to select the product that will best fit the pest management plan. It is important to note that some pesticide-tolerant strains of predatory mites are available as biological control agents.

Release process : Several species of predatory mites can be purchased through commercial suppliers. Select the predatory mite that best fits the pest management plan (e.g., target pest, greenhouse, etc.). Mites are usually...

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