

## Unleash the Power of Predators

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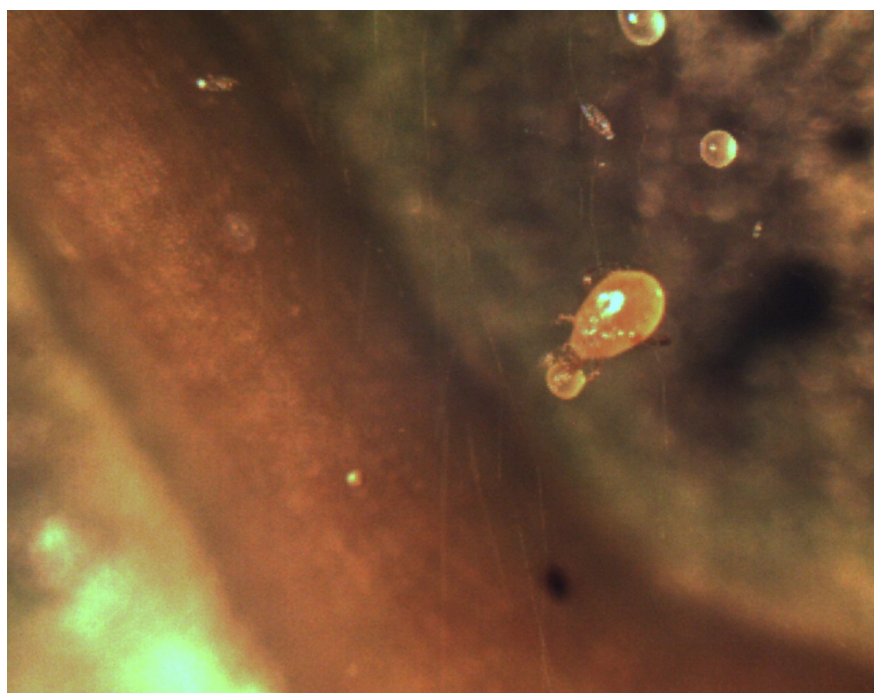
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Is anyone interested in a long term solution for spider mite control without using chemicals? Wouldn't it be nice to know that there are agents working for you, 24 hours per day, to prevent spider mite problems? These goals can be achieved with predator mites AND a sound strategy for their use. In this article, I'll explain how to achieve this result.

First to define the problem. The barriers to implementing a successful strategy are finding a reliable predator mite vendor, implementing a release schedule that works, and knowing what to expect in order to evaluate the results. All three are essential to achieving the desired results for the money you will spend. The hardest part is gaining the experience to get these three areas synchronized and working. There is no substitute for time spent trying, but I'll try to cut that time down considerably by sharing what I have learned.

There are two species of predator mites used for spider mite control: *Phytoseiulus persimilis* and *Neoseiulus californicus*. *Persimilis* is a great spider mite predator with a couple of important differences, compared to *californicus*. This mite will outperform *californicus* while spider mites are present, but will die off quickly once their food source is exhausted. Also, *persimilis* can be more sensitive to chemical sprays if you must apply them. *Californicus* will also clean an area of spider mites, but seem to work at a slower pace. The advantages of *californicus* are that they can survive on other food sources, such as broad mites, for a short time, (*Illustration 1*). Try Koppert Biological Systems, Sterling Insectary, or Syngenta Bioline as suppliers.

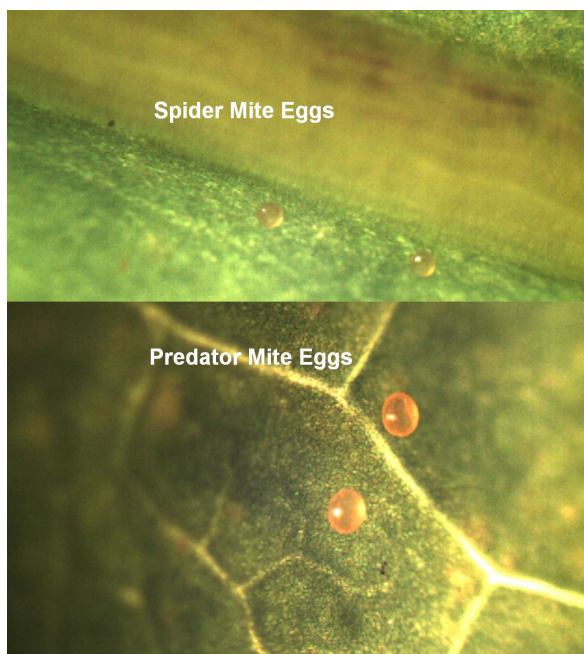


*Illustration 1: Predator mite eating a spider mite egg. Predators will focus on eggs before eating adults.*

Now we move on to implementation. You may be tempted to release many thousands of mites and then relax about spider mites until they become a problem again. I have tried this and it does not work. A much better method would be to periodically release mites, in smaller amounts, throughout the year. Continuous additions of new predator mites alters the natural swing in population sizes, of predator and prey, to the disadvantage of the prey. This tactic also helps prevent unchecked outbreaks of spider mites. Here is the worst scenario you could encounter: You find spider mites already numerous and multiplying rapidly, you apply predator mites and wait for the predators to solve the problem, which takes some time. While you

wait, the plant becomes more and more damaged until you are forced to spray a miticide resulting in the death of some predators and a plant that is unusable. Spare yourself this agony. I've done it, why should you? Try releasing some predators throughout the year, possibly monthly or twice per month, and expect better results. If some effort is dedicated to scouting your releases can be targeted and more effective.

Very important to implementing a successful strategy is knowing what to expect. First, realize that both types of predator mites will overtake and remove spider mites in time. The time it takes is a function of the quantity of predators verses the quantity of spider mites. Realistically, you should count on the subsequent generations of predators to be the force that eliminates the spider mites. Now the question becomes: What conditions need to be observed to predict that control will be achieved? This requires experience, but in general, you will see along with the spider mite adults and spider mite eggs, one or two predator mite adults, and a few predator mite eggs. This scenario should be repeated on most of the leaves, that contain spider mites, throughout the plant. At this point the mite populations are very near the turning point where predators will be numerous enough to eliminate the prey. Additionally, plenty of food exists for the predators to continue multiplying. As far as the timing for these conditions to appear, I expect to see predator eggs one week after releasing predators and I would expect these second generation predators to be eating spider mites in the second week after release. Recognizing predator mite eggs is easy as they are larger, more oval, and tinted red compared to spider mite eggs, (*Illustration 2*).



*Illustration 2: Spider Mite Eggs (Top) are smaller, spherical, and mostly clear.*

Finally, a successful predator program should also view the treatment areas on a macro scale. For example, a predator population will be most successful in groups of plants where mites can travel from plant to plant via the leaves. Predators can be used on isolated plants with equal success, but they should be viewed as separate mite ecosystems and must be managed as such. When spraying is necessary, either for spider mites or other insects, use the chemical compatibility tables supplied by the mite vendors. These tables allow you to pick pesticides with the least impact on the predator mites. Floramite SC is labeled for interiorscapes and specifically claims compatibility with predator mites.

Start your program with this information and plan to fine tune your strategy based on observations. Good luck!