

# Californicus-System

## A spider mite killer in and outdoors

### BIOLOGY

*Amblyseius californicus* (also called *Neoseiulus californicus*), controls spider mites and can be found naturally in California and Florida on strawberries, citrus and ornamentals. This species is very mobile.

Five different stages can be distinguished: egg, larva, protonymph, deuteronymph and adult. The life cycle can be completed within 10 to 14 days, provided that the temperature is high. At the same temperature, the life cycle of the spider mite is twice as long as that of *Amblyseius californicus*.

The adult predatory mite lives about 20 days. She lays eggs over 14 days (with an average of 3 eggs a day). The predatory mite *Amblyseius californicus* is able to consume 5 adult spider mites daily and also eats some eggs and nymphs.

### APPLICATION

*Amblyseius californicus* can be introduced in several vegetables, fruits and ornamental crops to control various mite species (e.g. two-spotted spider mite, cyclamen mite, etc....).

In crops where high temperature and/or relative humidity variations can occur, *Amblyseius californicus* will perform much better than *Phytoseiulus persimilis*. Contrary to *Phytoseiulus persimilis*, *Amblyseius californicus* can survive for a longer time without eating. *Amblyseius californicus* can also live on a diet of pollen.

In crops where it is very hard to detect the first spider mites, *Amblyseius californicus* may be introduced preventatively, even if no spider mites have been found yet.

### ADVANTAGES

In the future *Amblyseius californicus* will become more important as a natural enemy for spider mite control, as it offers the following advantages:

1. *Amblyseius californicus* can be introduced preventatively in contrast to *Phytoseiulus persimilis* and it is not cannibalistic.
2. *Amblyseius californicus* can survive on pollen.
3. *Amblyseius californicus* is not as temperature dependent as *Phytoseiulus persimilis*. *Amblyseius californicus* is active at temperatures from  $\pm 8^{\circ}\text{C}$  to  $\pm 35^{\circ}\text{C}$  and can be applied outdoors.
4. Besides two-spotted spider mite (*Tetranychus urticae*), *Amblyseius californicus* also attacks the broad mite (*Polyphagotarsonemus latus*) and the cyclamen mite (*Tarsonemus pallidus*).
5. More resistant to chemical pesticides.
6. Since *Amblyseius californicus* can starve for a longer time, a population will always be present in the crop. Therefore there is no need to repeat the introduction as often as *Phytoseiulus persimilis*.

### SIDE EFFECTS

Currently Biobest is carrying out numerous side effect experiments of pesticides with *Amblyseius californicus*. Nissorun, Torque and Appolo, as well as most fungicides seem to be harmless under greenhouse conditions. Lannate and most other long-term insecticides can be very negative for the build-up of the population.

### CALIFORNICUS-SYSTEM

*Amblyseius californicus* is available per 2000 units, both nymphs and adults, in tubes mixed with a vermiculite carrier.

## BIOBEST'S TECHNICAL ADVICE

1. Start preventative introduction of 1 - 2 predatory mites/m<sup>2</sup> in spring. Repeat the introduction every 2 to 3 weeks.
2. At the first signs of spider mites, it is recommended to introduce both *Amblyseius californicus* and *Phytoseiulus persimilis* at 6 units/m<sup>2</sup>, due to the slower development of *Amblyseius californicus*.
3. In case of broad mite and cyclamen mite, introduce a curative 6 predatory mites/m<sup>2</sup> at first signs of these mites.
4. If infestations are severe, introduce a larger amount of *Phytoseiulus persimilis* in combination with Feltiella-System.