

## Orius (*Orius* spp.) Minute Pirate Bugs, Thrips Predator

### Target pests

Western flower thrips (*Frankliniella occidentalis*)

Onion thrips (*Thrips tabaci*)

### Description

'Orius' is a predatory bug that feeds on many species of small, soft-bodied insects and pollen.

- Adults are 2-2.5 mm (1/10 inch) long, mostly black with lighter markings on the wings.
- Nymphs are colorless when they hatch, darkening to yellow, then dark brown as they grow. They grow from 0.5 mm (1/50 inch) long up to 1.8 mm (<1/10 inch) long.

All stages of Orius move very quickly. The adults are good flyers and move efficiently throughout a greenhouse to locate prey. Adults are attracted to, and often found in flowers.

### Use in Biological Control

- Orius has been shown to be an effective control for western flower thrips in cucumber and sweet pepper greenhouses. It is not effective for thrips control in tomatoes. (For information on thrips, see Sheet 320).
- Orius are generalist predators that consume a variety of pests including mites, aphids, and small caterpillars. They are most effective for pests with life stages that inhabit flowers (such as flower thrips).
- Optimum conditions are temperatures over 15°C (59°F) with relative humidity over 60%. Typical greenhouse temperatures of 18-20°C (64-82°F) and humidities are suitable for Orius development.

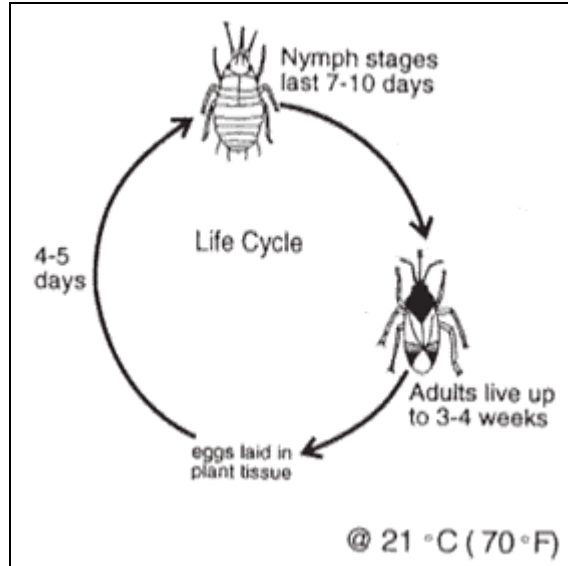
### Monitoring Tips

- Orius adults and older nymphs are easy to see in cucumber and pepper flowers, where they are feeding on thrips and pollen.
- Both adults and younger stages can be found on leaves and along stems, but they are more difficult to find.

### Life Cycle

A complete life cycle takes approximately 3 weeks at 21°C (70 °F). Cooler temperatures and lack of prey slow development.

- Sex ratio in the population is about equal, with slightly fewer (45%) females. Females lay 2 eggs per day, with an average of 30 eggs in their life time. Eggs are laid in plant tissue (main stem, leaf vein, flowers or petioles) with the top of the egg sticking out of the leaf. Eggs hatch in 4-5 days.



- Orius nymphs grow through 5 instars over 2-3 weeks, until they moult to the adult stage. Adults live for 3-4 weeks.
- Orius will diapause in the fall, when day lengths are less than 12.5 - 14 hours.

Orius pierces its prey with its mouthparts and sucks out the body fluids. If prey is abundant, Orius kills more thrips than it needs to survive. The presence of pollen favours development of Orius as it acts as an alternate food source.

### **Product Information**

Orius are usually sold as adults, packaged in containers with buckwheat hulls or other materials. This provides the adults with hiding places, which reduces cannibalism during shipping.

Release the adults by gently shaking them onto individual plants or by opening the containers in the greenhouse and allowing the insects to disperse.

### **Introduction Rates**

Orius need a food source before they can lay eggs, therefore they should only be released when thrips populations are present or when pollen is available (i.e., from flowers of sweet peppers).

#### General Introduction rates

- 5000-10,000 Orius/hectare (2,000-4,000/acre).

#### Specific Crops

- Greenhouse cucumbers — 0.5 Orius/plant or m<sup>2</sup>, weekly, for 2 weeks. or 1-4 Orius/plant in hot spots, when thrips populations are established.
- Sweet peppers — 2000-3000 Orius/1000 m<sup>2</sup> (yd<sup>2</sup>) in hot spots. Two releases, spaced 2 weeks apart will usually establish Orius throughout the greenhouse.

Control is achieved proportionately sooner with higher release rates. Four to six weeks are required after release of Orius before thrips populations decline markedly.

Note: Orius adults are attracted to yellow sticky traps, however, if traps are placed at a rate of 1 trap/100 plants or more, this should not be a problem. When more than 4 Orius are being caught on traps per week, it is an indicator that their density is high and that enough Orius are in the crop to bring thrips under control.

### **For Best Results**

- Until thrips populations are established, use the predatory mite *Cucumeris (Amblyseius cucumeris)* on cucumber (see Sheet 220). To prevent Orius from diapausing from mid-August through March supplemental lighting must be provided to increase day length to 14 hours or longer.

### **Using Pesticides**

For effects of pesticides on Orius, see Sheet 180.

Avoid the use of systemic insecticides or pesticides with long residual action.