

## 2010 Crop Recommendations

### Roses

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#### Introduction

Biological Control in Roses has been attempted for many years in Europe and North America. Results have ranged from fair to poor, despite active research on the part of growers and researchers. Recent research, yet unpublished, shows the devastating effect of burning sulphur on parasitoids. This research confirms the Biological Control industries' strong belief that the burning of sulphur is not complementary to the use of Biological Controls.

The major pests that we have experience with in Roses are; whitefly, spider mites, aphids, thrips and to some extent, leaf miner.

#### Planting out

Fungus gnats are an economical pest. The larvae effectively prune the fine, new root hairs, reducing the growth rate of the plant and its' vigor. For roses grown in loose soil such as coco fiber, *Hypoaspis miles* should be applied to each pot at the time of planting. The rate should be 10 per pot.

One week after planting, a nematode application will supplement the *Hypoaspis* by killing any larval fungus gnats and also feeding the *Hypoaspis*, as *Hypoaspis* feeds on all forms of nematodes as well. This step helps disperse the *Hypoaspis*.

In an established crop, *Atheta coriaria* should be added for control at a rate of 0.1 per square meter.

If the plants are going directly onto rock wool, nematodes should be the primary fungus gnat control.

#### Crop Management

The use of Monitoring/Trapping/Banking plants is essential in Rose production. The typical host plant is Eggplant. Eggplant is considerably more attractive than Roses, to most pests. The eggplant should be used at a rate of at least 1 for every 1000 square meters. They should be grown in the main aisle of the house so that they can be easily accessed.

In clean houses, they serve as monitoring devices, alerting you to an arrival of a pest. As the pest level builds up, the pest can be physically removed, in the case of whitefly, they can be vacuumed daily using a "dust buster" type unit.

Once trapping becomes unreasonable, the plants can be turned into banker plants by focusing the release of Biological Controls at the eggplant. These "banker plants" can generate large amounts of beneficial insects, while continuing to attract the pests out of the roses.

Extreme care must be taken to avoid spreading the crawling pests, like spider mite. Employee movement is a major method of spider mite dispersal. Employees should enter a mite infested area last, then leave directly. The coveralls should either be sprayed down with soapy water, or frozen overnight. I have seen air hoses work well for blowing mites off of employees.

European rose houses tend to be one variety only. In North America, most houses, if not all of them, grow as many varieties as they can. Experience as shown us that some varieties are more susceptible to various pests than others. A log book should be kept to note when and where the various pests occur.

The burning of sulphur for fungal control should be minimized. Tests have shown that the sulphur persists on the plant material for numerous days, so daily burning of sulphur is not necessary. When sulphur was allowed to be sprinkled on the floor, we never saw an affect on the biologicals.

## Spider Mite

Employees should be trained to spot spider mites and use a flagging system to identify their location. The section affected with mites should become the last section visited during the day.

*Amblyseius fallacis* should be used throughout the affected area. The *fallacis* will control all known species of spider mite and will not interfere with the *Phytoseiulus persimilis* which should be directly applied to the affected area. The typical release rate is 1 to 100 (predator to pest), for control within 2 weeks. *Persimilis* should only be applied on the bean leaves, as the vermiculite product is always a stored product. *Fallacis*, because it can feed on pollen, is active in a vermiculite carrier.

Some of our growers in Holland have very sophisticated humidity control systems. They have found that fungal diseases can be controlled by a strict maintenance of 80% humidity. This allows them to reduce, or even eliminate the burning of sulphur. As an added bonus, the constant humidity allows volunteer *Feltiella* to establish in the house and maintain a preventative spider mite control. The constant 80% humidity is also very negative to spider mites and reduces their voracity.

## Whitefly

Whitefly should never be allowed to get established. The presence of any detectable whitefly should immediately be reacted to with eggplants and *Encarsia formosa*. The *Encarsia* should be placed deep into the foliage, to shield them as much as possible from the sulphur, and to place them next to the whitefly scale. Our product, *Encarsia Max* is a fresh, non-refrigerated product, capable of better dispersion and efficacy. In houses with existing whitefly, *Encarsia Max* should be applied at a rate of 4 to 6 per square meter, for 4 weeks. The rate should then be reduced to 1 to 2 per square meter per week once parasitized scale is detected.

The Eggplant will play a major role in whitefly management. Once whitefly have built up on it, *Delphastus catalinae* should be introduced. *Delphastus* is a small, black beetle that feeds exclusively on all species of whitefly. We have had considerable success in some rose crops with *Delphastus*.

## Aphid

Aphids can cause considerable damage in roses. During aphid season, weekly releases of *Aphidoletes aphidimyza* should be made at a rate of 3000 per hectare (0.3 per square meter). *Aphidoletes* control and eliminate all species of aphids. They are excellent flyers and can find even just one aphid rapidly. If there is a high aphid population, care must be taken to release the preventative *Aphidoletes* in a “neutral” location, away from known aphid hot spots. This will force the *Aphidoletes* to disperse. The hot spots should be directly treated with *Aphidoletes* and *Aphidius matricariae*, a parasitic wasp.

Care should be taken is soap is to be used on aphids. The soap must be thoroughly rinsed off the plant in order to prevent burning of the leaves, which will stress the plant and create new opportunities for pests, especially spider mite.

Once again, the eggplant will help considerably with aphid control. Release *Aphidius* directly at the eggplant to create an *Aphidius* banking system in early or late season. In the summer, *Aphidoletes* should be banked on the plant, to prevent hyperparasites of *Aphidius* from undoing the *Aphidius* program.

## Thrip

The problem of thrips in roses has drastically been reduced since debudding has become popular. Thrips still can come in a big way, and can cause considerable damage, but they won't persist in

the crop if all of the flower buds are removed from the house and *Hypoaspis* is present in the root zone, interrupting thrip pupation.

*Amblyseius cucumeris* works well on roses, feeding on the first and second instar larvae. One application of *cucumeris* per month will maintain a constant level in the crop. Release rates are dependant on the level of contamination, ranging from 100 to 1000 per square meter. Slow release bags can also be used, but care must be taken to ensure that the bags are removed after 6 weeks to prevent the bran mite from causing damage in the buds.

Thrips also like eggplant a lot and can be seen easily all over the eggplant.

### **Leaf Miner**

There are at least 2 parasitoids that are commonly used, usually with excellent results. Please consult you local distributor for release rates and application strategies.