



Insects and Mites

The main insect and mite pests of poinsettia are fungus gnats, whiteflies (including the greenhouse whitefly, B and Q biotypes of the sweetpotato whitefly), two-spotted spider mites and lewis spider mites.

Shore flies are other insects that often are found associated with poinsettias, but feed on algae and are not directly injurious to the crop (Although shore flies can carry several plant pathogens). Mealybugs sometime occur as well, but almost always on poinsettias produced adjacent to mealybug-infested crops. Thrips can be found feeding on leaves early in the production cycle. Sometimes their feeding will cause leaf distortion.

A Few Words About Whiteflies

Whiteflies are the most important insect pests of poinsettia, and as such they are the main targets of an insect and mite management program. Most growers probably have heard about a “new” whitefly that has appeared on poinsettia crops in many parts of the United States, called the Q Biotype. Depending on the source of information about the Q Biotype, growers might be overly and unnecessarily concerned about this whitefly. The following section is an attempt to answer questions about this insect and its management.

1. What is the Q Biotype whitefly?

It is a *Bemisia tabaci* biotype whitefly that – prior to December 2004 – was known to occur in northern European and several Mediterranean countries (mainly Spain), but not in the United States. We have been dealing with what is called the B biotype since 1986, and before that the A biotype – which was never a problem on ornamental plants.



Bemisia tabaci whitefly adults

Some scientists have called the B biotype the Silver-leaf whitefly, *Bemisia argentifolii* – a separate species – but most now call it *Bemisia tabaci* – B Biotype. All the whitefly biotypes, A, B and Q, are identical in appearance and have virtually identical life cycles, host plants, etc, but differ in body chemistry. The only way they can be separated is by conducting laboratory tests.

2. Why should we worry about the Q whitefly?



Bemisia tabaci immatures on poinsettia

The Q whitefly is potentially serious because it is often less susceptible to many of the commonly used whitefly insecticides. Although there is some variability among the Mediterranean Q strains, they generally show moderate to high resistance to one or more neonicotinoid insecticides (e.g. Celero, Flagship, Marathon, Safari, TriStar), and the insect growth regulators pyriproxyfen (Distance) and buprofezin (Talus). These pesticides are widely used in whitefly management programs on field and greenhouse crops.

3. Has the Q Biotype whitefly been detected in the United States?

Yes. The first official detection of a Q biotype whitefly in the U.S. was in March, 2005 when whiteflies collected from poinsettias in an Arizona retail outlet in December, 2004 were tested as part of a pesticide resistance monitoring program. This collection has been called the **Poinsettia-04 strain**. Since this detection the Q whitefly has been found in 22 states (as of June, 2006), including the major ornamentals-producing states of California, Florida, North Carolina, Texas, Georgia, Oregon, Michigan and New York. All Q biotype whiteflies were collected from ornamentals, and nearly all in greenhouses from poinsettias.

There are several populations of the Q biotype whitefly from different areas in the Mediterranean region, and these vary in susceptibility to the same insecticides. The same appears to be true in the U.S. This means that there likely have been multiple introductions of this insect and that it is very probable that the Q whitefly has been in the U.S. for several years.

4. Are the neonicotinoid insecticides useless against Q whitefly biotypes?

No. Even though laboratory and greenhouse tests on some Q biotype whiteflies have shown reduced susceptibility (65-85 % kill) to some of the neonicotinoid insecticides, trials on other Q whitefly biotypes have shown that the neonicotinoid insecticides are very effective (90%+ kill). Therefore, neonicotinoid insecticides can still be used – but not over used - as part of a whitefly management program. **The key words here are management program**. A good insect or disease control program will involve scouting, sanitation and exclusion in addition to pesticides. Rotation of a neonicotinoid insecticide with products that have different modes of action is the best approach. Information on pesticide mode of action can be found in the OHP Chemical Class Chart, available through an OHP Regional Sales Manager or on the web site at www.ohp.com.

Regardless of the frightening scenarios that might be presented on the Q biotype, it remains just a whitefly that can be managed. Growers in areas where the Q biotype has been present for many years still produce quality crops. Therefore we should consider the Q biotype whitefly as a serious – but manageable – problem. Some scientists believe that the B-biotype whitefly is potentially a more serious problem because it has a higher reproduction rate than the Q biotype. Bottom line: Whether B or Q biotype, a whitefly resistance management program is required.

Insect and Mite Management on Poinsettias

OHP Inc. products, when used properly, will keep whiteflies and all of the other insect and mite problems on poinsettias to a minimum. Each product has a different mode of action, so can be used in a rotation program to minimize resistance development. These products include:

- **Azatin® XL Biological Insecticide** – for use against fungus gnat larvae, shore fly larvae, whiteflies, thrips and mealybugs. Application rates are 8-16 fluid ounces per 100 gallons.
- **Decathlon® synthetic pyrethroid insecticide** – for use against fungus gnat adults, shore fly adults, whiteflies, thrips and mealybugs. Decathlon is often combined with Azatin for adult and immature stage control. Application rates are 1.3-1.9 fluid ounces per 100 gallons.

- **Judo™ miticide/insecticide** – for use against spider mites and whiteflies. Judo has shown excellent activity against all whitefly species and biotypes on which it has been evaluated (including all known Q biotype strains). Application rates are 2-4 fluid ounces per 100 gallons.
- **Marathon® insecticide** – for use against fungus gnat larvae, whiteflies and mealybugs. Application rates depend on the formulation and whether applied as a spray or drench.
- **Pylon® miticide/insecticide** – for use against fungus gnat larvae and whiteflies. Pylon will control fungus gnat larvae when applied as a sprench, and spider mites when applied as a foliar spray. The A\application rate for fungus gnats and spider mites is 5.2 fluid ounces per 100 gallons.

The following application program is designed to control all of the major and occasional insect and mite pests of poinsettias.

Week	Treatment	Rate/100 Gallons	Target Pests
Before potting	Triathlon	See Label	For algae control, Shore Fly prevention on hard surfaces and cooling pads
1	Azatin XL + Decathlon Sprech	12 fl. oz. + 1.9 oz.	Fungus Gnats, Shore Flies, Whiteflies, Thrips, Mealybugs
2	Azatin XL + Decathlon Sprech	12 fl. oz. + 1.9 oz.	Fungus Gnats, Shore Flies, Whiteflies, Thrips, Mealybugs
3	Judo*	4 fl. oz.	Whiteflies, Spider Mites
5	Marathon G or Drench**	See label for appropriate rate	Whiteflies, Mealybugs
7	Judo	4 fl. oz.	Whiteflies, Spider Mites
8-9	Azatin XL + Decathlon	12 fl. oz. + 1.9 oz.	Whiteflies (if necessary)

*Pylon miticide/insecticide can be used as an alternative sprench treatment for fungus gnat control (5.2 fl. oz./100 gallons), and as a foliar spray for spider mite control (2.6-5.2 fl. oz./100 gallons).

**Note: Discus® Nursery Insecticide can be used in place of Marathon on poinsettias produced outside of greenhouses. Foliar spray application rate is 25 fluid ounces per 100 gallons. The drench rate depends on container size.

Plant Disease Management on Poinsettias

The most serious disease problems of poinsettias are *Pythium* root rot, *Rhizoctonia* root and stem rot, *Botrytis*, Powdery Mildew and Fungal leaf spots.

OHP Inc. has fungicides that will prevent or control all of these major poinsettia diseases:

- **Aliette® WDG-** for use against *Pythium* root rot. Application rates are 1 -5 pounds per 100 gallons as a foliar spray and 6.4-12.8 ounces per 100 gallons as a drench.
- **FenStop™** - for use against *Pythium* root rot. Application rates are 7-14 fluid ounces per 100 gallons as a spray or drench.
- **Compass™ O** – for use against *Rhizoctonia* root and stem rot, *Botrytis*, powdery mildew, fungal leaf spots. Application rates are 1-4 ounces per 100 gallons as a spray and 1-2 ounces per 100 gallons as a drench.
- **OHP Chipco® 26019 WP or Sextant™** – for use against *Rhizoctonia* root and stem rot, *Botrytis*, fungal leaf spots. Application rates for OHP Chipco 26019 are 1-2 pounds per 100 gallons as a spray and 6 - ounces per 250 gallons as a drench. Application rates for Sextant are 1-2.5 quarts per 100 gallons as a spray and 13 fluid ounces per 100 gallons as a drench.
- **OHP 6672™ 4.5L or 50WP-** for use against *Rhizoctonia* root and stem rot. Application rates for OHP 6672 4.5L are 10-20 fluid ounces as a spray and 20 fluid ounces per 100 gallons as a drench. Application rates for OHP 6672 50WP are 8-24 ounces as a spray and 12-16 ounces per 100 gallons as a drench.
- **Strike® 50** – for use against powdery mildew, fungal leaf spots. Application rates are 1-2 ounces per 100 gallons.
- **Triact® 70** – for use against *Botrytis*, powdery mildew. Application rates are 1-1 gallon per 100 gallons.

It is not practical to suggest that a certain fungicide be applied during a specific week of production so the following listing will provide a rotation/alternation program for the major poinsettia disease problems.

Disease	Solutions
Pythium root rot	Aliette® WDG, FenStop™
Rhizoctonia root and stem rot	OHP Chipco® 26019, Sextant™, OHP 6672™, Compass™ O
Botrytis	Compass™ O, OHP Chipco® 26019, Triact® 70
Powdery mildew	Compass™ O, Triact® 70, Strike® 50
Fungal leaf spots	Compass™ O, OHP Chipco® 26019, Strike® 50

Regulating Plant Height of Poinsettias

Along with managing light and spacing a grower often will use a good plant growth regulator or a PGR. When a PGR is employed you need to err on the side of caution. Using a product that is generally forgiving and cost effective is the key.

Cycocel® plant growth regulant contains the active ingredient chlormequat (2-chlorethyl) trimethylammonium chloride, 11.8%. Cycocel regulates plant growth by interfering with the action of the growth hormones within the plant, thereby slowing stem elongation. The result is height control, a compact appearance, internodes are shortened and thickened, petioles are shortened, and leaves are darker green. Plants appear more tolerant to stress conditions such as very high and very low temperatures, drought, and soil alkalinity. Flowering time and flower size usually are unaffected. Color may be more vivid depending on plant species, variety, dosage and timing of application.

One of the major benefits of using Cycocel is the margin for application error. Many PGR's have very tight tolerances and even a slight over-dose can cause a severe plant response or even plant damage. Cycocel allows for a margin of error. This minimizes the grower's risk of plant damage.

Cycocel can be used to reduce stem elongation of all poinsettia varieties. It can be applied as need to stock plants, cuttings during propagation and before or after pinching plants grown for flowering.

Response of poinsettias to Cycocel varies with variety and geographical region of the United States. Higher rates and more frequent applications are needed in warmer production areas. For natural-season crops in the North, Cycocel should not be used after Oct. 15, except that reduced rates can be used until Oct. 21 if conditions are warm and sunny. In the South, Cycocel should not be used after Nov. 1. Late application times or excessive rates can cause reduced bract size and /or delayed flowering. If the crop is being produced for other than natural season, the last application should be no later than 6 weeks prior to flower maturity.

Spray applications can be made at rates between 800 and 1,500 ppm. Multiple applications may be made as needed at intervals between 3 and 14 days. Frequent reapplications may be needed if lowest application rates are used. At rates of 1,000 to 1,500 ppm, less frequent reapplication is needed. Higher Cycocel rates between 1,500 and 3,000 ppm often result in considerable leaf yellowing and are not frequently used, but may be applied if the user has adequately evaluated these rates.

Drench applications can be made to poinsettias using the procedures given in the Drench Applications section of this label. Drench application rates are 3,000 to 4,000 ppm. Drench treatments should not be made after the critical cut off dates given above for Cycocel applications to poinsettias.

Tank Mixes of Cycocel® and B-Nine®

Combinations of Cycocel and B-Nine a PGR from Chemtura Corporation have shown a synergistic reaction, meaning the combination is stronger than either by themselves. This combination provides height control and can minimize concerns with phytotoxicity.

The application rate for Cycocel and B-Nine can be altered to adjust the degree of height reduction resulting from a spray treatment. In general, the highest Cycocel rate that does not cause excessive leaf yellowing can be used, and then the B-Nine rate can be raised or lowered to adjust the activity of the tank mix application.

The following table gives a range of application rates for Cycocel and B-Nine to use in establishing trials.

Activity	Cycocel (ppm)	B-Nine (ppm)
Very high	1,500	5,000
High	1,500	2,500
Medium	1,250	1,250
Low	1,000	800

Poinsettias are more sensitive to the combination of Cycocel and B-Nine than many other crops. Outside of the warmest regions of the United States, the medium to low rates should be used.