

Battle Whiteflies and Thrips

Effectively Controlling Thrips

Most adult thrips are slender, minute (less than 1/20 inch long), and have long, narrow wings. Immatures (called larvae or nymphs, or pupae) are similarly shaped with a long, narrow abdomen but lack wings. The entire cycle from egg to adult requires from 12 to 16 days. Most thrips range in color from translucent white or yellowish to dark brown or blackish, depending on the species and life stage. A few species are more brightly colored. They hang out on undersides of leaves.

Thrips feed by rasping the leaves from the surface of plant tissue and sucking up plant sap. This results in silver-colored, bleached tissue lacking in chlorophyll, accompanied by black varnishlike spots of excrement. In addition, feeding by thrips can cause twisting and distortion of leaves and flowers. The silvery resin has been reported to attract powdery mildew to the garden.

Adults must be killed at the leaf level. The adults however mate in the medium. The larvae must be attacked at the root zone! Below we have broken the two types of Control into both treatment for the leaves (which will kill the adults) and also treatment at the root zone to kill the larvae that are lurking in the medium. Make sure to attack and treat both regions.

Treatment Methods for the Adults (at Leaf Level)

Blue (not **Yellow**) **Sticky** **Strips:**

The traps are designed to trap adult thrips. Place anywhere that adult thrips congregate. Riddle the base of plants with these.

Monterey **Garden** **Insect** **Spray:**

Spinosad based products are relatively new to the market. Spinosad is a nerve toxin

derived from a naturally-occurring bacterium, *Saccopolyspora spinosa*. Monterey's product contains both forms of Spinosad (A mixture of Spinosyn A & Spinosyn D), thereby making it superior to other products with only one form. Sprayed Pests may be seen moving for up to several hours - but will not feed and die.

Monterey Garden Insect Spray Application Rates:
 Quart - Mix 1-3 tsp. / Quart (5-15mL/Quart). We find that 1 tsp. / Quart works great and is softer on plants! Gallon - Mix 4-12 tsp. / Gallon (20-60mL/Gallon). Again, we use 4tsp./Gallon - super effective & causes no adverse effects on plants.

Pylon (newer, not as toxic):
 Pylon is great for mite control and has finally been labeled for control of thrips. OG - growers have known that Pylon is a great product for thrip control but no-one was allowed to talk about it unless it was labeled as such. Best when used with Stirrup M - a pheromone solution attracting thrips to the poised areas. When using a chemical like Pylon (You need a pesticide licence) it is important to use these guidelines:
 1. Use a pesticide Respirator. 2. Wear fluid proof gloves. 3. Wear long sleeves and pants and take off and wash as soon as application is finished. 4. Wear eye protection.

Pylon Application Rates:
 Mix 1/4tsp. / Gallon of Solution (1.25mL/Gal). You can then divide this by 1/4 into a quart bottle if necessary. Pylon affects insects by not allowing ADP to convert to ATP and bugs die because they cannot create energy.

Treatment Methods for the Larvae (at Root Zone)

Nematodes:

These microscopic worms are pretty awesome. They only effect soft-bellied insects like fungus gnat larvae (no animals - so don't worry!) Nematodes get sucked up into the guts of the larvae and pupae), begin to colonize and multiply until they finally burst open the stomach of the larvae (dealing it out a very nasty death) and releasing more nematode colonies into the medium in the process.

Nematode Application Rates:

Apply 1 Million (1 packet) Nematodes per each “grow light” in your grow space. Each packet of nematodes is dropped and mixed into a 1 Gallon container of water (pH as normal) then hand applied to each plant. Then remove sponge and toss into reservoir.

Systemic Killer (Orthene):

Systemic Killer obliterates pests at the roots. It will kill larvae, & just about anything else in the medium. Make sure you apply, then FLUSH 3-5 hrs. after application w/ pH'd water. Repeat this drench as necessary (up to 3 times). Apply to one plant first, then apply to rest of garden.

Systemic killer Application Rates:

Mix 1oz. per 5 Gallons of solution. After application, make sure to FLUSH 3-5 hours later with ph'd water. Repeat as necessary.

How to Battle Whiteflies

Whiteflies usually occur in groups on the undersides of leaves. They derive their name from the mealy, white wax covering the adult's wings and body. Adults are tiny insects with yellowish bodies and whitish wings and are approximately 2 mm long. While single whitefly can be difficult to see, large numbers clustered on the underside of leaves are very obvious. Whiteflies normally lay their tiny, oblong eggs on the undersides of leaves. The eggs hatch, and the young whiteflies gradually increase in size through four nymphal stages called instars.

Whiteflies feed by tapping into the phloem of plants, exposing plants to the whiteflies' toxic saliva and decreasing the plant's overall turgor pressure. The damage is quickly elevated as whiteflies congregate in large numbers, quickly overwhelming susceptible plants. Damage is further exacerbated as whiteflies, like aphids, excrete honeydew as a waste product, which promotes mold growth and may seriously impede the ability of farms to process cotton harvests.

In humid conditions, a black sooty mold fungus grows on the honeydew and blackens leaves and fruit. The black mold and honeydew excrement also attracts powdery mildew. Most plants take severe damage, not from the whitefly's themselves but from the mold and Powdery Mildew they attract! Make sure to remove severely infested or damaged leaves as they occur. Please see our "Foliar Spray" info-sheet handout on how to properly apply these remedies.

WhiteFly Parasites:

Tiny Whitefly Parasites (*Encarsia formosa*) lay their eggs inside developing Whitefly pupae, so a Whitefly Parasite hatches out instead of a Whitefly. You'll need a magnifier to see them, but they spell death for Greenhouse Whiteflies. These little suckers are SUPER EFFECTIVE. We have used them many times - works like a charm. 1000 parasites per 1000 watts of light. Use at least 2 parasite releases.

Azamax

After ingesting Azamax an insect can't feed. They feel full all the time. The insects cannot shed their skin to molt, and they can't form a pupae. Ultimately the insects end up paralyzed and they die. Soft on Predators.

Azamax Application Rates:

- Quart size foliar application: In a quart mix 3 tsp. of Azamax and a few drops of wetting agent with RO water. Shake and apply. Wait 5 days and reapply by increasing dose to 4.5 tsp of Azatrol with wetting agent and water. If spraying indoors we recommend raising the lights or spraying while the lights are off (for at least a 3 hour period.) Use within 24 Hours. - Gallon size foliar application: In a gallon, mix 2 oz of Azamax + a wetting agent with RO water. Shake and apply. Wait 4-5 days and then re-apply with 3 oz per Gallon + a wetting agent with RO water. If spraying indoors we recommend raising the lights or spraying while the lights are off (For at least a 3 hour period.)

Outdoors, spray either early in the morning or at dusk. For best results use within 24 hours.

Pyrethrins (Don't Bug Me or Whitmire 1600 - X-Clude)

Pyrethrin lasts for 24 hours before it degrades to 1/2 of its original amount. It is derived from chrysanthemums and generally has a low toxicity for humans. That being said, we still think you should spray with a mask and gloves. There are many different brands on the market to choose from. We like Don't Bug Me from Fox Farm because it is inexpensive and effective even when diluted 50% with purified water. The Aerosal sprays from Whitmire are stronger and create a finer spray but can "burn" plant leaves if used improperly. Please see our "Foliar Spray" info-sheet handout. FULL COVERAGE is necessary to be effective. Spray every 3 days until problem ceases to exist. Both of these bottles of Pyrethrins are Ready - to - Use. Just purchase and apply as needed.

Forbid:

Forbid offers outstanding knockdown and residual control of mites and whiteflies. The active ingredient in Forbid, spiromesifen, represents a new class of chemistry from Bayer Environmental Science, called the tetramic acids. It is capable of traveling through the tops of the leaves and reaching to the undersides. For best practice you should still apply to both sides of the leaves. When using a chemical like Forbid (You need a pesticide licence) it is important to use these guidelines:

1. Use a pesticide Respirator.
2. Wear fluid proof gloves.
3. Wear long sleeves and pants and take off and wash as soon as application is finished.
4. Wear eye protection.

Forbid

Application

Rates:

Usage is only 1/8 to 1/4 teaspoons per gallon of spray solution.

ATTENTION! This handout provides general information and is not to be taken as advice or a recommendation. Before using any product described in this handout, you should verify the information to determine the product's efficacy and safety, and to learn of any laws or regulations applicable to the product. The handout uses descriptions,

such as “pesticide”, in an informal, familiar way, and these descriptions are not intended to convey whether products are subject to particular laws or regulations.