

Gerbera Crop Recommendation

By Evergreen Growers Supply LLC

OVERVIEW:

Gerbera are very beautiful, but unfortunately they are also very attractive to pests. In fact, some growers use Gerbera to lure pests away from other plants. Pests such as aphids, thrips, and spider mites damage Gerbera by sucking from their leaves. For efficiency and health reasons, many Gerbera growers are moving away from costly chemical pesticides and are turning to beneficial insects. Retailers and consumers demand safe and beautiful bouquets and plants, so using biological control is also an important marketing tool.

This guide should be especially helpful for the pot Gerbera grower. Using beneficial insects will help achieve a very high level of success, with bigger and brighter plants at a lower cost. Unfortunately, a pest infestation for cut flower Gerbera can be a much bigger challenge. Major outbreaks of whiteflies or thrips need to be treated aggressively. Physically trapping or gently vacuuming the pests might be the best option for quickly turning around a problem.

For this crop, growers tend to see the most success when applications of biological controls are released at high rates for short periods of time. It is always better for growers to work preventatively against pests, rather than retroactively.

PRIOR TO PLANTING

When preparing to use beneficial insects for pest management, growers need to focus on climate control, fungicide applications, and plant nutrition. These factors play a major role in whether or not good bugs are able to do their jobs properly. High humidity has a negative impact on whiteflies, spider mites, and thrips. Naturally occurring fungal pathogens will completely wipe out most pest populations if the humidity remains above 80% for more than 48 hours. Consistent temperatures over 86°F will reduce the greenhouse whitefly adult lifespan from weeks to days and suppress egg-laying. Hot and dry conditions are ideal for spider mites.

The use of sulfur pots impedes the success of beneficial insects. Recent research has shown that even short burns of only a few hours can kill all beneficial insects shortly following exposure.

Plant nutrition is a critical consideration when dealing with pests. Sucking insects are attracted to well-fertilized plants, especially if the nitrogen source is ammonium. By switching away from ammonium-based fertilizer mixtures, growers make plants less attractive to sucking pests. Unfortunately, spider mites and some thrips are

not influenced by the presence of ammonium. They are generally attracted to stressed, under-fertilized plants.

GETTING STARTED

When planting has started and the pots are first watered, the soil mite such *Stratiolaelaps scimitus* should be applied to the soil surface. These soil mites will control fungus gnat larvae in the root zone, leading to a faster growth rate and healthier plants. We can consult about application rates and timing according to your pest pressure and budget.

Stratiolaelaps also feed on pupating thrips larvae, helping thrips management by breaking the reproductive cycle. If despite reasonable prevention the crop ends up with a spider mite problem, apply more *Stratiolaelaps* to the floor area, focusing on cracks and any other breaks in the floor where the spider mites may hide. The mites will feed on the dormant spider mites, significantly reducing the numbers that may return to the crop.

COMMON PESTS WHEN GROWING GERBERA

WHITEFLY (*Aleyrodidae*)

Whiteflies are highly attracted to Gerbera. The density of the foliage and the succulent nature of the leaves create a perfect refuge for the pest. Gerbera's leaf density also



prohibits most spray programs from doing what they're supposed to. The foliage also makes it difficult for beneficial insects to find all of the hot spots when effectively trying to eliminate whiteflies. All whitefly predators and parasitoids rely on the smell of the whitefly's honeydew to find the hot spots. A greenhouse that is evenly infested by whitefly will make it difficult for the beneficial insects to pinpoint the areas of most concern, thus negating their searching ability. Ideally, starting with a clean house, [*Encarsia formosa*](#) and [*Delphastus catalinae*](#) will find the new areas of infection and deal with them effectively. In greenhouses that have an existing whitefly population, growers must over-inoculate with beneficial insects. They should be manually spread out, and if possible, all existing honeydew should be washed off prior to their release.

If growers are dealing with greenhouse whitefly, *Encarsia* works well. *Encarsia* have a tremendous searching ability. In a clean house, the insect will maintain control at a rate of 2 to 4 wasps per 10 square feet weekly. *Encarsia* should be considered an insurance policy; continue introducing it at the low rate even if whitefly populations have crashed. The "Achilles Heel" of *Encarsia* (and all other parasitoids) is the honeydew of the whitefly. Once a hot spot has developed, the leaf surface becomes very sticky and they lose their ability to suppress the pests. The tiny wasps just can't handle the gooey mess and will leave. Luckily, *Delphastus* thrives in the goo. It is attracted to the densest hot spots and eats both the whitefly as well as the honeydew. *Delphastus* always prefers the eggs of the whitefly, progressing up the development ladder until they get to the adult which they will also consume. Rates for *Delphastus* in Gerbera range from 1 adult per 10 square feet every 3 weeks, to 1 adult per 10 square feet weekly.

The essential issue for effective whitefly management is the use of fresh, unrefrigerated *Encarsia*, because of the winter temperature range. Gerbera like to be cool, but stored *Encarsia* are ineffective below 64.5° F, allowing a healthy population of whitefly to build up over the winter and early spring. Fresh *Encarsia* can easily manage a whitefly problem down to 50°F.

In the same family as *Encarsia*, [*Eretmocerus eremicus*](#) can also be used to control a whitefly problem. *Eretmocerus* originates in the desert regions of Arizona and California and is able to tolerate higher temperatures than *Encarsia*, but can be used together to control

silverleaf and greenhouse whiteflies. *Eretmocerus* controls whiteflies by parasitizing whitefly larvae.

Silverleaf whitefly (*Bemesia*) must be managed differently. While some parasitoids are naturally inclined to *Bemesia*, all commercial strains are reared on and conditioned to the greenhouse whitefly. We do not recommend using parasitoids to control or manage *Bemesia*. The good news is that *Bemesia* tends not to spread out as fast as greenhouse whitefly, so the hot spots are more clearly defined and easier to target. *Delphastus* naturally prefers *Bemesia* and will go to those hot spots before the greenhouse whitefly hot spots. While *Bemesia* is a more serious threat because of its capacity to act as a virus vector, it is also much easier to manage if/when growers use *Delphastus*.

As stated before, shifting fertilizer mixes away from ammonium will also help manage whiteflies.

SPIDER MITES (*Tetranychidae*)

It's rare for growers to find both whiteflies and spider mites rampant in the same house, or at least in the same area of the house. The two pests are typically attracted to different plants. Spider mites also hate honeydew because of the stickiness and the higher humidity associated with it. Therefore, once growers have their whitefly problem under control, they usually begin battling spider mites. Fortunately, there are a few excellent spider mite controls that are well-suited for Gerbera. Aside from the *Stratiolaelaps* in the soil, [*Amblyseius fallacis*](#) ("fallacis") will provide long term spider mite suppression. It is usually applied at a rate of 2 per 10 square feet, only once. The fallacis will build up in the crop by feeding on the spider mites, but also eating the pollen and other pests such as young thrips larvae as well as other spider mite species. Being a true generalist, fallacis will also feed on whitefly eggs, helping prevent the spreading of the whitefly.

If a spider mite hot spot becomes too developed, too fast, fallacis can't tolerate significant webbing. [*Phytoseiulus persimilis*](#) ("persimilis") is then used to treat the hot spots. Persimilis works very well with fallacis as the two do not significantly interfere with each other. Persimilis easily works at all levels of webbing, but it is only effective against the two.

[*Mesosiulus longipes*](#) ("longipes") is similar to persimilis, but can tolerate lower humidity. The optimum conditions



for. These predators require higher humidity as the temperature increases. Longipes are most effective in warm greenhouses or interiorscapes with artificial lighting. Release longipes at a rate of 3 per square foot, once a week, 1 to 2 times.

Another predatory mite that works best when used preventatively against spider mites is *Neoseiulus californicus* (“californicus”). Growers will see best results when californicus is allowed to build up before the spider mite populations are able to establish themselves. Californicus is tolerant of various temperatures and low humidity, but works best under warm to hot conditions. It tolerates higher temperatures and lower humidity than persimilis.

When pest populations are low, californicus will feed on pollen which keeps predatory populations around the crop. While some predators will actively seek out new prey in the absence of food, most will stay on the crop and wait for the arrival of new pests.

Amblyseius andersoni (“andersoni”) is another predatory mite that can be used to control spider mites and a range of other mite pests - it’s great for broad mites as well. For best results, growers should apply andersoni when pest mite numbers are low. The predatory mites will then be able to feed on small colonies of mites and prevent them from growing and causing major damage.

Andersoni can be purchased in a shaker bottle or sachet. If using the shaker bottle, gently shaking the andersoni onto the crop near the flowers. Suggested rate is 2 to 3 predator mites per 10 square feet. Sachets should always be shaded from direct sunlight and introduced at 2 meter spacing along the crop row. Apply to any convenient location on the plant, such as a leaf petiole, twig or small branch. Duration of sachet activity is 6 weeks, though longer-lasting control may be evident if the predatory mites are established in the crop.

When growers have an established spider mite issue, *Galendromus occidentalis* (“occidentalis”) might be their best option as they feed primarily on spider mite nymphs and adults, but not eggs. Occidentalis is a very versatile predatory mite and tolerates high temperatures and low humidity well. This biological control is recommended for greenhouses with a relative humidity of 40% or less. It is native to California and has been used to control spider mites, two spotted mites, russet mites, and others. Adults eat 1 to 3 pest adults or up to 6

pest eggs per day. Apply occidentalis upon arrival, at a rate of 2 to 3 per square foot, bi-weekly, 1-2 applications. Occidentalis needs at least 11 hours of daylight.

Stethorus punctillum is a tiny black beetle that also thrives in low humidity situations. If growers are unable to manage the climate effectively and the spider mite conditions are extreme, *Stethorus* could save the crop. It should be applied at a rate of 0.1 per square foot in extreme cases, or in moderate cases, at a rate of 0.01 per square foot. These beetles find spider mites by smell and quickly move to new infestations, leaving behind their eggs and larvae to finish the job. One advantage of *Stethorus* is that that can fly plant to plant. They are sensitive to insecticides. The stickiness of the flower head will not deter these beetles.

Another option is to help prevent these pests is **Met52[®] EC*. This contact bioinsecticide utilizes a pathogenic fungus in an emulsifiable oil for the effective control of thrips, root aphids, russet mites, broad mites and more. For best results, Met52[®] should be applied in early stages of population development. Met52[®] product efficacy is impacted by coverage and the application frequency is influenced by the environment, the manner of application (foliar or drench), and the population of the target pest.

**Preferal[™]* Microbial Insecticide can also be used to combat spider mites. Preferal[™] is a naturally-occurring fungus that infects both foliage and soil dwelling insects such as whiteflies, aphids, thrips, spider mites, and other pests. The best results can be obtained by using Preferal[™] in an Integrated Pest Management Program, which includes scouting, monitoring and early detection and identification of target insects. Monitoring of pest pressure is critical to the effective use of Preferal[™]. Efficacy results from germination and growth of the beneficial fungus over several days, so applications should start before pest numbers have reached crisis levels. Preferal[™] is most effective when application is initiated just before or at the first signs that target pests are present.

****Please read product labels carefully before using. Please use caution and always use products according to safety and legal guidelines.***



THRIPS (Thysanoptera)

Managing thrips can take a lot of effort. They are nearly impossible to avoid. Thrips also love Gerbera and can cause economic damage very quickly, as they go after the plant's flowers. Having *Stratiolaelaps* in the pots and on the floor is a starting point, but usually growers need to apply more beneficial insects to effectively deal with a thrips problem. A good strategy is to introduce the predatory mite *Amblyseius cucumeris* ("cucumeris") very early and often. Like fallacis, cucumeris is a generalist mite capable of living on pollen, whitefly eggs, spider mites and thrips. It is a very effective thrips predator. Under balanced conditions, it will wait by the thrips emergence holes and then bite the head off when it emerges. It is also capable of chasing down the first and second instar larvae of thrips.

Cucumeris should be applied at a rate of 5 per 10 square feet, each month, unless thrips become rampant. If this happens, growers should then cucumeris 5 per 10 square feet every 2 weeks until the thrips season is over. An unsprayed Gerbera crop or a spot-sprayed crop will also allow Orius to naturally enter the house. *Orius insidiosus* is a true bug and specializes in feeding on thrips, tackling even the adults. Orius is available for purchase, but is quite expensive and very prone to diapause, therefore preventing early establishment.

In moist conditions *Atheta coriaria*, or rove beetles, can also help control soil stages of thrips and feed on most other small soil organisms. Rove beetles will go wherever their prey is located, whether it's down the floor drains or at the very tops of the plants. Apply *Atheta* at a rate of about 1 beetle every 10 square feet.

Other options for thrips control are Met52[®] or Nemasys[®]. For help controlling thrips populations either the Granular or EC formulation of Met52[®] is suitable (see previous section on spider mites for more information about this product.) Nemasys[®] utilizes microscopic worms (*Steinernema feltiae*) that attack and kill targeted insects without affecting any other organisms. Within the infected insect, the beneficial nematodes continually reproduce and then spread out for long-term control. When applied to the soil, Nemasys[®] will provide prolonged protection against pest re-infestation.

There are many physical controls that are effective with thrips. Yellow or blue [sticky cards](#) can actually remove a

significant number of flying adults. The trick is to keep the cards low, at or below flower height. When a thrips problem gets overwhelming, growers can try using a large tub filled with a soapy solution to attract and kill large numbers of adult thrips.

The tub should be yellow or white and measure about 18 inches long, 12 inches wide and 6 inches deep. In the tub, make a solution of mostly water and a small amount of dish soap. Adding vanilla or almond extract can also help attract the pests. Thrips will be drawn to the tub for as long as it keeps its scent, which is usually about 3 days. If this method proves successful, growers may want to repeat the process until the thrips are no longer an issue.

LEAF MINER (*Phytomyza syngenesiae*)

This pest can overwhelm a Gerbera crop very quickly. Fortunately, the parasitoid *Diglyphus* works extremely well to combat it. As in all parasitoids, early introduction and appropriate numbers are essential. Good control of the leaf miner goes along with good whitefly control, as the honeydew of the whitefly impairs the *Diglyphus*.

APHIDS (*Aphidoidea*)


Aphids can be a big problem, but seldom show up in Gerbera. The emergence of the Foxglove Aphid in North America should be a concern to all growers, as the plant range for this formidable pest appears to be increasing. At any sign of aphid, Gerbera growers should immediately apply 0.5 *Aphidoletes aphidimyza* per 10 square feet weekly. They will quickly eliminate any aphids.

When aphid populations are high, *Aphidius colemani* alone will not provide adequate control, but they work well in conjunction with *Aphidoletes* and ladybugs to provide control. *Aphidius* species are a group of native parasitic wasps, frequently found parasitizing aphids. Adults are tiny, just 2 to 3 mm long, dark-colored wasps that do not sting. The larvae develop entirely inside the host aphid, which eventually become rigid mummies when the larvae pupate. *Aphidius* is an outstanding searcher, and can locate new aphid colonies even when aphid populations are low.

Using AzaGuard™, an Insect Growth Regulator

For growers trying to make the switch from chemical pesticides to biological controls, *AzaGuard™ can work as a great bridge product for any of the target pests listed





above. AzaGuard™ is a 3% Azadirachtin formulated Insect Growth Regulator (IGR) that offers broad spectrum insecticidal control on over 300 insect species.

Many growers who have applied powerful chemicals to fight pests in the past have experienced adverse reactions when trying to shift away from the chemicals. During this initial shifting period, pest populations tend to explode, making it very appealing for growers to resort back to chemical products at the sake of saving their crop. Azaguard™ can help growers manage pests during this interim period. It is important to always read product labels carefully to determine an appropriate application rate.

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