

## **CUCURBIT VEGETABLES - APHIDS, WHITEFLIES**

### General Information

#### INFORMATION

Besiege is a foliar insecticide providing control of lepidopteran insects, and listed sucking and chewing insects.

After a foliar application, most of the compound stays on the leaf surface and a small amount penetrates into the leaf tissue. Initial and residual control is contingent upon thorough crop coverage.

For best performance, always follow these directions:

- Apply Besiege when insect pest populations begin to build, but before populations reach economically damaging levels. Economic thresholds for pests controlled by Besiege may be available from your local agricultural authorities.
- Thorough spray coverage is essential for optimal performance. Apply Besiege in sufficient water to ensure good coverage. See specific application information in the Crop Use Directions section of this label. The use of higher water volumes will generally result in better coverage, especially under adverse conditions (e.g., hot, dry) or where a dense plant canopy exists.
- Besiege is rainfast once the spray solution has dried on treated plants.
- In addition to control of key pests listed on this label, Besiege may aid in the suppression of other listed pests. Suppression can mean either inconsistent control (good to poor), or consistent control at a level below that generally considered acceptable for commercial control.

#### RESISTANCE MANAGEMENT

Some insect pests are known to develop resistance to products after repeated use. Because resistance development cannot be predicted, the use of this product should conform to sound resistance management strategies established for the crop and use area. Syngenta encourages responsible product stewardship to ensure effective long-term control of the insects on this label.

Besiege contains a Group 3 insecticide (lambda-cyhalothrin, belonging to the pyrethroid class of chemistry) and a Group 28 insecticide (chlorantraniliprole, belonging to the diamide class of chemistry). Insect biotypes with acquired or inherent resistance to Group 3 or Group 28 insecticides may eventually dominate the insect population if Group 3 or Group 28 insecticides are used repeatedly as the predominant method of control for targeted species. This may result in partial or total loss of control of those species by Besiege or other Group 3 or Group 28 insecticides.

If resistance to this product develops in your area, this product, or other products with a similar mode of action, may not provide adequate control. If poor performance cannot be attributed to improper application or extreme weather conditions, a resistant strain of insect may be present. If you experience difficulty with control and resistance is a reasonable cause, immediately consult your local company representative or agricultural advisor for the best alternative method of control for your area.

In order to maintain susceptibility to these classes of chemistry:

- Avoid using Group 3 and/or Group 28 insecticides exclusively for season-long control of insect species with more than one generation per crop season.
- For insect species with successive or overlapping generations, apply Besiege or other Group 3 and/or Group 28 insecticides using a “treatment window” approach. A treatment window is a period of time as defined by the stage of crop development and/or the biology of the pests of concern. Within the treatment window, depending on the length of residual activity, there may either be single or consecutive applications (soil, foliar, unless otherwise stated in the Directions for Use) of the Group 3 and/or Group 28 insecticides. Do not exceed the maximum Besiege allowed per year.
- Following a treatment window of Group 3 and/or Group 28 insecticides, rotate to a

treatment window of effective products with a different mode of action before making additional applications of Group 3 and/or Group 28 insecticides.

- A treatment window rotation, along with other IPM practices for the crop and use area, is considered an effective strategy for preventing or delaying a pest's ability to develop resistance to these classes of chemistry.
- If resistance is suspected, do not reapply Besiege or other Group 3 or Group 28 insecticides.

Other Insect Resistance Management (IRM) practices include:

- Incorporating IPM techniques into your insect control program.
- Monitoring treated insect populations for loss of field efficacy.
- Using tank-mixtures or premixes with insecticides from a different target site of action group as long as the involved products are all registered for the same crop outlet and effective rates are applied.

For additional information on Insect Resistance Management:

- Contact your local extension specialist, certified crop advisor and/or product manufacturer for additional insect resistance management recommendations.
- Visit the Insecticide Resistance Action Committee (IRAC) on the web at:  
<http://www.irc-online.org/>.

#### SPRAY DRIFT REQUIREMENTS

Observe the Following Precautions When Spraying in the Vicinity of Aquatic Areas Such as Lakes; Reservoirs; Rivers; Permanent Streams, Marshes or Natural Ponds; Estuaries and Commercial Fish Farm Ponds: Vegetative Buffer Strip Construct and maintain a minimum 10-foot-wide vegetative filter strip of grass or other permanent vegetation between the field edge and down gradient aquatic habitat (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds).

Only apply products containing Besiege onto fields where a maintained vegetative buffer strip of at least 10 feet exists between the field and down gradient aquatic habitat.

For guidance, refer to the following publication for information on constructing and maintaining effective buffers:

[www.in.nrcs.usda.gov/technical/agronomy/newconbuf.pdf](http://www.in.nrcs.usda.gov/technical/agronomy/newconbuf.pdf)

Conservation Buffers to Reduce Pesticide Losses. Natural Resources Conservation Services. USDA, NRCS. 2000.

Fort Worth, Texas. 21 pp.

Buffer Zone for Ground Application (groundboom, or airblast)

Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries, and commercial fish ponds).

Buffer Zone for Aerial Application

Do not apply within 150 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries, and commercial fish ponds).

Additional Requirements for Ground Applications

Wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application.

For ground boom applications, apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

Additional Requirements for Aerial Applications

Mount the spray boom on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length must be used and must not exceed 75% of the wing span or 80% rotor diameter.

Flight speed and nozzle orientation must be considered in determining droplet size.

Spray must be released at the lowest height consistent with pest control and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety.

When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

#### TANK MIX APPLICATION

Prepare no more spray mixture than is needed for the immediate operation. Thoroughly clean spray equipment before using this product. Maintain agitation throughout the spraying operation. Flush the spray equipment thoroughly following each use and apply the rinsate to a previously treated area. Keep product container tightly closed when not in use.

#### Besiege Alone

Add 1/2 of the required amount of water to the mix tank. With the agitator running, add the desired amount of Besiege to the tank. Continue agitation while adding the remainder of the water. Begin application of the solution after Besiege has completely dispersed into the mix water. Maintain agitation until all of the mixture has been applied.

#### Adjuvants

The use of adjuvants is allowed on all crops and may improve the performance of Besiege insecticide. When an adjuvant is to be used with this product, use an adjuvant that meets the standard of the Chemical Producers and Distributors Association (CPDA) adjuvant certification program. Besiege is an aqueous-based formulation. Do not use any type of non-emulsifiable oils in combination with Besiege. If adjuvants are used, use the following types:

- Nonionic Surfactant (NIS) containing at least 75% surface agent
- Non-phytotoxic Crop Oil Concentrate (COC), including once refined Vegetable Oil Concentrate (VOC)
- Methylated Seed Oils (MSO) containing a minimum of 17% emulsifier.

Adjuvants other than NIS or COC may be used providing the product meets all of the following criteria:

- Contains only EPA exempt ingredients.
- Is non-phytotoxic to the target crop.
- Is compatible in mixture. (established through a jar test)
- Is supported locally for use with Besiege on the target crop through proven field trials and through university and extension specifications.

Do not use the following in combination with Besiege as diluents or adjuvants:

- Non-emulsifiable oils
- Diesel Fuel
- Straight Mineral Oil

#### CHEMIGATION – POTATOES ONLY

##### Sprinkler Irrigation Application:

Apply Besiege at rates and timing described elsewhere in this label. As local specifications differ, consult your local State Extension Service or other local experts for specifications on adjuvant or diluent types, (see TANK MIX APPLICATION) rates and mixing instructions. These specifications must be proven, through university and extension field trials, to be effective with Besiege applied by chemigation.

Check the irrigation system to ensure uniform application of water to all areas. Thorough coverage of foliage is required for good control. Maintain good agitation in the pesticide supply tank prior to and during the entire application period.

Apply by injecting the specified rate of Besiege into the irrigation system using a metering device that will introduce a constant flow and by distributing the product to the target area in 0.1–0.2 acre-inch of water. Use the least amount of water required for proper distribution and coverage. Inject the product into the main irrigation line ahead of a right angle turn in the line to insure adequate dispersion or mixing in the irrigation water. Once the application is completed, flush the entire irrigation and injection system with clean water before stopping the system. If application is being made during a normal irrigation set of a stationary sprinkler, inject the specified rate of Besiege for the area covered into the system only during the end of the irrigation set for sufficient time to provide adequate coverage and product distribution.

Do not apply Besiege through an irrigation system connected to a public water system. Public water system means a system for the provision to the public of piped

water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Use Restrictions: Sprinkler Irrigation Application:

- A. Apply this product only through (sprinkler including center pivot, lateral move, end tow, side [wheel] roll, traveler, big gun, solid set, or hand move) irrigation system(s). Do not apply this product through any other type of irrigation system.
- B. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- C. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers or other experts.
- D. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- E. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.
- F. The system must contain a functional check valve, vacuum relief valve, and low-pressure drain appropriately located on the irrigation pipeline to prevent water-source contamination from backflow.
- G. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- H. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- I. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

J. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

K. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump or a Venturi injector) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

L. Any alternatives to the above required safety devices must conform to the list of EPA-approved alternative devices.

M. Do not apply when wind speed favors drift beyond the area intended for treatment or non-uniform distribution of treated water.

N. Do not apply through chemigation systems connected to public water systems.

#### Limitations, Restrictions, and Exceptions

#### Cucurbit Vegetables Crop Group 9

#### Use Restrictions

- Maximum Besiege Allowed per Year: Do not exceed a total of 31.0 fl oz of Besiege or 0.18 lb ai of lambdacyhalothrin-containing products or 0.2 lb ai of chlorantraniliprole-containing products per acre per year.
- Application Timing: Apply before pests reach damaging levels. Scout fields and treat again if populations rebuild to potentially damaging levels. Apply higher rates within the listed rate range for heavy infestations.
- Minimum Interval between Applications: 5 days
- Water Volume: Use sufficient water volume to ensure thorough coverage of foliage. Do not use less than 10 GPA for ground applications or 5 GPA for aerial applications.
- Make no more than 4 applications per acre per crop.



Aphids, Whiteflies: Suppression only

Aphids, Whiteflies: Refer to Resistance Management section.

Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

Pre-Harvest Interval

1 day

Rates

[field\\_rates 0](#)

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Restricted Entry Interval

24 hours

Timings

[Before pests reach damaging levels.](#)