



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

March 18, 2016

Susan Gallager  
Regulatory Associate  
Certis USA L.L.C.  
9145 Guilford Road, Suite 175  
Columbia, MD 21046

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment – Acceptable  
Amendment Clarifying Sublabels by Differentiating Use Sites  
Product Name: Superneem 4.5B  
EPA Registration Number: 70051-9  
Application Date: December 4, 2015  
OPP Decision Number: 512156

Dear Ms. Gallager:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration

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process. Therefore, should the EPA find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6.

If you have any questions, please contact Andrew Reighart of my team by phone at (703) 347-0469 or via email at [reighart.andrew@epa.gov](mailto:reighart.andrew@epa.gov).

Sincerely,

A handwritten signature in blue ink that reads "Andrew C. Bryceland". The signature is written in a cursive style with a large initial 'A' and 'B'.

Andrew Bryceland, Team Leader  
Biochemical Pesticides Branch  
Biopesticides and Pollution  
Prevention Division (7511P)  
Office of Pesticide Programs

Enclosure

**Master Label**

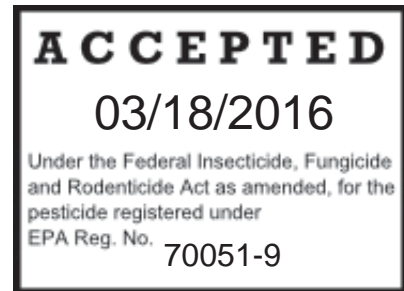
# Superneem4.5-B

INSECT GROWTH REGULATOR
BIOLOGICAL INSECTICIDE

**Sublabel A: Commercial Agricultural Use**  
**Sublabel B: Ornamental Use**

**ACTIVE INGREDIENT:**

Azadirachtin .....	4.5%
<b>OTHER INGREDIENTS</b> .....	<u>95.5%</u>
<b>TOTAL</b> .....	100.0%



**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**

Si usted no entiende la etiqueta, busque a alguien para que se la explique en detalle.  
(If you do not understand this label, find someone to explain it to you in detail.)

EPA Reg. No. 70051-9

**Manufactured for:**  
**Certis USA**  
**9145 Guilford Road, Suite 175**  
**Columbia, MD 21046**

**Net Contents: One Quart or 32 fl. oz. (946mL)**

See attached booklet for additional Precautionary Statements, First Aid Statements, Directions for Use, and Storage and Disposal Statements

# Sublabel A – Agricultural

# Superneem4.5-B

INSECT GROWTH REGULATOR

BIOLOGICAL INSECTICIDE

 CAN BE USED IN ORGANIC PRODUCTION


An Insecticide for Use on Vegetables, Fruits, Turf (Including Commercial Lawns), and other Crops Grown in the Field or Mushroom Houses.

Kills/repels a variety of insect pests including whiteflies, loopers, caterpillars, leafminers, psyllids, mealybugs, and larvae of diamondback moths.

**ACTIVE INGREDIENT:**

Azadirachtin ..... 4.5%

**OTHER INGREDIENTS** ..... 95.5%**TOTAL** ..... 100.0%

This product contains 0.39 lb. (175 g) of azadirachtin per US gallon

See attached booklet for additional Precautionary Statements, First Aid Statements, Directions for Use, and Storage and Disposal Statements

**KEEP OUT OF REACH OF CHILDREN****CAUTION**

Si usted no entiende la etiqueta, busque a alguien para que se la explique en detalle.  
(If you do not understand this label, find someone to explain it to you in detail.)

**Net Contents: One Quart or 32 fl. oz. (946mL)**

Lot No.:

EPA Reg. No. 70051-9

EPA Est. No. 39578-TX-01, 44616-MO-01

**Manufactured for:**

Certis USA

9145 Guilford Road

Suite 175

Columbia, MD 21046

**PRECAUTIONARY STATEMENTS****HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION:** Avoid contact with skin, eyes or clothing. Harmful if swallowed or inhaled. Avoid breathing vapors or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

**FIRST AID**

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

**If swallowed:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.  
Hot Line Number: 1-800-255-3924.

## PERSONAL PROTECTIVE EQUIPMENT

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category C on an EPA chemical resistance category selection chart.

### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride (PVC), or Viton.
- Shoes plus socks
- Protective eyewear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not re-use them.

## USER SAFETY RECOMMENDATIONS

Users Should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

## ENVIRONMENTAL HAZARDS

This product may be hazardous to fish and aquatic invertebrates. For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

## PHYSICAL AND CHEMICAL HAZARDS

Combustible: Do not use or store near heat or open flame.

## DIRECTIONS FOR USE

**It is a violation of Federal law to use this product in a manner inconsistent with its labeling.**

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow workers entry into treated areas during the restricted entry interval (REI) of 4 hours.

For early entry into treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, wear:

- Coveralls.
- Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinylchloride (PVC), or Viton.
- Shoes plus socks.
- Protective Eyewear

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standards for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, or greenhouses. For other uses including golf courses, and other non-agricultural uses, do not enter treated areas without protective clothing until sprays have dried.

**PREHARVEST INTERVAL**

SUPERNEEM 4.5-B can be applied up to and including the day of harvest (zero PHI). Individual state regulations may vary and should be consulted for allowable preharvest interval.

**MODE OF ACTION**

This product controls targeted insect larvae when they ingest or come in contact with it, by interfering with the insect's ability to molt. It is effective on all larval or nymphal stages. It also reduces crop damage by repelling and deterring feeding of all stages of insects.

**SPRAY EQUIPMENT**

Use any suitable ground, aerial, or hand application equipment that allows for uniform coverage of the targeted treatment area.

**GENERAL INFORMATION**

- Broad Spectrum Insect Growth Regulator Insecticide
- Not for use in food-handling establishments.
- Shake well before using.
- Kills only immature stages (larvae or nymphs) of insects. Treated larvae may die as pupae.
- Make applications when pests first appear and are in their early larval stages. Repeat applications every 7 days or as needed.
- Botanical Insecticide Concentrate.
- Spraying directly onto the pest and a longer duration of leaf wetting increases effectiveness. Apply in early to mid-morning or late afternoon.
- The pH of spray solution containing SUPERNEEM 4.5-B must be kept between 3 and 8. Use spray solutions within several hours of preparation for maximum effectiveness. Do not store diluted solution for later use.
- Do not apply to wilted or otherwise stressed plants, or to newly transplanted material prior to root establishment. Do not apply to known spray sensitive plants without testing.
- SUPERNEEM 4.5-B has been found to be compatible when used in conjunction with most beneficial insects. Conduct a small trial to assure compatibility before using on a large scale.
- Use with care when applying near streams, ponds, lakes or bodies of water.
- Do not apply SUPERNEEM 4.5-B when weather conditions favor drift or the likelihood of runoff is high.
- For best results, add a spreader-sticker or oil-based adjuvant (such as methylated seed oil) at the label rate.
- Do not use on Comice Pears and other known sensitive pear varieties

This product may be pre-mixed in a supply tank with water, fertilizer or other appropriate agricultural chemicals. Agitation is necessary (see Mixing Directions). Crop injury or lack of effectiveness can result if uniform distribution is not achieved.

When pest populations are high, use the higher label rates.

**TANK MIXING**

SUPERNEEM 4.5-B Insect Growth Regulator, has been found to be compatible with most commonly used fungicides, insecticides, and fertilizers. Check physical compatibility first by using the correct proportion of products in a small jar test. Then, test tank-mix combinations for phytotoxicity on a sample of plants prior to use. This must be done with combinations used before as environmental conditions can alter the interaction between compounds. *Due to the wide variation in climatic conditions, cultural practices, and other factors, the user assumes full responsibility for any crop damage or other liability resulting from the use of SUPERNEEM 4.5-B in a tank mix combination.* Do not mix SUPERNEEM 4.5-B with oxidizing agents such as bleach, or strong acids and bases as they will destabilize the product.

**DIRECTIONS FOR USE ON FIELD-GROWN FOOD CROPS****GENERAL DIRECTIONS:**

Use care when applying near streams, ponds, lakes or other bodies of water.

Do not apply SUPERNEEM 4.5-B when weather conditions favor drift or when the likelihood of runoff is high.

**SPECIFIC CROP/PEST DIRECTIONS:**

*Application Rate:* Apply 0.25 – 1 pint (4 – 16 fl. oz.) of SUPERNEEM 4.5-B per acre using suitable ground or aerial application equipment, in a manner to obtain uniform and complete plant coverage. For agronomic crops apply using conventional ground application equipment in a minimum of 30 gallons of water and aerial application equipment in a minimum of 3 gallons of water. Avoid over-spraying to the point of excessive runoff. Refer to the table below for application rates against selected pests. Use the low rate as a preventative when pest pressure is low, or if used in conjunction with adulticide products. Otherwise, use the high rate. The maximum application rate is 20 grams active ingredient or less per acre according to the tolerance exemption (40 CFR 180.1119).

### Application Rates for Whiteflies, Aphids, Leafminers, Worms, and Other Pests

Pest	Rate of SUPERNEEM 4.5-B per Acre*	Frequency	Remarks
<b>Whiteflies:</b> Low Pressure High pressure	4 – 7 fl. oz. 8 – 16 fl. oz.	4 – 10 days 3 – 7 days	Foliar application against nymphs
<b>Aphids</b>	5 – 7 fl. oz.	7 – 10 days	Suppression of nymphs and adult feeding deterrence
<b>Leafminers</b> ( <i>Liriomyza</i> spp. and Citrus Leafminer <i>Phyllocnistis citrella</i> )	4 – 7 fl. oz.	14 – 21 days	Foliar application against larvae and nymphs
<b>Lepidoptera larvae</b> (caterpillars or worms) feeding on foliage or fruit	4 – 10 fl. oz.	7 – 10 days	Foliar application against larvae
<b>Others (including):</b> Borers, Leafhoppers, Leafrollers, Loopers	7 – 16 fl. oz.	7 – 10 days	Foliar application against larvae or nymphs

\*Apply in sufficient water to obtain adequate plant coverage, typically 30 – 100 gallons per acre by ground or 3 – 5 gallons per acre by air.

### For Use on Vegetables, Melons, Strawberries, and Other Food Crops Grown in Greenhouses (or other cover) for Transplanting to Production Fields.

#### For Use on Bearing and Nonbearing Fruit and Nut Trees, Grapevines, Caneberries, and Other Small Fruits.

Apply SUPERNEEM 4.5-B at the indicated rates in sufficient water to ensure adequate plant coverage. Use 1-2 gallons of spray solution per 1,000 square feet, or a minimum of 30 gallons of water per acre for conventional application equipment (3 gallons of water per acre for low/ultralow volume equipment).

Pests controlled by SUPERNEEM 4.5-B	Rate of SUPERNEEM 4.5-B per 100 gallons of water*	Remarks
<b>Aphids</b>	10 – 16 fl. oz.	Foliar application for suppression and adult feeding deterrence.
<b>Armyworms</b>	4 – 16 fl. oz.	Foliar application against larvae.
<b>Borers</b> , including Peach Twig Borer, Peachtree Borer, and Squash Vine Borer	4 – 16 fl. oz.	Foliar application against young larvae before boring or tunneling in the plant.
<b>Caterpillars, Loopers</b> , and other Lepidoptera Larvae (worms)	4 – 16 fl. oz. (Except as noted at right)	Foliar application against larvae feeding externally on leaves, fruits, other external plant parts. <b>Corn Earworm, Diamondback Moth, Hickory Shuckworm, Imported Cabbageworm (larvae of Cabbage Butterfly), and Navel Orangeworm:</b> Use 10 – 16 fl. oz. /100 gal. <b>Artichoke Plume Moth:</b> Apply at 16 fl. oz. /100 gal.
<b>Colorado Potato Beetle</b> & other leaf-feeding beetles	4 – 16 fl. oz.	Foliar application against leaf-feeding larvae.
<b>Cutworms</b>	5 – 16 fl. oz.	Foliar application against larvae feeding on leaves or stems.
<b>Leafhoppers</b>	10-16 fl. oz.	Foliar application against nymphs.
<b>Leafminers:</b> <i>Liriomyza</i> spp. and citrus leafminer ( <i>Phyllocnistis citrella</i> )	6 – 16 fl. oz.	Foliar application against larvae. Mix with approved oil-based adjuvant for best results.
<b>Leafrollers</b>	4 - 16 fl. oz.	Foliar application against larvae.
<b>Scales</b>	6 – 16 fl. oz.	Foliar or stem application targeting crawler stages.
<b>Whiteflies</b>	6 – 16 fl. oz.	Foliar application against nymphs. Spray should be directed to undersides of leaves.

\*When using lower rates (less than 10 fl. oz.), combine SUPERNEEM 4.5-B with an approved adjuvant such as a non-phytotoxic crop oil, up to 1% for improved spray coverage and translaminar uptake. Always use sufficient spray volume to ensure good coverage of all plant parts. Treat early and target youngest larvae or nymphs for best control. Repeat applications every 7-10 days or as needed to maintain control.

## DIRECTIONS FOR COMMERCIAL LAWNS AND TURF

### Surface-Feeding Insects:

For use to control cutworms, armyworms, sod webworms, crickets, chinch bugs, leafhoppers, and grasshoppers.

Apply at first sign of pest presence or damage to turf. Do not apply if rain is forecast within the next 24 hours.

Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (or 0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage and penetration of the turf canopy. Use 2 – 5 gallons of diluted material per 1,000 square feet, or 50 – 100 gallons of diluted material per acre.

The treated area may be lightly irrigated for 3 – 5 minutes after application if desired to increase penetration of the turf surface. However, do not water turf again for 2 days after application.



Reapply as needed to maintain control of turf damage. Be sure to treat under shrubs and plants bordering houses or other structures.

### Subsurface-Feeding Insects:

Mow and irrigate turf prior to application. The treated area may be lightly irrigated for 3 – 5 minutes after application if desired to increase penetration of the turf surface. Do not water turf again within 24 hours after application. Do not mow again within 3 days after application.

For use to control white grubs (Japanese beetles, European chafers, dung beetles, June beetles, green June beetles, May beetles, annual white grubs, grub beetles, southern masked chafers, etc.) and crane fly larvae (leatherjackets):

- For white grubs, make application soon after adults emerge in summer (1 – 3 weeks after first sign of adults). Leatherjackets should be targeted as young larvae while feeding near the soil surface.
- Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage and penetration of the turf. Use 50 – 100 gallons of diluted material per acre, or 2 – 5 gallons of diluted material per 1,000 square feet.

For use to control mole crickets:

- Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage. Use 2 – 5 gallons of diluted material per 1,000 square feet, or 50 – 100 gallons of diluted material per acre.
- For best results, apply when nymphs are small, in the early spring. If necessary, reapply at 1 – 2 week intervals.

For use to control billbugs:

- Apply in mid to late spring or at first sign of pest emergence or damage.
- Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1000 square feet) using enough spray volume to obtain thorough coverage. Use 50-100 gallons of diluted material per acre, or 2 – 5 gallons of diluted material per 1,000 square feet.
- Reapply as necessary. Repeat treatment in early to mid fall to control possible second generation.

### Nematodes:

Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage. Use 50-100 gallons of diluted material per acre. Use 2 – 5 gallons of diluted material per 1,000 square feet. Repeat as necessary.

## DIRECTIONS FOR MUSHROOMS

**Compost Treatment (Post-Pasteurization):** After the compost has cooled, but prior to broadcasting spawn, dilute 2 – 4 fl. oz. of SUPERNEEM 4.5-B with 25 gallons of water, mix thoroughly, and apply as a fine spray over the compost surface (25 gallons treats 1,000 square feet).

**Post Planting (Spawning Treatment):** Dilute 1 – 2 fl. oz. of SUPERNEEM 4.5-B with 25 gallons of water, mix thoroughly, and apply as a fine spray to the surface (25 gallons treats 1,000 square feet).

**Casing Layer Treatment:** Beginning 3 days after casing, dilute 0.5 – 1 fl. oz. of SUPERNEEM 4.5-B with 25 gallons of water, mix thoroughly, and apply as a fine spray to the surface (25 gallons treats 1,000 square feet). Repeat every 7 – 10 days.

### STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

**PESTICIDE STORAGE:** Do not store above 100°F or below -20°F for extended periods of time. Keep containers tightly closed when not in use.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

**CONTAINER HANDLING:** Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Then offer for recycling, if available or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

### WARRANTY

Certis USA, L.L.C. warrants that the material contained herein conforms to the description on the label and is reasonably fit for the purposes referred to in the directions for use. Timing and method of application, weather, watering practices, nature of soil, the insect problem, condition of the crop, incompatibility with other chemicals not specifically recommended, and other influencing factors in the use of this product are beyond the control of the seller. To the extent consistent with applicable law, buyer assumes all risks of use, storage or handling of this material not in strict accordance with directions given herein. NO OTHER EXPRESS OR IMPLIED WARRANTY OF THE FITNESS OR MERCHANTABILITY IS MADE.

## INSECTS AND OTHER PESTS CONTROLLED BY SUPERNEEM 4.5-B

### Aphids, such as:

Apple Aphid	Cotton Aphid	Melon Aphid	Red Aphid
Blackmargined Aphid	Filbert Aphid	Pea Aphid	Wooly Apple Aphid
Cabbage Aphid	Green Peach Aphid	Potato Aphid	

### Beetle Larvae, Weevil Larvae, and Grubs, such as:

Bark Beetles	Bluegrass Weevil	Cucumber Beetles	May Beetle	Strawberry Root Weevil
Bean Leaf Beetle	Boll Weevil	Flea Beetles	Mexican Bean Beetle	Strawberry Weevil
Billbugs	Chafers ( <i>see list below</i> )	Japanese Beetle	Pecan Weevil	Twig Girdlers
Black Vine Weevil	Chestnut Weevil	Japanese Weevil	Potato Flea Beetle	White-fringed Beetle
Blister Beetles	Colorado Potato Beetle	June Beetles	Strawberry Beetles	Wireworms

### Borers, such as:

Mint Root Borer	Peachtree Borer	Southwestern Corn Borer
European Corn Borer	Peach Twig Borer	Squash vine borer

### Bugs, such as: Chinch Bug, *Lygus* Bugs, Stink Bugs (all types), and Squash Bugs

### Cankerworms, such as: Elm Spanworm, Fall Cankerworm, Linden Looper, and Spring Cankerworm

### Armyworms, Bollworms, Budworms, Caterpillars, Fruitworms, Loopers, Webworms, and Other Worms (Lepidoptera larvae), such as:

Armyworms	Dagger Moth	Lawn Armyworm	Rindworm	Tomato Fruitworm
Beet Armyworm	Diamondback Moth	Leafrollers ( <i>see list below</i> )	Red-humped Caterpillar	Tomato Hornworm
Bollworm	Fall Armyworm	Melon Worm	Saltmarsh Caterpillar	Tomato Pinworm
Borers ( <i>see list above</i> )	Grapefruit Worm	Melon Rindworm	Southern Armyworm	Walnut Caterpillar
Cabbage Looper	Grape Leafroller	Moth Larvae ( <i>see list below</i> )	Soybean Looper	Western Grapeleaf Skeletonizer
Cabbage Butterfly	Grapeleaf Skeletonizer	Navel Orangeworm	Spruce Budworm	Western Spruce Budworm
Cherry Fruitworm	Hickory Shuckworm	Pecan Nut Casebearer	Tent Caterpillar	Western Yellowstriped Armyworm
Corn Earworm	Hornworms	Pickleworms	Tobacco Budworm	Yellowstriped Armyworm
Cutworms ( <i>see list below</i> )	Imported Cabbageworm	Pink bollworm	Tobacco Hornworm	

### Chafers, such as: European Chafer, Northern Masked Chafer, Rose Chafer, and Southern Masked Chafer

### Crickets, such as: Mole Cricket and Mormon Cricket

### Cutworms, such as: Black Cutworm, Citrus Cutworm, Climbing Cutworm, Western Bean Cutworm, and Variegated Cutworm

### Grasshoppers and Locusts

### Leafrollers and Leaf tiers

### Leafhoppers, such as: Aster Leafhopper, Grape Leafhopper, Potato Leafhopper, and Variegated Leafhopper

### Leafminers, such as Citrus Leafminer, Pea Leafminer, Serpentine Leafminer, and Vegetable Leafminer

### Leafrollers, such as:

Blueberry Leafroller	Fruittree Leafroller	Obliquebanded Leafroller	<i>Pandemis</i> Leafroller
Filbert Leafroller	Grape Leafroller	Omnivorous Leafroller	

### Leaf perforators

### Maggots (Fly larvae), such as:

Cabbage Maggot	Fungus Gnat	Mushroom Fly	Phorid Flies	Walnut Husk Fly
Caribbean Fruit Fly	Hessian Fly	Melon Fly	Seed Corn Maggot	
Crane Fly	Leatherjackets	Onion Maggot	Sciarid Flies	
Fruit flies	Mediterranean Fruit Fly	Oriental Fruit Fly	Shore Fly	

### Marsh Flies, Crane Flies, and Leatherjackets

### Mealybugs

### Millipedes

### Moth larvae, such as:

Artichoke Plume Moth	European Grapevine Moth	Oriental Fruit Moth	Tiger Moth
Codling Moth	Gypsy Moth	Sunflower Bud Moth	Tufted Apple Bud Moth
Diamondback Moth	Light Brown Apple Moth	Sunflower Moth	Tussock Moth

### Nematodes (suppression)

### Phylloxera, such as: Grape Phylloxera, Pecan Leaf Phylloxera, Pecan Stem Phylloxera

### Psyllids, such as Asian Citrus Psyllid, Pear Psylla, Potato Psyllid, Tomato Psyllid

### Sawflies

### Scale insects, such as:

Black Scale	Calico Scale	Frosted Scales	San Jose Scale
Brown Soft Scale	Cottony-cushion Scale	Green Scale	Tea Scale
California Red Scale	Florida Red Scale	Purple Scale	Wax Scale

### Sowbugs (Pillbugs)

### Spittlebugs

### Thrips, such as:

Citrus Thrips	Melon Thrips	Pear Thrips	Western Flower Thrips
Flower Thrips	Onion Thrips	<i>Thrips palmi</i>	

### Webworms, such as: Fall Webworm, Garden Webworm, Lesser Webworm, and Sod Webworm

### Whiteflies, such as Greenhouse whitefly, Silverleaf Whitefly, and Sweet Potato Whitefly

## CROPS ON WHICH SUPERNEEM 4.5-B CAN BE USED

### Brassica (Cole) Crops, such as:

Bok Choy	Brussels Sprouts	Chinese Cabbage	Cavalo Broccolo	Kohlrabi	Rapini
Broccoli	Cabbage	(Bok Choy, Gai	Collards	Mustard Greens	Turnip Tops
Broccoli Raab	Cauliflower	Lon, Napa)	Kale	Mizuna	

### Bulb Vegetables, such as: Garlic, Leek, Onion (all types), and Shallot

### Citrus Fruits, such as:

Calamondin	Grapefruit	Lemon	Mandarin	Orange (all types)	Satsuma Mandarin
Citrus citron	Kumquat	Lime	(Tangerine)	Pummelo	

### Cucurbit Vegetables and Melons, such as:

Balsam pear (Bitter Melon)	Casaba	Crenshaw	Gourds	Mango Melon	Squash (all types)
Cantaloupe	Chinese Waxgourd	Cucumber	Honeyballs	Muskmelon	Watermelon
	Citron Melon	Gherkin	Honeydew	Pumpkin	Zucchini

### Feed and Forage Crops, such as Alfalfa, Clover, *Lespedeza*, Trefoil, Vetch (all types), and any grass grown for hay, forage, or animal feed.

### Fruiting Vegetables, such as:

Eggplant	Okra	Peppers (all types)	Tomato
Ground Cherry	Pepino	Tomatillo	

### Herbs and Spices, such as:

Allspice	Caraway	Costmary	Lemongrass	Pepper (Black or White)	Sweet Bay
Angelica	Cardamom	Cumin	Lovage	Poppy Seed	Tansy
Anise	Cassia	Curry Leaf	Mace	Rosemary	Tarragon
Annatto	Catnip	Dill	Marigold	Rue	Thyme
Balm	Celery Seed	Fennel	Marjoram	Saffron	Vanilla
Basil	Chives	Fenugreek	Mint	Sage	Wintergreen
Borage	Cilantro	Horehound	Mustard Seed	Savory	Woodruff
Burnet	Cinnamon	Hyssop	Nasturtium	Spearmint	Wormwood
Camomile	Cloves	Juniper Berry	Nutmeg	Sweet Basil	
Caper Buds	Coriander	Lavender	Pennyroyal		

### Leafy Vegetables, such as:

Arugula	Chervil	Chrysanthemum	Dock (Sorrel)	Orach	Rhubarb
Cardoon	Chinese Celery	(Edible)	Endive (Escarole)	Parsley	Spinach
Celery	Chinese Spinach	Cress (all types)	Fennel	Purslane	Swiss Chard
Celtuce	Corn Salad (Mâche)	Dandelion	Lettuce (all types)	Radicchio	

### Legumes, such as:

Alfalfa	Chickpea	Cowpeas	Lentils	Peas (all types)	Soybean
Beans (all types)	(Garbanzo)	Edamame	Lupins (all types)	Peanuts	

### Pome Fruits, such as:

Apple	Jujube	Mayhaw	Quince
Crabapple	Loquat	Pear*	

### Root and Tuber Crops, such as:

Beet (all types)	Chervil	Ginseng	Parsnip	Salisfy	Turnip
Carrot	Daikon	Horseradish	Potato	Sugarbeet	Yam
Cassava	Dasheen (taro)	Japanese radish	Radish	Sweet Potato	Yam bean
Celeriac	Ginger	Jicama	Rutabaga	Turmeric	

### Small Fruits and Berries, such as:

Blackberry (all types)	Currant	Gooseberry	Loganberry	Raspberry
Blueberry	Dew Berry	Grapes (all types)	Olives	Strawberry
Boysenberry	Elderberry	Huckleberry	Olallieberry	Youngberry

### Stone Fruits, such as:

Apricot	Cherry	Peach	Plumcot	Prune
Aprium	Nectarine	Plum	Pluot	

### Tree Nuts, such as:

Almond	Butternut	Chinquapin	Macadamia	Walnuts
Beech Nut	Cashew	Filberts (Hazelnuts)	Pecan	
Brazil Nut	Chestnut	Hickory Nuts	Pistachio	

### Tropical and Subtropical Fruits, such as:

Abiu	Banana	Guava	Malanga	Papaya	Starfruit
Avocado	Date	Longan	Mango	Passion Fruit	Sugar Apple
Breadfruit	Durian	Lychee	Mangosteen	Plantain	

### Turfgrass, such as:

Annual Bluegrass	Bentgrass	Centipede Grass	Perennial Ryegrass	Seashore Paspalum	Zoysia Grass
Annual Ryegrass	Bermuda grass	Fescue	St. Augustine Grass	Wheatgrass	

### Miscellaneous Crops, such as:

Artichoke	Corn (all types)	Hops	Palm	Sugarcane	Watercress
Asparagus	Cotton	Guayule	Pawpaw	Tamarillo	
Birdseed	Edible flowers	Kiwi	Persimmon	Tea	
Cacao	Feijoa	Mushrooms	Pineapple	Tobacco	
Coffee	Figs	(all types)	Pomegranate	Waterchestnut	

\* Do not use on Comice Pears and other known sensitive pear varieties

# Chemigation Bulletin

## GENERAL INFORMATION:

Apply this product only through drip (trickle); sprinkler (solid set, lateral move, end tow, sideroll, center pivot, or hand move); flood (basin); furrow; or border irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.

If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers or other experts.

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.

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.

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.

Chemigation systems connected to public water systems must contain a functional, reduced pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.

The pesticide injection pipeline must 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.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.

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

Do not apply when wind speed favors drift beyond the area intended for treatment.

## DRIP TRICKLE CHEMIGATION:

1. 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.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing valve to prevent the flow of fluid back toward the injection pump.
3. 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.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

5. 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.
6. Systems must use a metering pump such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Dilute the product in water following the label mixing directions. It may be premixed in a supply tank with water, fertilizer, or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply to moderately moist soils. Use volumes that thoroughly wet the soil but that do not cause significant runoff or excessive drip from pots. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.

**SPRINKLER CHEMIGATION:**

1. 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.
2. The pesticide injection pipeline must also contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. 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.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. 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.
6. Systems must use a metering pump such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Dilute the product in water following the label mixing directions. It may be premixed in a supply tank with water, fertilizer, or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply when soils are moderately moist. Use volumes that thoroughly wet the foliage and/or soil but that do not cause significant runoff or excessive drip from pots. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.
8. Do not apply when wind speed favors drift beyond the area intended for treatment.

**FLOOD (BASIN), FURROW AND BORDER CHEMIGATION:**

1. Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential of water source contamination from the backflow if water flow stops.
2. Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:
  - a. 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.
  - b. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
  - c. 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.
  - d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

- e. 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.
  - f. Systems must use a metering pump, such as a positive displacement injection pump (i.e., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
3. Dilute the product in water following the label mixing directions. It may be premixed in a supply tank with water, fertilizer, or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply to moderately moist soils. Use volumes that thoroughly wet the soil but that do not cause significant runoff. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.



**Sublabel B – Ornamental****Alternate Brand Name: AZATIN-O****Superneem**4.5-B

BIOLOGICAL INSECTICIDE

INSECT GROWTH REGULATOR

 **CAN BE USED IN ORGANIC PRODUCTION****FOR INDOOR AND OUTDOOR USE ON ORNAMENTALS, TURF (Including Commercial Lawns), VEGETABLES, AND OTHER HORTICULTURAL CROPS****ACTIVE INGREDIENT:**

Azadirachtin ..... 4.5%

**OTHER INGREDIENTS** ..... 95.5%**TOTAL** ..... 100.0%

This product contains 0.39 lb. (175 g.) of azadirachtin per US gallon

If you have questions or comments regarding the use of this product, please call 1-800-356-4647.

**KEEP OUT OF REACH OF CHILDREN****CAUTION**

Si usted no entiende la etiqueta, busque a alguien para que se la explique en detalle.

If you do not understand this label, find someone to explain it to you in detail.

**See attached booklet for additional Precautionary Statements, First Aid Statements, Directions for Use, and Storage and Disposal Statements****Net Contents: One Quart or 32 fl. oz. (946mL)**

Lot No.:

EPA Reg. No. 70051-9

EPA Est. No. 39578-TX-01, 44616- MO-01

**PRECAUTIONARY STATEMENTS****HAZARDS TO HUMANS AND DOMESTIC ANIMALS****CAUTION:** Avoid contact with skin, eyes or clothing. Harmful if swallowed or inhaled. Avoid breathing vapors or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco and using the toilet. Remove and wash contaminated clothing before reuse.**Manufactured for**

Certis USA

9145 Guilford Road

Suite 175

Columbia, MD 21046



### FIRST AID

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

**If swallowed:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.  
Hot Line Number: 1-800-255-3924.

### PERSONAL PROTECTIVE EQUIPMENT

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category C on an EPA chemical resistance category selection chart.

#### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride (PVC), or Viton.
- Shoes plus socks
- Protective eyewear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not re-use them.

### USER SAFETY RECOMMENDATIONS

Users Should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

This product may be hazardous to fish and aquatic invertebrates. For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

### PHYSICAL AND CHEMICAL HAZARDS

Combustible: Do not use or store near heat or open flame.

### DIRECTIONS FOR USE

**It is a violation of Federal law to use this product in a manner inconsistent with its labeling.**

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.



**AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow workers entry into treated areas during the restricted entry interval (REI) of 4 hours.

For early entry into treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, wear:

- Coveralls.
- Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinylchloride (PVC), or Viton.
- Shoes plus socks.
- Protective Eyewear

**NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standards for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, or greenhouses. For other uses including golf courses, and other non-agricultural uses, do not enter treated areas without protective clothing until sprays have dried.

## INSECTS AND OTHER PESTS CONTROLLED BY SUPERNEEM 4.5-B

### Aphids and Adelgids, such as:

Apple Aphid	Filbert Aphid	Potato Aphid	Cooley Spruce Adelgid
Blackmarginated Aphid	Green Peach Aphid	Red Aphid	Eastern Spruce Gall Adelgid
Cabbage Aphid	Melon Aphid	Rose Aphid	Pine Bark Adelgid
Cotton Aphid	Pea Aphid	Wooly Apple Aphid	Wooly Hemlock Adelgid

### Beetle Larvae, Weevil Larvae, and Grubs, such as:

Bark Beetles	Chafers ( <i>see list below</i> )	Japanese Beetle	Pine Root Collar Weevil	White-fringed Beetle
Bean Leaf Beetle	Chestnut Weevil	Japanese Weevil	Potato Flea Beetle	White Pine Weevil
Billbugs	Colorado Potato Beetle	June Beetles	Southern Pine Beetle	Wireworms
Black Vine Weevil	Cucumber Beetles	May Beetle	Strawberry Beetles	
Blister Beetles	Douglas Fir Beetle	Mountain Pine Beetle	Strawberry Root Weevil	
Bluegrass Weevil	Elm Leaf Beetle	Mexican Bean Beetle	Strawberry Weevil	
Boll Weevil	Flea Beetles	Pecan Weevil	Twig Girdlers	

### Borers, such as:

Azalea Stem Borer	Dogwood Twig Borer	Mint Root Borer	Peachtree Borer	Squash vine borer
Bronze Birch Borer	Iris Borer	Oak Borer	Peach Twig Borer	Rhododendron Borer
Dogwood Borer	Lilac Borer	European Corn Borer	Southwestern Corn Borer	

### Bugs, such as: Boxelder Bug, Chinch Bug, *Lygus* Bugs, Stink Bugs (all types), and Squash Bugs

### Cankerworms, such as: Elm Spanworm, Fall Cankerworm, Linden Looper, and Spring Cankerworm

### Armyworms, Bollworms, Budworms, Caterpillars, Fruitworms, Loopers, Webworms, and Other Worms (Lepidoptera larvae), such as:

Armyworms	Dagger Moth	Leafrollers ( <i>see list below</i> )	Red-humped Caterpillar	Tomato Pinworm
Bagworms	Diamondback Moth	Linden Looper	Saltmarsh Caterpillar	Walnut Caterpillar
Beet Armyworm	Fall Armyworm	Melon Worm	Southern Armyworm	Western Grapeleaf Skeletonizer
Bollworm	Grapefruit Worm	Melon Rindworm	Soybean Looper	Western Spruce Budworm
Borers ( <i>see list above</i> )	Grape Leafroller	Moth Larvae ( <i>see list below</i> )	Spruce Budworm	Western Yellowstriped Armyworm
Cabbage Looper	Grapeleaf Skeletonizer	Navel Orangeworm	Tent Caterpillar	Yellowstriped Armyworm
Cabbage Butterfly	Hickory Shuckworm	Pecan Nut Casebearer	Tobacco Budworm	
Cherry Fruitworm	Hornworms	Pickleworms	Tobacco Hornworm	
Corn Earworm	Imported Cabbageworm	Pink bollworm	Tomato Fruitworm	
Cutworms ( <i>see list below</i> )	Lawn Armyworm	Rindworm	Tomato Hornworm	

### Chafers, such as: European Chafer, Northern Masked Chafer, Rose Chafer, and Southern Masked Chafer

### Crickets, such as: Mole Cricket and Mormon Cricket

### Cutworms, such as: Black Cutworm, Citrus Cutworm, Climbing Cutworm, Western Bean Cutworm, and Variegated Cutworm

### Grasshoppers and Locusts

### Leaffolders and Leaf tiers

### Leafhoppers, such as: Aster Leafhopper, Grape Leafhopper, Potato Leafhopper, and Variegated Leafhopper

### Leafminers, such as:

Boxwood Leafminer	Elm Leafminer	Pea Leafminer	Vegetable Leafminer
Citrus Leafminer	Holly Leafminer	Serpentine Leafminer	

### Leafrollers, such as:

Blueberry Leafroller	Fruittree Leafroller	Obliquebanded Leafroller	<i>Pandemis</i> Leafroller
Filbert Leafroller	Grape Leafroller	Omnivorous Leafroller	

### Leaf perforators

### Maggots (Fly larvae), such as:

Cabbage Maggot	Fungus Gnat	Mushroom Fly	Phorid Flies	Walnut Husk Fly
Caribbean Fruit Fly	Hessian Fly	Melon Fly	Seed Corn Maggot	
Crane Fly	Leatherjackets	Onion Maggot	Sciariid Flies	
Fruit flies	Mediterranean Fruit Fly	Oriental Fruit Fly	Shore Fly	

### Marsh Flies, Crane Flies, and Leatherjackets

### Mealybugs

### Midges, such as: Chrysanthemum Gall Midge, Douglas Fir Midge, and Rose Midge

### Millipedes

### Moth larvae, such as:

Artichoke Plume Moth	European Pine Shoot Moth	Light Brown Apple Moth	Sunflower Bud Moth	Tufted Apple Bud Moth
Codling Moth	European Grapevine Moth	Oriental Fruit Moth	Sunflower Moth	Tussock Moth
Diamondback Moth	Gypsy Moth	Pine Tip Moth	Tiger Moth	

### Nematodes (suppression)

### Phylloxera, such as: Grape Phylloxera, Pecan Leaf Phylloxera, Pecan Stem Phylloxera

### Psyllids, such as Asian Citrus Psyllid, Pear Psylla, Potato Psyllid, Tomato Psyllid

### Sawflies

**Scale insects**, such as:

Azalea Bark Scale	Calico Scale	Florida Red Scale	Pine Needle Scale	Sugar Pine Scale
Black Scale	Camellia Scale	Frosted Scales	Purple Scale	Tea Scale
Brown Soft Scale	Cottony-cushion Scale	Green Scale	Rose Scale	Wax Scale
California Red Scale	Fern Scale	Juniper Scale	San Jose Scale	

**Sowbugs (Pillbugs)****Spittlebugs****Thrips**, such as:

Citrus Thrips	Gladiolus Thrips	Onion Thrips	<i>Thrips palmi</i>	Western Flower Thrips
Flower Thrips	Melon Thrips	Pear Thrips	(Melon Thrips)	

**Webworms**, such as: Fall Webworm, Garden Webworm, Lesser Webworm, and Sod Webworm**Whiteflies**, such as:

Ash Whitefly	Bayberry Whitefly	Cloudy-winged Whitefly	Silverleaf Whitefly	Variegated Whitefly
Banded-wing Whitefly	Citrus Whitefly	Greenhouse Whitefly	Sweetpotato Whitefly	Woolly Whitefly

**CROPS ON WHICH SUPERNEEM 4.5-B CAN BE USED**

SUPERNEEM 4.5-B can be used on the following crops and in the following situations:

- Greenhouses and other covered structures (including lath and shade), interiorscapes, turf, nurseries, and landscapes: For use on ornamental plants (foliage and flowering plants, cut flowers, greens, shrubs), herbs, spices, vegetables, melons, strawberries, and other food crops raised to harvest or food crop plants raised for commercial resale, and nursery stock (including bearing and non-bearing fruit trees and grapevines).
- For all outdoor grown non-food crops including non-bearing fruit trees and other field grown foliage, flowering and ornamental plants.
- Can be used indoors and outdoors. Plants may be potted, grown in soil or soilless mixtures, or grown hydroponically.

**Bedding Plants, Foliage plants, Flowers, Potted Plants, and other Ornamental Plants**, such as:

Actinopteris	Boxwood	Daylily	Geranium	Nasturtium	Rose
African Violet	Brachycome	Delphinium	Gerbera	Orchid (all types)	Rubberplant
Ageratum	Cacti	Dianthus	Gladioli	Pansy	Salvia
Aglaonema	Calabrese	Dieffenbachia	Gloxinia	Pelargonium	Schefflera
Allamanda	Caladium	Dracaena	Gypsophilla	Peony	Sedum
Algerian Ivy	Calla	Dusty Miller	Hedera	Peperomia	Sempervivum
Alocasia	Calathea	Easter Lily	Hibiscus	Petunia	Snapdragon
Anthurium	Calendula	English Ivy	Hyacinth	Philodendron	Spathiphyllum
Aphelandra	Carnation	Euphorbia	Hydrangea	Phlox	Stock
Artemisia	Chrysanthemum	Fern	Impatiens	Photinia	Syngonium
Aster	Cineraria	Ficus	Iris	Pinks	Tulip
Aucuba Illex	Coleus	Foliage Plants	Ivy (all types)	Pittosporum	Verbena
Azalea	Columbine	Foxglove	Lily (all types)	Poinsettia	Vinca
Baby's Breath	Cyclamen	Freesia	Maidenhair Fern	Portulaca	Wandering Jew
Begonia	Daffodil	Fuchsia	Mandavilla	Primrose	Yucca
Bougainvillea	Dahlia	Gaillardia	Marigold	Pothos	Zinnia
Boston Fern	Daisy	Gardenia	Narcissus	Rosemary	

**Brassica (Cole) Crops**, such as:

Bok Choy	Brussels Sprouts	Chinese Cabbage	Cavalo Broccolo	Kohlrabi	Rapini
Broccoli	Cabbage	(Bok Choy, Gai	Collards	Mustard Greens	Turnip Tops
Broccoli Raab	Cauliflower	Lon, Napa)	Kale	Mizuna	

**Bulb Vegetables**, such as: Garlic, Leek, Onion (all types), and Shallot**Citrus Fruits**, such as:

Calamondin	Grapefruit	Lemon	Mandarin	Orange (all types)	Satsuma Mandarin
Citrus citron	Kumquat	Lime	(Tangerine)	Pummelo	

**Cucurbit Vegetables**, such as:

Balsam pear	Casaba	Crenshaw	Gourds	Mango Melon	Squash (all types)
(Bitter Melon)	Chinese Waxgourd	Cucumber	Honeyballs	Muskmelon	Watermelon
Cantaloupe	Citron Melon	Gherkin	Honeydew	Pumpkin	Other Melons

**Fruiting Vegetables**, such as:

Eggplant	Okra	Peppers (all types)	Tomato
Ground Cherry	Pepino	Tomatillo	

**Herbs and Spices**, such as:

Allspice	Caper Buds	Cloves	Hyssop	Mustard Seed	Saffron
Angelica	Caraway	Coriander	Juniper Berry	Nasturtium	Sage
Anise	Cardamom	Costmary	Lavender	Nutmeg	Savory
Annatto	Cassia	Cumin	Lemongrass	Pennyroyal	Spearmint
Balm	Catnip	Curry Leaf	Lovage	Pepper	Sweet Basil
Basil	Celery Seed	Dill	Mace	(Black or White)	Sweet Bay
Borage	Chives	Fennel	Marigold	Poppy Seed	Tansy
Burnet	Cilantro	Fenugreek	Marjoram	Rosemary	Tarragon
Camomile	Cinnamon	Horehound	Mint	Rue	Thyme

Vanilla	Wintergreen	Woodruff	Wormwood		
<b>Leafy Vegetables</b> , such as:					
Arugula	Chervil	Chrysanthemum	Dock (Sorrel)	Orach	Rhubarb
Cardoon	Chinese Celery	(Edible)	Endive (Escarole)	Parsley	Spinach
Celery	Chinese Spinach	Cress (all types)	Fennel	Purslane	Swiss Chard
Celutce	Corn Salad (Mâche)	Dandelion	Lettuce (all types)	Radicchio	
<b>Legumes</b> , such as:					
Beans (all types)	Cowpeas	Lentils	Peas (all types)		
Chickpea (Garbanzo)	Edamame	Lupins (all types)			
<b>Ornamental Trees and Shrubs</b> , such as:					
Andromeda	Cacti	Euonymus	Hydrangea	Myrtle	Rhododendron
Arborvitae	Camellia	Ficus	Juniper	Oak	Rose
Ash	Ceanothus	Firethorn	Larch	Pachysandra	Rubber Plant
Aucuba Ilex	Cedar	Forsythia	Laurel	Peach	Spruce
Austrian Pine	Chamaecyparis	Hackberry	Lilac	Photinia	Sycamore
Azalea	Cherry	Hawthorn	Linden	Pine (all types)	White Cedar
Beech	Cotoneaster	Hemlock	London Plane	Pittosporum	White Pine
Birch	Crabapple	Hibiscus	Magnolia	Planetree	Yew
Birdsnest Spruce	Cyprus	Hickory	Mandevilla	Poplar	Yucca
Blue Spruce	Dogwood	Holly	Maple (all types)	Privet	
Boxwood	Douglas Fir	Honey Locust	Mimosa	Pyracantha	
Butternut	Elm	Horse Chestnut	Mountain Ash	Quince	
<b>Pome Fruits</b> , such as:					
Apple	Jujube	Mayhaw	Quince		
Crabapple	Loquat	Pear			
<b>Root and Tuber Crops</b> , such as:					
Beet (all types)	Chervil	Ginseng	Parsnip	Salisfy	Turnip
Carrot	Daikon	Horseradish	Potato	Sugarbeet	Yam
Cassava	Dasheen (taro)	Japanese radish	Radish	Sweet Potato	Yam bean
Celery	Ginger	Jicama	Rutabaga	Turmeric	
<b>Small Fruits and Berries</b> , such as:					
Blackberry (all types)	Currant	Gooseberry	Loganberry	Raspberry	
Blueberry	Dew Berry	Grapes (all types)	Olives	Strawberry	
Boysenberry	Elderberry	Huckleberry	Olallieberry	Youngberry	
<b>Stone Fruits</b> , such as:					
Apricot	Cherry (all types)	Peach	Plumcot	Prune	
Aprium	Nectarine	Plum	Pluot		
<b>Tree Nuts</b> , such as:					
Almond	Butternut	Chinquapin	Macadamia	Walnuts	
Beech Nut	Cashew	Filberts (Hazelnuts)	Pecan		
Brazil Nut	Chestnut	Hickory Nuts	Pistachio		
<b>Tropical and Subtropical Fruits</b> , such as:					
Abiu	Banana	Guava	Malanga	Papaya	Starfruit
Avocado	Date	Longan	Mango	Passion Fruit	Sugar Apple
Breadfruit	Durian	Lychee	Mangosteen	Plantain	
<b>Turfgrass</b> , such as:					
Annual Bluegrass	Bentgrass	Centipede Grass	Perennial Ryegrass	Seashore Paspalum	Zoysia Grass
Annual Ryegrass	Bermuda grass	Fescue	St. Augustine Grass	Wheatgrass	
<b>Miscellaneous Crops</b> , such as:					
Artichoke	Coffee	Figs	Mushrooms	Persimmon	Tea
Asparagus	Corn (all types)	Hops	(all types)	Pineapple	Tobacco
Birdseed	Edible flowers	Guayule	Palm	Pomegranate	Waterchestnut
Cacao	Feijoa	Kiwi	Pawpaw	Tamarillo	Watercress

**Important note:** This product has been evaluated for phytotoxicity on a wide range of crops. However, since all combinations or sequences of pesticide sprays including fertilizers, surfactants and adjuvants have not been tested, spray a small area first to make certain that no phytotoxicity occurs.

#### PREHARVEST INTERVAL

SUPERNEEM 4.5-B can be applied up to and including the day of harvest (zero PHI). Individual state regulations may vary and should be consulted for allowable preharvest interval.

#### MODE OF ACTION

This product controls targeted insect larvae when they ingest or come in contact with it, by interfering with the insect's ability to molt. It is effective on all larval or nymphal stages. It also reduces crop damage by repelling and deterring feeding of all stages of insects.

#### SPRAY EQUIPMENT

Use any suitable application equipment that allows for uniform coverage of the targeted treatment area, such as hand- or power-operated spray equipment.

## GENERAL APPLICATION DIRECTIONS

### General Information

- Broad Spectrum Insect Growth Regulator Insecticide
- Not for use in food-handling establishments.
- Shake well before using.
- Kills only immature stages (larvae or nymphs) of insects. Treated larvae may die as pupae.
- Make applications when pests first appear and are in their early larval stages. Repeat applications every 7 days or as needed.
- Botanical Insecticide Concentrate.
- Formulated for interiorscape use.
- For indoor and outdoor use.
- Spraying directly onto the pest and a longer duration of leaf wetting increases effectiveness. Apply in early to mid-morning or late afternoon.
- The pH of spray solution containing SUPERNEEM 4.5-B must be kept between 3 and 8. Use spray solutions within several hours of preparation for maximum effectiveness. Do not store diluted solution for later use.
- Do not apply to wilted or otherwise stressed plants, or to newly transplanted material prior to root establishment. Do not apply to known spray sensitive plants without testing.
- SUPERNEEM 4.5-B has been found to be compatible when used in conjunction with most beneficial insects. Conduct a small trial to assure compatibility before using on a large scale.
- Use with care when applying near streams, ponds, lakes or bodies of water.
- Do not apply SUPERNEEM 4.5-B when weather conditions favor drift or the likelihood of runoff is high.

For best results, add a spreader-sticker or oil-based adjuvant (such as methylated seed oil) at the label rate. This product may be pre-mixed in a supply tank with water, fertilizer or other appropriate agricultural chemicals. Agitation is necessary (see Mixing Directions). Crop injury or lack of effectiveness can result if uniform distribution is not achieved.

When pest populations are high, use the higher label rates.

### SPRAY APPLICATION:

High volume: If plant foliage is dense, use higher label rates and increase spray volume to obtain uniform and complete coverage.

Low and ultra-low volume: Apply SUPERNEEM 4.5-B at rates of 4 to 16 fluid ounces per acre in a minimum of 3 gallons of water per acre. For best results, ensure uniform and complete plant coverage.

### DRENCH APPLICATION:

SUPERNEEM 4.5-B is effective as a soil drench for control of soil-dwelling insect larvae such as fungus gnats. It is also effective as a soil drench for control of both foliar and soil-dwelling pests, particularly when alternated with foliar sprays of SUPERNEEM 4.5-B.

Apply SUPERNEEM 4.5-B in sufficient water and for sufficient duration so as to distribute the application rate evenly to the entire treated area.

Apply to moderately moist soils. Use volumes that thoroughly wet the soil, but do not cause significant surface runoff or excessive drip from pots.

### CHEMIGATION:

Refer to the attached "Chemigation Bulletin" for use directions for chemigation. Do not apply this product through any irrigation system not specifically included in the Chemigation Bulletin.

### MIXING DIRECTIONS:

SUPERNEEM 4.5-B must be mixed with water for application. Do not apply undiluted product to plants. For best results:

1. Use clean equipment and clean water.
2. Add  $\frac{1}{2}$  to  $\frac{3}{4}$  of total water volume to the tank and begin agitation.
3. Add pesticide to the tank.
4. Add water up to full intended spray volume and mix thoroughly before applying.
5. Adjust pH of the spray solution to between 3 and 7, if necessary.
6. Apply pesticide mix immediately after mixing.
7. If the mixture is not applied immediately, agitate before application.
8. Thoroughly clean equipment following application.

**TANK MIXTURES OR FLUID FERTILIZERS:**

1. Before using this product in a tank mix with fertilizer or registered pesticide, determine compatibility by conducting a compatibility test with a small amount of each product.
2. Observe all cautions and limitations on labels of all products used in combination.
3. Follow all tank mix directions and observe limitations listed in the combination product(s) label.

**COMPATIBILITY TEST:**

Perform a compatibility test before tank mixing this product with other product(s) or liquid fertilizer(s). Fill three separate 1 quart jars with 1 pint of water and fertilizer. To a first jar add this product and mix well. To a second jar, add the desired other tank mix product(s) and mix well. To a third jar, combine this product with the other tank mix product(s) and mix well. If more than one product is used, add them separately with dry formulations first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix. For the appropriate amount of product for this test use the following:

Dry products - For each pound to be applied per acre, add 1.5 level teaspoons to each jar.

Liquid products - For each pint to be applied per acre, add 0.5 teaspoons or 2.5 ml to each jar.

Note any differences between the mixtures in the jars (compounds alone vs mixtures) after 15 minutes. Look for evidence of physical incompatibility such as clumping, precipitation, oily residues on the sides of the glass or other signs of incompatibility. If either mixture separates, but can be readily re-mixed, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, do not use the mixture.

**TANK MIX COMPATIBILITY**

SUPERNEEM 4.5-B Insect Growth Regulator has been found to be compatible with most commonly used fungicides, insecticides, and fertilizers. Check physical compatibility first by using the correct proportion of products in a small jar test. Then, test tank-mix combinations for phytotoxicity on a sample of plants prior to use. This must be done with combinations used before as environmental conditions can alter the interaction between compounds. *Due to the wide variation in climatic conditions, cultural practices, and other factors, the user assumes full responsibility for any crop damage or other liability resulting from the use of SUPERNEEM 4.5-B in a tank mix combination.* Do not mix SUPERNEEM 4.5-B with oxidizing agents such as bleach, or strong acids and bases as they will destabilize the product.

**GENERAL DIRECTIONS FOR INTERIORSCAPES, ORNAMENTAL PLANTS, LANDSCAPES, TREES, SHRUBS, LAWNS, TURF, AND GREENHOUSES**

For use to control whiteflies, thrips, mealybugs, leafminers, loopers, caterpillars, beet armyworms, aphids, and other pests on bedding plants, potted plants, foliage plants, ornamentals, trees, and shrubs in and around greenhouses, commercial nurseries, and interiorscapes.

For use to control insect pests of field-grown cut flowers and greens.

For use to control gypsy moths, weevils, psyllids, webworms, hornworms, spruce budworms, tent caterpillars, sawflies, and other pests on trees and shrubs in commercial landscapes.

SUPERNEEM 4.5-B may be used on fruits, vegetables, vegetable transplants, and herbs both inside and outside of the greenhouse.

Apply on a preventative 7 – day schedule or at the first sign of insect presence. This schedule is effective under low insect pressure. Under high insect pressure, apply every 3 – 4 days.

**For Field-Grown Cut Flowers and other Field-Grown Ornamental Plants:** Apply SUPERNEEM 4.5-B at 4 – 16 fluid ounces per acre in sufficient volume of water to achieve uniform and thorough spray coverage. For conventional ground application equipment, apply 30 – 100 gallons of spray mix per acre. For low volume application, apply 0.5 pint (8 fluid ounces) of SUPERNEEM 4.5-B per acre in sufficient water to provide adequate coverage.

**For Use in Greenhouses, Landscapes, Interiorscapes, and Nurseries:** Dilute SUPERNEEM 4.5-B at 4 – 16 fluid ounces per 100 gallons of water. Mix thoroughly. Apply at 25 – 40 psi with hand sprayer or 100 – 200 psi with power sprayer as a fine spray to all foliage and fruit surfaces to runoff (typically 1 – 2 gallons of spray solution per 1,000 sq. ft.). Avoid excessive application.

For drench applications, use 8 – 16 fluid ounces of SUPERNEEM 4.5-B per 100 gallons of water and apply at the rate of 1 quart of diluted solution per square foot of growing media surface. Repeat at 14- day intervals during the growing season.



**SPECIFIC PLANT/PEST DIRECTIONS:**

**Application Rates for Whiteflies and Other Key Insect Pests in Greenhouses (Including Lathe and Shade), Nurseries, Mushroom Houses, and Interiorscapes.** Apply SUPERNEEM 4.5-B at the indicated dilution rate per 100 gallons of water. Use 1-2 gallons of spray solution per 1,000 square feet to ensure adequate plant coverage.

Pests controlled by SUPERNEEM 4.5-B	Rate of SUPERNEEM 4.5-B per 100 gallons of water	Remarks
<b>Aphids</b>	10 – 16 fl. oz.	Suppression of nymphs and adult feeding deterrence.
<b>Black Vine Weevil</b>	16 fl. oz.	Apply as soil drench against larvae.
<b>Caterpillars &amp; Worms</b> , including: Armyworms, Bagworms, Cankerworms, Cutworms, Gypsy Moth, Leafrollers, Tent Caterpillars, and other Lepidoptera larvae	4 – 16 fl. oz.	For foliar application against larvae.
<b>Fungus Gnats</b>	8 fl. oz.	Apply as a soil drench for maggot control.
<b>Leafminers</b>	6 – 16 fl. oz.	For foliar application against larvae.
<b>Mushroom Fly</b>	16 fl. oz.	Apply as soil drench against larvae.
<b>Western Flower Thrips</b>	12 – 16 fl. oz.	Suppression of larvae and adult feeding deterrence.
<b>Whiteflies</b> , including Greenhouse Whitefly, Silverleaf Whitefly, and Sweetpotato Whitefly	6 – 16 fl. oz.	Foliar application against nymphs. Spray should be directed to undersides of leaves.
<b>Others, such as:</b> Leafhoppers, Sawflies	10 – 16 fl. oz.	For foliar application against larvae or nymphs. For leafhoppers, spray should be directed to undersides of leaves.

**DIRECTIONS FOR REPELLING JAPANESE BEETLES FROM ROSE PLANTS**

For best results, apply to roses at the first sign of Japanese beetle emergence in early summer at the rate of 0.5 pint of SUPERNEEM 4.5-B per 100 gallons of water.

SUPERNEEM 4.5-B is more effective when used as a preventative.

Spray to run-off, making sure to completely cover all parts of the plant, including buds and flowers.

Repeat application weekly, after rainfall or during periods of rapid plant growth as new growth that occurs after application is not fully protected. Continue applications as long as adult beetles are present.

Do not spray water directly onto foliage or otherwise wash off the leaves after treatment. This will reduce the effectiveness of the application.

After initial application, some beetles may be present on foliage but they will not feed on it.

**DIRECTIONS FOR LAWNS AND TURF****Surface-Feeding Insects:**

For use to control cutworms, armyworms, sod webworms, crickets, chinch bugs, leafhoppers, and grasshoppers.

Apply at first sign of pest presence or damage to turf. Do not apply if rain is forecast within the next 24 hours.

Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (or 0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage and penetration of the turf canopy. Use 2 – 5 gallons of diluted material per 1,000 square feet, or 50 – 100 gallons of diluted material per acre.

The treated area may be lightly irrigated for 3 – 5 minutes after application if desired to increase penetration of the turf surface.

However, do not water turf again for 2 days after application.

Reapply as needed to maintain control of turf damage. Be sure to treat under shrubs and plants bordering houses or other structures.

**Subsurface-Feeding Insects:**

Mow and irrigate turf prior to application. The treated area may be lightly irrigated for 3 – 5 minutes after application if desired to increase penetration of the turf surface. Do not water turf again within 24 hours after application. Do not mow again within 3 days after application.

For use to control white grubs (Japanese beetles, European chafers, dung beetles, June beetles, green June beetles, May beetles, annual white grubs, grub beetles, southern masked chafers, etc.) and crane fly larvae (leatherjackets):

- For white grubs, make application soon after adults emerge in summer (1 – 3 weeks after first sign of adults). Leatherjackets should be targeted as young larvae while feeding near the soil surface.

- Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage and penetration of the turf. Use 50 – 100 gallons of diluted material per acre, or 2 – 5 gallons of diluted material per 1,000 square feet.

For use to control mole crickets:

- Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage. Use 2 – 5 gallons of diluted material per 1,000 square feet, or 50 – 100 gallons of diluted material per acre.
- For best results, apply when nymphs are small, in the early spring. If necessary, reapply at 1 – 2 week intervals.

For use to control billbugs:

- Apply in mid to late spring or at first sign of pest emergence or damage.
- Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1000 square feet) using enough spray volume to obtain thorough coverage. Use 50-100 gallons of diluted material per acre, or 2 – 5 gallons of diluted material per 1,000 square feet.
- Reapply as necessary. Repeat treatment in early to mid fall to control possible second generation.

**Nematodes:**

Apply 1 quart – 3 gallons of SUPERNEEM 4.5-B per acre (0.75 – 9 fluid ounces per 1,000 square feet) using enough spray volume to obtain thorough coverage. Use 50-100 gallons of diluted material per acre. Use 2 – 5 gallons of diluted material per 1,000 square feet. Repeat as necessary.

**DIRECTIONS FOR GREENHOUSE AND NURSERY-GROWN FOOD CROPS**

Application Rates for Key Insect Pests of Vegetables Raised to Harvest (including Transplants for Commercial Resale), Fruits, and Nut Crops Grown in Greenhouses, Lath and Shade Houses, and Nurseries		
Apply SUPERNEEM 4.5-B at the indicated rates in sufficient water to ensure adequate plant coverage. Use 1-2 gallons of spray solution per 1,000 square feet, or equivalent to a minimum of 30 gallons of water per acre for conventional application equipment (3 gallons of water per acre for low/ultralow volume equipment).		
Pests controlled by SUPERNEEM 4.5-B	Rate of SUPERNEEM 4.5-B per 100 gallons of water*	Remarks
Aphids	10 – 16 fl. oz.	Foliar application for suppression and adult feeding deterrence.
Armyworms	4 – 16 fl. oz.	Foliar application against larvae.
Borers, including Peach Twig Borer, Peachtree Borer, and Squash Vine Borer	4 – 16 fl. oz.	Foliar application against young larvae before boring or tunneling in the plant.
Caterpillars, Loopers, and other Lepidoptera Larvae (worms)	4 – 16 fl. oz. (Except as noted at right)	Foliar application against larvae feeding externally on leaves, fruits, other external plant parts. <b>Corn Earworm, Diamondback Moth, Hickory Shuckworm, Imported Cabbageworm (larvae of Cabbage Butterfly), and Navel Orangeworm:</b> Use 10 – 16 fl. oz. /100 gal. <b>Artichoke Plume Moth:</b> Apply at 16 fl. oz. /100 gal.
Colorado Potato Beetle & other leaf-feeding beetles	4 – 16 fl. oz.	Foliar application against leaf-feeding larvae.
Cutworms	5 – 16 fl. oz.	Foliar application against larvae feeding on leaves or stems.
Leafhoppers	10-16 fl. oz.	Foliar application against nymphs.
Leafminers: <i>Liriomyza</i> spp. and citrus leafminer ( <i>Phyllocnistis citrella</i> )	6 – 16 fl. oz.	Foliar application against larvae. Mix with approved oil-based adjuvant for best results.
Leafrollers	4 - 16 fl. oz.	Foliar application against larvae.
Scales	6 – 16 fl. oz.	Foliar or stem application targeting crawler stages.
Whiteflies	6 – 16 fl. oz.	Foliar application against nymphs. Spray should be directed to undersides of leaves.
*When using lower rates (less than 10 fl. oz.), combine SUPERNEEM 4.5-B with an approved adjuvant such as a non-phytotoxic crop oil, up to 1% for improved spray coverage and translaminar uptake. Always use sufficient spray volume to ensure good coverage of all plant parts. Treat early and target youngest larvae or nymphs for best control. Repeat applications every 7-10 days or as needed to maintain control.		



**STORAGE AND DISPOSAL**

Do not contaminate water, food or feed by storage and disposal.

**PESTICIDE STORAGE:** Do not store above 100 degrees F or below -20 degrees F for extended periods of time. Keep containers tightly closed when not in use.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

**CONTAINER HANDLING:** Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Then offer for recycling, if available or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**WARRANTY**

Certis USA, L.L.C. warrants that the material contained herein conforms to the description on the label and is reasonably fit for the purposes referred to in the directions for use. Timing and method of application, weather, watering practices, nature of soil, the insect problem, condition of the crop, incompatibility with other chemicals not specifically recommended, and other influencing factors in the use of this product are beyond the control of the seller. To the extent consistent with applicable law, buyer assumes all risks of use, storage or handling of this material not in strict accordance with directions given herein. **NO OTHER EXPRESS OR IMPLIED WARRANTY OF THE FITNESS OR MERCHANTABILITY IS MADE.**

# Chemigation Bulletin

## GENERAL INFORMATION:

Apply this product only through drip (trickle); sprinkler (solid set, lateral move, end tow, sideroll, center pivot, or hand move); flood (basin); furrow; or border irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.

If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers or other experts.

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.

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.

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.

Chemigation systems connected to public water systems must contain a functional, reduced pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.

The pesticide injection pipeline must 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.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.

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

Do not apply when wind speed favors drift beyond the area intended for treatment.

## DRIP TRICKLE CHEMIGATION:

1. 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.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing valve to prevent the flow of fluid back toward the injection pump.
3. 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.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

5. 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.
6. Systems must use a metering pump such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Dilute the product in water following the label mixing directions. It may be premixed in a supply tank with water, fertilizer, or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply to moderately moist soils. Use volumes that thoroughly wet the soil but that do not cause significant runoff or excessive drip from pots. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.

**SPRINKLER CHEMIGATION:**

1. 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.
2. The pesticide injection pipeline must also contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. 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.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. 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.
6. Systems must use a metering pump such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Dilute the product in water following the label mixing directions. It may be premixed in a supply tank with water, fertilizer, or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply when soils are moderately moist. Use volumes that thoroughly wet the foliage and/or soil but that do not cause significant runoff or excessive drip from pots. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.
9. Do not apply when wind speed favors drift beyond the area intended for treatment.

**FLOOD (BASIN), FURROW AND BORDER CHEMIGATION:**

1. Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential of water source contamination from the backflow if water flow stops.
2. Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:
  - a. 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.
  - b. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
  - c. 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.
  - d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

- e. 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.
  - f. Systems must use a metering pump, such as a positive displacement injection pump (i.e., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
3. Dilute the product in water following the label mixing directions. It may be premixed in a supply tank with water, fertilizer, or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply to moderately moist soils. Use volumes that thoroughly wet the soil but that do not cause significant runoff. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.