

# Neemix<sup>®</sup>4.5

INSECT GROWTH REGULATOR

BIOLOGICAL INSECTICIDE

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.

 **CAN BE USED IN ORGANIC PRODUCTION**

**ACTIVE INGREDIENT:**

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

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

## 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.

## 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.



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

Lot Number:  
EPA Reg. No. 70051-9  
EPA Est. No. 70051-CA-001  
Item: 168600  
Package: 568589  
20191122  
ESL 20160318

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

**CERTIS**

This is a Specimen Label. It may not reflect the most-recent approved label for use in your state. Always refer to the label on the product packaging for approved use instructions. Please contact your Certis sales representative for more information.

#### 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.

#### 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.

##### 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

NEEMIX® 4.5 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 NEEMIX® 4.5 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.
- NEEMIX® 4.5 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 NEEMIX® 4.5 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

NEEMIX® 4.5 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 NEEMIX® 4.5 in a tank mix combination.* Do not mix NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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**

<b>Pest</b>	<b>Rate of Neemix® 4.5 Per Acre*</b>	<b>Frequency</b>	<b>Remarks</b>
<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>Leafminer</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 NEEMIX® 4.5 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).

<b>Pests controlled by Neemix® 4.5</b>	<b>Rate of Neemix® 4.5 per 100 gallons of water*</b>	<b>Remarks</b>
<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.

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**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 NEEMIX® 4.5 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). (continued)

Pests controlled by Neemix® 4.5	Rate of Neemix® 4.5 per 100 gallons of water*	Remarks
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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5 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 NEEMIX® 4.5

### Aphids, such as:

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

### 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

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**INSECTS AND OTHER PESTS CONTROLLED BY NEEMIX® 4.5 (continued)**

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**Leafminers**, such as: Citrus Leafminer, Pea Leafminer, Serpentine Leafminer, and Vegetable Leafminer

**Leafrollers**, such as:

Blueberry Leafroller  
Filbert Leafroller

Fruittree Leafroller  
Grape Leafroller

Obliquebanded Leafroller  
Omnivorous Leafroller

*Pandemis* Leafroller

**Leaf perforators**

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

Cabbage Maggot  
Caribbean Fruit Fly  
Crane Fly  
Fruit flies

Fungus Gnat  
Hessian Fly  
Leatherjackets  
Mediterranean Fruit Fly

Mushroom Fly  
Melon Fly  
Onion Maggot  
Oriental Fruit Fly

Phorid Flies  
Seed Corn Maggot  
Sciarid Flies  
Shore Fly

Walnut Husk Fly

**Marsh Flies, Crane Flies, and Leatherjackets**

**Mealybugs**

**Millipedes**

**Moth larvae**, such as:

Artichoke Plume Moth  
Codling Moth  
Diamondback Moth

European Grapevine Moth  
Gypsy Moth  
Light Brown Apple Moth

Oriental Fruit Moth  
Sunflower Bud Moth

Sunflower Moth  
Tiger Moth

Tufted Apple Bud 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  
Brown Soft Scale  
California Red Scale

Calico Scale  
Cottony-cushion Scale  
Florida Red Scale

Frosted Scales  
Green Scale  
Purple Scale

San Jose Scale  
Tea Scale  
Wax Scale

**Sowbugs (Pillbugs)**

**Spittlebugs**

**Thrips**, such as:

Citrus Thrips  
Flower Thrips

Melon Thrips  
Onion Thrips

Pear Thrips  
*Thrips palmi*

Western Flower Thrips

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

**Whiteflies**, such as: Greenhouse whitefly, Silverleaf Whitefly, and Sweet Potato Whitefly

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**CROPS ON WHICH NEEMIX® 4.5 CAN BE USED**

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

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

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

**Citrus Fruits**, such as:

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

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

**Legumes**, such as:

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

(continued)

**CROPS ON WHICH NEEMIX® 4.5 CAN BE USED** *(continued)*

**Pome Fruits**, such as:

Apple	Jujube	Mayhaw	Quince
Crabapple	Loquat	Pear*	

**Root and Tuber Crops**, such as:

Beet (all types)	Chervil	Ginseng	Parsnip	Salsify	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, discharge the water from the public water system 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.

# Neemix<sup>®</sup>4.5

INSECT GROWTH REGULATOR

BIOLOGICAL INSECTICIDE

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.

 CAN BE USED IN ORGANIC PRODUCTION

**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

## 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.

## 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.



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

Lot Number:

EPA Reg. No. 70051-9

EPA Est. No. 70051-CA-001

Item: 168600

Package: 568589

20191122

ESL 20160318

**Manufactured for:**

Certis USA, L.L.C.

9145 Guilford Road

Suite 175

Columbia, MD 21046

**CERTIS**

PEEL HERE TO OPEN 