

Turex®

BIOLOGICAL INSECTICIDE

For control of lepidopterous insect pests of certain terrestrial fruits, vegetables, ornamentals and flowers, tobacco, corn, cotton, soybeans and citrus.

ACTIVE INGREDIENT:

Bacillus thuringiensis subspecies *aizawai* strain GC-91
Solids, spores and Lepidopteran active toxins*50.0%

OTHER INGREDIENTS:50.0%

TOTAL:100.0%

*The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

See additional precautionary statements and directions for use inside booklet.

PRECAUTIONARY STATEMENTS

Hazards to Human and Domestic Animals

CAUTION/ PRECAUCIÓN

Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash 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.

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.

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. 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.

Environmental Hazards

Do not contaminate water when cleaning equipment or disposing of equipment wash waters.

This product must not be applied aerially within 1/4 mile of any habitats of endangered or threatened Lepidoptera. No manual application can be made within 300ft. of any threatened or endangered Lepidoptera.

Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Net Contents: 5 or 20 Pounds

EPA Reg.: No. 70051-99

EPA Est.: No. 67545-AZ-1^G

(Lot Number with "G")

EPA Est. No.: 70051-CA-001

Lot No.:

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

CERTIS

- Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, and P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning/maintaining PPE. If so such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements:

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

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.

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. 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 OF MERCHANTABILITY IS MADE.

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 worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

PPE required for early entry to 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 is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

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 Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter treated areas without protective clothing until sprays have dried.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR INSECT CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

GENERAL INFORMATION

Turex is a biological insecticide specific for use against the lepidopterous larvae listed on this label. Turex must be eaten by larvae to be effective. Since Turex is most effective against small, newly-hatched larvae, an early scouting program to determine early infestations is recommended. After consuming a lethal dose of Turex, larvae stop eating usually within an hour, but may remain on the foliage until they die, usually within several days. Affected larvae move more slowly and tend to become shriveled and discolored before dying. For best performance, always follow these directions:

- Treat when small, newly-hatched larvae are present and the first feeding damage is observed.
- Since Turex must be ingested to obtain control, treat when

larvae are actively feeding and before extensive damage occurs.

- Thorough spray coverage is essential for good control of the pest. Nozzles on ground equipment should be arranged in a manner to provide the best coverage. Increased water volume and spray pressure will enhance coverage.
- If insect infestation becomes heavy, use the higher (2.0 lbs./A) label rate. Increased water volume and shortened spray intervals may be necessary to achieve acceptable control.
- To maintain control, repeat applications may be necessary at 3 to 7-day intervals, depending on the rate of growth of the crop, weather conditions, and severity of insect infestation.
- Turex may be applied up to the day of harvest.
- To improve coverage and residual effectiveness of Turex, addition of a spreader/ sticker approved for use on growing crops to the spray tank is recommended for all crops, and especially for hard-to-wet crops, such as cole crops.

Note: Insects are known to develop resistance to products used repeatedly for control. Because resistance development cannot be predicted, the use of this product should conform to resistance management strategies established for the crop and use area. Such strategies may include rotating products with different modes of action. Consult your local pest control advisor or extension office for details. If resistance to this product develops in your area, this product or other products with a similar mode of action may not provide adequate control. If you experience difficulty with control, and resistance is a likely cause, consult your local Certis USA, L.L.C. representative or pest control advisor for the best alternative method of control. Certis USA, L.L.C. encourages good product stewardship to ensure effective long-term control of the respective insect pests.

Mixing Instructions

(1) Be sure the sprayer is clean and not contaminated with other materials. (2) Prepare no more spray mixture than is needed for the immediate operation. Fill tank 1/4 full with clean water or liquid fertilizer. (3) Start agitation. (4) Be certain that the agitation system is working properly and creates a rippling or rolling action on the liquid surface. (5) Pour Turex directly from the bag into the tank. (6) Continue filling tank until 90% full, increasing agitation if necessary to maintain surface action. (7) Add other tank mix products if needed. Finish filling tank. (8) Maintain maximum agitation throughout the spraying operation. (9) Empty tank as completely as possible before refilling to prevent residue building. Do not let the spray mixture stand overnight in the spray tank. (10) Flush the spray equipment thoroughly following each use and apply the rinsate to a previously treated area.

Table 1: Pounds of Turex required to treat various acreages at different rates

Acres to Treat	Pounds of Turex to Use				
	0.25 lb./A	0.5 lb./A	1.0 lb./A	1.5 lbs./A	2.0 lbs./A
5	1.25	2.5	5	7.5	10
10	2.5	5	10	15	20
15	3.75	7.5	15	22.5	30
20	5	10	20	30	40
30	7.5	15	30	45	60
40	10	20	40	60	80
50	12.5	25	50	75	100
100	25	50	100	150	200

Turex + Tank Mixtures: Turex is compatible with most commonly used insecticides, fungicides, liquid fertilizers, and spray adjuvants, if a non-ionic spreader/sticker approved for use on growing crops is included. This product can be mixed and used with other pesticides only in accordance with the most restrictive of label limitations and precautions. This product cannot be mixed with any product containing a label prohibition against such mixing. No label dosage rates may be exceeded.

Add 2/3 of the required amount of water to the spray or mixing tank. With the agitator running, add the required amount of Turex to the spray tank. Allow Turex time to dissolve before adding the other materials, especially nitrogen or boron. Then add the desired amount of the other products recommended for tank mixture. Continue agitation while adding the remainder of water and during application to maintain uniform suspension. Precaution: Turex must be completely dissolved and dispersed in water before any other tank mix partner, including micronutrients or other liquid or dry fertilizers, are added to the spray tank.

APPLICATION INSTRUCTIONS

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Ground Equipment

For conventional ground equipment, mix the specified rate of Turex and apply as a spray in a minimum of 20 gals. of water/A to assure thorough coverage of the crop. For aerial application, apply 2-10 gals. of water/A. Use a higher water volume in the far west to assure thorough coverage of the crop, and to give better performance.

CHEMIGATION APPLICATIONS

Turex alone or in combination with other tank mixtures which are registered for sprinkler irrigation may be applied through irrigation systems.

Apply this product only through sprinkler systems such as center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, or hand move. 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 nonuniform distribution of treated water. If you have questions about calibration, you should 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 system 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.

OPERATING INSTRUCTIONS

Sprinkler Irrigation

1. The system must contain a functional check-valve, vacuum relief valve, and low pressure drain appropriately located on the irrigated pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must 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-operating 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 (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

Chemigation Systems Connected to Public Water Systems

1. Public water system means a system for the provision to the public of piped water of 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.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water 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.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check-valve to prevent the flow of fluid back toward the injection pump.
4. 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.
5. 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.
6. 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.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

CALIBRATION AND APPLICATION

The following calibration and application techniques are provided for user reference, but do not constitute a warranty of fitness for application through sprinkler irrigation equipment. Users should check with state and local regulatory agencies for potential use restrictions before applying any agricultural pesticide through sprinkler irrigation equipment.

Center Pivot Irrigation Equipment (Use only with drive systems which provide uniform water distribution.)

1. Determine the size of the area to be treated.
2. Determine the time required to apply 1/4-1/2 inch of water over the area to be treated when the system and injection equipment are operated at normal pressures recommended by the equipment manufacturer. Run the system at 80-95% of the manufacturer's rated capacity.
3. Using water, determine the injection pump output when operated at normal line pressure.
4. Do not use the end gun for applications of Turex through Center Pivot Irrigation Equipment.
5. Determine the amount of Turex required to treat the area covered by the irrigation system. (Refer to table for use rates.)
6. Add the required amount of Turex all at once to sufficient water in the injection solution tank to meet the injection time requirements. (See **Mixing Instructions** section of this label.)
7. Maintain constant agitation in the injection solution tank during the injection period.
8. Inject Turex at the end of the irrigation cycle in 1/4-1/2 inch of water or as a separate application to maximize the effectiveness of the insecticide.
9. Continue to operate the system until the Turex solution has cleared the last sprinkler head.

Solid Set, Hand Move, and Moving Wheel Irrigation Equipment

1. Determine the acreage covered by the sprinklers.
2. Fill the injection solution tank with water and adjust flow rate to use the contents over a 20 to 30-minute interval.
3. Determine the amount of Turex required to treat the area covered by the irrigation system.
4. Add the required amount of Turex into the same quantity of water used to calibrate the injection period. (See **Mixing Instructions** section of this label.)
5. Operate the system at the same pressure and time interval established during the calibration.
6. Maintain constant agitation in the injection solution tank during the injection period.
7. Inject Turex at the end of the irrigation cycle in 1/4-1/2 inch of water or as a separate application to maximize the effectiveness of the insecticide.
8. Stop injection equipment after the treatment is completed. Continue to operate the system until the Turex solution has cleared the last sprinkler head.

Table 2: Application Rates

Crop	Pests	Lbs. Turex Per Acre ^a
Cole crops, Terrestrial Chinese vegetables, Terrestrial green leafy vegetables, Celery	Loopers, Imported Cabbageworm, Cross-striped Cabbageworm, Diamondback Moth, Armyworms, Beet Armyworm, Saltmarsh Caterpillar	0.5 to 2.0
Beans, Peas	Loopers, Armyworms, Green cloverworm, Velvetbean caterpillar	0.5 to 2.0
Tomatoes, Peppers	Loopers, Tomato Fruitworm, Hornworms, Armyworms	0.5 to 2.0
Tobacco ^b	Loopers, Tobacco Budworm, Hornworms	1.0 to 2.0
Cotton ^c	Tobacco Budworm, Cotton Bollworm, Armyworms, Loopers	Light Pressure - 0.25 to 0.5 ^d
		Moderate Pressure - 0.5 to 1.5
		High Pressure - 1.5 to 2.0

^a Under heavy infestation pressure, use 1.5-2.0 lbs./A. The 0.25-0.5 lb./A rate can be used to control light infestations of newly-hatched larvae.

^b Use to suppress light to moderate populations of small, newly-hatched larvae.

^c Apply on a 3 to 7-day schedule to suppress light to moderate populations of small, newly-hatched larvae. Best results can be expected using Integrated Pest Management/ Scouting Programs in early season cotton and continuing throughout the season.

^d Improved control can be achieved by tank-mixing Turex with other EPA-registered insecticides. When using a tank-mix, use lower Turex rates (0.25-0.75 lb./A). Treat when eggs and/ or newly hatched larvae are found. To maintain control, repeat applications, targeted against eggs and small larvae, as necessary.

Crop	Pests	Lbs. Turex Per Acre ^a
Terrestrial Ornamentals and Flowers	Loopers, Budworms, Diamondback Moth, Armyworms	0.5 to 2.0
Stone Fruit: ^e Peaches, Nectarines, Plums, Prunes, Cherries	Twig Borer, Navel Orangeworm	1.0 to 2.0
Tree Nuts: ^e Almonds, Filberts, Walnuts, Pecans	Twig Borer, Codling Moth, Gypsy Moth, Navel Orangeworm	1.0 to 2.0

Crop	Pests	Lbs. Turex Per Acre ^a
Pistachios ^e	Twig Borer, Codling Moth, Gypsy Moth, Navel Orangeworm	1.0 to 2.0
Greenhouse vegetables: Tomatoes, Cole Crops, Peppers	Armyworms, Loopers, Diamondback Moth, Fruitworms, Hornworms, Budworms	0.5 to 2.0
Grapes	Grapeleaf Skeletonizer	1.0 to 2.0
Corn	European Corn Borer	1.0 to 2.0
Terrestrial small fruits and berries	Armyworms	0.5 to 2.0

^a Under heavy infestation pressure, use 1.5-2.0 lbs./A. The 0.25-0.5 lb./A rate can be used to control light infestations of newly-hatched larvae.

^e Make two applications at early bloom and again at petal fall. Good coverage is essential.

Crop	Pests	Lbs. Turex Per Acre ^a
Cranberries ^f	Gypsy Moth, Spanworm, False armyworm, Cutworm, Blossom Worm	1.0 to 2.0
Cucurbits	Rindworm Complex (Loopers, Armyworms, Diamondback Moth), Melonworms	0.5 to 2.0
Potatoes	Loopers, Armyworms, Diamondback Moth	1.0 to 2.0
Soybeans ^c	Soybean Looper, Armyworms, Velvetbean Caterpillar, Podworms, Loopers	Light Pressure - 0.25 to 0.5 ^d Moderate Pressure - 0.5 to 1.5 High Pressure - 1.5 to 2.0
Pome fruit: Apples, Pears	Codling Moth ^e , Pandemis Leaf Roller ^g , Tufted Apple Bud Moth, Red Banded Leafroller, Oblique Banded Leafroller	1.0 to 2.0
Alfalfa and other forage crops	Armyworms, Alfalfa Caterpillar, Loopers	0.5 to 2.0
Citrus: Oranges, Grapefruit, Tangerine	Orangedog, Citrus cutworm	1.0 to 2.0

^a Under heavy infestation pressure, use 1.5-2.0 lbs./A. The 0.25-0.5 lb./A rate can be used to control light infestations of newly hatched larvae.

^c Apply on a 3 to 7-day schedule to suppress light to moderate populations of small, newly-hatched larvae.

^d Improved control can be achieved by tank-mixing Turex with other EPA-registered insecticides. When using a tank-mix, use lower Turex rates (0.25-0.75 lb./A). Treat when eggs and/or newly-hatched larvae are found. To maintain control, repeat applications, targeted against eggs and small larvae, as necessary.

^e Make two applications at early bloom and again at petal fall. Good coverage is essential.

^f Apply in a minimum of 15 gallons of water per acre for ground applications and up to 400 gallons of water per acre for chemigation.

^g Make applications at pink stage, full bloom, and petal fall; also at egg laying stage for second generation and 4-7 days later.

Crop	Pests	Lbs. Turex Per Acre ^a
Sugarbeets, Radish and other Root Crops, Leaves of Root and Tuber Vegetables	Armyworms, Cross-Striped Cabbageworm, Diamondback Moth, Hornworms, Imported Cabbageworm, Loopers	0.5 to 2.0
Herbs and Spices	Armyworms, Diamondback Moth, Imported Cabbageworm, Loopers	0.5 to 2.0
Peanuts	Armyworms, Velvetbean Caterpillar, Podworms, Loopers	1.0 to 2.0
Peppermint, Spearmint	Armyworms, Cutworms, Loopers	1.0 to 2.0
Artichokes	Artichoke Plume Moth	1.0 to 2.0
Bulb Vegetables: Onions, Garlic	Armyworms, Diamondback Moth, Hornworms, Imported Cabbageworm, Loopers	1.0 to 2.0

^a Under heavy infestation pressure, use 1.5-2.0 lbs./A. The 0.25-0.5 lb./A rate can be used to control light infestations of newly hatched larvae.

Storage and Disposal

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

Storage: Store at temperatures below 104°F.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Do not reuse outer container. Dispose of outer container in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

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