

SURTIVO

Biological insecticide for the integrated control of *Helicoverpa zea* (corn earworm, cotton bollworm, tomato fruitworm), *Chloridea virescens* (tobacco budworm), *Chrysodeixis includens* (soybean looper) and *Trichoplusia ni* (cabbage looper) on labeled food and non-food crops

GROUP

31

INSECTICIDE

Active Ingredient*:

<i>Chrysodeixis includens</i> Nucleopolyhedrovirus isolate #460:.....	17.1%
<i>Helicoverpa zea</i> Nucleopolyhedrovirus strain ABANPV-U:.....	17.1%
Other Ingredients:.....	65.8%
Total:.....	100.0%

* Contains a minimum of 7.5 x10⁶ occlusion bodies per milliliter of product

KEEP OUT OF REACH OF CHILDREN

CAUTION

See additional precautionary and first aid statements on the back panel

EPA Registration No: 87978-6
EPA Est. Number: 87978-TX-001

Net Contents: 0.25, 1, 1.3, 2.5, 5 gallons;
50 (1.7 oz.), 100 (2.4 oz.) or 200 (4.8 oz.) mL

Manufactured for:
AgBiTech Pty Ltd
8 Rocla Court Glenvale
Queensland Australia 4350
Product of USA

Batch Code:

AgBiTech

PRODUCT INFORMATION

This product contains a biological insecticide for the control of the following larvae on labeled crops:

Corn earworm, Cotton bollworm, Tomato fruitworm (*Helicoverpa zea*)

Tobacco bollworm (*Chloridea virescens*)

Soybean looper (*Chrysodeixis includes*)

Cabbage looper (*Trichoplusia ni*)

INSTRUCTIONS

Surtivo is a combination of *Helicoverpa zea* nucleopolyhedrovirus strain ABA-NPV-U (HearNPV) and *Chrysodeixis includens* nucleopolyhedrovirus isolate #460 (ChinNPV), which are two highly specific pathogens of *Helicoverpa zea* (corn earworm), *Chloridea virescens* (tobacco bollworm), *Chrysodeixis includens* (soybean looper) and *Trichoplusia ni* (cabbage looper). The effectiveness of Surtivo is dependent on a number of important factors, such as: larval size, environmental conditions, quality of the application and the feeding behavior of the pest. Because of the requirement for good application and climatic conditions, the performance and speed of activity of Surtivo can be variable. Larvae can take up to 8 days to die, though the rate of damage by NPV-infected larvae is greatly reduced within 3 to 5 days post infection, dependent on larvae size. Daytime temperatures of 65°F to 95°F are ideal for the activity of both NPVs. Infected larvae will amplify the virus and, following death, will release large amounts of viral occlusion bodies that can result in ongoing control, particularly under warm and humid environmental conditions suitable for NPV development and dispersion.

USES

Surtivo is effective against larvae of *Helicoverpa zea*, *Chloridea virescens*, *Chrysodeixis includens* and *Trichoplusia ni*. Thorough coverage of the crop is essential, as the NPV in Surtivo must be ingested by larvae to be effective. Surtivo is most effective on smaller larvae (less than 0.5 inches). Target application when the majority of the larvae are 2nd instar or younger. Surtivo should not be used to control larvae that are 4th instar or larger. When used correctly, Surtivo will provide between 60 and 90% control of larvae present at the time of spraying, with greater control expected on smaller larvae. Larvae will continue to feed for up to 3 days following virus infection and take between up to 8 days to die, with slower control occurring with larger larvae and during cool conditions. Under high pest pressure or sub-optimal application conditions, or when immediate protection against damage is required, additional control options should be considered.

RAIN FASTNESS

The majority of virus uptake by larvae occurs within one (1) hour post-application. For this reason, it is best to avoid applying Surtivo if heavy rain is expected within one (1) hour following application. However, do not delay application if only moderate rain is expected, or heavy rain (greater than 0.4 inches per hour) is not imminent.

CROPS, APPLICATION RATES AND CROP SPECIFIC INFORMATION

Crops	Rate of Surtivo per acre	Additional Information
Sorghum	1.4 to 2.8 fl. oz.	Use lower application rates when targeting small larvae (1 st and 2 nd instar) and in mixtures with chemical insecticide sprays for midge control (not ULV). Use higher application rates when targeting 3rd instar larvae or under high pressure situations. Applications that are targeted when 50% of heads have reached 100% flowering will provide good control.
Cereal Grains Group (Crop Group 15 excluding Sweet corn) including: Corn (maize), Popcorn, Rice ¹ Alfalfa (hay and seed) Oilseed Group (Crop Group 20) including: Flax seed, Canola, Safflower, Sunflower Peanut Legume Vegetables Group (Succulent or Dried) (Crop Group 6 excluding Peanut and Soybean) including: Adzuki bean, Broad bean, Chickpeas, Cowpea, Fava bean, Field pea, Kidney bean, Lablab bean, Lentil, Lima bean, Sweet lupin, White lupin, Mung bean, Navy bean, Pigeon pea Vetch	2.0 to 3.2 fl. oz.	Use lower application rates as a preventive measure in vegetative crop stages. Use the high application rate when the pest population has reached economic threshold.
Soybean (including Edamame)	2.0 to 3.2 fl. oz.	Use lower application rates as a preventive measure in vegetative crop stages. Use the high application rate when the pest population has reached economic threshold.
Sweetcorn	2.4 to 4.8 fl. oz.	Application should be made from the vegetative stages until silking. Applications during silking should employ a high rate and be in conjunction with other control measures. Application of low rates at regular (3 to 5 day) intervals, particularly via overhead irrigation water, is an effective strategy from vegetative stages, through row tassel to silking.
Root and Tuber Vegetable Group (Crop Group 1) including: Carrot, Sweet potato, Sugar beet, Potato Brassica (Cole) Leafy Vegetable Group (Crop Group 5) including: Broccoli, Brussels sprouts, Cabbage, Cauliflower, Chinese broccoli, Kale, Mustard greens, Mustard spinach, Rape greens Leafy Vegetables (Except Brassica Vegetables) Group (Crop Group 4) including: Celery, Endive, Lettuce, Roquette, Spinach Fruiting Vegetables Group (Crop Group 8 - 10) including: Chili, Eggplant, Okra, Pepper, Tomato Cucurbit Vegetables Group (Crop Group 9) including: Cucumber, Melon, Pumpkin, Summer and winter squash, Watermelon, Zucchini Berries Group (Crop Group 13 - 07) including: Blackberry, Blueberry, Boysenberry, Cranberry ² , Currant, Gooseberry, Raspberry, Strawberry Pome Fruit Group (Crop Group 11 - 10) including: Apple, Pear Ornamental Flowers and Plants Avocado Asparagus	2.4 to 4.8 fl. oz.	Use a higher application rate when flowers, fruit or marketable parts of the crop are present, under high pest pressure conditions or to control 3rd instar larvae. Use the lower application rate during vegetative stages of crop production. Application of low rates at regular (3 to 5 day) intervals, particularly via overhead irrigation water, provide best results.
Cotton	2.4 to 4.8 fl. oz.	High leaf pH in cotton causes rapid NPV deactivation, giving Surtivo very short residual activity and resulting in highly variable performance in this crop. Surtivo should not be solely relied upon.
Tobacco, Hemp	2.4 to 4.8 fl. oz.	Use a higher application rate under high pest pressure conditions or to control 3rd instar larvae. Use the lower application rate at regular intervals is an effective strategy in tobacco.

MIXING GUIDELINES

Shake the container well before use. Spray water pH should be neutral (pH 7.0) – spray water pH above 8 may damage the virus and performance will be reduced. If needed, use a suitable buffer or acidifier. If mixing with other pesticides or foliar fertilizers in water, add Surtivo to the spray tank after the other products are thoroughly diluted. Apply Surtivo within 10 hours after mixing.

Compatibility:

In water: Surtivo is highly compatible with the majority of herbicides, insecticides, fungicides and foliar fertilizers when mixed in water. Ensure that the mixture has a pH of 8 or less before adding Surtivo as higher pH levels will damage the viruses.

In oil (ultra-low volume): For ULV application in oil, Surtivo is not compatible with other pesticides, since the undiluted solvents in these products can damage the viruses.

APPLICATION INSTRUCTIONS

Use application parameters (nozzles, swath width, pressure, boom height, speed, etc.) to ensure thorough coverage of the target area.

I. Legume Vegetables (Succulent and Dried) Group (Crop Group 6 excluding Soybean), Root and Tuber Vegetables Group (Crop Group 1) including: Carrot, Sweet potato, Sugar beet, Potato; Brassica (Cole) Leafy Vegetables Group (Crop Group 5) including: Broccoli, Brussels sprouts, Cabbage, Cauliflower, Chinese broccoli, Kale, Mustard greens, Mustard spinach, Rape greens); Leafy Vegetables (except Brassica Vegetables) Group (Crop Group 4) including: Celery, Endive, Lettuce, Roquette, Spinach; Fruiting Vegetable Group (Crop Group 8 - 10) including: Chili, Eggplant, Okra, Pepper, Tomato; Cucurbit Vegetables Group (Crop Group 9) including: Cucumber, Melon, Pumpkin, Summer and winter squash, Watermelon, Zucchini; Berries Group (Crop Group 13 - 07) including: Blackberry, Blueberry, Boysenberry, Cranberry³, Currant, Gooseberry, Rasperry, Strawberry; Pome Fruit Group (Crop Group 11 - 10) including: Apple, Pear; Ornamental Flowers and Plants; Avocado; Asparagus; Tobacco; Hemp.

Ground Rig

Apply Surtivo by ground rig or hand-held equipment in a minimum of 40 gallons of water per acre.

II. Sorghum, Cereal Grains Group⁴, Alfalfa, Oilseed Group, Peanut, Soybean, Sweet Corn, Cotton

Ground Rig

Apply Surtivo in a minimum of 10 gallons of water per acre.

Aerial – High Volume

Apply Surtivo in a minimum of 3 gallons of water per acre. This application method is particularly susceptible to droplet evaporation, especially during hot and dry conditions (temperature greater than 85°F and relative humidity less than 40%). Droplet evaporation will reduce coverage, which can have a detrimental impact on performance. During hot and dry conditions avoid using this application method - wait until conditions favor good coverage or apply in ULV (see below). Alternatively, if application in water by air during hot and dry conditions cannot be avoided, increase application volume and/or use an anti-evaporation additive (such as an emulsifiable oil) to improve coverage.

Aerial – Low Volume (Sorghum only)

Apply Surtivo in a minimum of 1 gallon of water per acre and include an anti-evaporation additive (such as 2% emulsifiable oil).

Aerial – Ultra-Low Volume (ULV)

Use an approved oil carrier and apply in a minimum volume of 1 quart per acre using micronair nozzles. When applying Surtivo in ULV, DO NOT tank mix with other pesticides or fertilizers (refer to Compatibility).

Chemigation (via overhead irrigation water):

Surtivo can be effectively applied to crops in overhead irrigation water. The product should be introduced to the irrigation water at the appropriate rate using irrigation equipment. If the product is diluted in water prior to injection into the irrigation water, ensure that the dilution water is clean and not silty with a pH of 7 or less and ensure there is constant agitation. Preferably, rainwater should be used for dilution. Ensure any diluted Surtivo is used within 10 hours of mixing.

For one-pass mobile irrigators (such as center-pivot, lateral-move, end-tow, side-roll, traveler, big-gun), continuously and evenly introduce the required quantity of Surtivo into the irrigation water over the course of irrigation. It is recommended to apply Surtivo in no more than 0.5 inches of irrigation water. For static irrigators (such as solid-set or hand-move), introduce the required amount of Surtivo into the irrigation water just prior to completion of the irrigation period, to maximize the concentration of Surtivo applied and the amount that remains on the crop. See the CHEMIGATION section (following) for additional information.

CHEMIGATION

General Requirements:

1. Apply this product only through sprinkler (including center-pivot, lateral-move, end-tow, side-(wheel) roll, traveler, big-gun, solid-set, or hand-move) irrigation systems. Do not apply this product through any other type of irrigation system including drip (trickle) systems.
2. Lack of effectiveness can result from non-uniform distribution of treated water.
3. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts.
4. 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.
5. 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 any necessary adjustments should the need arise.

Requirements for Chemigation Systems Connected to Public Water Systems:

1. Public water supply 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 25 individuals daily at least 60 days throughout the year.
2. Chemigation systems connected to the public water systems must contain a functional, reduced-pressure zone (RPZ), backflow preventer or the functional equivalent in the water supply 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 flow outlet end of the fill pipe and the top or the 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.

Requirements for 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 back flow.
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-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 (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.

DAYS TO HARVEST

There are no restrictions on applying Surtivo up to the time of harvest.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE

Care must be taken to avoid exposure of Surtivo to high temperatures (above 104°F). Packaged, sealed product can be exposed to direct light for brief periods of time (<2 hours), but should be stored out of direct sunlight.

- Surtivo stored in cool rooms, refrigerators and freezers* (0 to 59°F) will be viable for at least 30 months.
- Surtivo stored in air-conditioned rooms (<77°F) will be viable for at least 6 months.

*Surtivo stored in a freezer (0°F) will remain liquid.

Note. Exposure of Surtivo to temperatures from 77°F to 104°F for short periods of time (<36 hours) will not affect efficacy. Transport time of 36 hours or less in non-refrigerated, covered trucks is acceptable as long as temperature does not exceed 104°F.

PESTICIDE DISPOSAL

To avoid waste, apply product in this container according to label directions. If waste cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

CONTAINER HANDLING

[Plastic containers with capacities equal to or less than 5 gallons:] Nonrefillable container. Do not reuse or refill this container. Triple rinse container 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 1/4 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 the container in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinance. If burned, stay out of smoke.

WARRANTY

This product is warranted to contain the amount of active ingredients as described in this label and the product will be as effective as intended if properly transported, used, and applied per the label instructions. The effectiveness of this product may be degraded by improper storage, transportation or handling and may be subject to environmental factors out of AgBiTech Pty Ltd.'s control. The user must monitor the performance of the product as climatic, geographical or biological variables may affect the results obtained. To the extent consistent with applicable law, AgBiTech Pty Ltd. and its subsidiaries make no other warranties, expressed or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label or accepts no responsibility in respect of this product. To the extent consistent with applicable law, AgBiTech Pty Ltd. and its subsidiaries disclaim any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

SURTIVO

Active Ingredient:

<i>Chrysodeixis includens</i> Nucleopolydiovirus isolate #460:	17.1%
<i>Helicoverpa zea</i> Nucleopolydiovirus strain ABANPV-U:	17.1%
Other Ingredients:	65.8%
TOTAL:	100.0%

* Contains a minimum of 7.5 x10⁶ occlusion bodies per milliliter of product

EPA Registration No: 87978-6 EPA Est. Number: 87978-TX-001

FIRST AID

- | | |
|-------------------------|--|
| If on skin or clothing: | <ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15-20 minutes. |
|-------------------------|--|

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or a doctor, and when going for treatment.

For general information on this product, contact the National Pesticide Information Center (NPIC) at 1-800-858-7378, Monday through Friday, 8 a.m. to 12 p.m. PST or at <http://npic.orst.edu>. For medical emergencies, call the poison control center at 1-800-222-1222.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through the skin. Avoid contact with skin and clothing. 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 (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Protective eyewear
- For ULV Oil applications wear chemical resistant gloves made of barrier laminate, nitrile rubber 2¹ 14 mils, neoprene rubber 2¹ 14 mils, or viton 2¹ 14 mils.

Mixers/loaders and applicators must wear a NIOSH-approved particulate respirator with any P or R filter with NIOSH approval number prefix TC-84A or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE 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

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, wash water or rinsate.

DIRECTIONS FOR USE

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

Do not use this product until you have read the entire label. 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 requirement specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with 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 exemptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box apply only 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
- Protective eyewear
- For ULV Oil applications wear chemical resistant gloves made of barrier laminate, nitrile rubber 2¹ 14 mils, neoprene rubber 2¹ 14 mils, or viton 2¹ 14 mils

LIFT
HERE