Bioprotec PLUS

GROUP	11	INSECTICIDE

AQUEOUS BIOLOGICAL INSECTICIDE

FOR USE ON AGRICULTURAL and GREENHOUSE CROPS AND ORNAMENTALS

SUSPENSION

COMMERCIAL

READ THE LABEL BEFORE USING

POTENTIAL SENSITIZER

CAUTION EYE IRRITANT

ACTIVE INGREDIENT:
Bacillus thuringiensis subspecies *kurstaki*, strain EVB113-19
Potency: 17,500 Cabbage Looper Units (CLU) per mg of product (equivalent to 20 billion CLU per liter)
REGISTRATION NO: 32425 PEST CONTROL PRODUCTS ACT

Net Contents : 10 litres

Lot No.
Date of Manufacture :

AEF Global inc.
440, 3e avenue, suite 100
Lévis, Qc, Canada G6W 5M6
(418) 838-4441
Toll-free Help-line: 1-866-622-3222
www.aefglobal.com

GENERAL DIRECTIONS FOR USE
Bioprotec PLUS is selectively toxic to some species of lepidopteran larvae. It is a stomach intoxicant only; to be effective, deposits of Bioprotec PLUS must be ingested by susceptible larvae. Thorough coverage of target foliage where larvae are feeding is essential. In general, larvae should be treated when they are newly hatched and actively feeding. After ingestion of a sufficient dose, larvae cease feeding within a few hours and death occurs in 2 - 5 days.

Bioprotec PLUS is a water based formulation which may be applied undiluted or diluted with clean water. Dilute with minimal quantities of clean water only when required to improve coverage. If diluting with water, add the recommended amount of Bioprotec PLUS to the required amount of water in the spray tank. Agitate as necessary to maintain suspension. Avoid application when significant rainfall is imminent. For early morning applications, foliage should not be wet with dew to the point of runoff.

DO NOT allow spray mixture to stand in the sprayer for more than 18 hours.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

As this pesticide is not registered for the control of pests in aquatic system, DO NOT use to control aquatic pests.

DO NOT apply by any type of irrigation system.

GROUND APPLICATION
For ground application, dilute required amount of Bioprotec PLUS with clean water only to the volume required to provide thorough coverage. Wet foliage thoroughly but not to the point of excessive run-off.

For mist blower applications, add the recommended rate of Bioprotec PLUS to water, at a mix ratio ranging from 1:20 to 1:50. Recommended maximum volume of spray mixture is 100 Litres per hectare.

For high volume hydraulic sprayers, add the recommended volume of Bioprotec PLUS to water at a mix ratio ranging from 1:50 to 1:500. Recommended maximum volume of spray mixture is 1000 Litres per hectare.

DO NOT apply by any type of irrigation system.

AERIAL APPLICATION INSTRUCTIONS
Apply only by fixed-wing or rotary aircraft equipment that has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label. Label rates, conditions and precautions are product specific. Apply only at the rate recommended for aerial application on this label. Where no rate for aerial application appears for the specific use, this product cannot be applied by any type of aerial equipment. Ensure uniform application by using appropriate marking devices and/or electronic guidance equipment.

USE PRECAUTIONS

Apply only when meteorological conditions at the treatment site allow for complete and even coverage. Apply only when meteorological conditions are in compliance with local and/or provincial authorities.

OPERATOR PRECAUTIONS

DO NOT allow the pilot to mix product to be loaded onto the aircraft. However, loading of premixed product with a closed system is permitted. It is desirable that the pilot has communication capabilities at each treatment site at the time of application. The field crew and the mixer/loaders must wear the personal protective equipment described in the PRECAUTIONS section of this label. When handlers/loaders use closed systems to load the product onto the aircraft, the handler requirement for eye goggles, a particulate filtering facepiece respirator with any N, R or P filtermay be waived. When reduced personal protective equipment is worn, the facepiece respiratorand eye goggles must be immediately available for use in an emergency such as a spill or equipment breakdown. All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit and vehicle cabs must be washed before reuse. Decontaminate aircraft cockpits and vehicle cabs if contamination occurs.

PRODUCT SPECIFIC PRECAUTIONS

Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-866-622-3222 or obtain technical advice from the distributor or from your provincial agricultural representative.
Application of this specific product must meet and/or conform to the aerial uses and rates on this label.

DIRECTIONS FOR USE: FIELD CROPS, ORCHARD USES, GREENHOUSE USES

Apply at first signs of infestation when larvae are small. Repeat applications, according to economic threshold, as necessary to maintain control. Thorough coverage of all foliage is essential. To improve wetting and distribution on difficult to wet foliage (e.g. crucifers), the addition of a wetting agent is recommended. Bioprotec PLUS may be applied up to the day of harvest.

GROUND APPLICATION

Use recommended amount of Bioprotec PLUS in a minimum of 300 litres of water per hectare, depending on the type of equipment and crop. Use diluted spray mixtures within a 12 hour period.

DO NOT apply by any type of irrigation system.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

AERIAL APPLICATION

Bioprotec PLUS should be applied by aerial equipment undiluted. Dilute with minimal quantities of water only when required to improve deposit. Best results can be expected when Bioprotec PLUS is applied to dry foliage with calibrated aircraft capable of obtaining droplet

sizes below 300 microns and preferably in the range of 50-150 microns. If dilution is necessary fill the mix tank or plane hopper with the desired quantity of water. Start the mechanical or hydraulic agitation to provide moderate circulation before adding Bioprotec PLUS. Add the recommended rate of Bioprotec PLUS to the tank or plane hopper and agitate until uniformly suspended. If using undiluted product, continual mixing is not necessary and should be avoided. Please see section "AERIAL APPLICATION INSTRUCTIONS".

PEST	CROP/SITE	Litres/Hectare
Cabbage Looper	Asian Radish, Bok Choy, Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Celery, Chinese Cabbage, Chinese Broccoli, Collards, Kale, Lettuce, Mustard Greens, Parsley, Potatoes, Spinach, Turnip Greens, Tomatoes, Herbs and Spices Group[11] (including celery seed, parsley (dried), mustard seed, nasturtium, basil, caraway, catnip, chervil (dried), coriander, dill and fennel; Mints), Cannabis (field-grown) and Hemp[19]	0.9 – 1.8
Imported Cabbage Worm	Asian Radish, Bok Choy, Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Celery, Chinese Cabbage, Chinese Broccoli, Collards, Kale, Lettuce, Mustard Greens, Parsley, Potatoes, Spinach, Turnip Greens, Tomatoes	0.9 – 1.8
Diamond Back Moth	Asian Radish, Bok Choy, Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Celery, Chinese Cabbage, Chinese Broccoli, Collards, Kale, Lettuce, Mustard Greens, Parsley, Potatoes, Spinach, Turnip Greens, Tomatoes	0.9 – 1.8
Leafrollers[1] (Fruittree, European, Oblique-banded, Three-lined)	Orchards: Apple, Apricot, Cherry, Peach, Pear Plum/Prune Nut Crops (Hazelnuts, Walnuts, Sweet chestnuts,	1.8 – 2.5 1.8 – 2.5

	Pecans) Crop Group 13-07 (berries and small fruit)[16]	 0.9 – 1.8
Essex Skipper	Timothy Mixtures and Other Forage Grasses	0.35 – 0.44
Hornworms	Tobacco, Tomatoes	0.4 – 0.7
Rangeland Caterpillar	Rangeland	0.4 – 0.7
Winter Moth[2]	Apples	0.44
Fruitworms[1]	Orchards: Apple, Apricot, Cherry, Peach, Pear, Plum/Prune	1.8 – 2.5
White Marked Tussock Moth	Blueberries[3], Ornamental Urban Trees[4]	2.5
Green and Brown Spanworm	Cranberries	0.44 – 0.9
Sunflower Moth[5]	Sunflowers	0.5 - 1.0
Early and Late Season Oblique Banded Leafrollers	Red Raspberries[7]	0.9 – 1.8
Tomato Fruitworm[6]	Tomato	0.9
European Corn Borer	Sweet and Field Corn[8] Succulent common beans[9] (e.g. green, yellow/wax, snap, string) Sweet Peppers[10] Cannabis (field-grown) and Hemp[19]	1.8 – 2.5 1.8 – 2.5 1.8 1.8 – 2.5
Grape Berry Moth[12] Leafrollers[13] Bagworms[14]	Grapes	1.8
Leek moth	Chives, Garlic, Green Onions, Leeks, Onions, Shallots[15]	0.9 – 1.8
Blueberry Spanworm (*Itame argillacearia)*	Lowbush Blueberries[17]	0.44-0.9
Chainspotted Geometer (*Cingilia catenaria*)	Lowbush Blueberries[17]	0.44-0.9
Rannoch Looper (*Itame brunneata*)	Lowbush Blueberries[17]	0.44-0.9
Cranberry Fruitworm	Highbush Blueberries[18]	0.9 – 1.8
Cherry Fruitworm	Highbush Blueberries[18]	0.9 – 1.8
Box Tree Moth (*Cydalima perspectalis*)	Boxwood	1.5 – 2.5

[1]Apply in 600-800 L water/ha at pink stage and, if populations are heavy, at petal fall using an airblast orchard sprayer. For high volume sprayers, add recommended volume of Bioprotec PLUS to water at a mix ratio of 1:50 to 1:500. Recommended maximum volume is 1500 litres/hectare. Weekly applications may be necessary if egg hatch is asynchronous. Best results are obtained if applications are made in the evening or on a cloudy day. For spindle plantings and dwarf trees, volume and application equipment must be adjusted accordingly. Consult an appropriate orchard pest management guide for further details regarding Tree Row Volume (TRV) applications.
[2]For use in combination with Ripcord 400 EC (12.5 ml/ha) or Cymbush 250 EC (28 ml/ha.). See their respective labels for specific instructions.

[3] Make 2 applications. Apply first at peak second instar larval development. Apply second application 2 – 5 days later. Use aerial, ground or mist blower applications.
[4] Make 2 applications. Make first application when larvae are in peak second instar. Make second application 2 - 5 days later.
[5] Apply aerially when 20 - 50% heads in bloom. Thorough coverage of larval feeding sites within flowers is necessary for adequate control. Apply when provincial authorities recommend treatment based on pheromone trap counts. A second application may be necessary if trap counts are high.
[6] Apply every 5 - 7 days.
[7] Apply in a maximum volume of 600 Litres/ha.
[8] For ground application only, by boom sprayer. Adjust the dosage per hectare, within the approved rate range, as a function of the density of foliage to treat, i.e., when crop canopy is dense in late summer, the higher dosage may be required. Up to 3 applications per generation of European corn borers, for a maximum of 6 applications per year. Allow 5-10 days between applications. Monitor for the pest and apply at hatching, before larvae bore into plant tissues. Consult provincial recommendations and regional advisors for monitoring procedures, treatment thresholds and refinements on the timing of application. Bioprotec PLUS is more effective when no rain occurs within 24-48 hours after application, to allow time for larvae to ingest a lethal quantity of spray deposits.
[9] Application: Apply 1.8 – 2.5 L Bioprotec PLUS /ha. Adjust the dosage per hectare, within this range as a function of the density of the foliage to treat, i.e., when crop canopy is dense in late-summer, the higher dosage may be required. Up to 2 applications may be made per generation of European corn borers, for a maximum of 4 applications per year. Allow 5-10 days between applications. PHI 1 day. Timing: Monitor for the pest and apply at hatching, before larvae bore into the plant tissues.
Consult provincial recommendations and regional advisors for monitoring procedures, treatment threshold and refinements on the timing of application. Method: Ground application by boom sprayer. Consult provincial recommendations and regional advisors for further guidance. Additional: Bioprotec PLUS is more effective when no rain occurs within 24-48 hours after application, to let time for larvae to ingest a lethal quantity of spray deposits. To reduce the incidence of European corn borer in bean fields, it is recommended not to grow beans adjacent to corn field (the preferred crop for the pest) and to remove volunteer corn from bean fields in order not to attract moths.
[10] Apply to young larvae at first signs of infestation; repeat application 2-4 times as necessary to maintain control of young larvae; application interval is 7-10 days; ground application only; PHI 1 day.
[11] Application: Apply 0.9 – 1.8 L Bioprotec PLUS /ha in a minimum of 300L of water. Adjust the dosage per hectare, within this range as a function of the density of larvae or the density of the foliage to treat, i.e., when crop canopy is dense in late-summer, the higher dosage may be required. Allow 5-10 days between applications. Number of applications: No more than 5. Use diluted spray mixture within 12 hour period. Timing: Monitor for the pest and apply at hatching, when larvae are small. Consult provincial recommendations and regional advisors for monitoring procedures, treatment threshold and refinements on the timing of application. Method: Ground application by boom sprayer or mist blower.
Consult provincial recommendations and regional advisors for further guidance.
[12] Applications should start before egg hatch and after seeing adult flight. Ensure complete coverage. Repeat application if needed every 7 to10 days (6 applications maximum).
[13] Repeat application if needed every 3 to 14 days (4 applications maximum).
[14] One application should be made when larvae are observed feeding on grapes.
[15] The use of pheromone traps is critical to application timing. Since application is targeted at the larval stages, a period of 7-10 days following peak flight helps to ensure maximal egg hatch.
[16] Treat when larvae are young (early instar) before crop is damaged. Repeat applications at an interval sufficient to maintain control, usually 3 – 14 days. Spray volume: Apply in a minimum of 300L/ha; use higher spray volumes for berry crops with larger plant stature. Thorough coverage of all foliage is essential.
[17] Maximum of four applications per year. Apply in a minimum of 300L/ha. Apply when larvae in the first or second instar are present at or above the economic threshold.
[18] Apply Bioprotec PLUS by adjusting the application rate within this range as a function of the density of larvae or the density of the foliage to treat; i.e., when crop canopy is dense in late summer, the higher rate may be required. Allow 5-10 days between applications. Monitor for the pests and apply at hatching, when larvae are small. Apply from petal fall through to green fruit stage. Weekly applications may be necessary if egg hatch is asynchronous. Consult provincial recommendations and regional advisors for monitoring procedures, treatment thresholds, and refinements on the timing of applications. Ground application by boom sprayer or mist blower. Use a minimum of 300 litres of water per hectare. Bioprotec PLUS is more effective when no rain occurs within 24-48 hours after application, allowing time for larvae to ingest a lethal quantity of spray deposits. Maximum of

4 applications. Pre-Harvest Interval = 0 days. Best results are obtained if applications are made in the evening or on a cloudy day.
19 For ECB monitor for the pest and apply at hatching, before larvae bore into plant tissues. For cabbage looper begin application just prior to egg hatch and continue as indicated by monitoring. Repeat application at interval of 5 - 10 days (ECB) or 7 days (cabbage looper). PHI: 0 days. Apply in sufficient volume to ensure thorough coverage, a minimum of 300L/ha is recommended
Additional: Bioprotec PLUS is more effective when no rain occurs within 24-48 hours after application, to let time for larvae to ingest a lethal quantity of spray deposits.

GREENHOUSE USES

Apply to young larvae at first signs of infestation. Repeat applications as necessary to maintain control of young larvae. The timing and number of applications will depend on foliage development and larval activity, including egg hatch, stage of larval development and population pressure.

DO NOT apply by any type of irrigation system.

DO NOT allow effluent or runoff from greenhouses containing this product to enter lakes, streams, ponds or other waters.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

As this pesticide is not registered for the control of pests in aquatic system, DO NOT use to control aquatic pests.

CROP	PEST	Litres per 1000L water
Vegetables (Tomatoes, Lettuce, Cucumbers, Peppers, Eggplants)	Cabbage Looper, Tomato Hornworm	1.1 0.6 – 1.1
Chrysanthemums	Cabbage Looper	1.1
Roses	Omnivorous Leafroller	1.1
Greenhouse ornamentals, Greenhouse herbs, Greenhouse vegetables (peppers, tomatoes, cucumbers), for fruit and transplant production	*Duponchelia fovealis*[1] *Opogona sacchari*[2]	1.0

1 Foliar and drench application. Make applications when egg hatch is essentially complete but before crop damage occurs. Apply the product such that it flows along the stem, coating it well, and into the top layer of the soil around the base of the plant. Thorough coverage of foliage and stems is necessary. Reapply at 7 day intervals, as required by monitoring.
2 Foliar application. Make application just prior to egg hatch. Apply the product such that it flows along the stem, coating it well. Thorough coverage of foliage and stems is necessary (minimum of 300 L of water per hectare). Reapply at 7 day intervals, as required by monitoring.

OTHER USES

CROP	PEST	Litres per 1000L water
Cannabis (marihuana)	Cabbage Looper[1]	1.1

produced commercially indoors		

[1] Apply in sufficient water volume to ensure thorough leaves coverage, recommend a minimum of 300L/ha with a hydraulic sprayer. Begin application just prior to egg hatch and continue as indicated by monitoring. Maximum of 8 applications per year with a 7 day interval between applications and a PHI of 0 days.

The DIRECTIONS FOR USE for the uses described in this section of the label were developed by persons other than AEF Global Inc. under the User Requested Minor Use Label Expansion program. For these uses, AEF Global Inc. has not fully assessed performance (efficacy) and/or crop tolerance (phytotoxicity) under all environmental conditions or for all crop varieties when used in accordance with the label. The user should test the product on a small area first, under local conditions and using standard practices, to confirm the product is suitable for widespread application.

PEST	**CROP/SITE**	**Litres/Hectare**
Gypsy moth[1]	Sea buckthorn	1.5 – 2.5
Hop Looper[2]	Hops	0.9 - 1.8
European Corn Borer[2]	Hops	1.5 – 2.5

1 Use the higher rate for heavy infestations. If egg hatch is extended or re-infestation occurs, repeat applications. Apply every 7 to10 days.

2 Apply at first signs of infestations when larvae are small. Repeat applications, according to economic threshold, as necessary to maintain control. For European corn borer, up to 3 applications per generation for a maximum of 6 applications per year. Consult provincial recommendations and regional advisors for monitoring procedures, treatment thresholds, and timing of applications. Allow 5-10 days between applications. Monitor for the pest and apply at hatching, before larvae bore into plant tissues. Apply Bioprotec PLUS with a high volume sprayer in a minimum of 300 litres of water per hectare.

CROP	PEST	Litres per 1000L water
Greenhouse Wasabi (*Wasabia japonica*)[1]	Cabbage looper Alfalfa looper	1.1

1 Apply as a foliar spray for a maximum of 5 applications per year (or per crop). Pre-Harvest Interval (PHI) is 0 days. The timing and number of applications will depend on foliage development and larval activity, including egg hatch, stage of larval development and population pressure. Apply at first signs of infestation when larvae are small. Repeat applications at usually 3 to 14 days interval, according to economic threshold, as necessary to maintain control. Thorough coverage of all foliage is essential. To improve wetting and distribution on difficult to wet foliage (e.g. crucifers), the addition of a wetting agent is recommended.

RESISTANCE MANAGEMENT RECOMMENDATIONS

For resistance management, please note that Bioprotec PLUS contains a Group 11 insecticide. Any insect population may contain individuals naturally resistant to Bioprotec PLUS and other Group 11 insecticides. The resistant individuals may dominate the insect

population if this group of insecticides is used repeatedly in the same fields. Other resistance mechanisms that are not linked to site of action but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance management strategies should be followed.
To delay insecticide resistance:
• Where possible, rotate the use of Bioprotec PLUS and other Group 11 insecticides with different groups that control the same pests in a field.
• Insecticide use should be based on an Integrated Pest Management program that includes scouting, record keeping, and considers cultural, biological and other chemical control practices.
• Monitor treated pest populations for resistance development.
• Contact your local extension specialist or certified crop advisors for any additional pesticide resistance management and/or integrated pest management recommendation for the specific site and pest problems in your area.
• For further information or to report suspected resistance, contact AEF Global Inc. representative at 440, 3e avenue, suite 100, Lévis, Qc, Canada G6W 5M6,1-866-622-3222,www.aefglobal.com

PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN
May cause sensitization. May irritate eyes. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Wear waterproof gloves, long-sleeved shirt, long pants, goggles, socks and shoes and a minimum of a particulate filtering facepiece respirator with any N, R or P filter when handling, mixing/loading or applying the product and during all clean-up and repair activities. When applicators use closed systems (e.g. enclosed cabs), the personal protective equipment may be reduced or modified. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

Restricted Entry Interval: DO NOT enter or allow worker entry into treated areas for 4 hours or until sprays have dried, unless wearing waterproof gloves, long-sleeved shirt, long pants, socks and shoes.

If the pest control product is to be used on a commodity that may be exported to the U.S. and you require information on acceptable residue levels in the U.S., visit CropLife Canada's web site at: www.croplife.ca.

ENVIRONMENTAL PRECAUTIONS:

- To reduce runoff from treated areas into aquatic habitats, avoid applications to areas with a moderate to steep slope, compacted soil or clay.
- Avoid application when heavy rain is forecast.
- Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

FIRST AID

If swallowed: Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water is able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth 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 centre 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 by mouth-to-mouth, if possible. Call a poison control centre of doctor for further treatment advice.

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 centre or doctor for treatment advice.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

TOXICOLOGICAL INFORMATION
Treat symptomatically.

STORAGE
In order to ensure microbial purity and potency, Bioprotec PLUS should be stored in the original container between 4°C and 20°C. Product should be used within 18 months of the date of manufacture. Store container upright and keep tightly closed when not in use. After extended storage, shake or stir contents to assure a uniform suspension.

DISPOSAL
Do not reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:
1. Triple or pressure rinse the empty container. Add the rinsing to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

For information on the disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency is case of a spill, and for clean-up of spills.

NOTICE TO USER
This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.