

**BIOPROTEC XHP**  
**AQUEOUS BIOLOGICAL INSECTICIDE**

<b>GROUP</b>	<b>11</b>	<b>INSECTICIDE</b>
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**FORESTS and WOODLANDS,**

**RESTRICTED**

**READ THE LABEL BEFORE USING**

**POTENTIAL SENSITIZER**

**GUARANTEE:**

*Bacillus thuringiensis* subspecies *kurstaki*, strain HD-1, at a potency of 21,700 International Units (IU) per mg., equivalent to 25.4 BIU (Billion International Units) per liter

**REGISTRATION NO: 27749**

**PEST CONTROL PRODUCTS ACT**

**NET CONTENTS (LITRES):** 205, 1000 litres, bulk tanker truck

**LOT NO.**

**DATE OF MANUFACTURE:**

**This product must be used within 12 months of the date of manufacture**

**AEF Global, Inc.  
201 Mgr. Bourget  
Levis (Qc)  
G6V 9V6  
Canada**

## **DIRECTIONS FOR USE**

Bioprotec XHP aqueous biological insecticide is toxic only to some species of lepidopteran larvae. It is a stomach intoxicant only; to be effective, deposits of Bioprotec XHP aqueous biological insecticide 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 XHP aqueous biological insecticide 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 XHP aqueous biological insecticide to the required amount of water in the spray tank. Agitate as necessary to maintain suspension. Use diluted mixtures of Bioprotec XHP aqueous biological insecticide within 72 hours of mixing and recirculate mixture before loading and/or application.

Avoid application when significant rainfall is imminent. For early morning applications, foliage should not be wet with dew to the point of runoff.

Consult with recognized forest pest management authority or AEF Global representative regarding appropriate timing and method of application. The timing and number of applications required for effective forest protection will depend upon target pest, target foliage development, pest pressure and larval activity. Applications should coincide with sufficient foliage development (shoot elongation or leaf expansion) to ensure maximum spray deposit. To the extent possible, apply treatments after egg hatch has been completed to assure that the maximum number of larvae are present during the treatment period. In conditions where egg hatch is extended and/or larval development is significantly advanced and/or larval populations are high, use of higher rates and/or additional applications, 5 -10 days apart, is recommended. See the application rate table for pest specific recommendations.

### **GROUND APPLICATION:**

For ground application, dilute required amount of Bioprotec XHP aqueous biological insecticide 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 XHP aqueous biological insecticide to water, at a mix ratio ranging from 1:25 to 1:65. Recommended maximum volume of spray mixture is 100 Litres per hectare.

For high volume hydraulic sprayers, add the recommended volume of Bioprotec XHP aqueous biological insecticide to water at a mix ratio ranging from 1:65 to 1:650. Recommended maximum volume of spray mixture is 1000 Litres per hectare.

### **AERIAL APPLICATION:**

Apply only by fixed-wing or rotary aircraft equipment which 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.

Undiluted applications, at the volumes noted in the application rates table, are highly recommended for most labelled pests. When deemed necessary to improve coverage, Bioprotec XHP aqueous biological insecticide may be diluted with clean water only and applied at the rates indicated in the application rates table. Total volume of spray material to be applied per hectare depends upon target pest, target foliage, weather, spray equipment and droplet size. Best results are expected when Bioprotec XHP aqueous biological insecticide is applied undiluted to dry foliage with well calibrated aircraft and appropriate spray system capable of delivering droplets in the range of 30-80 microns for coniferous foliage and 50-150 microns for broadleaf foliage.

Ensure uniform application by employing appropriate marking devices.

**Use Precautions:**

Apply only when meteorological conditions at the treatment site allow for complete and even coverage. Apply only under conditions of good practice specific to aerial application as outlined in the *Basic Knowledge Requirements for Pesticide Education in Canada: Applicator Core and Aerial Module*, developed by CAPCO.

**Operator Precautions:**

Do not allow the pilot to mix product to be loaded onto the aircraft. 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. 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 decontaminated regularly.

**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 or forestry representative. Application of this specific product must meet and/or conform to the restricted uses and application rates on this label.

**RESTRICTED USES  
FORESTS and WOODLANDS****NOTICE TO USER**

This control product is to be used only in accordance with the directions on this label. It is an offence under the PEST CONTROL PRODUCTS ACT to use a control product under unsafe conditions.

**NATURE OF RESTRICTION**

This control product is to be used only in the manner authorized; consult local pesticide regulatory authorities about use permits that may be required.

**Forestry Use:** Ground/Aerial Application for sites greater than 500 ha.

**Woodlands Use:** Aerial Application for sites 500 ha. or less.

Consult local Transport Canada office regarding air regulations for forest and woodland aerial applications.

Undiluted applications, at the volumes noted in the application rates table, are highly recommended for most labelled pests. When deemed necessary to improve coverage, Bioprotec XHP aqueous biological insecticide may be diluted with clean water only and applied at the rates indicated in the application rates table. Total volume of spray material to be applied per hectare depends upon target pest, target foliage, weather, spray equipment and droplet size. Best results are expected when Bioprotec XHP aqueous biological insecticide is applied undiluted to dry foliage with well calibrated aircraft and appropriate spray systems capable of delivering droplets in the range of 30-80 microns for coniferous foliage and 50 -150 microns for broadleaf foliage. Federal or provincial officials may recommend inclusion of a water soluble dye for purposes of recording spray deposit.

## Application Rates: Aerial <sup>1</sup> and Ground Application

### Forests and Woodlands.

Pest	BIU/ ha	Litres of product / ha
Gypsy Moth <sup>2</sup>	30 - 50	1.2 - 2.0
Eastern Spruce Budworm <sup>3</sup>	15 - 30	0.6 - 1.6
Western Spruce Budworm <sup>3</sup>	30 - 40	1.2 - 1.6
Jack Pine Budworm <sup>4</sup>	20 - 30	0.8 - 1.2
Eastern Hemlock Looper <sup>4</sup>	30 - 40	1.2 - 1.6
White Marked Tussock Moth <sup>4</sup>	50	2.0

<sup>1</sup>See Restricted Uses for aerial application to forests and woodlands and ground application to forest sites > 500 ha.

<sup>2</sup> Gypsy Moth: apply first application when larvae are in 2<sup>nd</sup> and 3<sup>rd</sup> instar and leaf expansion reaches 40-50%. If egg hatch is extended or reinfestation occurs, 2 or more applications, 7 - 10 days apart, may be required. Use higher rates for heavy infestations.

<sup>3</sup> For control of Eastern Spruce Budworm at lower rates and volumes (less than or equal to 0.8 litre/hectare; 20 BIU/ha.), Bioprotec XHP aqueous biological insecticide must be applied using enhanced atomization in order to ensure generation of sufficient spray droplets for impingement on conifer foliage (balsam fir, black spruce). This requires use of Micronaire AU4000 atomizers with appropriate flow rate, and blade angle settings to ensure a minimum rotation. Treat spruce budworms prior to fifth instar larval development, when bud flush/shoot development is sufficient to ensure good deposit on emerging needles. For heavy infestations, higher rates and a second application are recommended. In mountainous terrain, higher rates and volumes may be required to ensure adequate coverage. For forest stands with a high spruce component, in addition to fir, a second application may be necessary, after the spruce buds have opened.

<sup>4</sup>Other pests: Apply after egg hatch is complete, when early instar larvae are feeding on exposed foliage. For broadleaf foliage, apply when leaf expansion reaches 40 - 50%. For coniferous foliage, apply when bud flush/shoot development is sufficient to ensure good deposit. If egg hatch is extended or larval populations are high, higher rates and/or additional applications, 5 -10 days apart, may be required.

### RESISTANCE MANAGEMENT RECOMMENDATIONS:

For resistance management, please note that Bioprotec XHP aqueous biological insecticide contains a group 11 insecticide. Any insect population may contain individuals naturally resistant to Bioprotec XHP aqueous biological insecticide and other group 11 insecticides. The resistant individuals may dominate the insect population if this group of insecticides and used repeatedly in the same fields. Other resistance mechanisms that are not linked to site of action but are 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 XHP aqueous biological insecticide or other group 11

insecticides with different groups that control the same pests in a field.

- Use tank mixtures with insecticides from a different groups when such use is permitted.
- Insecticide use should be based on an IPM program that includes scouting, record keeping, and considers cultural, biological and other chemical control practices.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- Monitor: Monitor efficacy of Bioprotec XHP aqueous biological insecticide and other Group 11 insecticides used against the targeted pest(s) and record other factors that may influence insecticide performance and/or pest development.
- Reporting: If a Group 11 target site insecticide, such as Bioprotec XHP aqueous biological insecticide, appears to be less or no longer effective against a pest that it previously controlled or suppressed, contact a AEF Global inc. representative at 1-866-622-3222 or at [www.aefglobal.com](http://www.aefglobal.com) to assist in determining the cause of reduced performance.

#### **PRECAUTIONS:**

KEEP OUT OF REACH OF CHILDREN. May cause sensitization. Avoid contact with skin, eyes or clothing. Wear a long-sleeved shirt, long pants, water-proof gloves and eye goggles when handling, mixing/loading or applying the product and during all clean-up/repair activities. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

#### **FIRST AID:**

IF SWALLOWED: Rinse mouth and throat with copious amount of water. Do not induce vomiting.

IF ON SKIN/CLOTHING: Take off contaminated clothing. Wash skin with plenty of soap and water.

IF INHALED: Move to fresh air.

IF IN EYES: Hold eye open and rinse slowly and gently with water. Remove contact lenses, if present, then continue rinsing eye.

GENERAL: Seek medical attention if irritation or signs of toxicity occurs and persists or are severe. Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

#### **TOXICOLOGICAL INFORMATION:**

Treat symptomatically.

#### **STORAGE:**

Store at temperatures between 4° and 25° C for up to 12 months from the date of manufacture. Cooler storage temperatures are preferred. Store container upright and keep tightly closed when not in use. After extended storage, shake or stir contents to assure a uniform suspension.

#### **DISPOSAL:**

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Follow provincial instruction for any required additional cleaning of the container prior to its disposal.
3. Make the empty container unsuitable for further use.
4. Dispose of the container in accordance with provincial requirements.
5. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial

regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

**NOTICE TO USER:**

This control product is to be used only in accordance to the directions on this label. It is an offence under the Pest Control Product Act to use a control product under unsafe conditions.

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