Foray® 48B

BIOLOGICAL INSECTICIDE

FLOWABLE CONCENTRATE

For Commercial Forestry and Wide-Area Pest Treatment—Aerial Application Only

FOR ORGANIC PRODUCTION

ACTIVE INGREDIENT:
Bacillus thuringiensis, subsp. *kurstaki*, strain *ABTS-351*, fermentation solids, spores and insecticidal toxins 12.65%
OTHER INGREDIENTS 87.35%
TOTAL 100.00%

Potency: 10,600 Cabbage Looper Units (CLU) per mg of product (equivalent to 48 billion CLU per gallon).

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

EPA Reg. No. 73049-427
EPA Est. No. 33762-IA-001 List No. 60181

INDEX:

1.0 First Aid
2.0 Precautionary Statements
  2.1 Hazards to Humans and Domestic Animals
  2.2 Personal Protective Equipment (PPE)
  2.3 Agricultural Use Requirements
  2.4 Non-agricultural Use Requirements
  2.5 User Safety Recommendations
  2.6 Environmental Hazards
3.0 Directions for Use
4.0 Agricultural Use Requirements
5.0 Storage and Disposal
6.0 Warranty and Disclaimer
7.0 Directions for Use Booklet
8.0 Agricultural Use Requirements
9.0 Non-agricultural Use Requirements
10.0 Application
11.0 Aerial Application
12.0 Spray Volumes
  12.1 Aerial Application
13.0 General Agricultural Use Requirements
14.0 General Non-agricultural Use Requirements
15.0 Aerial Application

KEEP OUT OF REACH OF CHILDREN

CAUTION

1.0 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.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.

2.0 PRECAUTIONARY STATEMENTS

2.1 HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

2.2 Personal Protective Equipment (PPE)

Applicators and other handlers must wear:
- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

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

2.3 Agricultural Use Requirements:

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

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.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must provide all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as spill or equipment breakdown.

2.4 Non-agricultural Use Requirements:

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

2.5 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.

CONTINUED

2.6 Environmental Hazards

Except under the forest canopy, 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 cleaning equipment or disposing of equipment washwaters.

This product must not be applied aerially within 1/4 mile of any habitats of threatened or endangered lepidoptera.

3.0 DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

4.0 AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions For Use section for information about this standard.

Refer to the Directions For Use (below) for further directions.

5.0 STORAGE AND DISPOSAL

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

Pesticide Storage: Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 32 degrees C (90 degrees F).

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes can not 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 Disposal: Nonrefillable 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 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 in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances.

Refillable Container: Refill this container with pesticide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

6.0 WARRANTY AND DISCLAIMER

To the extent permitted by applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions.

7.0 DIRECTIONS FOR USE BOOKLET

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

Apply this product only through aerial application.

8.0 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 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.

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 (that involves contact with anything that has been treated, such as plants, soil, or water) is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

9.0 NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses 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.

10.0 APPLICATION

Apply Foray 48B, undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected, only by aerial equipment. The amount of water needed per acre will depend upon crop size, weather, spray equipment, and local experience.

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

11.0 HANDLING & MIXING

If Foray 48B is applied undiluted, the operator must ensure that the bulk quantity is well agitated and homogenous.

When Foray 48B is shipped by bulk tankers and transferred via a closed-loop mixing/loading system, the material is measured by passing through in-line flow meters directly into the aircraft, minimizing exposure to ground handling personnel.

In a similar manner, smaller containers of Foray 48B are also to be used with a closed-loop mixing/loading system to minimize the potential for accidental spills and exposure of ground handling personnel.

If dilution with water is needed for full crop coverage, fill tank with approximately 3/4 of the water required for dilution. Begin agitation and pump Foray 48B into the water while maintaining continuous agitation. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

When applying a diluted spray mixture, the use of a spreader-sticker approved for use on growing crops will improve the weather-fastness of the spray deposits. Add the spray adjuvant to the tank after the Foray 48B is added, and before the final volume of water is added to complete the mixture. Reduce or momentarily halt tank agitation and then add the required amount of adjuvant to the diluted mix. Use a closed-loop system to siphon the required quantity of adjuvant or pour the adjuvant into the top hatch of the tank. Once added, close tank opening, and resume agitation; add the rest of the water to complete the spray mix.

Combinations with commonly used spray tank adjuvants are generally not deleterious to Foray 48B, if the mix is used promptly. Before mixing in the spray tank, identify possible problems with physical compatibility by mixing all components in a small container in proportionate quantities. Check with an adjuvant supplier for advice on spray adjuvants that are compatible with biological pesticides such as Foray 48B to avoid incompatibilities.

12.0 SPRAY VOLUMES

12.1 Aerial Application: Use appropriate amount of Foray 48B, as indicated in the tables that follow, in aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. In the western U.S., use a normal minimum of 5-10 gallons per acre; in the eastern regions, use a normal minimum of 2-3 gallons. The minimum amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

13.0 GENERAL AGRICULTURAL USE INSTRUCTIONS

Foray 48B is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 48B must be ingested by the larvae to be effective. For consistent control, apply at first sign of newly hatched larvae (1st and 2nd instar larvae). Susceptible larvae that ingest Foray 48B cease feeding within a few hours and die within 2-5 days.

Foray 48B may be applied up to and on the day of harvest.

For maximum effectiveness, follow the instructions listed below:

Monitor fields to detect early infestations.

Apply Foray 48B when eggs start hatching and larvae are small (early instars) and before significant crop damage occurs. Larvae must be actively feeding to be affected.

Repeat applications every 3 to 14 days to maintain control and protect new plant growth. Factors affecting spray interval include rate of plant growth, weather conditions, and reinfestation. Monitor populations of pests and beneficials to determine proper timing of applications.

Under conditions of heavy pest pressures or when large worms are present use the higher rate, shorten the application interval, and/or improve spray coverage to enhance control. When these conditions are present, consider use of contact insecticide to enhance control.

Thorough coverage is essential for optimum performance.

Crop	Pests	Rate[1] (fl. oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Ornamental Fruit, Nut and Citrus Trees[2]	Gypsy Moth & Asian Gypsy Moth, Elm Spanworm	21 - 107
	Spruce Budworm, Browntail Moth, Douglas Fir Tussock Moth, Coneworm, Buck Moth	21 - 80
	Tussock Moths, Pine Butterfly, Bagworm, Leafrollers, Tortrix, Mimosa Webworm, Tent Caterpillar, Jackpine Budworm, Blackheaded Budworm, Saddled Prominent, Saddleback Caterpillar, Eastern and Western Hemlock Looper, Orangestriped Oakworm, Satin Moth	16 - 43
	Redhumped Caterpillars, Spring and Fall Cankerworm, California Oakworm, Fall Webworm	11 - 31

Special Instructions:

[1] Use the higher rates on advanced larval stages or under high density larval populations.

[2] In treating Gypsy Moth and Asian Gypsy Moth infected trees and shrubs in urban, rural, and semi-rural areas, exposure of non-target vegetation including, but not limited to, native and ornamental species and food or feed crops is permitted.

Use and mix this product with other pesticides only in accordance with the most restrictive of label limitations and precautions. Do not mix this product with any product containing a label prohibition against such mixing. Do not exceed label dosage rates.

14.0 GENERAL NON-AGRICULTURAL USE INSTRUCTIONS

Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes. For use on plants intended for aesthetic purposes or climatic modification and being grown in ornamental gardens or parks, or on golf courses or lawns and grounds.

Not for use on trees being grown for sale or other commercial use, or for commercial seed production, or for the production of timber or wood products, or for research purposes except wide-area public pest control programs sponsored by government entities, such as mosquito abatement, Gypsy Moth control, and Mediterranean Fruit Fly eradication.

Foray 48B contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 48B is a stomach poison and is effective against lepidopterous larvae. After ingestion, larvae stop feeding within hours and die 2-5 days later. Maximum activity is exhibited against early instar larvae. Apply Foray 48B only by aerial application.

Use Foray 48B with a closed-loop mixing/loading system that will minimize the potential for accidental spills and exposure of ground handling personnel.

If dilution with water is needed for full crop coverage, fill tank with approximately 3/4 of the water required for dilution. Begin agitation and pump Foray 48B into the water while maintaining continuous agitation. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

Monitor to detect early infestations.

Crop	Pests	Rate[1] (fl. oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Ornamental Fruit, Nut and Citrus Trees[2]	Gypsy Moth & Asian Gypsy Moth, Elm Spanworm	21 - 107
	Spruce Budworm, Browntail Moth, Douglas Fir Tussock Moth, Coneworm, Buck Moth	21 - 80
	Tussock Moths, Pine Butterfly, Bagworm, Leafrollers, Tortrix, Mimosa Webworm, Tent Caterpillar, Jackpine Budworm, Blackheaded Budworm, Saddled Prominent, Saddleback Caterpillar, Eastern and Western Hemlock Looper, Orangestriped Oakworm, Satin Moth	16 - 43
	Redhumped Caterpillars, Spring and Fall Cankerworm, California Oakworm, Fall Webworm	11 - 31

Special Instructions:

[1] Use the higher rates on advanced larval stages or under high density larval populations.

[2] In treating Gypsy Moth and Asian Gypsy Moth infected trees and shrubs in urban, rural, and semi-rural areas, exposure of non-target vegetation including, but not limited to, native and ornamental species and food or feed crops is permitted.

Use and mix this product with other pesticides only in accordance with the most restrictive of label limitations and precautions. Do not mix this product with any product containing a label prohibition against such mixing. Do not exceed label dosage rates.

15.0 AERIAL APPLICATION

Apply Foray 48B, either alone or diluted with water, aerially at the rates per acre shown in the application rates table. Spray volumes of 32-107 fluid ounces of product per acre give optimum coverage. Best results are expected when Foray 48B is applied to dry foliage.

For smaller spray volumes, mix the proper number of teaspoons of Foray 48B from the following chart to attain the desired rates:

If the rate is:	Add this amount per gallon of mix:
8 fl. oz. (0.5 pt.)/acre	1/2 teaspoon
16 fl. oz. (1.0 pts.)/acre	1 teaspoon
24 fl. oz. (1.5 pts.)/acre	1-1/2 teaspoons
32 fl. oz. (2.0 pts.)/acre	2 teaspoons
48 fl. oz. (3.0 pts.)/acre	3 teaspoons
64 fl. oz. (4.0 pts.)/acre	4 teaspoons

Foray is a registered trademark of Valent BioSciences Corporation.

© 2012 Valent BioSciences Corporation

VALENT BIOSCIENCES CORPORATION
870 TECHNOLOGY WAY
LIBERTYVILLE, IL 60048 USA
PH: 800-323-9597