

73049-427

11-15-2006

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

1/43

Ms. Helen Mero  
870 Technology Way, Suite 100  
Libertyville, IL 60048-6316

NOV 15 2006

Subject: Valent BioSciences Corporation  
Foray® 48 SI Biological Insecticide Flowable Concentrate  
EPA File Symbol: 73049-427  
Label Amendment to Incorporate Organic Language  
Application Date: August 22, 2006

798330	345/300
	1155

Dear Ms. Mero,

The amendment referred to above, submitted in connection with registration under FIFRA section 3(c)(7)(A) is acceptable provided that you:

1. Submit and/or cite all data required for registration/reregistration of your product under FIFRA section 3(c)(5) when the Agency requires all registrants of similar products to submit such data.
2. Submit five (5) copies of your final printed labeling before you release the product for shipment. Final printed labeling means the label or labeling of the product when distributed or sold. Clearly legible reproductions or photo reductions will be accepted for unusual labels, such as those silk-screened directly onto glass or metal containers or large bags or drums labels.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

If you have any questions contact Angela Gonzales at 703-308-0460 or by e-mail at: [gonzales.angela@epa.gov](mailto:gonzales.angela@epa.gov).

A stamped copy of the label is enclosed for your records.

Sincerely,

Sheryl Reilly, Ph.D., Chief  
Microbial Pesticides Branch  
Biopesticides and Pollution Prevention Division (7511P)

Enclosure

CONCURRENCES

SYMBOL	7511P	7511P	7511P				
SURNAME	GONZALES	Peterson	Reilly				
DATE	10/25/06	11/6/06	11/9/06				

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FORAY® 48 SI  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE

Master label

**ACCEPTED**  
NOV 15 2006  
Under the Federal Insecticide,  
Fungicide, and Rodenticide Act,  
as amended, for the pesticide  
registered under  
EPA Reg. No. 73049-427

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**FORAY® 48 SI  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE**

**For Organic Production**

**Active Ingredient:**

<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> , strain ABTS-351 fermentation solids, spores and insecticidal toxins.....	12.65 %
Other Ingredient.....	87.35 %
Total.....	100.00 %

Potency: 48 billion Cabbage Looper Units (CLU/GAL) of product.

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

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

Valent BioSciences Corporation  
870 Technology Way, Suite 100  
Libertyville, IL 60048  
EPA Registration No.  
EPA Est. No. 33762-IA-1

<b>FIRST AID</b>	
<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 - 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
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.	

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**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS  
CAUTION**

Avoid contact with eyes or clothing. Causes moderate eye irritation. Wash thoroughly with soap and water after handling.

**Personal Protective Equipment**

Applicators and other handlers must wear:

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

**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.

**Non-agricultural Use Requirements:**

Mixer/loaders and applicators not in enclosed cabs or aircraft 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.

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.

**User Safety Recommendations**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- 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.

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**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 cleaning equipment or disposing of equipment washwaters.

This product must not be applied aerially within ¼ mile of any habitats of endangered species or threatened lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

**DIRECTIONS FOR USE**

**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 Booklet attached to this container for further directions.

**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 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 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 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 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.

Keep unprotected persons out of the treated areas until sprays have dried.

**APPLICATION**

FORAY 48 SI may be applied by ground or aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. 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.

**MIXING**

Shake or stir FORAY 48 SI before use. Fill spray or mixing tank half full of water. Begin agitation and pour FORAY 48 SI into water while maintaining continuous agitation. Add other

spray material (if any) and balance of water. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

To improve weather-fastness of the spray deposits for hard to wet crops, such as cole crops, use of a spreader-sticker approved for use on growing crops. Combinations with commonly used spray tank adjuvants are generally not deleterious to FORAY 48 SI, if the mix is used promptly. Before mixing in the spray tank, the testing of physical compatibility by mixing all components in a small container in proportionate quantities will identify possible problems. Checking with an adjuvant supplier for advice on spray adjuvants that are compatible with biological pesticides such as FORAY 48 SI or Foray, will help avoid incompatibilities.

**SPRAY VOLUMES**

**Ground Application:** Use indicated amount of FORAY 48 SI in ground equipment with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

**Aerial Application:** Use indicated amount of FORAY 48 SI 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. 5-10 gallons per acre is the normal minimum; in the eastern regions a minimum of 2-3 gallons is normally used. The minimum amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

**GENERAL AGRICULTURAL USE INSTRUCTIONS**

FORAY 48 SI is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. FORAY 48 SI 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 48 SI cease feeding within a few hours and die within 2-5 days.

FORAY 48 SI 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 48 SI 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, the use of a contact insecticide can enhance control.

Thorough coverage is essential for optimum performance. Ground applicators equipped with directed drop nozzles can improve coverage.



Crop Group	Pests	Rate (Pints/Acre)
<b>Forage, Fodder, Hay</b>		
Alfalfa (Hay & Seed) and Other Non-grass Animal Feeds, Grasses Grown for Feed (pasture, ranges, hay or silage)	Alfalfa Caterpillar  Loopers  Armyworms* European Skipper (Essex Skipper)	1.0 - 3.0  1.5 - 5.5  1.5 - 3.0
<b>Fruits &amp; Nuts</b>		
Pome and Stone Fruit Trees such as: Apples, Pears, Quince, Apricots, Cherries, Nectarines, Peaches, Plums, Prunes. Nut Trees such as: Almonds, Filbert, Chestnuts, Walnuts, Pecans.	Citrus Cutworm Navel Orangeworm  Redhumped Caterpillar Tent Caterpillars Omnivorous Leafroller Tortrix Moths Cankerworms Peach Twig Borer Fruittree Leafroller Gypsy Moth & Asian Gypsy Moth Turfted Apple Budmoth Fall Webworm Variegated Leafroller Redbanded Leafroller Walnut Caterpillar Codling Moth Cutworms Filbert Leafroller Oblique Banded Leafroller  Filbert Webworm  Roughskinned Cutworm	1.5 - 5.5             1.5 - 3.0  1.0 - 1.5

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Crop Group	Pests	Rate (Pints/Acre)
Citrus	Orangedog	1.0 - 3.0
	Fruittree Leafroller Citrus Cutworm	1.5 - 5.5
	Amorbia**	3.0 - 4.0
Small Fruit and Berries such as: Blackberries, Blueberries, Currants, Raspberries, Strawberries, Cranberries	Gypsy Moth & Asian Gypsy Moth Blueberry Leafroller Loopers Fruittree Leafroller Grape Berry Moth Oblique Banded Leafroller Achema Sphinx Moth (Hornworm)	1.5 - 3.0
	Armyworms* Tobacco Budworm	1.5 - 5.5 5.5
Grapes	Cherry Fruitworm Green Fruitworm	1.0 - 1.5
	Grape Leafroller Grapeleaf Skeletonizer Omnivorous Leafroller Orange Tortrix Saltmarsh Caterpillar	1.5 - 4.0
<b>Other Fruits</b>		
Bananas	Banana Skipper	1.5 - 3.0
Tropical Fruits	Hornworms	1.5 - 5.5
	Leafrollers	
	Loopers Omnivorous Looper	
Kiwi	Omnivorous Leafroller	1.5 - 5.5
Pineapple	<i>Gummosos-Batrachedra commosae</i> (Hodges)	1.0 - 1.5
	<i>Thecla-Thecla basilides</i> (Geyr)	
Melons	(See Vegetable Crops, Cucurbits)	

Crop Group	Pests	Rate (Pints/Acre)
Vegetables and Cole Crops  Root & Tuber Vegetables, and leaves of Root and Tuber vegetables such as: Beets, Carrot, Horseradish, Radish, Potato, Sweet Potato, Turnip and Turnip Greens, Sugarbeets	Imported Cabbageworm	1.0 - 3.0
	Green Cloverworm Hornworms	0.5 - 3.0
	Cutworms Loopers	1.5 - 3.0
	Webworms Saltmarsh Caterpillar Omnivorous Leafroller	
	Armyworms*	1.5 - 5-5
	Diamondback Moth	1.0 - 3.0
	European Corn Borer	3.0 - 4.0
	Alfalfa Caterpillar	0.5 - 1.0
	Bulb Vegetables such as: Garlic, Leeks, Onions, Shallot	Saltmarsh Caterpillar Omnivorous Leafroller Webworms
Hornworms		0.5 - 3.0
Imported Cabbageworm Green Cloverworm Loopers		1.0 - 3.0
Cutworms		1.5 - 3.0
Armyworms*		1.5 - 5.5
Diamondback Moth		1.0 - 1.5
European Corn Borer		3.0 - 4.0
<i>Heliothis</i> spp.		3.0

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Crop Group	Pests	Rate (Pints/Acre)
Leafy vegetables such as: Celery, Lettuce (Head and Leaf), Parsley, Endive, Spinach, Kale	Imported Cabbageworm Green Cloverworm	1.0 - 3.0
	Hornworms	0.5 - 3.0
	Cutworms Webworms	1.5 - 3.0
	Loopers Diamondback Moth	1.0 - 3.0
	Saltmarsh Caterpillar Omnivorous Leafroller	1.5 - 3.0
	Armyworms*	1.5 - 5.5
	European Corn Borer	3.0 - 4.0
Legume and foliage of Legume vegetables, such as: Lentils, Peas, Beans, Soybeans	Loopers	1.0 - 3.0
	Hornworms	0.5 - 1.5
	Podworms	1.5 - 3.0
	Imported Cabbageworm Green Cloverworm	
	Saltmarsh Caterpillar Soybean Loopers Velvetbean Caterpillar	
	Armyworms*	1.5 - 5.5
	Diamondback Moth	1.0 - 3.0
	European Corn Borer	3.0 - 4.0
	Cutworms	1.5 - 4.0

Crop Group	Pests	Rate (Pints/Acre)
Fruiting Vegetables such as: Eggplant, Peppers, Tomatoes	Imported Cabbageworm Diamondback Moth Green Cloverworm  Hornworms  Tomato Fruitworm ( <i>Heliothis</i> ) Variegated Cutworm Saltmarsh Caterpillar Loopers  Armyworms*  European Corn Borer	1.0 - 1.5    0.5 - 3.0  1.5 - 3.0   1.5 - 5.5  3.0 - 4.0
Brassica (cole) vegetables such as: Broccoli, Brussels sprouts, Cabbage, Cauliflower, Collards, Kohlrabi	Hornworms  Webworms Loopers Cutworms Saltmarsh Caterpillar Omnivorous Leafroller  Diamondback Moth Imported Cabbageworm Green Cloverworm  Armyworms*  European Corn Borer	0.5 - 3.0  1.5 - 3.0     1.0 - 3.0  1.5 - 5.5  3.0 - 4.0
Curcubit vegetables such as: Cucumbers, Melons, Pumpkins, Squash, Watermelon	Imported Cabbageworm Green Cloverworm Diamondback Moth Loopers Saltmarsh Caterpillar Melonworm Pickleworm Rindworm complex  Armyworms*  European Corn Borer  Hornworms	1.0 - 3.0        1.5 - 5.5  3.0 - 4.0  0.5 - 1.5

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Crop Group	Pests	Rate (Pints/Acre)
<b>OTHER VEGETABLES</b>		
Artichokes	Artichoke Plume Moth	1.5 - 4.0
	Armyworms*	1.5 - 4.0
	Loopers	1.0 - 4.0
Asparagus	Armyworms*	1.5 - 5.5
	Diamondback Moth Green Cloverworm Imported Cabbageworm	1.0 - 1.5
	Loopers	1.0 - 3.0
	Malanga	Armyworms*
Saltmarsh Caterpillar		1.5 - 3.0
Watercress (Spray only when there is no standing water in the bed.)	Loopers	1.0 - 3.0
	Diamondback Moth	
	Armyworms*	1.5 - 5.5
	Green Cloverworm Imported Cabbageworm	1.0 - 1.5
	Saltmarsh Caterpillar European Corn Borer	1.5 - 3.0 3.0 - 4.0
Sweet Corn	(see Other Crops, Corn)	
<b>Herbs, Spices, Mints</b>		
Such as Basil, Dill, Oregano, Thyme, Peppermint	Loopers	1.0 - 3.0
	Diamondback Moth Green Cloverworm Imported Cabbageworm	1.0 - 1.5
	Armyworms*	1.5 - 5.5
	European Corn Borer	3.0 - 4.0
<b>Other Crops</b> Avocados	Loopers	3.0 - 4.0
	Orange Tortrix Omnivorous Leafroller Omnivorous Looper Spanworm	1.5 - 5.5
	Amorbia**	1.5 - 5.5

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Crop Group	Pests	Rate (Pints/Acre)
Rice	Armyworms*	1.5 - 4.0
	Loopers Saltmarsh Caterpillar	1.5 - 3.0
	Cutworms	1.5 - 4.0
	Green Cloverworm Velvetbean caterpillar	1.0 - 1.5
	<i>Heliothis</i> spp	3.0
Cotton (Except CA & AZ)	Loopers	1.5 - 3.0
	Armyworms*	1.5 - 5.5
	Cotton Bollworm Tobacco Budworm	1.0 - 5.5

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Special Instructions: For early season management of *Heliothis/Helicoverpa* species, initiate applications at pinhead square stage when eggs are present. For best results, application should be timed to coincide with egg hatch. Continue applications on 5 day intervals. Addition of an ovicide may be beneficial. Preservation of beneficial insects should be considered in selecting an ovicide. Applications of FORAY 48 SI may continue throughout the season. As the larval population increases through the season, increase rates of FORAY 48 SI, and tank-mix with other larvicides for increased control. When the crop canopy is dense and larvae are feeding in the lower canopy, aerial application of FORAY 48 SI may not provide adequate deposit for acceptable control. When the crop canopy is dense and larvae are feeding in the lower canopy, aerial application of FORAY 48 SI may not provide adequate deposit for acceptable control. 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.

Crop Group	Pests	Rate (Pints/Acre)
Cotton (CA & AZ)	Armyworms*	1.5 - 5.5
	Cotton Leaf Perforator	1.5 - 3.0
	Cotton Leafworm	
	Saltmarsh Caterpillar	
	Loopers	1.5 - 3.0
Cotton Bollworm	1.5 - 5.5	
Tobacco Budworm		



Special Instructions: Repeat as necessary throughout the season to maintain control. If egg laying frequency indicates future moderate to heavy larval populations, time application to coincide with the second instar larvae. During periods of high temperatures, larvae will progress through first to third instars very rapidly and early application timing is necessary for control. When plant cover is dense and larvae are feeding in the lower 2/3 portion of the plant, aerial application of FORAY 48 SI may not provide adequate deposit to achieve acceptable control.

Crop Group	Pests	Rate (Pints/Acre)
Canola/Rape Seed	Armyworms*	1.5 - 5.5
	Diamondback Moth	1.0 - 1.5
	Loopers	1.5 - 3.0
	<i>Heliothis</i> spp	1.5 - 5.5
Corn Such as: Field, Sweet, Popcorn	Armyworms*	1.5 - 5.5
	European Corn Borer (Whorl Stage Only)	1.5 - 4.0
	Southwestern Corn Borer	3.0 - 4.0
Hops	Armyworms*	1.5 - 5.5
	Loopers	1.0 - 3.0
	Omnivorous Leaf-tier	1.5 - 3.0
	Spotted Cutworm Oblique Banded Leafroller	
Jojoba	Looper ( <i>Anacamptodes</i> spp)	1.5 - 3.0
Peanuts	Green Cloverworm	1.5 - 3.0
	Loopers	
	Velvetbean Caterpillar	
	Podworms	
	<i>Heliothis</i> spp**	3.0

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Crop Group	Pests	Rate (Pints/Acre)
Persimmons, Pomegranate	Fall Webworm Filbert Webworm Omnivorous Leafroller Redhumped Caterpillar Tent Caterpillars  Citrus Cutworm	1.5 - 3.0       1.5 - 4.0
Safflower	Armyworms*  Loopers Saltmarsh Caterpillar	1.5 - 5.5  1.5 - 3.0
Sorghum	Headworm	1.5 - 3.0
Soybeans	(see Vegetable Crops, Legumes)	
Sunflowers	Headmoth Loopers	1.5 - 3.0
Small Grains	Armyworms*  Loopers	1.5 - 5.5  1.5 - 3.0
Tobacco	Tobacco Hornworm  Loopers  Tobacco Budworm**	0.5 - 1.5  1.0 - 3.0  3.0
<b>Flowers Bedding Plants, and Ornamentals</b>  Ornamentals Flowers, Bedding Plants	Armyworms*  Azalea Moth Diamondback Moth Ello Moth (Hornworm) Io Moth Loopers Oleander Moth Omnivorous Leafroller Omnivorous Looper Tobacco Budworm	1.5 - 5.5  1.0 - 1.5
<b>Greenhouse and Outdoor Nursery Crops</b>  Such as: Flowers, Brassica, Fruiting Groups, Herbs, and Leafy	Armyworms*  <i>Heliothis</i> spp Loopers	1.5 - 5.5  1.5 - 3.0

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Crop Group	Pests	Rate (Pints/Acre)
Turf		
Turf	Sod Webworm	3.0-5.5
	Tropical Sod Webworm	3.0
	Armyworm*	3.0

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

**Special Instructions**

\*Armyworm Control: FORAY 48 SI may be used to control small armyworms (first and second instar) when populations are light and full coverage sprays are applied. Repeat treatment as necessary. If late instar larvae or heavy populations are present, greater control can be achieved by adding a contact insecticide.

\*\*Suppression Only: Use to aid in control of light to moderate populations of first and second instars in Integrated Pest Management conditions. Repeat treatments at four to five day intervals. The use of additional ovicidal or larvicidal insecticide will aid in control.

<sup>1</sup>Use the higher rates on advanced larval stages or under high density larval populations.

<sup>2</sup>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.

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.

**PRODUCT CONTAINER LABEL**

**DIRECTIONS FOR USE FOR NON-AGRICULTURAL APPLICATIONS**

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 agency responsible for pesticide regulation.

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 interior plantscapes, 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 48 SI contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. FORAY 48 SI 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. FORAY 48 SI may be used for both ground and aerial application. Shake or stir the product before use. Add some water to the tank mix, pour the required amount of FORAY 48 SI into the tank and then add the remaining amount of water to obtain the proper mix ratio. Agitate as necessary to maintain the suspension. Use the diluted mix within 72 hours.

**Ground Application**

Use an adequate amount of tank mix to obtain thorough coverage without excessive run off. Use the indicated per acre dosages of FORAY 48 SI in up to the following amounts of water:

High volume hydraulic sprayers	100 gallons
Mist blowers	10 gallons

**Aerial Application**

FORAY 48 SI may be applied aerially, either alone or diluted with water at the dosages shown in the application rates table. Spray volumes of 32-128 ounces per acre give optimum coverage. Best results are expected when FORAY 48 SI is applied to dry foliage.

For smaller spray volumes mix the proper number of teaspoons of FORAY 48 SI from the following chart to attain the desired rates:

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<u>If the rate is:</u>	<u>Add this amount per gallon of mix:</u>
0.5 pts./acre	1/2 teaspoon
1.0 pts./acre	1 teaspoon
1.5 pts./acre	1 1/2 teaspoons
2.0 pts./acre	2 teaspoons
3.0 pts./acre	3 teaspoons
4.0 pts./acre	4 teaspoons
5.5 pts./acre	5 1/2 teaspoons

**PRODUCT CONTAINER LABEL**

Crop	Pests	Rate <sup>(1)</sup> (oz./acre)	Dosage <sup>(1)</sup> (BIU/acre)
<p><b>Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees</b></p> <p>Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Ornamental Fruit, Nut &amp; Citrus Trees<sup>(2)</sup></p>	<p>Gypsy Moth &amp; Asian Gypsy Moth Elm Spanworm</p> <p>Spruce Budworm Browntail Moth Douglas fir tussock moth Coneworm Buck Moth</p> <p>Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern &amp; Western Hemlock looper Orangestriped Oakworm Satin Moth</p> <p>Redhumped Caterpillars Spring &amp; Fall Cankerworm California Oakworm Fall Webworm</p>	<p>21 - 107</p> <p>21 - 80</p> <p>16 - 43</p> <p>11 - 21</p>	<p>8 - 40</p> <p>8 - 30</p> <p>6 - 16</p> <p>4 - 8</p>
<p><b>Home Garden Use</b></p>	<p>FORAY 48 SI may be used for any labeled pest and crop using the rates and mixing instructions in the Directions for Use for Non-Agricultural Applications section and the additional information specified in GENERAL NON-AGRICULTURAL USE INSTRUCTIONS section</p>		

**Special Instructions**

<sup>1</sup>Use the higher rates on advanced larval stages or under high density larval populations.

<sup>2</sup>In treating Gypsy Moth and Asian Gypsy Moth infested trees and shrubs in urban, rural, and semi-rural areas, exposure on non-target vegetation including, but not limited to, native and ornamental species and food or feed crops is permitted.

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### **STORAGE AND DISPOSAL**

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

**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:** Pesticide waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility in accordance with federal and local regulations.

**Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

### **HOME GARDEN USE DISPOSAL INSTRUCTIONS**

If empty: Do not re-use this container. Place in trash or offer for recycling if available.

### **NOTICE OF WARRANTY**

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.

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**FORAY® 48 SI**  
**BIOLOGICAL INSECTICIDE**  
**FLOWABLE CONCENTRATE**  
**Sub-label I**

**For aerial application only**

Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Ornamental Fruit, Nut & Citrus  
Trees

26/43

**FORAY® 48 SI  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE**

 **For Organic Production**

**Active Ingredient:**

<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> , strain ABTS-351 fermentation solids, spores and insecticidal toxins.....	12.65 %
Other Ingredient.....	87.35 %
Total.....	100.00 %

Potency: 48 billion Cabbage Looper Units (CLU/GAL) of product.

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

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

Valent BioSciences Corporation  
870 Technology Way, Suite 100  
Libertyville, IL 60048  
EPA Registration No.  
EPA Est. No. 33762-1A-1

<b>FIRST AID</b>	
<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 - 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
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.	

**PRECAUTIONARY STATEMENTS  
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.

**Personal Protective Equipment**

Applicators and other handlers must wear:

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

**Agricultural Use Requirements:**

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.

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.

**User Safety Recommendations**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- 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 cleaning equipment or disposing of equipment washwaters.

This product must not be applied aerially within ¼ mile of any habitats of endangered species or threatened lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

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## 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 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. 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 Booklet attached to this container for further directions.

## DIRECTIONS FOR USE BOOKLET

Apply this product only through aerial application.

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

- Coveralls
- Waterproof gloves
- Shoes plus socks

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### 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.

Keep unprotected persons out of the treated areas until sprays have dried.

### APPLICATION

FORAY 48 SI may be only applied by aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. 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.

### HANDLING & MIXING

Foray may be applied undiluted, but the operator must ensure that the bulk quantity is well agitated and homogenous.

When FORAY 48 SI 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 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 ¾ of the water required for dilution. Begin agitation and pump FORAY 48 SI 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. The spray adjuvant is to be added to the tank after the Foray has been 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. You may use your closed loop system to siphon the required quantity of adjuvant or you may 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.

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

## SPRAY VOLUMES

**Aerial Application:** Use appropriate amount of FORAY 48 SI 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. 5-10 gallons per acre is the normal minimum; in the eastern regions a minimum of 2-3 gallons is normally used. The minimum amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

## GENERAL AGRICULTURAL USE INSTRUCTIONS

FORAY 48 SI is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. FORAY 48 SI 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 48 SI cease feeding within a few hours and die within 2-5 days.

FORAY 48 SI 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 48 SI 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, greater control can be achieved by adding a contact insecticide.

Thorough coverage is essential for optimum performance.

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Crop	Pests	Rate <sup>(1)</sup> (oz./acre)	Dosage <sup>(1)</sup> (BIU/acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Ornamental Fruit, Nut & Citrus Trees <sup>(2)</sup>	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	21 - 107	8 - 40
	Spruce Budworm Browntail Moth Douglas fir tussock moth Coneworm Buck moth	21 - 80	8 - 30
	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock looper Orangestriped Oakworm Satin Moth	16 - 43	6 - 16
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	11 - 21	4 - 8

<sup>1</sup>Use the higher rates on advanced larval stages or under high density larval populations.

<sup>2</sup>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.

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.

**DIRECTIONS FOR USE FOR NON-AGRICULTURAL APPLICATIONS**

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 agency responsible for pesticide regulation.

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 48 SI contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. FORAY 48 SI 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. FORAY 48 SI is to be used for aerial application.

FORAY 48 SI is used 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 ¾ of the water required for dilution. Begin agitation and pump FORAY 48 SI 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.



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**Aerial Application**

FORAY 48 SI is to be applied aerially, either alone or diluted with water at the dosages shown in the application rates table. Spray volumes of 32-128 ounces per acre give optimum coverage. Best results are expected when FORAY 48 SI is applied to dry foliage.

For smaller spray volumes mix the proper number of teaspoons of FORAY 48 SI from the following chart to attain the desired rates:

<u>If the rate is:</u>	<u>Add this amount per gallon of mix:</u>
0.5 pts./acre	1/2 teaspoon
1.0 pts./acre	1 teaspoon
1.5 pts./acre	1 1/2 teaspoons
2.0 pts./acre	2 teaspoons
3.0 pts./acre	3 teaspoons
4.0 pts./acre	4 teaspoons

**NOTICE OF WARRANTY**

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.

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**FORAY® HG  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE  
Sub-label II**

**For Urban, Home and Garden Use**

**FORAY® HG  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE**

 **For Organic Production**

**Active Ingredient:**

<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> , strain ABTS-351 fermentation solids, spores and insecticidal toxins.....	12.65 %
Other Ingredient.....	87.35 %
Total.....	100.00 %

Potency: 48 billion Cabbage Looper Units (CLU/GAL) of product.

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

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

Valent BioSciences Corporation  
870 Technology Way, Suite 100  
Libertyville, IL 60048  
EPA Registration No.  
EPA Est. No. 33762-IA-1

<b>FIRST AID</b>	
<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 - 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
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.	

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**PRECAUTIONARY STATEMENTS  
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.

**Personal Protective Equipment**

Applicators and other handlers must wear:

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

**Non-agricultural Use Requirements:**

As a general precaution, when exposed to potentially high concentrations of living microbial products such as this, wear a dust particle mask when mixing or applying this product.

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.

**User Safety Recommendations**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- 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 cleaning equipment or disposing of equipment washwaters.*

This product must not be applied aerially within ¼ mile of any habitats of endangered species or threatened lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

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## 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 agency responsible for pesticide regulation.

### 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.

Exposure of unprotected persons can be mitigated by directed spraying. Spray should be allowed to dry undisturbed.

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 interior plantscapes, 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 48 SI contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. FORAY 48 SI 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. Before use, shake or stir the product. Add some water to the tank mix, pour the required amount of FORAY 48 SI into the tank and then add the remaining amount of water to obtain the proper mix ratio. Agitate as necessary to maintain the suspension. Use the diluted mix within 72 hours.

#### Ground Application

Use an adequate amount of tank mix to obtain thorough coverage without excessive run off. Use the indicated per acre dosages of FORAY 48 SI in up to the following amounts of water:

High volume hydraulic sprayers	100 gallons
Mist blowers	10 gallons

### APPLICATION

FORAY 48 SI may be applied by ground, undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. 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.

### MIXING

Shake or stir FORAY 48 SI before use. If dilution is desired fill spray or mixing tank with half of the desired water. Begin agitation and pour FORAY 48 SI into water while maintaining continuous agitation. Add other spray material (if any) and balance of water. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

To improve weather-fastness of the spray deposits for hard to wet crops, such as cole crops, use of a spreader-sticker approved for use on growing crops. Combinations with commonly used spray tank adjuvants are generally not deleterious to FORAY 48 SI, if the mix is used promptly. Before mixing in the spray tank, the testing of physical compatibility by mixing all components in a small container in proportionate quantities will identify possible problems. Checking with an adjuvant supplier for advice on spray adjuvants that are compatible with biological pesticides such as Foray, will help avoid incompatibilities.

### SPRAY VOLUMES

**Ground Application:** Use indicated amount of FORAY 48 SI in ground equipment with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

### GENERAL AGRICULTURAL USE INSTRUCTIONS

FORAY 48 SI is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. FORAY 48 SI 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 48 SI cease feeding within a few hours and die within 2-5 days.

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FORAY 48 SI may be applied up to and on the day of harvest.

For maximum effectiveness follow the instructions listed below:

Monitor to detect early infestations.

Apply FORAY 48 SI 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, a contact insecticide can enhance control.

Thorough coverage is essential for optimum performance. Ground applicators equipped with directed drop nozzles can improve coverage.

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Crop	Pests	Rate <sup>(1)</sup> (oz./1000 ft <sup>2</sup> )
Forest and Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Ornamental Fruit, Nut & Citrus Trees <sup>(2)</sup>	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	0.5 - 2.5
	Spruce Budworm Browntail Moth Douglas fir tussock moth Coneworm Buck moth	0.5 - 1.9
	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock looper Orangestriped Oakworm Satin Moth	0.3 - 1.0
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	0.25 - 0.5



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Crop	Pests	Rate <sup>(1)</sup> (oz./1000 ft <sup>2</sup> )
Fruiting Vegetables such as: Eggplant, Peppers, Tomatoes	Imported Cabbageworm Diamondback Moth Green Cloverworm	0.3 - 0.5
	Hornworms	0.15 - 1.0
	Tomato Fruitworm ( <i>Heliothis</i> ) Variegated Cutworm Saltmarsh Caterpillar Loopers	0.5 - 1.0
	Armyworms*	0.5 - 1.8
	European Corn Borer	1.0 - 1.3
Small Fruit and Berries such as: Blackberries, Blueberries, Currants, Raspberries, Strawberries, Cranberries	Gypsy Moth & Asian Gypsy Moth	0.5 - 1.0
	Blueberry Leafroller Loopers	
	Fruitree Leafroller Grape Berry Moth	
	Oblique Banded Leafroller Achema Sphinx Moth (Hornworm)	
	Armyworms*	0.5 - 1.8
Brassica (cole) vegetables such as: Broccoli, Brussels sprouts, Cabbage, Cauliflower, Collards, Kohlrabi	Hornworms	0.15 - 1.0
	Webworms Loopers	0.5 - 1.0
	Cutworms Saltmarsh Caterpillar Omnivorous Leafroller	
	Diamondback Moth Imported Cabbageworm Green Cloverworm	0.3 - 1.0
	Armyworms*	0.5 - 1.8
	European Corn Borer	1.0 - 1.3

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Crop	Pests	Rate <sup>(1)</sup> (oz./1000 ft <sup>2</sup> )
Ornamentals Flowers, Bedding Plants	Armyworms*	0.5 - 1.8
	Azalea Moth	0.3 - 0.5
	Diamondback Moth	
	Ello Moth (Hornworm)	
	Io Moth	
	Loopers	
	Oleander Moth	
	Omnivorous Leafroller	
	Omnivorous Looper	
Tobacco Budworm		

Crop	Pests	Rate <sup>(1)</sup> (oz./1000 ft <sup>2</sup> )
Greenhouse and Outdoor Nursery Crops	Armyworms*	0.5 - 1.8
Such as: Flowers, Brassica, Fruiting Groups, Herbs, and Leafy vegetables	<i>Heliothis</i> spp Loopers	0.3 - 0.5

<sup>1</sup>Use the higher rates on advanced larval stages or under high density larval populations.

<sup>2</sup>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.

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.

For smaller spray volumes mix the proper number of teaspoons of FORAY 48 SI from the following chart to attain the desired rates:

<b>If the rate is:</b>	<b>Add this amount per gallon of mix:</b>
0.15 oz./1000 ft.	1/2 teaspoon
0.3 oz./1000 ft.	1 teaspoon
0.5 oz./1000 ft.	1 1/2 teaspoons
1.0 oz./1000 ft.	3 teaspoons
1.3 oz./1000 ft.	4 teaspoons
1.8 oz./1000 ft.	5 1/2 teaspoons

4/3/43

### **STORAGE AND DISPOSAL**

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

**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:** Pesticide waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility in accordance with federal and local regulations.

**Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

#### **Home Garden Use Disposal Instructions**

Securely wrap original container in several layers of newspaper and discard in trash.

### **NOTICE OF WARRANTY**

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.

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