

VAULT® WP BIOLOGICAL INSECTICIDE

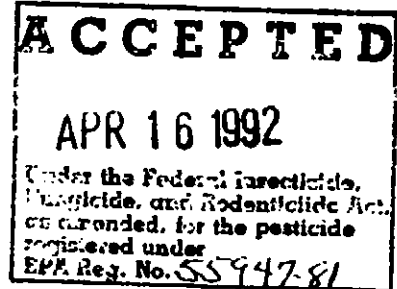
ACTIVE INGREDIENT:

Bacillus thuringiensis subspecies kurstaki,
 potency of 16,000 International Units
 per milligram* 3.2

INERT INGREDIENTS:..... 96.8
 100.0%

*Equivalent to 7.2 billion International Units per lb.
 (8.0 billion Spodoptera units per lb.)

VAULT® is a trademark of Sandoz Ltd.



CAUTION

KEEP OUT OF REACH OF CHILDREN

See Side Panel For Additional Precautionary Statements

STORAGE AND DISPOSAL

STORAGE: Store in a cool place. Activity may be impaired by storage at temperatures above 90° F. Do not contaminate water, food, or feed by storage or disposal.

DISPOSAL:

Pesticide - Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

Container - Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning.

SANDOZ AGRO, INC.
 Des Plaines, Illinois 60018

EPA Reg. No. 55947-81
 EPA Est. No. 55947-CA-2

VAULT WP BIOLOGICAL INSECTICIDE

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS CAUTION

May cause skin and eye irritation and skin sensitization reactions in certain individuals. Avoid contact with skin, eyes, or clothing. Wear protective clothing (overalls and gloves) while using or handling this product. Remove contaminated clothing and wash before reuse. Discontinue use if reaction occurs.

STATEMENT OF PRACTICAL TREATMENT

If on skin: Wash with plenty of water. Get medical attention if irritation persists.

If in eyes: Flush eyes with plenty of water. Get medical attention if irritation persists.

ENVIRONMENTAL HAZARDS

Do not contaminate water when disposing of equipment washwaters.

DIRECTIONS FOR USE

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

Unless specifically stated, do not apply this product through any type of irrigation system.

VAULT® WP is a biological insecticide specific for the control of lepidopterous larvae (see Recommended Application Rates section). VAULT® WP attacks the larval gut and must be ingested by the insect to be effective.

Since the active ingredient, Bacillus thuringiensis, is exempt from tolerance requirements, VAULT® WP may be applied up to and on the day of harvest.

GENERAL USE INSTRUCTIONS

For most consistent control, apply at first sign of newly hatched worms (first and second instar larvae). Instructions for specific crops are located in the Additional Information Section in the Use Directions.

Reapply as necessary under a pest management program that includes close scouting.

If rapid knockdown of heavy worm or non-lepidopterous populations is necessary, include an effective contact insecticide in combination with VAULT® WP.

For heavy worm infestations use the higher VAULT® WP rate. During situations of dense foliage and/or rapid growth, increasing water carrier volumes will provide better crop coverage and improve VAULT® WP performance.

Mixing:

Fill spray or mixing tank $\frac{1}{2}$ full. Turn on agitation and pour VAULT® WP into water while maintaining continuous agitation. Add other spray material (if any) and add balance of water. Agitate as necessary to maintain suspension. Do not allow diluted sprays to remain in the tank for more than 48 hours. VAULT® WP is formulated to provide desirable coverage and adherence to leaf surfaces. Additional adjuvants, spreaders or stickers may be added to improve product performance, especially under heavy dew or rainy conditions. Combinations with commonly used insecticides, fungicides or other spray tank adjuvants are generally not deleterious to VAULT® WP if the mix is used promptly. Before mixing in the spray tank, it is advisable to test physical compatibility by mixing all components in a small container in proportionate quantities.

GROUND APPLICATION

Unless otherwise stated, use recommended amount of VAULT® WP in a minimum of 20 gallons of water per acre depending on type of crop and requirements of state regulations.

AERIAL APPLICATION

Use recommended amount of VAULT® WP in at least 3 gallons of water per acre. Applications at higher water volumes have demonstrated improved control of targeted pests. Apply early morning or evening when air is calm.

RECOMMENDED APPLICATION RATES

VEGETABLE CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Artichokes	Artichoke Plume Moth	1-2½	Apply in a minimum of 100 gallons of water per acre with a spray interval of 10 days or less. Apply 1 lb./acre in combination with ASANA XL, AMBUSH or SUPRACIDE serially to aid in resistance management of the artichoke plume moth. Use and follow all label directions of the tank mix partner regarding application timing, gallonage and schedules.
Artichokes			
Asparagus	Armyworm*	1-3	Repeat as necessary to maintain control
Beans (Green, Lima, Mung)			
Broccoli	Diamondback Moth	1-2½	*Use to suppress light populations of small (first to second instar) armyworms.
Brussel Sprouts	Green Cloverworm	¼-1	
Cabbage	Hornworm	¼-1	
Cardoon			
Carrots	Imported Cabbageworm	¼-1	
Cauliflower			
Celeriac	Looper	¼-2½	
Celery			
Chick Peas			
Chinese Broccoli			
Chinese Cabbage	Salt Marsh Caterpillar	1-2	
Collards			
Cucumbers			
Dry Bulb Onions			
Eggplants	European Corn Borer	2-3	Also see Bioigation
Garlic			
Green Onions			
Greens (Dandelion, Turnip, Mustard, Beet, China)	Tomato pinworm	1½-2½	
Herbs (Basil, Cilantro, Dill, Oregano, Thyme, etc.)			
Horseradish			
Kale			
Kohl Rabi			
Leeks			
Lettuce (Endive, Romaine, Head Lettuce, Escarole Butter Crunch, Leaf, etc.)			

RECOMMENDED APPLICATION RATES

VEGETABLE CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Melons (Cantaloupe, Crenshaw, Honeydew, Muskmelon, Watermelon, etc.)			
Okra			
Onions			
Parsley			
Parsnips			
Peas			
Peppers			
Potatoes			
Pumpkins			
Radishes			
Rappini			
Rutabaga			
Salsify			
Spinach			
Squash (Summer and Winter)			
Sweet Corn			
Sweet Potatoes			
Swiss Chard			
Table Beets			
Tomatoes			
Turnip Root			
Watercress			
Yams			

RECOMMENDED APPLICATION RATES

FRUIT, NUT, & VINE CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Apples and Pears	Fruittree	1-2	Apply when newly hatched larvae appear and before leaves are rolled. Continue applying as a part of the normal cover spray program until pest is adequately controlled.
	Leafroller		
	Gypsy Moth	1-2	
	Redbanded Leafroller	1-2	
	Tufted Apple Budmoth	1-2	
	Variegated Leafroller	1-2	
	Omnivorous Leafroller	1-2½	
	Tent Caterpillar	1-2	
	Pandemis Leafroller	1-2	
	Peach Twigborer	2-6	
	Oriental Fruitmoth	2-6	
	Navel Orangeworm	2-6	
Codling Moth	2-8		
Avocados	Looper	2-2½	Apply as necessary to maintain control.
	Orange Tortrix	1-2	
	Omnivorous Leafroller	1-2	Begin treatment as soon as possible after hatching and before larvae are protected by leaf folds.
	Amorbia	2	
Bananas	Banana Skipper	1-2	Hawaii only. Use calibrated ground equipment with adequate water to apply to point of runoff.
Citrus	Citrus Cutworm	1-3	Use 50-600 gallons of water per acre when using ground equipment and 10 gallons of water minimum per acre by air.
	Fruittree Leafroller	1-2	
	Orangedog	¼-1	
	Amorbia	2-3	
Blueberries Caneberries Currants Kiwi	Blueberry Leafroller	1-2	Apply by ground equipment only. Begin treatment as soon as possible after hatching. For leafrollers, apply before larvae are protected by leaf folds.
	Cherry Fruitworm	¼-1	
	Fruittree Leafroller	1-2	
	Gypsy Moth	1-2	
	Green Fruitworm	¼-1	
	Looper	1-2	
	Orange Tortrix	1-2	
	Omnivorous Leafroller	1-2	
	Blueberry Spanworm	1-2	

RECOMMENDED APPLICATION RATES

FRUIT, NUT, & VINE CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS		
Grapes	Grape Leafroller	1-2½	Apply by ground equipment in up to 200 gallons total spray per acre to obtain thorough coverage of leaf surfaces. Start treating as soon as possible after hatching and before larvae are protected by leaf folds.		
	Grapeleaf Skeletonizer	1-2½			
	Omnivorous Leafroller	1-2½			
	Orange Tortrix	1-2½			
	Saltmarsh Caterpillar	1-2½			
	Almonds	Fall Webworm		1-2	For leafrollers, start treating as soon as possible after hatching and before larvae are protected by leaf folds. Apply when caterpillars are actively feeding (Second to fourth instar). For single applications, in pecans, for pecan nut casebearer, use a minimum of 1.5 lb/acre. A split application of 1.0 lb./acre may provide better flexibility and improved targeting of egg hatches. Make first application when majority of eggs are in white or pink stage. Make the second application within 7-10 days.
	Apricots	Filbert Webworm		1-2	
Cherries	Omnivorous Leafroller	1-2			
Filberts	Citrus Cutworm	1-2½			
Nectarines	Redhumped Caterpillar	1-2			
Peaches	Tent Caterpillar	1-2			
Pecans	Roughskinned Cutworm	½-1			
Persimmons	Pecan Nut Casebearer	1-2½			
Plums	Peach Twig-borer	2-6			
Pomegranate	Oriental Fruitmoth	2-6			
Prunes	Naval Orangeworm	2-6			
Walnuts	Codling Moth	2-8			
Melons (Also see Vegetables)	Rindworm Complex	1-1½	Apply at first sign of hatch before larvae enter fruit. Repeat as necessary to maintain control.		

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RECOMMENDED APPLICATION RATES

FRUIT, NUT, & VINE CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Strawberries	Armyworm* Gypsy Moth Looper Roughskinned Cutworm	1-3 1-2 1/4-1 1-2	<p>Apply as necessary to maintain control. Use 20 gallons of water minimum per acre when using ground equipment and 5 gallons water minimum per acre by aircraft.</p> <p>In a tankmix with contact insecticides, rates as low as 1 lb. of VAULT® WP may be used for the control of armyworm.</p> <p>*Use to suppress light populations of small (first to second instar) armyworms.</p>

RECOMMENDED APPLICATION RATES

FIELD CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Alfalfa (Hay and Seed)	Alfalfa Caterpillar	½-1	<p>Under conditions of rapid plant growth and rapidly increasing armyworm populations (10 worms or greater per 180° sweep) use the highest rate. Against heterogenous worm populations, where 4th and 5th instars are present, and continuous egg laying, applications may provide variable control. Under these conditions, the addition of a contact insecticide in combination with VAULT® WP is recommended.</p> <p>The addition of a spreader sticker to VAULT® WP may provide improved performance</p> <p>*Use to suppress light populations of small (1st to 2nd instar) armyworms.</p>
Sudan Grass	Armyworm*	1-3	
Hay Crops	Looper	½-2	
& Other Forage Crops			
Small Grains	Armyworm*	2-3	<p>Apply as necessary to maintain control.</p> <p>*Use to suppress light populations of small (first to second instar) armyworms.</p>
Hops	Looper	½-2	<p>Apply as necessary to maintain control.</p> <p>Begin treatment as soon as possible after hatching and before larvae are protected by leaf folds.</p>
	Omnivorous	1-2	
	Leaf-tier		
	Spotted Cutworm	1-2	
	Oblique Banded Leafroller	1-2	

RECOMMENDED APPLICATION RATES

FIELD CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Canola Evening Primrose	Armyworm*	1-3	Apply as necessary to maintain control. *Use to suppress light populations of small (first to second instar) armyworms.
	Diamondback Moth	1-2½	
	Imported Cabbageworm	½-1	
	Looper	½-2	
	Hornworms	¼-½	
Field Corn Pop Corn Seed Corn	Armyworm*	1-3	Make initial application when economically damaging populations exist. Repeat as necessary to maintain control. Applications must be made to early instars prior to entering the ear or plant. Aids in control. Also see Biogation.
	Southwestern Corn Borer	2-3	
	European Corn Borer	2-3	
			*Use to suppress light populations of small (first to second instar) armyworms.
Jojoba	Looper (<i>Anacamptodes</i> spp.)	1-2	Apply in a minimum of 50 gallons of water per acre by ground equipment or a minimum of 10 gallons of water by aerial equipment. Thorough coverage of foliage is essential and dictates the minimum spray volumes necessary.

RECOMMENDED APPLICATION RATES

FIELD CROPS

CROP	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Dry Beans	Armyworm*	1-3	Apply as necessary to maintain control.
Peas	Green	1-2 ^{1/2}	
Lentils	Cloverworm		
Mint			
Peanuts	Looper	1-2	
Rice	Salt Marsh	1-2	
Safflower	Caterpillar		
Soybeans	Velvetbean	1-2 †	
Sugar Beets	Caterpillar		
Sunflower	<u>Helicoverpa spp.</u> (<u>Heliothis spp.</u>) †	2-2 ^{1/2}	
Sorghum †	Cutworm	1-3	*Use to suppress light populations of small (first to second instar) armyworms.
Tobacco	Looper	1-2	Apply as necessary to maintain control.
	Tobacco	1/4-1	
	Hornworm		
	Tobacco Budworm	1-2 ^{1/2}	

RECOMMENDED APPLICATION RATES

COTTON - Except Arizona and California

TIMING	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Early	Bollworm Tobacco Budworm	4-2½	<p>For early season management of bollworm and budworm species. Initiate applications when 50% of plants are at pinhead square cotton stage, independent of bollworm and budworm egg and larval counts, or at first egg lay, whichever occurs earlier. Continue applications on 5 day spray interval up to synthetic pyrethroid spray window.</p> <p>For added worm control, tankmixing of VAULT® WP with a labeled ovicide, such as, methomyl (0.125 lb. a.i./acre), profenofos (0.25 lb. a.i./acre), or thiodicarb (0.125-0.25 lb. a.i./acre) is recommended. Read and follow all precautions and restrictions on tankmix product labels.</p>

RECOMMENDED APPLICATION RATES

COTTON (CALIFORNIA/ARIZONA)

TIMING	INSECT	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Early and Mid-Season	Armyworm*	1-3	<p>Repeat as necessary throughout season to maintain control.</p> <p>If egg laying frequency indicates future moderate to heavy worm populations, time application spray to coincide with the second instar larvae. During periods of high temperatures, worms will progress to the third* instar* very rapidly and early application timing is necessary for control.</p> <p>To be effective, VAULT® WP spray must be deposited at the larval feeding site. When plant cover is dense and worms are feeding in the lower 2/3 portion of the plant, aerial application of VAULT® WP may not provide adequate control.</p> <p>*Use to suppress light populations of small (first to second instar) armyworms.</p>
	Cotton Leaf Perforator	1-2	
	Cotton Leafworm	1-2	
	Looper	1-2½	
	Saltmarsh Caterpillar	1-2	
	Bollworm	1-3	
Tobacco Budworm	1-3	<p>For the suppression of light to moderate infestations, apply at first sign of egg laying or newly hatched worms (first instar larvae).</p>	

RECOMMENDED APPLICATION RATES

SHADE TREES, ORNAMENTALS (Including Roses)

PESTS	RATE LBS./ACRE	ADDITIONAL INSTRUCTIONS
Spring and Fall Cankerworm	$\frac{1}{2}$ -1	Apply when leaf expansion reaches 40% to 50% as infestation warrants. If eggs hatch over a long period of time, or if reinfestation occurs, spray about 14 days after first applications.
Elm Spanworm	$\frac{1}{2}$ -1	
Tent Caterpillar	$\frac{1}{2}$ -1	
Gypsy Moth	$\frac{1}{2}$ -1	
Spruce Budworm	$\frac{1}{2}$ -1	
Jackpine Budworm	$\frac{1}{2}$ -1	Apply after eggs have hatched and early instar larvae are feeding on exposed foliage.
Douglas Fir Tussock Moth	$\frac{1}{2}$ -1	
Bagworm	$\frac{1}{2}$ -1	
California Oak Moth	$\frac{1}{2}$ -1	
Western Tussock Moth	$\frac{1}{2}$ -1	
Fruittree Leafroller	$\frac{1}{2}$ -1	
Mimosa Webworm	$\frac{1}{2}$ -1	
Redhumped Caterpillar	$\frac{1}{2}$ -1	
Fall Webworm	$\frac{1}{2}$ - $\frac{1}{2}$	
Armyworm*	2-2 $\frac{1}{2}$	
Omnivorous Leafroller	1-2	*Use to suppress light populations of small (first to second instar) armyworms.

TURF AND GRASS SEED PRODUCTION

Tropical Sodwebworm	2	Repeat as necessary throughout season to maintain control.
Armyworm*	2	
Sodwebworm	2	
		*Use to suppress light populations of small (first to second instar) armyworms.

BIOGATION - Center Pivot Irrigation Application for European and Southwestern Corn Borer in Field Corn (Not For Use in California)

APPLICATION INSTRUCTIONS

Rate - For control of European Corn Borer and suppression of Southwestern Corn Borer using center-pivot irrigation equipment, apply a mixture of 2 to 3 lbs. of VAULT® WP per acre plus a registered sticker.

Sticker and VAULT® WP Mixture - VAULT® WP should be added to the tank first, then the recommended sticker. (See instructions below).

For best performance, make application in 0.5 inch/acre or less.

Filter size should allow for smooth flow of VAULT® WP from the tank to injector pump (18-20 mesh).

ATTENTION

INSTRUCTIONS FOR DILUTED APPLICATION WITH STICKER

1. Pre-clean and flush nurse tank, lines, screen canister and pump with insectigation oil until they are water-free.
2. Use a 20 mesh screen or larger. A finer mesh screen may prevent the smooth flow of VAULT® WP from the nurse tank into the pump.
3. Calibrate with insectigation oil.
4. Begin agitation.
5. Pour VAULT® WP into tank and then the oil.
6. Maintain agitation during application.
 - If you stop injecting the VAULT® WP-oil mix due to rain, mechanical failure or etc., be sure to mix well and re-agitate uniformly before continuing application.
7. When you rinse the VAULT® WP container, do so with insectigation oil. Avoid water contamination for oil-diluted applications.
8. Fine-tune calibration.
9. When application is complete, thoroughly flush the injection system and sprinkler system with insectigation oil.

Check label for Federal Chemigation requirements. Follow State and Local requirements for chemigation.

APPLICATION EQUIPMENT CAUTIONS

The active ingredient in VAULT® WP will settle in the tank and injections lines; adequate agitation must be provided before and during the injection period. Use only in systems that apply uniformly and have appropriate check valves. Do not apply when windspeed favors drift. When application is complete, thoroughly flush the injection system and sprinkler lines.

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination.

The pesticide injection pipeline should contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline should contain either a functional, normally closed solenoid-operated valve connected to the system interlock or a functional vacuum relief valve to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system should contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point when pesticide distribution is adversely affected.

(Indian Meal Moth, Almond Moth)

To control and prevent Indian Meal Moth and Almond Moth infestations of stored soybeans and grains, prepare a spray mixture which includes 1 gallon of water for every 3 oz. by weight of VAULT® WP. The spray mixture may be applied either by treating the top 4 inches of grain as it is being augered into storage (applying 0.6 pint of mixture per bushel in the grain stream), or by treating the surface of grain after it is in the bin. The Table below can be used as a guide in determining the total amount of VAULT® WP needed according to the bin diameter or the number of bushels to be treated.

Bin Diameter (ft)	Surface Area (sq. ft.)	Bushels (to 4 in. depth)	VAULT® WP Rate (by weight)	
			Grams	Oz.
8	50	13	42	1.50
12	113	30	100	3.50
16	201	53	170	6.00
20	314	84	240	8.50
24	452	120	370	13.00
28	615	163	510	18.00
32	804	214	652	23.00

To insure thorough coverage when making applications to the grain surface after it is in the bin, apply spray mixture in three (3) applications. Mix the grain with a scoop or rake to a depth of four (4) inches after each application.

Stored grain may be treated anytime, but for best results, treat grain at the time it is placed into storage or shortly thereafter, or in the early spring prior to egg-laying. Full season control is normally experienced. Re-treat only if reinfestation occurs.

For the protection of bagged grain, apply spray mixture to entire grain mass, and mix thoroughly prior to bagging. VAULT® WP at 12 oz. by weight per 10 gallons of water will treat approximately 100 bushels.

Treated grain may be used at any time after treatment.

FLOWERS AND ORNAMENTALS

VAULT® WP may also be used for flowers and ornamentals outdoors and in the greenhouse at a rate of 1/3-1 lb. per 100 gallons of water for control of listed insects on this label.

GUIDE FOR SMALL SPRAY VOLUME MIXING

Rate Lbs./A	Conversion Rate* Teaspoons/Gallon
1/3	1
1	2
2	4

*Assumes Application to spray runoff.

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**LIMITATION OF WARRANTY
AND LIMITATION OF LIABILITY**

NOTICE: Read this Limitation of Warranty and Limitation of Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Sandoz or seller. All such risks shall be assumed by buyer or user.

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