

2024-1378  
2024-06-04

**BOOKLET**

**ORTHENE® 97% SOLUBLE GRANULE  
SYSTEMIC INSECTICIDE**

**GROUP**

**1B**

**INSECTICIDE**



**DANGER  
POISON**

**EYE AND SKIN IRRITANT  
READ LABEL BEFORE USING**

**KEEP OUT OF REACH OF CHILDREN**

**AGRICULTURAL  
NOT FOR INDOOR RESIDENTIAL USE**

**ACTIVE INGREDIENT:**

Proposed label on 2023-06-14

Acephate (O,S-dimethyl acetylphosphoramidothioate) .....97%

**REGISTRATION NO. 29499**

**PEST CONTROL PRODUCTS ACT**

**NET CONTENTS: 580 grams to 5.0 kg**

**For product information call: 1-800-4386071**

**UPL AgroSolutions Canada Inc.**

**PO Box 12219**

**Research Triangle Park, NC 27709**

**FOR CHEMICAL EMERGENCY: spill, leak, fire, exposure, or accident call CHEMTREC 1-800- 424-9300.**

**READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH LABEL CAUTIONS, WARNINGS AND DIRECTIONS.**

**KEEP PESTICIDE IN ORIGINAL CONTAINER. DO NOT PUT CONCENTRATE OR DILUTE INTO FOOD OR DRINK CONTAINERS.**

#### **PRECAUTIONS**

**KEEP OUT OF REACH OF CHILDREN AND UNAUTHORIZED PERSONNEL.**

Fatal or poisonous if swallowed.

May irritate eyes and skin. Do not breathe spray mist. Avoid eye or skin contact with spray mist. Do not contaminate lakes, streams or ponds. Avoid contamination of feed and foodstuffs. Do not apply under conditions involving possible drift to food, forage or other plantings that might be damaged or the crops thereof rendered unfit for sale, use or consumption. Store in cool, dry place. Protect from excessive heat.

DO NOT apply as a foliar application in residential areas. Residential areas are defined as any use site where bystanders including children could be exposed during or after application. This includes in and around homes, schools, public buildings or any other areas where the general public including children could be exposed.

Apply only when the potential for drift beyond the area to be treated is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment and sprayer settings.

#### **PERSONAL PROTECTIVE EQUIPMENT**

##### **Mechanically-Pressurized Handgun**

Wear a long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes during mixing, loading, application, clean-up and repair. In addition, a respirator with a NIOSH-approved organic-vapour-removing cartridge with a prefilter approved for pesticides OR a NIOSH -approved canister for pesticides, MUST be worn.

##### **All other Equipment**

Wear a long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes during mixing, loading, application, clean-up and repair. Gloves are not required during application within a closed

cab.

For handheld application when applying above waist height, including overhead, chemical resistant headgear must be worn. Chemical-resistant headgear includes Sou'Wester hat, chemical-resistant rain hat or large brimmed waterproof hat and hood with sufficient neck protection.

#### **ENVIRONMENTAL PRECAUTIONS**

Toxic to aquatic organisms. Observe buffer zones specified under DIRECTIONS FOR USE.

Toxic to birds and small wild mammals.

Toxic to bees. Bees may be exposed through direct treatment, spray drift, and residues on/in leaves, pollen and nectar in flowering crops and weeds. Minimize spray drift to reduce harmful

effects on bees in habitats close to the application site. Avoid applications when bees are foraging in the treatment area in ground cover containing blooming weeds. To further minimize exposure to pollinators, refer to the complete guidance "[Protecting Pollinators during Pesticide Spraying – Best Management Practices](http://www.canada.ca/pollinators)" on the Health Canada website ([www.canada.ca/pollinators](http://www.canada.ca/pollinators)). Follow crop specific directions for application timing.

Toxic to certain beneficial arthropods (which may include predatory and parasitic insects, spiders, and mites). Minimize spray drift to reduce harmful effects on beneficial arthropods in habitats next to the application site such as hedgerows and woodland.

For applications on crops that are highly attractive to pollinators (cranberry, and outdoor ornamentals excluding coniferous trees), or when using managed bees for pollination services:

**DO NOT** apply during the crop blooming period or during the 9-day period before the crop blooms.

For applications on all other crops:

Avoid application during the crop blooming period. If applications must be made during the crop blooming period, restrict applications to evening when most bees are not foraging.

To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay.

Avoid application when heavy rain is forecast. Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative filter strip between the treated area and the edge of the water body.

The use of this product may result in contamination of groundwater particularly in areas where soils are permeable (e.g., sandy soil) and/or the depth to the water table is shallow.

## **FIRST AID**

**IF SWALLOWED**, call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**IF IN EYES**, hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

**IF INHALED**, move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

**IF ON SKIN OR CLOTHING**, take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

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

## **TOXICOLOGICAL INFORMATION**

Acephate is an organophosphate that is a cholinesterase inhibitor. Typical symptoms of overexposure to cholinesterase inhibitors include headache, nausea, dizziness, sweating, salivation, runny nose and eyes. This may progress to muscle twitching, weakness, tremors, incoordination,

vomiting, abdominal cramps and diarrhea in more serious poisonings. A life-threatening poisoning is signified by loss of consciousness, incontinence, convulsions, and respiratory depression with a secondary cardiovascular component. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate degree of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as pralidoxime chloride, may be therapeutic if used early; however, use only in conjunction with atropine. In cases of severe acute poisoning, use antidotes immediately after establishing an open airway and respiration. With oral exposure, the decision of whether to induce vomiting or not should be made by an attending physician.

### DECONTAMINATION

NOTE: Hydrated limes, Hypochlorite oxidants, and other alkaline material should NOT be used in clean up procedures. Spills of **ORTHENE® 97% SOLUBLE GRANULE SYSTEMIC INSECTICIDE ("ORTHENE 97% SG")** should be scooped into disposable containers. If **ORTHENE 97% SG** is spilled, spread a heavy clay absorbent over spill. Shovel material into disposable container.

### STORAGE

To prevent contamination, store this product away from food or feed.

### DISPOSAL

1. Empty bag thoroughly into spray tank.
2. Make the empty bag unsuitable for further use.
3. Dispose of the bag in accordance with provincial requirements.

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

### NOTICE TO USER

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *PEST CONTROL PRODUCTS ACT* to use this product in a way that is inconsistent with the directions on the label.

### GENERAL DIRECTIONS FOR USE AND LIMITATIONS

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

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

**DO NOT** apply in greenhouses, except on ornamentals (including roses)

For outdoor uses, **DO NOT** apply with airblast or other mist-blower equipment.

**DO NOT** apply using aerial application equipment.

For greenhouse uses, **DO NOT** apply using handheld mistblowers/airblast or handheld fogging equipment.

To protect pollinators, follow the instructions regarding bees in the Environmental Precautions section.

**Field sprayer application:** **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE S572.1) fine classification. Boom height must be 60 cm or less above the crop or ground.

#### Buffer zones:

Spot treatments using hand-held equipment and soil drench or soil incorporation **DO NOT** require a buffer zone

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands).

Method of application	Crop	Buffer Zones (metres) Required for the Protection of:	
		Freshwater Habitat of Depths:	
		Less than 1 m	Greater than 1 m
Field sprayer	Tobacco	1	0

When tank mixes are permitted, consult the labels of the tankmix partners and observe the largest (most restrictive) spray buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASAE) category indicated on the labels for those tank mix partners.

DO NOT enter or allow worker entry into treated areas to perform postapplication activities during the intervals specified in the Restricted-Entry Intervals (REIs) and Pre-Harvest Intervals table below.

#### Supplements

This product can be tank mixed with Ohm or Wave as post emergent applications for only crops registered on both this product label and those listed on Ohm or Wave labels.

#### MAXIMUM APPLICATION RATES, MAXIMUM NUMBER OF APPLICATIONS PER YEAR AND MINIMUM RETREATMENT APPLICATION INTERVALS

Crop	Maximum Application Rate (grams product /ha)	Maximum Number of applications per Year	Minimum Retreatment Interval (days)
Bell Peppers	850	2	14
Brussel Sprouts	580	2	14
Cabbage	580	2	14
Cauliflower	580	2	14
Head Lettuce	580	2	14
Celery	580	2	14
Sweet Corn	580	2	14
Seed Corn	580	2	14

Ornamentals, trees and cut flowers (greenhouse and outdoors)	657	2	7
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**RESTRICTED-ENTRY INTERVALS (REIs) AND PRE-HARVEST INTERVALS (PHIs)**

<b>Crop</b>	<b>Postapplication Activity</b>	<b>REI and/or PHI</b>
Cauliflower, Brussels Sprouts, Cabbage	Harvesting*	28 days
	All other activities	12 hrs
Celery	Harvesting*	21 days
	All other activities	12 hrs
Head lettuce	Harvesting*	7 days
	All other activities	12 hrs
Bell Peppers	Harvesting*	7 days
	Hand set/hand line irrigation related activities involving foliar contact	2 days
	All other activities	12 hrs
Cranberries	Hand harvesting-raking	5 days
	Mechanical harvesting	12 hrs
	All other activities	12 hrs
Seed corn	Hand detasseling	13 days
	All other activities	12 hrs
Sweet corn	Harvesting*	21 days
	All other activities	12 hrs
Saskatoon Berries	Harvesting*	11 months
	All other activities	12 hrs
Tobacco (seedlings)	All activities	12 hrs
Tobacco (mature plant)	Hand set/hand line irrigation related activities involving foliar contact	6 days
	Harvesting*	3 days
	All other activities	12 hrs
Tomato seedlings	All activities	12 hrs
Ornamentals, non-cut flowers (outdoors)	Hand set/hand line irrigation related activities involving foliar contact	11 days
	All other activities	12 hrs
Ornamentals grown for cut flowers (outdoors)	Hand harvesting, hand pruning (full foliage) disbudding	7 days
	All other activities (container moving, hand weeding, scouting, planting / transplanting, hand pruning (minimum foliage), pinching, plant support/staking, and hand set/hand line irrigation related activities involving foliar contact)	12 hrs
Trees (coniferous and deciduous) Foliar application	Hand set/hand line irrigation related activities involving foliar contact	7 days
	Harvesting (Christmas trees)	5 days
	All other activities	12 hrs
Ornamentals, non-cut flowers (greenhouse)	All activities	12 hrs
Ornamentals grown for cut flowers (greenhouse)	Hand harvesting, hand pruning (full foliage) disbudding	2 days
	All other activities (container moving, hand	12 hrs



Crop	Postapplication Activity	REI and/or PHI
	weeding, scouting, planting / transplanting, hand pruning (minimum foliage), pinching, plant support/staking)	

\*Harvesting REI/PHI includes all methods of harvesting (i.e., hand, mechanically-assisted and mechanical)

For non-crop areas, **DO NOT** enter or allow worker entry until sprays have dried

## DIRECTIONS FOR USE ON FIELD CROPS

Repeat application if re-infestation occurs with a maximum of 2 applications/year on each crop unless otherwise stated in the table. Minimum interval between applications is 14 days unless otherwise stated in the table.

Toxic to bees:

For cranberry: **DO NOT** apply during the crop blooming period or during the 9-day period before the crop blooms.

For all other crops: Avoid application during the crop blooming period. If applications must be made during the crop blooming period, restrict applications to evening when most bees are not foraging. When using managed bees for pollination services, **DO NOT** apply during the crop blooming period.

Mix thoroughly and spray entire plant covering both sides of foliage. Spray when insects are present or feeding injury is first noticed. Repeat if re-infestation occurs.

CROP	PESTS	RATE (product)	APPLICATION INSTRUCTIONS AND LIMITATIONS
Cabbage, Brussel Sprouts, Cauliflower	Cabbage looper, Imported cabbageworm, Diamondback moth larvae, Green peach aphid	580 g/ha	Apply in 225 to 1650 L of water using conventional ground application equipment. Do not feed trimmings to livestock or allow animals to graze on treated areas.
Head lettuce (crisp head type only)	Cabbage looper, Imported cabbageworm, Diamondback moth larvae, Green peach aphid	580 g/ha	Apply in 225 to 1650 L of water using conventional ground application equipment. Use the high rate only when heavy pest infestations are present. Do not feed trimmings to livestock or allow animals to graze on treated areas.
Celery	Green peach aphid, Tarnished plant bug	580 g/ha	Apply in 225 to 1650 L of water. Apply with ground equipment only. Apply when insects reach economic threshold levels.
Corn (Seed and Sweet)	European corn borer	580 g/ha	Apply in 220 to 1000 L of spray mix using conventional ground application equipment. Use the high rate only when heavy pest infestations are present. For European corn borer, apply when egg

CROP	PESTS	RATE (product)	APPLICATION INSTRUCTIONS AND LIMITATIONS
			<p>mass count indicates an economically damaging population.</p> <p>Do not feed corn fodder or forage from treated crop to livestock.</p>
Saskatoon berries (non-bearing)	Woolly elm aphid	6.57g/L of water	<p><b>Soil Injection Application:</b> Provides control of woolly elm aphid in non-bearing Saskatoon berry plants. Can be used in first three years of establishment. Apply once per year in mid July or early August.</p> <p>Mix 6.57g product/10 L of water (equivalent to 6.37 g a.i./10 L of water). Apply 2 L of this solution per plant. The solution is injected with a probe; 3 to 5 injections for each plant to a depth of 12 cm. The injection should be made 15 cm from the stem of the plant.</p>
Saskatoon berries (bearing)	Woolly elm aphid Woolly apple aphid	6.57g/L of water	<p><b>Soil Injection Application:</b> Provides control of woolly elm aphid and woolly apple aphid in bearing Saskatoon berry plants.</p> <p>Apply once per year in mid July or early August after harvest is complete.</p> <p>Mix 6.57 g product/10 L of water (equivalent to 6.37 g a.i./10 L of water). Apply 2 L of this solution per plant. The solution is injected with a probe; 3 to 5 injections for each plant to a depth of 12 cm. The injection should be made 15 cm from the stem of the plant. A rate of 1.3 g product per plant and a planting density of 2000 plants per hectare is a rate of 2.6 kg/ha.</p>
Sweet Pepper (Bell type)	Green peach aphid, Pepper maggot	580 g/ha	Apply in 225 to 1650 L of water with conventional ground application equipment. Begin applications when eggs or insects appear.
For outdoor use only	European corn borer	850 g/ha	
Tobacco (Flue cured)  For outdoor use only	Tomato hornworm, Flea beetle, Green peach aphid	580-850 g/ha	Apply in at least 100 L of water using conventional ground application equipment. Use 850 g product/ha for control of established populations.

CROP	PESTS	RATE (product)	APPLICATION INSTRUCTIONS AND LIMITATIONS
	Darksided cutworm (pre-plant)	580 g/ha (cover crop treatment)  1160 g/ha (soil treatment)	Treat either the rye or wheat cover crop or the soil using at least 200 L of water per hectare. The application is most effective when applied late afternoon or early evening when temperatures are 13°C or higher. Apply soon after the cutworms have hatched (mid to late April, 4 to 5 days before plowing).  Do not use the treated cover crop for animal feed or food.
	Darksided cutworm (post-plant)	1160 g/ha	Apply the single post-plant application in sufficient water to give good coverage of seedlings. Apply in the late afternoon or evening.
Tobacco For outdoor use only	Darksided cutworm, Potato flea beetle, Root maggot, Green peach aphid, Thrips	850-1315 g/ha	<b>Transplant water treatment:</b> Make one application per season at transplanting. Provides control for approximately 2 to 3 weeks after transplanting. Apply in a minimum of 1200 L of transplant water per hectare. Do not apply more than 1275 g a.i./ha as a transplant water application as some phytotoxicity may occur.
	Wireworm	850 g/ha	<b>Transplant water treatment:</b> Apply in 1200 L of transplant water per hectare. Make one application per season at transplanting.
Cranberry	Blackheaded fireworm	580 g/ha	Apply one prebloom application to control the first generation of blackheaded fireworm where field scouting indicates insect numbers warrant treatment. Apply in 225 to 1650 L of water per hectare using conventional ground equipment. A second application may be made post bloom if insect numbers indicate it is required.
Tomato For outdoor use only	Cutworms, Potato flea beetle, Root maggots, Wireworms, Aphids, Thrips, Colorado potato beetle	928 g/ha	<b>Transplant water application:</b> To provide control of listed pests for approximately 2 to 3 weeks after transplanting, apply in 2000 L of water per hectare. This rate is based on 14,000 plants per hectare.

## DIRECTIONS FOR USE ON ORNAMENTALS (Outdoor and Greenhouse) AND TREES

**ORTHENE 97% SG** effectively controls many insects that infest ornamentals (outdoors and greenhouse). **ORTHENE 97% SG** controls insects that are present and remains effective for an extended period of time because it is systematically absorbed by plants. Mix thoroughly and spray entire plant covering both sides of foliage. Spray when insects are present or feeding injury is first noticed. Repeat application if re-infestation occurs with a maximum of 2 applications/year on the crop. Minimum of 7 to 10 days between applications.

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

Toxic to bees: When used on outdoor ornamentals excluding coniferous trees (pine, fir, juniper, spruce, arborvitae, cedar, hemlock, cypress, yew, live Christmas trees), **DO NOT** apply during the crop blooming period or during the 9-day period before the crop blooms.

To protect pollinators, follow the instructions regarding bees in the Environmental Precautions section.

### Application Rate (product)

Hydraulic sprayer: 657 g / 1000 L

SITE	PESTS
Abelia, Forsythia, Fruitless Mulberry, Laurel, Magnolia	Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Alder	Fall webworm, Leafminer, Psyllids
Alyssum, Daisy	Flower thrips
Arborvitae	Aphids, Bagworm, Spider mites (except twospotted)
Ash	Aphids, Fall webworm, Gypsy moth, Lace bug, Sawflies (open feeders: blackheaded ash), Tent caterpillars (eastern and forest), Tussock moth
Aspen, Bloodleaf (Iresine), Dusty miller, Flowering almond, Flowering quince, Gazania,	Aphids

SITE	PESTS
Mock orange, Photinia, Pittosporum, Tulip	
Aster	Aphids, Armyworms (fall, beet and yellowstriped), Flower thrips, Leafminer
Azalea	Aphids, Greenhouse whitefly, Lace bug, Mealybugs, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites (except twospotted)
Barberry, Ligustrum, Mahonia	Aphids, Greenhouse whitefly
Birch	Aphids, Cankerworms (spring and fall), Fall webworm, Gypsy moth, Leafminer, Sawflies (open feeders: dusky birch), Tent caterpillars (eastern and forest), Tussock moth, Yellownecked caterpillar
Boston ivy	Potato leafhopper
Bottlebrush, Honeylocust	Spider mites (except twospotted)
Boxwood, Euonymous, Hibiscus, Nandina, Rose of Sharon	Aphids, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Calendula	Aphids, Armyworms (fall, beet and yellowstriped), Flower thrips, Potato leafhopper, Tobacco budworm
Camellia	Greenhouse whitefly, Mealybugs, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites (except twospotted)
Cedar	Bagworm, Gypsy moth

SITE	PESTS
Cockspur thorn	Cankerworms (spring and fall). APPLICATION MUST BE MADE POST-BLOOM.
Cotoneaster	Aphids, Lace bug, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Cypress	Bagworm, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites
Dahlia	Armyworms (fall, beet and yellowstriped), Potato leafhopper, Twospotted spider mite
Daylily	Flower thrips, Twospotted spider mite
Deutzia	Aphids, Leafminer
Elm (Chinese or Siberian)	Elm leaf beetle (larvae), Tussock moth, Armyworms (fall, beet and yellowstriped) on Chinese elm only, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium) on Chinese Elm only
Fir	Aphids, Tussock moth, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Fall webworm, Spider mites (except twospotted)
Flowering cherry	Obliquebanded leafroller APPLICATION MUST BE MADE POST-BLOOM. Tent caterpillars (eastern and forest) APPLICATION MUST BE MADE POST-BLOOM.
Flowering plum	Aphids  Tent caterpillars (eastern and forest) APPLICATION MUST BE MADE POST-BLOOM.
Geranium	Tobacco budworm, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Gladiolus	Flower thrips,

SITE	PESTS
	Gladiolus thrips
Hackberry	Psyllids, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Hawthorn	Aphids
Hemlock	Gypsy moth, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites (except twospotted)
Holly	Leafminer, Obliquebanded leafroller, Psyllids, Tussock moth, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites (except twospotted)
Hydrangea, Primrose	Aphids, Twospotted spider mite
Ivy	Aphids, Mealybugs
Juniper	Bagworm, Meadow spittlebug, Spider mites (except twospotted)
Lantana	Greenhouse whitefly
Larch	Sawflies (open feeders: redheaded pine)
Lilac	Aphids, Leafminer, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Linden	Aphids, Bagworm, Cankerworms (spring and fall) APPLICATION MUST BE MADE POST-BLOOM. Fall webworm, Tussock moth, Yellownecked caterpillarAPPLICATION MUST BE MADE POST-BLOOM.
Locust	Leafminer
Maple	Aphids, Bagworm,

SITE	PESTS
	Cankerworms (spring and fall), Gypsy moth, Potato leafhopper, Tent caterpillars (eastern and forest), Tussock moth, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Marigold	Flower thrips, Leafminer, Sunflower moth, Twospotted spider mite
Oak	Aphids, Fall webworm, Lace bug, Leafminer, Yellownecked caterpillar, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites (except twospotted)
Pachysandra, Phlox	Twospotted spider mite
Petunia	Armyworms (fall, beet and yellowstriped), Flower thrips, Tobacco budworm
Pine	Bagworm, Gypsy moth, Nantucket pine tip moth, Sawflies (open feeders: redheaded pine, European pine), Tussock moth, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites (except twospotted)
Poplar	Aphids, Fall webworm, Gypsy moth, Poplar tentmaker, Tent caterpillars (eastern and forest), Tussock moth
Pyracantha	Aphids, Lace bug, Yellownecked caterpillar, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Rhododendron	Lace bug



SITE	PESTS
Rose (field grown)	Aphids, Armyworms (fall, beet and yellowstriped), Flower thrips, Meadow spittlebug, Obliquebanded leafroller, Rose midge, Tussock moth, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium), Spider mites
Rose (greenhouse grown)	Aphids, Flower thrips, Omnivorous leafroller, Rose midge, Whitefly
Salvia	Aphids, Flower thrips, Greenhouse whitefly
Silver maple	Cankerworms (spring and fall)
Slippery elm	Casebearers
Snapdragon	Aphids, Armyworms (fall, beet and yellowstriped), Flower thrips, Tobacco budworm
Spirea	Aphids, Obliquebanded leafroller
Spruce	Gypsy moth, Leafminer, Sawflies (open feeders: redheaded pine, yellowheaded spruce), Tussock moth, Spider mites (except twospotted)
Staghorn sumac	Obliquebanded leafroller
Sumac	Psyllids
Sweetgum	Bagworm
Sycamore	Aphids, Bagworm, Casebearers, Fall webworm, Lace bug, Obliquebanded leafroller, APPLICATION MUST BE MADE POST-BLOOM. Tussock moth APPLICATION MUST BE MADE POST-BLOOM.
Shade trees,	Pear slug (pear sawfly larvae)

SITE	PESTS
Ornamentals, Shelterbeds (such as Cotoneaster, Willow, Mountain ash and Pincherry)	APPLICATION MUST BE MADE POST-BLOOM.
Viburnum	Aphids, Greenhouse whitefly, Twospotted spider mite
Wild cherry	Tussock moth APPLICATION MUST BE MADE POST-BLOOM.
Willow	Aphids, Bagworm, Willow leaf beetle (larvae), Fall webworm, Gypsy moth APPLICATION MUST BE MADE POST-BLOOM. Poplar tentmaker, Psyllids, Sawflies (open feeders: dusky birch), Tent caterpillars (eastern and forest), APPLICATION MUST BE MADE POST-BLOOM. Tussock moth APPLICATION MUST BE MADE POST-BLOOM. Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Wisteria	Aphids, Mealybugs, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Yew (taxus)	Mealybugs
Yucca	Flower thrips, Scale insects (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium)
Zinnia	Flower thrips, Greenhouse whitefly, Lace bug, Leafminer

**DIRECTIONS FOR USE ON CHRISTMAS TREES PLANTATIONS, FARM WOODLOTS, TREE NURSERIES, SHELTERBELTS, AND RIGHTS OF WAY.**

In farm woodlots, shelterbelts, and rights of way, acephate can ONLY be applied using hand-held application equipment for spot treatment.

Toxic to bees: When used on pollinator attractive trees DO NOT apply during the tree blooming/pollen shedding period, or the 9 days before the tree blooming/pollen shedding period. This restriction excludes coniferous trees: pine, fir, juniper, spruce, arborvitae, cedar, hemlock, cypress, yew, live Christmas trees.

Rate: 657 grams of product/1000 L

Minimum interval between applications: 21 days

PESTS	APPLICATION INSTRUCTIONS AND LIMITATIONS
<p>Aphid,  Armyworm (fall, beet and yellowstriped),  Bagworm,  Cankerworm (fall and spring), Casebearer,  Fall webworm,  Flower thrips,  Gladiolous thrips,  Greenhouse whitefly,  Gypsy moth,  Lace bug,  Leaf beetle larvae (elm and willow), Leafminer,  Meadow spittlebug,  Mealybug,  Nantucket pine tip moth,  Oak leafshredder,  Obliquebanded leafroller,  Psyllid,  Pear slug (pear sawfly larvae),  Poplar tentmaker,  Potato leafhopper,  Rose midge,  Scale insect (crawlers: cottony maple, hemlock, oystershell, cottony cushion, lecanium),  Sawflies (open feeders: dusky birch, blackheaded ash, redheaded pine, European pine, yellowheaded spruce sawfly),  Spider mites,  Sunflower moth,  Tent caterpillars (eastern and forest), Tobacco budworm,  Tussock moth,  Yellownecked caterpillar</p>	<p>Consult Canadian Forestry Service office or provincial forestry authority for information on timing of sprays and method of application.</p> <p>DO NOT apply to American elm, flowering crabapple, sugar maple, cottonwood, redbud and weigelia, as foliage injury may occur. Before treating rare or unusual varieties, it is advisable to test it on a few plants before spraying large numbers.</p> <p>Clean sprayer after use by flushing with water. Do not use household bleach or cleaning agent.</p>

## **DIRECTIONS FOR USE AS TREE INJECTION**

**FOR USE BY TRUNK INJECTION FOR CONTROL OF INSECT AND MITE PESTS OF ORNAMENTAL DECIDUOUS AND CONIFEROUS TREES, AS LISTED ON THIS LABEL (refer to the table under DIRECTIONS FOR USE ON TREES AND ORNAMENTALS above)**

**NOTICE TO USER: READ THE FOLLOWING BEFORE USING THIS PRODUCT FOR TRUNK INJECTION IN ORNAMENTAL DECIDUOUS AND CONIFEROUS TREES:**

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

### **TRUNK INJECTION IN ORNAMENTAL DECIDUOUS AND CONIFEROUS TREES**

**ORTHENE 97% SG** can be used to inject ornamental deciduous and coniferous trees in residential areas, rural lands, farms, business and office complexes, shopping complexes, multi-family residential complexes, golf courses, airports, cemeteries, parks, ravines, playgrounds, and athletic fields to control insect and mite pests, as listed in the table under DIRECTIONS FOR USE ON TREES above.

- ☐ Not for use on trees used to produce fruits, nuts, or syrup for consumption.
- ☐ Applications are not recommended for trees with a Diameter at Breast Height (DBH) of 7.5 cm or less.  
Maximum of one application per tree within 24 months.  
Entry to treated areas by bystanders is restricted until all insecticide is injected into the trees.

All mixing should be carried out by a certified applicator or under the supervision of a certified applicator. Personal protective equipment for mixing and loading should include eye protection, respirator, coveralls, neoprene apron, nitrile gloves and rubber boots. Personal protective equipment for injections should include eye protection, coveralls, nitrile gloves and rubber boots.

TOXIC to bees, birds and mammals. This product is systemic and is transported upwards through the tree. Bees, birds and mammals can be exposed to residues in floral pollen and/or nectar, fruits, seeds or sap resulting from tree injections. EXCEPT FOR CONIFEROUS TREES, APPLICATION MUST BE MADE POST-BLOOM. Applying post-bloom reduces risk to pollinators.

#### **Mix Rate:**

Pre-mix **ORTHENE 97% SG** at a ratio of 100 grams per 45 mL, or 221 grams per 100 mL, of water for use with the following injection application methods and rates.

Apply 0.3 mL for each 2.5 cm Diameter at Breast Height (DBH) of tree. Determine the diameter of tree being injected at breast height. Multiply diameter (cm) of tree x 0.3 mL to calculate the total amount of **ORTHENE 97% SG** required. Inject **ORTHENE 97% SG** as indicated below or with

BioForest Inc. EcoJect System, a refillable injection tool. Refer to EcoJect user manual and the

APPLICATION METHOD FOR TRUNK INJECTION IN ORNAMENTAL DECIDUOUS AND CONIFEROUS TREES, below, for instruction on injection hole drilling, how to determine the number of injection holes and how many refillable canisters should be used per tree.

Should a less viscous (more flow) mix be required for compatibility with the injection method (i.e. pipette), pre-mix **ORTHENE 97% SG** at a ratio of 83 grams per 50 mL of water and apply 0.4 mL for each 2.5 centimetres Diameter at Breast Height (DBH) of tree.

## **APPLICATION METHOD FOR TRUNK INJECTION IN ORNAMENTAL DECIDUOUS AND CONIFEROUS TREES**

### **Smaller Trees (pipette method):**

1. Pre-drill the tree with the number of holes required to accommodate the total amount of **ORTHENE 97% SG** to be applied. Use the countersink bit provided or drill to the depth indicated on the 5/32 bit. Each hole will hold 1 mL of product. Space the holes equally around the tree circumference. Holes should be drilled at a 45-degree angle toward the ground and placed towards the base of the tree, just above the root flare. Holes only need to be drilled to the depth of the countersink bit or the depth mark on the 5/32 bit. This will ensure sufficient depth into the sapwood and create a reservoir to a volume of 1 mL.
2. Pre-load the provided pipette with the total amount of **ORTHENE 97% SG** to be applied. If the amount of **ORTHENE 97% SG** to be applied exceeds the volume of the pipette, fill the pipette to its complete volume and subtract this from the amount of **ORTHENE 97% SG** to be applied. Fill the pipette with the remaining amount to be applied to continue the application. Repeat if necessary. If using a 1mL pipette, fill to the complete volume of the pipette for application to each hole.
3. Insert the pipette nozzle just into the reservoir opening (do not push the nozzle into the hole to occupy the reservoir volume) and depress the pipette pump. Each activation of the pipette pump applies to 1 mL of product into the reservoir.
4. Following each application of **ORTHENE 97% SG**, seal the reservoir hole with beeswax.

### **Smaller Trees (syringe method):**

1. Pre-drill the tree with the number of holes required to accommodate the total amount of **ORTHENE 97% SG** to be applied. Use the countersink bit provided or drill to the depth indicated on the 5/32 bit. Each hole will hold 1 mL of product. Space the holes equally around the tree circumference. Holes should be drilled at a 45-degree angle toward the ground and placed towards the base of the tree, just above the root flare. Holes only need to be drilled to the depth of the countersink bit or the depth mark on the 5/32 bit. This will ensure sufficient depth into the sapwood and create a reservoir to a volume of 1 mL.
2. Use a catheter tip to avoid punctures and injuries. Pre-load the syringe to capacity or with the total amount of **ORTHENE 97% SG** to be applied.
3. Insert the catheter tip of the syringe just into the reservoir opening (do not push the entire tip into the hole to occupy the reservoir volume) and depress the syringe plunger while noting the plunger movement along the milliliter graduations. Depress the plunger only to a distance

equivalent to 1 mL graduation as indicated on the syringe barrel. This will apply 1 mL of product into the reservoir.

4. Repeat step 3 for each hole drilled in the tree and seal the reservoir hole with beeswax following each application.

#### **Larger Trees (EcoJect System):**

1. Pre-drill the tree with the number of holes required to accommodate the total amount of **ORTHENE 97% SG** to be applied. Each hole will receive 4 mL of product; therefore, dividing the total amount of **ORTHENE 97% SG** to be applied by 4 will result in the number of holes required. Use the 5/32" drill bit provided and drill only to the depth indicated on the bit. Space the holes equally around the tree circumference. Holes may be drilled straight into the tree (90 degrees) and placed towards the base of the tree, just above the root flare.
2. Force the EcoJect nozzle into the hole (tap with a hammer, if necessary) in order to secure a seal between the EcoJect nozzle and the tree. Secure the filled EcoJect canister to the nozzle. This will activate the pump mechanism in the canister and cause 4 mL of **ORTHENE 97% SG** to enter the hole.
3. Remove the EcoJect nozzle and canister together from the hole and seal the hole with beeswax.
4. Repeat steps 2 and 3 for each hole in the tree.

#### **RESISTANCE MANAGEMENT RECOMMENDATIONS**

For resistance management, please note that **ORTHENE 97% SG** contains a Group 1B insecticide. Any insect population may contain individuals naturally resistant to **ORTHENE 97% SG** and other Group 1B insecticides. The resistant individuals may dominate the insect population if this group of insecticides is used repeatedly in the same fields. Other resistance mechanisms that are not linked to site of action but are specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay insecticide resistance:

- Where possible, rotate the use of **ORTHENE 97% SG** or other Group 1B insecticides with different groups that control the same pests.
- Use tank mixtures with insecticides from a different group when such use is permitted.
- Insecticide use should be based on an IPM program that includes scouting and recordkeeping, and considers cultural, biological and other chemical control practices.
- Monitor treated pest population for resistance development.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance contact UPL AgroSolutions Canada Inc at 1-800-438-6071.

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