



## ORTHENE<sup>®</sup> 90 S

(INSECTICIDE)

[INSECTICIDE IN A WATER-SOLUBLE BAG]

Active Ingredient	By Wt.
Acephate (O,S-Dimethyl acetylphosphoramidothioate) .....	90%
Other Ingredients .....	10%
Total .....	100%

KEEP OUT OF REACH OF CHILDREN

### CAUTION

SEE BELOW FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

Formulation for Eggs/DEADHATCH<sup>®</sup>

NET WEIGHT [5] POUNDS

Contains Two 2½ Lb. WSP Packets

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS & DOMESTIC ANIMALS

#### CAUTION

Harmful if swallowed. Causes eye irritation. Avoid contact with eyes, skin and clothing. Avoid breathing dust or spray mist. Wash hands thoroughly after handling. Do not allow children or pets to come into contact with treated areas until sprays have dried.

<b>FIRST AID</b> <b>Acephate is an organophosphate, cholinesterase inhibitor.</b>	
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>•Call poison control center or doctor immediately for treatment advice.</li> <li>•Have person sip a glass of water if able to swallow.</li> <li>•Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>•Do not give anything by mouth to an unconscious person.</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>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 inhaled</b>	<ul style="list-style-type: none"> <li>•Move person to fresh air.</li> <li>•If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>•Call a poison control center or doctor for further 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 <b>1-800-892-0099</b> for emergency medical treatment information.	
<b>NOTES TO PHYSICIAN</b>	
This material contains a cholinesterase inhibitor. Measurement of blood cholinesterase activity may be useful in monitoring exposure but decisions regarding treatment will usually need to be made before test results are available. If signs of cholinesterase inhibition appear, atropine sulfate is antidotal. 2-PAM (PROTOPAM) is also antidotal and may be used in conjunction with atropine but should not be used alone.	

#### PERSONAL PROTECTIVE EQUIPMENT (PPE):

Applicators and other handlers must wear: long-sleeved shirt and long pants, waterproof gloves, shoes plus socks and chemical-resistant headgear for overhead exposure.

**Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.** 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 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:**

This pesticide is toxic to birds. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Cover or soil - incorporate spills.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting treatment area.

Exposed treated seed may be hazardous to birds and other wildlife. Dispose of all excess treated seed and seed packaging by burial away from bodies of water.

## DIRECTIONS FOR USE

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

**READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH PRECAUTIONARY STATEMENTS AND DIRECTIONS, AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS.**

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. 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 enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 24 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 and chemical-resistant headgear for overhead exposure.

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product 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.

Statement for use on agricultural products:

For non-agricultural areas, do not enter treated areas without protective clothing until sprays have dried.

Statement for use on non-agricultural use Alternate Brand Name products:

For other uses, including golf courses and other non-agricultural areas, do not enter treated areas without protective clothing until sprays have dried.

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**DISCLAIMER, RISKS OF USING THIS PRODUCT,  
LIMITED WARRANTY  
AND LIMITATION OF LIABILITY**

**IMPORTANT: Read the entire Label including this Disclaimer, Risks of Using this Product, Limited Warranty, and Limitation of Liability before using this product. If the terms are not acceptable THEN DO NOT USE THE PRODUCT; rather, return the unopened product within 15 days of purchase for a refund of the purchase price.**

**RISKS OF USING THIS PRODUCT**

The Buyer and User (referred to collectively herein as "Buyer") of this product should be aware that there are inherent unintended risks associated with the use of this product which are impossible to eliminate. These risks include, but are not limited to, injury to plants and crops to which this product is applied, lack of control of the target pests or weeds, resistance of the target pest or weeds to this product, injury caused by drift, and injury to rotational crops caused by carryover in the soil. Such risks of crop injury, non-performance, resistance or other unintended consequences are unavoidable and may result because of such factors as weather, soil conditions, disease, moisture conditions, irrigation practices, condition of the crop at the time of application, presence of other materials either applied in the tank mix with this product or prior to application of this product, cultural practices or the manner of use or application, (or a combination of such factors) all of which are factors beyond the control of Valent. The Buyer should be aware that these inherent unintended risks may reduce the harvested yield of the crop in all or a portion of the treated acreage, or otherwise affect the crop such that additional care, treatment and expense are required to take the crop to harvest. If the Buyer chooses not to accept these risks, THEN THIS PRODUCT SHOULD NOT BE APPLIED. By applying this product Buyer acknowledges and accepts these inherent unintended risks AND AGREES THAT ALL SUCH RISKS ASSOCIATED WITH THE APPLICATION AND USE ARE ASSUMED BY THE BUYER.

Valent shall not be responsible for losses or damages (including, but not limited to, loss of yield, increased expenses of farming the crop or such incidental, consequential or special damages that may be claimed) resulting from use of this product in any manner not set forth on the label. Buyer assumes all risks associated with the use of this product in any manner or under conditions not specifically directed or approved on the label.

**LIMITED WARRANTY**

Valent warrants only that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the label, under average use conditions, when used strictly in accordance with the label and subject to the Risks of Using This Product as described above. EXCEPT AS SET FORTH ABOVE, VALENT MAKES NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED. No agent or representative of Valent or Seller is authorized to make or create any other express or implied warranty.

**LIMITATION OF LIABILITY**

In no event shall Valent or Seller be liable for any incidental, consequential, indirect or special damages resulting from the use or handling of this product. The limitation includes, but is not limited to, loss of yield on all or any portion of the treated acreage, increased care, treatment or other expenses required to take the crop to harvest, increased finance charges or altered finance ratings, emotional or mental distress and/or exemplary damages. THE EXCLUSIVE REMEDY OF THE BUYER, AND THE EXCLUSIVE MAXIMUM LIABILITY OF VALENT OR SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT SHALL BE THE RETURN OF THE PURCHASE PRICE OF THIS PRODUCT OR, AT THE ELECTION OF VALENT OR SELLER, THE REPLACEMENT OF THE PRODUCT.

**PROMPT NOTICE OF CLAIM**

Valent must be provided notice as soon as Buyer has reason to believe it may have a claim, but in no event later than twenty-one days from date of planting, or twenty-one days from the date of application, whichever is latter, so that an immediate inspection of the affected property and growing crops can be made.

If Buyer does not notify Valent of any claims, in such period, it shall be barred from obtaining any remedy.

**NO AMENDMENTS**

Valent and Seller offer this product, and Buyer accepts it, subject to the foregoing Disclaimer, Risks of Using This Product, Limited Warranty and Limitation of Liability, which may not be modified by any oral or written agreement.

**TANK MIXES**

**NOTICE: Tank mixing or use of this product with any other product which is not specifically and expressly authorized by the label shall be the exclusive risk of user, applicator and/or application advisor.**

Read and follow the entire label of each product to be used in the tank mix with this product.

**CHEMIGATION**

**Apply to Cranberries only by sprinkler irrigation systems. Do not apply by chemigation to any other crop, or this crop using any other type of irrigation system.**

## WATER SOLUBLE PACKAGING

(To Be Used for Cotton WSP Formulation Only)

### MULTIPLE PACKAGING

This bag contains multiple water soluble packets of ORTHENE 90 S. Do not handle the packets with wet gloves or allow the packets to become wet prior to addition to spray tank. Do not break open packets. Refer to the Tables of Equivalents to calculate the number of packets to use. If all packets are not used, close and reseal outer container to protect remaining packet(s).

### SINGLE PACKAGING

This bag contains one water soluble packet of ORTHENE 90 S. Do not handle the packet with wet gloves or allow the packet to become wet prior to addition to spray tank. Do not break open packets. Refer to the Tables of Equivalents to calculate the number of packets to use. Open outer bag by pulling perforated tearstrip and drop the unopened inner packet of ORTHENE 90 S into spray tank.

### PREPARATION OF SPRAY SOLUTION

To prepare spray solution, drop the unopened packet(s) of ORTHENE 90 S into a spray tank containing at least one-half the total quantity of water required. Direct water at the floating packet(s) and continue to add water with the agitator running until the spray volume is reached. Do not add any liquid fertilizers, micronutrients or adjuvants to the spray solution until after the packet and its contents have completely dissolved. Water soluble packet(s) should completely dissolve in approximately five minutes. Dissolution rate may be slowed by cold water, lack of agitation, or water containing high concentrations of boron or sulfur.

## TABLE OF EQUIVALENTS

(To Be Included on Cotton WSP Formulation Only)

Rates of ORTHENE 90 S Per Acre	Acres Treated by a 2.5 lb. WSP Packet
2.5 oz.	16
3.2 oz.	12.5
3.25 oz.	12.3
0.25 lb.	10
0.28 lb.	8.9
0.5 lb.	5
0.56 lb.	4.5
0.8 lb.	3.1
1.0 lb.	2.5
1.1 lb.	2.3

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## GENERAL INFORMATION

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ORTHENE 90 S a soluble powder is an insecticide for control of pests on selected agricultural crops and in certain non-crop areas. The active ingredient in ORTHENE 90 S is acephate, a water-soluble insecticide readily absorbed by plant roots and foliage to give systemic control of feeding insects. Insect pests are generally controlled more effectively by Orthene through ingestion than by contact. Application of ORTHENE 90 S to maintain control should be repeated only as directed.

[The following paragraph is for ornamental uses labels only.]

To ensure that ORTHENE 90 S a soluble powder is compatible with the variety or cultivar of the listed ornamental crops under your specific conditions, test the product on a limited scale and observe for phytotoxicity over two weeks before making large scale applications. The large number of existing ornamental varieties and cultivars coupled with the constant introduction of new variants precludes specific testing of each type. It is impossible to field test this product in every locale where sold or in all of the combinations created by differences including those in soil or media type, pH, moisture of fertility, environment conditions such as temperature, lighting or degree days and horticultural practice including planting dates, control of other pests, timing of various horticultural practice and the manner of use and application of this product.

**FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR INSECT CONTROL, CROP INJURY, AND/OR ILLEGAL RESIDUES.**

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.

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## BEANS AND LIMA BEANS - Dry and Succulent Forms

**TABLE 1. Beans and Lima Beans - Dry and Succulent Forms - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 20 to 100 gals./A of spray  <b>By Air:</b> Minimum of 2 gals./A of spray	Fleahoppers Grasshoppers	0.25 to 0.5 lb. (4 to 8 oz.)	Apply when eggs or insects first appear.	14 (snapbeans - succulent or dry beans)
	Aphids (excluding Black Bean Aphid) Bean Leaf Beetle Bean Leafroller Cabbage Looper Cutworms Green Cloverworm Leafhoppers Mexican Bean Beetle Plantbugs (Lygus) Soybean Looper Thrips Whitefly (Except Sweetpotato or Silverleaf Whitefly)	0.5 to 1.1 lbs. (8 to 17.6 oz.)	Repeat at 7 to 10 day spray intervals as necessary to maintain control.*  Use higher rates for severe insect infestations.	0 (lima beans - succulent form)
	Armyworms (excluding Beet Armyworm) Corn Earworm European Corn Borer	0.8 to 1.1 lbs. (12.8 to 17.6 oz.)		

**USE PRECAUTIONS:**

Do not feed treated vines to livestock.

\*Do not apply more than 2.2 lbs./A (2 lbs. ai) per season.

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## CELERY

**TABLE 2. Celery - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 50 to 100 gals./A of spray  <b>By Air:</b> Minimum of 5 gals./A of spray	Green Peach Aphid	0.5 to 1.1 lbs. (8 to 17.6 oz.)	Apply when eggs or insects first appear.	21
	Cabbage Looper Fall Armyworms	1.1 lbs. (17.6 oz.)	Repeat at 3 to 10 day spray intervals as necessary to maintain control.*	
<b>USE PRECAUTIONS:</b> *Do not apply more than 2.2 lbs./A (2 lbs. ai) per season. All celery must be trimmed (tops removed) before shipment for use. Do not use trimmed tops for food or feed.				

## COLE CROPS

### BRUSSELS SPROUTS & CAULIFLOWER

**TABLE 3. Cole Crops - Brussels Sprouts & Cauliflower - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 25 to 150 gals./A of spray  <b>By Air:</b> Minimum of 5 gals./A of spray	Green Peach Aphid	0.5 to 1.1 lbs. (8 to 17.6 oz.)	Use the high rate when heavy infestations of aphids are present. Apply when eggs or insects first appear.  Repeat application as necessary to maintain control.*	14
	Cabbage Looper Diamondback Moth Larvae Imported Cabbage Worm	1.1 lbs. (17.6 oz.)	<b>Diamondback Moth Larvae-</b> This insect has demonstrated an ability to develop resistance to various classes of insecticides. Consult your local Agricultural Extension Service for current recommended control practices for this insect.	

**USE PRECAUTIONS:**  
 \*Do not apply more than 2.2 lbs./A (2 lb. ai) per season to Brussels Sprouts and Cauliflower.  
 Do not feed trimmings to livestock or allow animals to graze in treated areas.

## COTTON

### GENERAL USE PRECAUTIONS

Do not use treated seed for food or feed purposes or process for oil.

Do not feed gin trash to livestock.

Do not allow animals to graze on treated areas.

**\*\*Do not apply more than 6 lbs. ai/A per season. This includes the use of Payload® 15 Granular as an in-furrow at planting treatment, all foliar spray, liquid in-furrow application and seed treatment uses.**

**TABLE 4. Cotton - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>COTTON SEED HOPPER BOX</b>  <b>AT-PLANTING APPLICATION</b>  [HOPPER BOX USE NOT INCLUDED ON WSP PACKAGED PRODUCT]	Black (Greasy) Cutworm Cotton Aphids Thrips (Including Western Flower Thrips)	2.5 to 3.25 oz.	Add dry ORTHENE 90 S to seed in the planter box to achieve an application rate of 3 to 4 oz./A.  Even coverage of seed is required for acceptable insect control. Plants grown from improperly treated seed may not exhibit insect control. To obtain even coverage, fill planter box ½ full of seed, add ½ of required ORTHENE 90 S and mix thoroughly. Add remainder of seed and ORTHENE 90 S to the hopper box and thoroughly mix.  Improved distribution of ORTHENE 90 S on seed can be achieved by premixing both in a separate container and then transferring treated seed to hopper box.  Use of ORTHENE 90 S with air planters is not recommended since loss of product will occur.	At-Planting Application
<b>USE PRECAUTIONS:</b> Do not use treated seed for food or feed purposes or process for oil. ORTHENE 90 S cotton seed hopper box treatment is not permitted in Arizona, California and the Blacklands of Texas.				
<b>IN FURROW</b>  <b>By Ground: 3 to 5 gals./A of spray.</b>  <b>AT-PLANTING APPLICATION</b>	Aphids* Black (Greasy) Cutworm (Except CA) Thrips (Including Western Flower Thrips)  * Excluding Cotton Aphids in AZ & CA.	0.56 to 1.1 lb.  <b>NOTE: For the Blacklands of Texas use 1.1 lb./A ORTHENE 90 S.</b>	Use flat-fan nozzles for in-furrow application. Align nozzles to ensure good spray deposition into the seed furrow. Cone type nozzles are not recommended since unacceptable spray deposition may occur.  Securely fasten spray-system tubing to furrow opener and check frequently to ensure proper positioning and operation.  ORTHENE 90 S can be mixed with fungicides that are sprayed in-furrow for disease control.	At-Planting Application

## COTTON (Continued)

**TABLE 4. Cotton - Recommendations for Use (Continued)**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 10 to 25 gals./A of spray  <b>By Air:</b> 3 to 10 gals/A of spray (minimum of 5 gals./A in AZ & CA)	Thrips (Including Western Flower Thrips)	3.2 oz.	Apply when eggs or insects first appear.  Repeat application as necessary to maintain control.**	21
	Plantbugs (Lygus)	0.25 to 1.0 lb.  0.5 to 1.0 lb. (AZ & CA)	Apply when eggs or insects first appear.  Use highest rate for Lygus adults that have migrated into cotton.  Repeat application as necessary to maintain control.**	21
	Fleahopper	0.25 lb.	Apply when eggs or insects first appear.  Repeat application as necessary to maintain control.**	21
	Cotton Aphids (excluding AZ and CA)	0.5 to 1.0 lb.	This insect may develop resistance to various classes of insecticides. Consult your local Agricultural Extension Service for current control recommendations.  Repeat application as necessary to maintain control.**	21
	Whitefly (excluding Sweetpotato Whitefly/Silverleaf Whitefly)	0.5 to 1.0 lb.	Repeat application as necessary to maintain control.**	21
	Armyworms (excluding Beet Armyworm)  Cabbage Looper	1.0 lb.	Apply when eggs appear and repeat at 3 to 7 day spray intervals.**	21

## COTTON (Continued)

**TABLE 4. Cotton - Recommendations for Use (Continued)**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 10 to 25 gals./A of spray.  <b>By Air:</b> 3 to 10 gals/A of spray (minimum of 5 gals./A in AZ & CA)	Bollworm Tobacco Budworm Adults Larvae  Eggs/DEADHATCH®	0.5 to 1.0 lb. (East of Rockies)  1.0 lb. (AZ & CA)  0.25 to 0.5 lb.	Early Season: Use 0.5 lb./A for light infestation.  Mid and Late Season: Use 0.8 to 1.0 lb./A for moderate to severe infestations.  Apply when eggs appear and repeat at 3 to 7 day spray intervals.**  Moths of budworm larvae are controlled by direct contact with spray. Moth kill is most likely to occur when late evening applications are made.  DEADHATCH: Control of emerging larvae by consumption of treated egg casings.	21
	Stinkbugs	0.8 lb.	Apply when eggs appear and repeat at 3 to 7 day spray intervals.**	21
	Pink Bollworm (AZ & CA)	1.0 lb.	Apply when insects appear and repeat at 5 to 7 day spray intervals.**	21
	Cutworms	0.8 lb.	Ground application is recommended.  Aerial applications are less effective, but may be used.  Control is most effective when ground application is made in the evenings and sprays are directed toward the base and lower portion of plant.  Apply when insects first appear or damage is first noted and Repeat application as necessary to maintain control.**	21

## COTTON TANK MIXES

### GENERAL USE PRECAUTIONS:

Do not feed gin trash or treated forage to livestock.  
Do not allow livestock to graze on treated areas.

\*Do not apply more than 6 lbs. ai/A per season. This includes the use of Payload 15 Granular as an in-furrow at planting treatment, all foliar spray, liquid in-furrow application and seed treatment uses.

Always read and follow all label directions when using any pesticide alone or in tank mix combinations. Observe all restrictions and precautions which appear on all product labels. The most restrictive labeling applies when using a tank mix.

**TABLE 5. Cotton Tank Mixes - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	ORTHENE 90 S AND TANK MIX PARTNER	AMOUNT OF ORTHENE 90 S + TANK MIX PARTNER PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 10 to 25 gals./A spray.  <b>By Air:</b> 3 to 10 gals./A of spray (minimum 5 gals./A in CA).	Sweetpotato Whitefly (Silverleaf Whitefly)	ORTHENE 90 S + DANITOL 2.4 EC Spray	0.5 to 1.0 lb. + 10 % to 16 fl. oz.	User should comply with all applicable directions, restrictions and precautions on the EPA registered label for Danitol 2.4 EC Spray.	21
	Armyworms (excluding Beet Armyworm) Bollworm Cabbage Looper Cotton Aphid Cutworms Fleahopper Grasshoppers Pink Bollworm Plantbugs (Lygus, Mirids) Salt Marsh Caterpillar Thrips (Including Western Flower Thrips) Tobacco Budworm Whitefly (Excluding Sweetpotato/Silverleaf Whitefly)	ORTHENE 90 S + LORSBAN® 4E	0.28 to 1.1 lbs. + 1 to 2 pts.	User should comply with all applicable directions, restrictions and precautions on the EPA registered label for LORSBAN® 4 E.  <b>Cutworms:</b> Use of 0.8 lb./A ORTHENE 90 S  <b>By Ground:</b> Ground application is recommended.  Control is most effective when ground application is made in the evenings and sprays are directed toward the base and lower portion of plant.  <b>By Air:</b> Aerial applications are less effective, but may be used.  Apply when insects first appear or when damage is first noted and Repeat application as necessary to maintain control.*	21

### RESISTANCE-MANAGEMENT

Cotton pest control programs, especially those for control of silverleaf whitefly populations, should employ a properly designed resistance-management strategy. Such resistance-management strategies include mixture or rotation of alternative classes of chemistry including organophosphates, carbamates, pyrethroids or insect growth regulators. Consult your state or area agricultural extension service for local resistance management strategies and advice on alternative insecticides.

## COTTON TANK MIXES WITH PYRETHROIDS

### GENERAL USE PRECAUTIONS:

Do not feed gin trash or treated forage to livestock.  
Do not allow livestock to graze on treated areas.

**\*\*Do not apply more than 6 lbs. ai/A per season.** This includes the use of Payload 15 Granular as an in-furrow at planting treatment, all foliar spray, liquid in-furrow application and seed treatment uses.

Synthetic Pyrethroids should be used within the guidelines of state and/or regional resistance management programs and recommendations.

Always read and follow all label directions when using any pesticide alone or in tank mix combinations. Observe all restrictions and precautions which appear on all product labels. The most restrictive labeling applies when using a tank mix.

**TABLE 6. Cotton Tank Mixes with Pyrethroids - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	ORTHENE 90 S AND TANK MIX PARTNER	AMOUNT OF ORTHENE 90 S + TANK MIX PARTNER PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  By Ground: 10 to 25 gals./A spray.  By Air: 3 to 5 gals./A spray (minimum 5 gals./A in CA). See remarks for Cutworms.	Aphids Bollworm Cabbage Looper Cotton Leaf Perforator Cutworms Fall Armyworm Fleahoppers Pink Bollworm (AZ & CA) Plantbugs Stinkbugs Sweetpotato/Silverleaf Whitefly Thrips (Including Western Flower Thrips) Tobacco Budworm Whitefly	ORTHENE 90 S + one of the following:	0.5 to 1.0 lb. + one of the following:	Apply when eggs or insects first appear.  Repeat application as necessary to maintain control.**	21
		AMMO® 2.5 EC*	Refer to the AMMO 2.5 EC approved label for use instructions.	<b>Stinkbugs:</b> Use 0.8 lb/A of ORTHENE 90 S.	21
		ASANA® XL*	Refer to the ASANA XL approved label for use instructions.	<b>*Cutworms:</b> Use 0.8 lb./A of ORTHENE 90 S.	21
		BAYTHROID® 2 EC	Refer to the BAYTHROID 2 EC approved label for use instructions.	<b>By Ground:</b> Ground application is recommended.	21
		CAPTURE® 2 EC	Refer to the CAPTURE 2 EC approved label for use instructions.	Control is most effective when ground application is made in the evenings and sprays are directed toward the base and lower portion of plant.	21
		KARATE® 1 E (Except CA)	Refer to the KARATE 1 E approved label for use instructions.	<b>By Air:</b> 3 to 10 gals./A spray (minimum 5 gals./A in CA)  Aerial applications are less effective, but may be used.	21
		SCOUT X-TRA® (Except CA)	Refer to the SCOUT X-TRA approved label for use instructions.	Apply when eggs or insects first appear or damage is first noted.  Repeat application as necessary to maintain control.**	28

### RESISTANCE-MANAGEMENT

Cotton pest control programs, especially those for control of silverleaf whitefly populations, should employ a properly designed resistance-management strategy. Such resistance-management strategies include mixture or rotation of alternative classes of chemistry including organophosphates, carbamates, pyrethroids or insect growth regulators. Consult your state or area agricultural extension service for local resistance management strategies and advice on alternative insecticides.

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## CRANBERRY

**TABLE 7. Cranberry - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground or Sprinkler:</b> Sufficient water to give thorough coverage.  <b>By Air:</b> Minimum of 2 gals./A of spray.	Cranberry Blossom Worm Cranberry Cutworm Gypsy Moth False Armyworm Fireworms Spanworms Sparganothis	1.1 lbs. (17.6 oz.)	<b>SPRINKLER IRRIGATION APPLICATION TO CRANBERRIES:</b> This product may only be applied through sprinkler irrigation systems including center pivot, lateral move, end tow, side (wheel) roll, travelers, big gun, solid set, or hand move. Do not apply this product through any other type of irrigation system.  Crop injury, lack of effectiveness, or illegal pesticide residues in the crop may result from non-uniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.	90
<b>USE PRECAUTION:</b> <b>Note:</b> Limit to one application per growing season. Do not apply more than 1.1 lbs./A (1 lb. ai) per season. Do not apply from start of bloom until all berries set.  Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the label-prescribed safety devices for public water systems are in place.  A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.  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 from backflow.  The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.  The pesticide injection pipeline must also contain a functional, normally closed solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.  The system must 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 where pesticide distribution is adversely affected.  Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.  Do not apply when wind speed favors drift beyond the area intended for treatment.  <b>Solid Set System:</b> Apply specified dosage for the entire length of the irrigation period or for a 30 to 60 minute period at the end of a regular irrigation set or as a 30 to 60 minute injection as a separate application not associated with a regular irrigation. Allow time for all lines to flush the pesticide through all nozzles before turning off irrigation water. To ensure the lines are flushed and free of remaining pesticide, a dye indicator may be injected into the lines to mark the end of the application period. See <b>NOTE</b> .  <b>Center Pivot Systems:</b> Inject the specified dosage per acre continuously for one complete revolution of the system. See <b>NOTE</b> .  <b>NOTE:</b> Constant agitation must be maintained in the chemical supply tank during the entire period of insecticide application. Inject the product with a positive displacement pump into the main line ahead of a right turn to ensure adequate mixing.  <b>Application of more than label-recommended quantities of irrigation water per acre may result in decreased product performance by removing the chemical from the zone of effectiveness.</b>				



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## HEAD LETTUCE - Crisphead Type Only

**TABLE 8. Head Lettuce (Crisphead Type Only) - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 10 to 60 gals./A of spray broadcast.  <b>By Air:</b> Minimum of 5 gals./A of spray	Aster Leafhopper Green Peach Aphid	0.5 to 1.1 lbs. (8 to 17.6 oz.)	Repeat application as necessary to maintain control.*	21  Spring, Summer and early Fall crops in all areas, Winter crops in Florida and Texas, late Fall crops in Arizona and Winter crops in Arizona and California.
	Amyworms (excluding Beet Armyworm) Cabbage Looper	1.1 lbs. (17.6 oz.)		

**USE PRECAUTIONS:**

\*Do not apply more than 2.2 lbs./A (2 lbs. ai) per season.

Do not feed trimmings to livestock or allow animals to graze on treated areas.

AZ & CA, Desert Areas: Do not apply after first head begins to form in crops which germinate from mid-September through November.

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## MINT

### PEPPERMINT AND SPEARMINT

**TABLE 9. Mint - Peppermint and Spearmint - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 20 to 100 gals./A of spray  <b>By Air:</b> 5 to 10 gals./A of spray	Alfalfa Looper Aphids Cutworms	1.1 lbs. (17.6 oz.)	Apply when eggs or insects first appear.  Make one repeat application, if necessary, to maintain control.*	14
<b>FOLIAR</b>  <b>By Ground:</b> 40 to 100 gals./A of spray	Strawberry Root Weevil Adult Black Vine Weevil Adult	1.1 lbs. (17.6 oz.)	<b>Strawberry Root and Black Vine Weevil:</b> For control, apply in water in a minimum of 40 gals. spray per acre by ground. Good spray coverage and canopy spray penetration is critical for control. Increase spray volume and pressure with tall or dense mint canopy.  Apply after adult emergence is complete but prior to egg laying. Apply at dusk or during the night on a warm still evening. Two applications 10-14 days apart may be necessary to reduce heavy infestations.	14

**USE PRECAUTIONS FOR ALL APPLICATION METHODS:**

\*Do not apply more than 2.2 lbs./A (2 lbs. ai) per season.

Do not graze treated areas.

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## NON-BEARING CITRUS

### CITRUS

#### GENERAL USE PRECAUTIONS

Do not graze treated areas.

DO NOT HARVEST citrus for one year after treatment.

**TABLE 10. Non-Bearing Citrus - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS
<b>FOLIAR</b>  By Ground: 100 to 200 gals./A of spray.	Aphids Grasshoppers Katydid Mealybugs Orangedogs Plantbugs Thrips Whiteflies (except Sweetpotato/Silverleaf)	0.5 lb. (8 oz.)	Repeat application as necessary to maintain control.
	Citrus Blackfly	0.5 to 0.8 lb. (8 to 12.8 oz.)	Apply when eggs or insects first appear.  Use the high rate when a heavy infestation is present.  Repeat at 7 to 10 day spray intervals.
	Ants (Including Imported Fire Ants and Harvester Ants)	0.8 lb. (12.8 oz.)	Repeat application as necessary to maintain control.
Spray individual juvenile or non-bearing trees for coverage with total application not to exceed specified rate in lbs. per acre. Length of residual activity will depend upon spray coverage and the amount of moisture following application.			
<b>SOIL MOUND TREATMENT</b>  <b>DRENCH METHOD</b>	Ants Including Imported Fire Ants and Harvester Ants	0.8 oz./5 gals.	Apply 1 gal. of mix to each mound area by sprinkling the mound until it is wet and treat a four (4) foot diameter circle around the mound.  Repeat application as necessary to maintain control.

## NON-CROP AREAS

### FIELD BORDERS, FENCEROWS, ROADSIDES, DITCHBANKS, BORROW PITS

**TABLE 11. Non-Crop Areas - Field borders, Fencerows, Roadsides, Ditchbanks, Borrow Pits - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS
<b>FOLIAR</b>  <b>By Ground:</b> 10 to 20 gals./A of spray  <b>By Air:</b> 1 to 5 gals./A of spray (minimum of 5 gals./A in CA)	Grasshoppers	0.25 lb. (4 oz.)	For early to mid-season application.  Use the higher volumes when spraying dense foliage.  An approved drift retardant may be added to aid in controlling drift and reducing evaporation of aerial sprays.
<b>USE PRECAUTION:</b> Do not graze or feed vegetation cut from treated areas.			

### WASTELAND

**TABLE 12. Non-Crop Areas - Wasteland - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS
<b>FOLIAR</b>  <b>By Ground:</b> 10 to 20 gals./A of spray  <b>By Air:</b> ½ gal./A of spray (minimum of 5 gals./A in CA)	Black Grass Bugs Grasshoppers Mormon Crickets	1.6 to 2.2 oz.	Use the higher volumes when spraying dense foliage.  An approved drift retardant may be added to aid in controlling drift and reducing evaporation of aerial sprays.
<b>USE PRECAUTION:</b> Do not make more than one application per season. Do not graze or feed vegetation cut from treated areas. Do not allow animals to graze on treated areas.			

## PEANUTS

**TABLE 13. Peanuts - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 10 to 50 gals./A of spray  <b>By Air:</b> 5 to 10 gals./A of spray	Grasshoppers	0.25 to 0.5 lb. (4 to 8 oz.)	Apply when eggs or insects first appear.  Repeat application as necessary to maintain control.*  ORTHENE can be tank mixed with registered at-cracking and early post-emergence peanut herbicides, provided those products do not prohibit tank mixes, provided the most restrictive of label limitations and precautions are observed, and provided no label dosage rates are exceeded.	14 (of digging)
	Thrips	0.4 to 0.8 lb. (6.4 to 12.8 oz.)	To determine physical compatibility, pour the recommended proportions of each chemical with the same proportion of water as will be present in the chemical supply tank into a suitable container, mix thoroughly and allow to stand for five minutes. If the combination remains mixed, or can be remixed readily, the mixture is considered physically compatible. When mixing wettable powder or dry flowable formulations, add and disperse these first, then add liquid pesticides. Conduct another compatibility test at concentrations which will be present in the irrigation lines. If there is any separation which cannot be remixed readily, VALENT recommends that the combination not be used.	
	Corn Earworm Fall Armyworm Leafhoppers Loopers Velvetbean Caterpillar	0.8 to 1.1 lbs. (12.8 to 17.6 oz.)	Combinations should be kept agitated and should be applied immediately. Do not allow combinations to set for prolonged periods in the chemical supply tank or irrigation lines.	

**USE PRECAUTIONS:**

Do not feed treated forage or hay to livestock.  
Do not allow animals to graze on treated areas.

\*Do not apply more than 4.0 lbs. a. i. (4.4 lbs. formulated product) per acre per crop cycle. This includes the use of ORTHENE 90 S on peanuts as a foliar spray in addition to the peanut planterbox seed treatment use.

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CROP	PESTS CONTROLLED	RATE OF ORTHENE 90 S PER 100 LBS. OF PEANUT SEED	FURTHER USE INSTRUCTIONS
<p><b>PLANTER BOX SEED TREATMENT APPLICATION (HOPPER BOX)</b></p> <p>[HOPPER BOX USE NOT INCLUDED ON WSP PACKAGED PRODUCT]</p>	Thrips	<p>3.5 oz.</p> <p>DO NOT apply more than 3.5 oz. per acre.</p>	<p>Apply ORTHENE 90 S at a rate of 3.5 oz. per 100 lbs. of peanut seed in the planter box as a dry powder. Even coverage of seed is required for acceptable insect control.</p> <p><b>MIXING:</b> This procedure for application of ORTHENE 90 S to peanut seed must be followed to ensure complete and adequate coverage:</p> <p><b>STEP 1:</b> Fill planter box 1/3 full of seed. Apply 1/3 of total amount of ORTHENE 90 S evenly over the surface of the peanuts.</p> <p><b>STEP 2:</b> Fill planter box 2/3 full of seed. Apply 1/3 of total amount of ORTHENE 90 S evenly over the surface of the peanuts.</p> <p><b>STEP 3:</b> Fill planter box with remaining seed. Apply 1/3 of total required amount of ORTHENE 90 S evenly over the surface of the peanuts.</p> <p>DO NOT attempt to mix ORTHENE 90 S with the seed peanuts by stirring or other mechanical agitation. Such action will result in unacceptable damage to seed prior to planting.</p> <p>Do not use treated seed for food or feed.</p>
<p><b>USE PRECAUTIONS:</b></p> <p>Do not apply more than 4.0 lbs. a. i. (4.4 lbs. formulated product) per acre per crop cycle. This includes the use of ORTHENE 90 S on peanuts as a foliar spray in addition to the peanut planterbox seed treatment use.</p>			

## PEPPERS

### BELL

**TABLE 14. Peppers - Bell - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  By Ground: 25 to 150 gals./A of spray  By Air: Minimum of 3 gals./A of spray (minimum of 5 gals./A in CA)	Grasshoppers	0.25 to 0.5 lb. (4 to 8 oz.)	Apply when eggs or insects first appear.	7
	Cabbage Looper Green Peach Aphid Tobacco Hornworm	0.5 to 1.1 lbs. (8 to 17.6 lbs.)	Repeat as necessary to maintain insect-pest populations below economically damaging numbers.*	
	European Corn Borer	0.8 to 1.1 lbs. (12.8 to 17.6 oz.)		
<b>USE PRECAUTION:</b> *Do not apply more than 2.2 lbs./A (2 lbs. ai) per season.				

### NON-BELL

**FOR USE IN MIDWESTERN, EASTERN STATES AND PUERTO RICO ONLY.**

**TABLE 15. Peppers - Non-Bell - Recommendations for Use**

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FOLIAR</b>  <b>By Ground:</b> 40 to 150 gals./A of spray	Aphids	0.5 lb. (8 oz.)	Repeat at 7 to 10 day spray intervals as necessary.*	7
<b>USE PRECAUTION:</b> *Do not apply more than 1.1 lbs./A (1 lb. ai) per season.				

# TOBACCO

**TABLE 16. Tobacco - Recommendations for Use**
**GENERAL USE PRECAUTIONS**

\*Do not apply more than 4.4 lbs./A (4 lbs. ai) per season. This includes the use of Orthene in transplant water, plant bed, soil, float bed (greenhouse), and foliar applications.

APPLICATION METHOD	PESTS CONTROLLED	RATES OF ORTHENE 90 S PER ACRE	REMARKS	DAYS TO HARVEST
<b>FLOATBED</b>  FOLIAGE: Apply at the equivalent of 1 tablespoon in 3 gals. water per every 1,000 sq. ft. of bed.	Cutworm Flea Beetle Green Peach Aphid Tobacco Aphid	0.8 lb. (12.8 oz.)	Apply evenly to ensure thorough coverage.  NOTE: Floatbed water should be disposed of in the transplanted field as transplant water or foliar spray.	
<b>PLANT BED</b>  FOLIAGE: Apply at the equivalent of 1 tablespoon in 1 gal. of water per every 1,000 sq. ft. of bed.	Cutworm Flea Beetle Green Peach Aphid Tobacco Aphid	0.8 lb. (12.8 oz.)	Apply evenly to ensure thorough coverage.	
<b>TRANSPLANT</b>  Apply in a minimum of 100 gals. of transplant water per acre.	Cutworms Flea Beetle Green Peach Aphid Potato Tuberworm Tobacco Aphid Tobacco Thrips	0.8 lb. (12.8 oz.)	Provides control for approximately 3 to 4 weeks after transplanting.  For control late in the season, apply foliar sprays of ORTHENE 90 S.	
<b>USE PRECAUTIONS:</b> Do not apply more than 0.8 lb. ORTHENE 90 S per acre as a transplant-water application as some phytotoxicity may occur.				
<b>FOLIAR</b>  By Ground: 10 to 50 gals./A of spray  By Air: Minimum of 3 gals./A of spray	Grasshoppers	0.25 to 0.5 lb. (4 to 8 oz.)	Repeat on a 7-day spray schedule or as necessary.*	3
	Flea Beetle Green Peach Aphid Hornworm Tobacco Thrips	0.5 lb. (8 oz.)		
	Stinkbugs Tobacco Aphid Vegetable Weevils	0.5 to 0.8 lb. (8 to 12.8 oz.)		
	Budworm Cabbage Looper Cutworm Japanese Beetle	0.8 lb. (12.8 oz.)		
<b>SOIL MOUND TREATMENT</b>				3
<b>DRY METHOD</b> {USE NOT INCLUDED ON WSP PACKAGED PRODUCT}	Ants (Including Imported Fire Ants and Harvester Ants)	1 to 2 tsp.	Evenly distribute over the mound.	
<b>DRENCH METHOD</b>	Ants (Including Imported Fire Ants and Harvester Ants)	0.8 oz./5 gals.	Apply 1 gal. of mix to each mound area by sprinkling the mound until it is wet and treat a four (4) foot diameter circle around the mound.	
<b>USE PRECAUTIONS:</b> Treat a maximum of 13 mounds per acre. Do not treat more than once per season. Apply in the early morning or late afternoon, when ants are most active, for best results. Applications made under prolonged hot and dry conditions may be ineffective due to the location of the ants deep within the nest.				



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### SMALL VOLUME SPRAY EQUIPMENT

Preparation of ORTHENE Spray Mix Using a Small Fluid Ounce Measuring Cup		
Label Recommendation ORTHENE 90 S in 100 Gals. Water	Equivalent ORTHENE 90 S in 20 Gals. Water	Equivalent ORTHENE 90 S in 1 Gal. Water (tsp./Gal.)
0.28 lb.	0.9 oz.	0.4 tsp.
0.5 lb.	1.6 oz.	0.83 tsp.
0.8 lb.	2.5 oz.	1.25 tsp.
1.1 lbs	3.5 oz.	1.7 tsp.

### SPECIALTY USES NON CROP AREAS

Crop	Insects	Amount ORTHENE 90 S Per Acre	Further Use Instructions
Non-Crop Areas	Ants (Including Imported Fire Ants and Harvester Ants)	<p><b>Mound Treatment - Dry Methods:</b> Evenly distribute 1 to 2 teaspoons over the mound. [USE NOT INCLUDED ON WSP PACKAGED PRODUCT]</p> <p><b>Drench Method:</b> Mix 0.83 oz. in 5 gals. of water. Apply 1 gal. of mix to each mound area by sprinkling the mound until it is wet and treat a four (4) foot diameter circle around the mound.</p>	<p>For best results apply the material in the early morning or late afternoon when the ants are most active.</p> <p>Applications made under prolonged hot and dry conditions may be ineffective due to the location of the ants deep within the nest.</p> <p>Grass in treated area may be injured.</p> <p>Do not treat mound more than once per season.</p>

### SPECIALTY USES CONTAINER GROWN NURSERY STOCK

Plants	Insects	Amount ORTHENE 90 S Per 100 Gals.	Time of Application	Recommended Application
Container Grown Nursery Stock (Arborvitae Azalea Camellia Rhododendron Roses Viburnum Yew)	Black Vine Weevil Strawberry Root Weevil	0.8 lb. (12.8 oz.)	Application should be made by mid-September for greenhouse stock and by mid-October for outdoor stock. Consult your local county extension agent for information on the identification and control of root weevils on ornamentals.	Apply the specified amount of ORTHENE 90 S per 100 gals. of solution so as to thoroughly drench the root system.
	Ants (Including Imported Fire Ants and Harvester Ants)	0.8 lb. (12.8 oz.)	Apply as needed to control the pest.	

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## TREES AND SHRUBS

Plants	Insects	Amount ORTHENE 90 S Per 100 Gals.	Time of Application	Recommended Application
Trees and Shrubs (Except Flowering Crabapple, see below).	Aphids Bagworms Birch Leafminer Tent Caterpillars* Lace Bugs Leafrollers	0.28 lb. (4.5 oz.)	As the insects begin to appear.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer. The addition of a suitable sticker improves control of Gypsy Moth larvae.  *Mist blower application. Adjust rates to 1-1/3 lbs. per 100 gals. water for Gypsy Moth control and 1.0 lb. per 100 gals. water for Tent Caterpillar control.  Do not apply to Huckleberry, Balm of Gilead, Cottonwood, Lombardy Poplar and Viburnum suspensum.  Nursery crops. Before treating large plantings, spray only a few plants and observe two weeks for phytotoxicity.
	Douglas Fir Tussock Moth Larvae Gypsy Moth Larvae* Webworms	0.5 lb. (8 oz.)	As the insects begin to appear.	
	Scales (Crawlers)	0.5 lb. (8 oz.)	As crawlers begin to appear. Repeat applications, at a 2 week or more interval, may be necessary where there is continuous crawler production.	
	Ponderosa Pine Needle Miner	0.5 lb. (0.8 oz.)	Time of application is important. Consult your Farm Advisor or County Extension Agent.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer as a full coverage spray.
	Grasshoppers	0.5 lb. (0.8 oz.)	As the grasshoppers begin to appear.	
	California Oakworm Cankerworms (Spring and Fall)	0.28 to 0.5 lb. (4.5 to 8 oz.)	As the insects begin to appear. Use the higher amount when the larger larvae are present.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer.
	Nantucket Pine Tip Moth Larvae	0.8 lb. (12.8 oz.)	Time of application is important. Consult your Farm Advisor or County Extension Agent. Repeat applications will be required for subsequent generations.	
	Root Weevil Adults	0.8 lb. (12.8 oz.)	Apply when first feeding damage occurs. Repeat applications, at four week intervals until the first heavy frost, may be necessary for complete foliage protection.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer as a full coverage spray.
	Box Elder Bugs Sawflies Budworms Leafhoppers	0.8 lb. (12.8 oz.)	As the insects begin to appear.	
	Japanese Beetle	1.1 lbs. (17.6 oz.)	As the Japanese Beetles begin to appear. Repeat applications, at 2 week intervals, may be necessary.	
	Elm Leaf Beetle (larvae)	1.1 lbs. (17.6 oz.)	As the larvae begin to appear. ORTHENE will not prevent Elm Leaf Beetle eggs from hatching.	

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## TREES AND SHRUBS (Continued)

Plants	Insects	Amount ORTHENE 90 S Per 100 Gals.	Time of Application	Recommended Application
Douglas Fir (Christmas Trees)	Douglas Fir Needle Midge	0.5 lb. (8 oz.) (0.5 lb. per acre)	Application should be made no more than 2 weeks prior to bud burst. For additional pest management information, consult your County Extension Service.	Apply the specified amount of ORTHENE 90 S in not less than 2 gals. of spray per acre by air or in 100 gals. of spray per acre by ground.
Flowering Crabapples	Aphids Tent Caterpillars Leafrollers	0.28 lb. (4.5 oz.)	As the insects begin to appear.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer.  Do not apply more often than 3 times in a growing season at a 4 week interval.  Caution: Phytotoxicity has occurred on the following Crabapple varieties: Hopa, Ichonoski, Malusfloribunda, Pink Perfection, Red Wine and Snow Cloud.
Crape Myrtle	Aphids	2 to 3 level Tbsp. (0.5 to 0.8 oz.) per 1 Tbsp. of water.	As aphids begin to appear.	Make a paint-on slurry by mixing the specified amount of ORTHENE 90 S with 1 tablespoon of water. Remove the loose bark from the trunk areas to be treated. Completely paint a band around each trunk to a width twice its diameter. Application should be made to trunks within a zone 6 to 12 inches above the ground and below the point where branching begins. For multi-trunk plants be certain to treat all trunks. For either single or multi-trunk plants, application should be made as low as possible within the recommended treatment zone.

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# GOLF COURSE AND SOD FARM TURFGRASS

DO NOT ALLOW LIVESTOCK TO GRAZE TREATED AREAS. DO NOT FEED TREATED GRASS TO LIVESTOCK.

Plant	Insects	Amount ORTHENE 90 S Per 1000 Sq. Ft.	Time of Application	Recommended Application
Golf Course and Sod Farm Turfgrass	Fall Armyworm Yellow Striped Armyworm Southern Armyworm	0.4 to 1 oz. (1.1 to 2.75 lbs. per acre)	As the insects appear. A repeat application at 2 week intervals may be necessary.	Apply the specified amount of ORTHENE 90 S per 1,000 sq. ft. Use a minimum of 5 gals. water per 1,000 sq. ft. to obtain good coverage.
	Cutworm	1 to 2 oz. (2.75 to 5.5 lbs. per acre)		
	Chinch Bugs	1 to 2 oz. (2.75 to 5.5 lbs. per acre)	Apply as needed for adult population knockdown (10 to 14 days).	Apply the specified amount of ORTHENE 90 S per 1,000 sq. ft. Use 1 to 15 gals. water per 1,000 sq. ft. to obtain good coverage.
	Fleas	1 to 2 oz. (2.75 to 5.5 lbs. per acre)	Apply as needed for knockdown (7 to 10 days) only of existing adult populations.	
	Sod Webworm (Crambus spp.)	0.4 to 0.83 oz. (1.1 to 2.25 lbs. per acre)	As sod webworms begin to appear. Use the higher amount when quick knockdown is needed or with heavy infestations.  Repeat application may be necessary. Do not repeat at more 1 week intervals.	
	Leafhopper	0.83 oz. (2.25 lbs. per acre)	As the leafhoppers begin to appear. A repeat application at 1 week intervals may be necessary.	

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# **GOLF COURSE AND SOD FARM TURFGRASS (Continued)**

**DO NOT ALLOW LIVESTOCK TO GRAZE TREATED AREAS. DO NOT FEED TREATED GRASS TO LIVESTOCK.**

Plant	Insects	Amount ORTHENE 90 S Per 1000 Sq. Ft.	Time of Application	Recommended Application
<b>Golf Course and Sod Farm Turfgrass</b>	Mole Crickets (Except CA) Spittlebug (Except CA)	0.83 to 1.6 oz. (2.25 to 4.3 lbs. per acre)	As mole crickets begin to appear. For knockdown of existing populations, more than one application may be required throughout the growing season. For heavy infestations, use the higher dosage rate.	Apply the specified amount of ORTHENE 90 S per 1,000 sq. ft. Use 1 to 15 gals. water per 1,000 sq. ft. to obtain good coverage.  Apply during late afternoon or early evening hours and after an irrigation. Do not irrigate after application.  The use of a lemon fragrance substance in the spray mix may enhance control by acting as a flushing agent and thus provide increased mole cricket contact with the ORTHENE 90 S. The following lemon-scented products have been shown to be effective flushing agents: Lemon Joy, Lemon Palmolive, and Mighty Myrt Products Manufacture- Base Pure Lemon Fragrance. The use rate for these lemon-scented products is 2 teaspoons per gallon of water for small total mix volumes or 6 fl. oz. per 50 gals. of water for large total mix volumes.
	Greenbug (Schizaphis graminum) Grasshoppers	0.4 oz. (1.1 lbs. per acre)	Apply when insects or their damage first appears. Repeat as necessary. Application is not to be repeated at more than 1 week intervals.	Apply the specified amount of ORTHENE 90 S. Use 4 gals. of water per 1,000 sq. ft. to obtain good coverage. Do not mow turfgrass for at least 24 hours after application.
	Black Turfgrass Ataenius (Except CA)	1.25 to 1.6 oz. (3.4 to 4.3 lbs. per acre)	Apply when insects or their damage first appear.	Apply the specified Amount of ORTHENE 90 S per 1,000 sq. ft. Use a minimum of 5 gallons water per 1000 square feet. Irrigate lightly after application (not more than ½ inch). Use the higher rate for severe infestations.
<b>Dichondra (Plant Site For Golf Course and Sod Farm Turfgrass)</b>	Cutworm Flea Beetle Southern Armyworm Yellow Striped Armyworm	0.83 to 1.6 oz. (2.25 to 4.3 lbs. per acre)	As the insects appear. Repeat at 2 week intervals as necessary.	Apply the specified amount of ORTHENE 90 S per 1,000 sq. ft. Use a minimum of 15 gals. of water per 1,000 sq. ft. to obtain good coverage.

### MOUND TREATMENT OF FIRE ANTS AND HARVESTER ANTS IN TURFGRASS

Plant	Insects	Amount ORTHENE 90 S	Time of Application	Recommended Application
<b>Turfgrass</b>  Residential, Recreational, and Commercial Turf	Imported Fire Ants and Harvester Ants	<p><b>Mound Treatment- Dry Method:</b> Evenly distribute 1 to 2 teaspoons over the mound. [USE NOT INCLUDED ON WSP PACKAGED PRODUCT]</p> <p><b>Drench Method:</b> Mix 0.83 oz. in 5 gals. of water. Apply 1 gal. of mix to each mound area by sprinkling the mound until it is wet and treat a four (4) foot diameter circle around the mound.</p>	<p>For best results apply the material in the early morning or late afternoon when the ants are most active.</p> <p>Applications made under prolonged hot and dry conditions may be ineffective due to the location of the ants deep within the nest.</p>	<p>Apply the specified amount of ORTHENE 90 S as directed.</p> <p>Grass in treated areas may be injured.</p> <p>Do not treat mound more than once per season.</p>

## OUTDOOR AND PERIMETER SPRAY

Location	Insects	Amount ORTHENE 90 S Per Gallon	Time of Application	Recommended Application
Outdoor and perimeter area.	Wasp	1.3 oz. (0.08 lb.)	Treat early or late in the day, as wasp are generally less active during these times.	Apply specified amount of ORTHENE 90 S per each gallon of water used. Apply as a spot treatment to the nest, nest entrance, and surrounding areas where the wasps alight.
	Ants (Including Imported Fire Ants and Harvester Ants) Crickets Cockroaches Earwigs Pillbugs	1.3 oz. (0.08 lb.)	As the insects appear.	Apply specified amount of ORTHENE 90 S per each gallon of water used.  Apply to a band of soil 6 to 10 feet adjacent to the structure and to a height of 2 to 3 feet on the foundation where pests may be active or may find entrance. Also apply as a residual spray or with a paint brush to surfaces of buildings, window frames, shutters, entryways, screens, eaves, patios, garages, carports, around garage areas and other areas where these pests congregate.
Note: Not for use on residential turfgrass.				

## OUTDOOR FLORAL CROPS AND GROUND COVERS

Plants	Insects	Amount ORTHENE 90 S Per 100 Gals.	Time of Application	Recommended Application
Chrysanthemums Daisies Dahlias Easter Lily Gladioli Gypsophila Pachysandra Pansy Peony Roses Sedum Statice Strawflower Yarrow Zinnia	Aphids Thrips Lygus	0.5 lb. (8 oz.)	As insects begin to appear. Repeat applications may be necessary.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer as a full coverage spray. Multiple applications may cause slight tip burn or marginal leaf necrosis on some varieties. Test on a few plants to determine varietal susceptibility.
Roses Boston Ivy	Japanese Beetle	1.1 lbs. (17.6 oz.)	As the Japanese Beetles begin to appear. Repeat applications at 2 week intervals may be necessary.	

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### GREENHOUSE FLORAL AND FOLIAGE PLANT CROPS

Plant	Insects	Amount ORTHENE 90 S Per 100 Gals.	Time of Application	Recommended Application
Roses	Leafrollers	0.5 to 0.8 lb. (8 to 12.8 oz.)	As leafrollers begin to appear. Use the higher amount when the large larvae are present.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer as a full coverage spray.
Foliage Plants Anthuriums Cacti Orchids Poinsettia	Aphids	0.28 lb. (4.5 oz.)	As aphids begin to appear.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer as a full coverage spray. The addition of a wetting agent may be required on difficult to wet foliage.
	Mealybugs Thrips Whiteflies	0.5 lb. (8 oz.)	As the insects begin to appear. A repeat application, at a 2 week interval, may be necessary for control of mealybugs and whiteflies.	<b>Caution:</b> Phytotoxicity has occurred on the following foliage plants: <i>Blechnum gibbum</i> , <i>Cissus antarctica</i> , <i>Ficus triangularis</i> , <i>Fittonia verschaffeltii</i> , <i>Maranta leuconeura kerchoveana</i> , <i>Pachystachya lutea</i> , <i>Plectranthus australis</i> , <i>Polypodium aureus</i> , <i>Polystichum</i> , <i>Pteris ensiformis</i> , <i>Tolmiea menziesii</i> . Before treating large plantings spray only a few plants and observe two weeks for varietal phytotoxicity. Application of ORTHENE 90 S on Poinsettias after bract formation may result in phytotoxicity on certain varieties.
	Scales (Crawlers)	0.5 lb. (8 oz.)	As crawlers begin to appear. Repeat applications, at a 2 week or more interval, may be necessary where there is continuous crawler production.	
	Sweet Potato Whiteflies (Except CA)	0.28 lb. (4.5 oz.) plus TAME® 2.4 EC Spray 10 2/3 fl. oz. (0.2 lb. ai)	Apply when insects first appear. If a population is well established, make one application of the tank mix and follow 5 to 7 days later with TAME alone at 16 fl. oz./100 gals. See TAME label for instructions.	
				For sweet potato whitefly control, apply the specified amount of ORTHENE 90 S plus TAME 2.4 EC Spray as a tank mix at a volume necessary to obtain good coverage. Follow the TAME label for specific instructions on the alternation of TAME plus ORTHENE and TAME alone and the rotation instructions to avoid potential resistance.



**GREENHOUSE FLORAL AND FOLIAGE PLANT CROPS (Continued)**

PLANTS	INSECTS	Amount ORTHENE 90 S Per 100 Gals.	TIME OF APPLICATION	RECOMMENDED APPLICATION
Roses Carnations Chrysanthemums	Aphids Thrips	0.5 lb. (8 oz.)	As aphids begin to appear.  As thrips begin to appear or at the tight flower bud stage. Repeat applications may be necessary.	Apply the specified amount of ORTHENE 90 S in 100 gals. water with a hydraulic sprayer as a full coverage spray.  Do not apply more often than once every 28 days to Carnations and Chrysanthemums.  <b>Caution:</b> Phytotoxicity has occurred on the following Chrysanthemum varieties: Albatross, Bonnie Jean, Dixie, Garland, Gem, Iceberg, Pride, Showoff, Statesman, Tally Ho, Westward Ho, and Wild Honey. Before treating large Chrysanthemum plantings, spray only a few plants and observe two weeks for varietal phytotoxicity. Do not apply to Chrysanthemums and Roses with open flowers.

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.

**STORAGE AND DISPOSAL****PROHIBITIONS**

Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.  
Open dumping is prohibited.

**STORAGE**

Keep pesticide in original container.  
Do not put concentrate or dilute into food or drink containers.  
Store in cool, dry place. Protect from excessive heat.  
Do not contaminate food or foodstuffs.  
Do not store or transport near feed or food.  
For help with any spill, leak, fire or exposure involving this material, call day or night 1 - 800 - 892 - 0099.

**PESTICIDE DISPOSAL**

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

**CONTAINER DISPOSAL**

Completely empty canister into application equipment. Do not reuse container. Dispose of empty canister in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**OR**

[FOR WATER SOLUBLE PACKAGING ONLY]

Do not reuse the outer bag. Dispose of outer bag in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

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