

**Agri Star®**  
By Albaugh Inc.

**SPECIMEN  
LABEL**

# MACHO® 4.0

## Flowable Insecticide

Manufactured for:  
**ALBAUGH, INC.**  
Ankeny, IA 50021  
515-964-9444

**FOR CHEMICAL SPILL, LEAK,  
FIRE, OR EXPOSURE, CALL  
CHEMTREC (800) 424-9300**

ACTIVE INGREDIENT:	% BY WT.
Imidacloprid: 1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine . . .	40.7%
OTHER INGREDIENTS . . . . .	59.3%
TOTAL . . . . .	100.0%

Contains 4 lbs. of active ingredient per gallon

EPA Reg. No. 42750-140

EPA Est. No. 70815-GA-01

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**

### FIRST AID

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

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

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

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

In case of emergency call CHEMTREC toll free at 1-800-424-9300.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

**NOTE TO PHYSICIAN:** No specific antidote is available. Treat the patient symptomatically.

**See inside booklet for additional PRECAUTIONARY STATEMENTS.**

# **PRECAUTIONARY STATEMENTS**

## **HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

### **CAUTION**

Harmful if swallowed, absorbed through skin, or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC), or Viton
- Shoes plus socks

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

### **ENGINEERING CONTROLS STATEMENT**

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### **USER SAFETY RECOMMENDATIONS**

**Users should:**

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### **ENVIRONMENTAL HAZARDS**

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

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 the treatment area. This product is toxic to wildlife and highly toxic to aquatic invertebrates.

This chemical demonstrates the properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

**TAKE THE FOLLOWING PRECAUTIONS WHEN MIXING AND APPLYING IN THE VICINITY OF AQUATIC AREAS SUCH AS LAKES, RESERVOIRS, RIVERS, PERMANENT STREAMS, MARSHES OR NATURAL PONDS, ESTUARIES, AND COMMERCIAL FISHING PONDS.**

### **SPRAY DRIFT MANAGEMENT**

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

#### **For Aerial Applications**

For aerial applications, mount the spray boom on the aircraft so as to minimize drift caused by wing tip vortices. Use the minimum practical boom length, do not exceed 75% of the wing span or rotor diameter. Release spray at the lowest possible height consistent with good pest control and flight safety. Do not make applications more than 10 feet above the crop canopy.

### **Importance of Droplet Size**

An important factor influencing drift is droplet size. Small droplets (<150-200 microns) drift to a greater extent than large droplets. Within typical equipment specifications, applications should be made to deliver the largest droplet spectrum that provides sufficient control and coverage. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the airstream as much as possible and by avoiding excessive spray boom pressure.

### **Wind Speed Restrictions**

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size, canopy, and equipment specifications determine drift potential at any given wind speed. Do not apply when winds are greater than 15 mph and avoid gusty and windless conditions. Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.

### **Restrictions During Temperature inversions**

Do not make aerial or ground applications during temperature inversions. Drift potential is high during temperature inversions. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical mixing.

### **Mixing and Loading Requirements**

To avoid potential contamination of groundwater, the use of a properly designed and maintained containment pad for mixing and loading of any pesticide into application equipment is recommended. If containment pad is not used, maintain a minimum distance of 25 feet between mixing and loading area and potential surface to groundwater conduits such as field sumps, uncased well heads, sinkholes, or field drains.

### **Airblast (Air Assist) Specific Instructions for Tree Crops and Vineyards**

Airblast sprayers carry droplets into the canopy of trees/vines via a radially- or laterally-directed airstream. Follow the following spray drift management practices:

- Adjust deflectors and aiming devices so that spray is only directed into the canopy.
- Block off upward pointed nozzles when there is no overhanging canopy.
- Use only enough air volume to penetrate the canopy and provide good coverage.
- Do not allow the spray to go beyond the edge of the cultivated area (i.e., turn off sprayer when turning at end rows).
- Only spray inward, toward the orchard or vineyard, for application to the outside rows.

### **No-spray Zone Requirements for Soil and Foliar Applications**

Do not apply by ground within 25 feet or by air within 150 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds.

### **Runoff Management**

Do not cultivate within 10 feet of the aquatic areas to allow growth of a vegetative filter strip. When using MACHO® 4.0 on erodible soils, employ the Best Management Practice for minimizing runoff. Consult your local Natural Resources Conservation Service for recommendations in your use area.

### **Endangered Species Notice**

Under the Endangered Species Act, it is a federal offense to use any pesticide in a manner that results in the death of a member of an endangered species. Consult your local county bulletin, County Extension Agent, or Pesticide State Lead Agency for information concerning endangered species in your area.

### **Resistance Management**

Some insects are known to develop resistance to insecticides after repeated use. As with any insecticide, the use of this product should conform to resistance management strategies established for the use area.

MACHO® 4.0 contains a Group 4A insecticide. Insect biotypes with acquired or inherent tolerance to Group 4A insecticides may eventually dominate the insect population if Group 4A insecticides are used repeatedly as the predominant method of control for targeted species. This may eventually result in partial or total loss of control of those species by MACHO® 4.0 and other Group 4A insecticides.

The active ingredient in MACHO® 4.0 insecticide is a member of the neonicotinoid chemical class. Insect pests resistant to other chemical classes have not shown cross-resistance to MACHO® 4.0. In order to maintain susceptibility to this class of chemistry in insect species with high resistance development potential, it is recommended that for each crop season: 1) only a single, soil application of MACHO® 4.0 be made; 2) foliar applications of products from the same class not be made following a long residual, soil application of MACHO® 4.0, or other neonicotinoid products.

If a soil application of MACHO® 4.0 has not been made during a crop season and foliar applications are to be made, avoid using a block of more than three consecutive applications of MACHO® 4.0 and/or other Group 4A products having the same or similar mode of action. Following a neonicotinoid block of treatments, Albaugh Inc. strongly encourages the rotation to a block of applications with effective products with a different mode of action before using additional applications of neonicotinoid products. Using a block rotation or windowed approach, along with other IPM practices, is considered an effective use strategy for preventing or delaying an insect's ability to develop resistance to this class of chemistry.

Foliar applications of MACHO® 4.0 or other Group 4A products from the neonicotinoid chemical class should not be used on crops previously treated with a long-residual, soil-applied products from the neonicotinoid chemical class.

Other Group 4A, neonicotinoid products used as foliar treatments include: Actara, Assail, Calypso, Centric, Clutch, Couraze, Galian, Impulse, Intruder, Leverage, Nuprid, Pasada, Provado, Trimax Pro, and Venom.

Other Group 4A, neonicotinoid products used as soil/seed treatments include Admire Pro, Advise, Alias, Belay, Couraze, Cruiser, Gaucho, Macho, Macho Max, Nuprid; Platinum, Venom and Widow.

Contact your Cooperative Extension specialist, certified crop advisor, and/or product manufacturer for additional insect resistance management recommendations. Also, for more information on Insect Resistance Management (IRM), visit the Insecticide Resistance Action Committee (IRAC) on the web at <http://www.irac-online.org/>.

## **DIRECTIONS FOR USE**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. 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 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 intervals. 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 12 hours. Exception: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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
- Chemical-resistant gloves made of any waterproof material such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC), or Viton
- Shoes plus socks

## APPLICATION DIRECTIONS

For soil applications of MACHO® 4.0, direct product into the seed or root-zone of crop. Failure to place MACHO® 4.0 into root-zone may result in loss of control or delay in onset of activity. MACHO® 4.0 may be applied with ground or chemigation application equipment.

Do not apply MACHO® 4.0 in enclosed structures such as planthouses or greenhouses except as specified in the **TOBACCO, CUCURBIT VEGETABLES, FRUITING VEGETABLES** and **GREENHOUSE VEGETABLES**, (Mature plants in production greenhouses): Cucumber, Tomato only sections of this label.

Foliar applications of MACHO® 4.0 must be applied as a directed or broadcast foliar spray. Thorough coverage of foliage, without runoff, is necessary for optimum insecticidal efficacy. Use adequate spray volumes, properly calibrated application equipment, and spray adjuvant if necessary to obtain thorough coverage. Failure to provide adequate coverage and retention of MACHO® 4.0 on leaves and fruit may result in loss of insect control or delay in onset of activity. MACHO® 4.0 may be applied with properly calibrated ground or aerial application equipment. Minimum specified spray volumes, unless otherwise stated in the crop-specific application sections, are 10 gallons per acre by ground and 5 gallons per acre by air. MACHO® 4.0 may also be applied by overhead chemigation (see additional information in “Chemigation” section on this label below) if allowed in crop-specific application sections.

When applied as a soil application, optimum activity of MACHO® 4.0 results from applications to the root-zone of plants to be protected. The earlier MACHO® 4.0 is available to the developing plant, the earlier the protection begins. MACHO® 4.0 is continuously taken into roots over a long period of time, and the systemic nature of MACHO® 4.0 allows movement from roots through the xylem tissue to all vegetative parts of the plant. This results in extended residual activity of MACHO® 4.0, the control of insects, and the prevention and/or reduction of virus transmission or symptom expression. The rate of MACHO® 4.0 applied affects the length of the plant protection. Use the specified higher rates when infestations occur later in crop development or where pest pressure is continuous. MACHO® 4.0 will generally not control insects infesting flowers, blooms, or fruit. Additional crop protection may be required for insects feeding in or on these plant parts, and for insects not listed in the crop-specific, pests-controlled sections of this label. Additionally, specific MACHO® 4.0 application instructions are provided in the crop-specific sections of this label.

Suppression, or less than complete control of certain diseases and insect pests including reduced feeding may also result from a MACHO® 4.0 application. Complete control of these pest/diseases may require supplemental control measures.

MACHO® 4.0 use on crops grown for production of true seed intended for private or commercial planting is typically restricted but may be allowed under state specific, supplemental labeling. As with any insecticide, care must be taken to minimize exposure of MACHO® 4.0 to honey bees and other pollinators. Use of MACHO® 4.0 on crops requiring bee pollination must be avoided during bloom and a minimum of 10 days prior to bloom. Additional information on MACHO® 4.0 uses for these crops and other questions may be obtained from the Cooperative Extension Service, PCAs, consultants, or local Albaugh, Inc. representatives.

Make application only to plants grown in field-type soils, potting media, or mixtures thereof. Do not apply to plants grown in non-soil medias such as perlite, vermiculite, rock wool, or other soil-less media, or plants growing hydroponically. Pre-mix MACHO® 4.0 with water or other appropriate diluent prior to application. Keep MACHO® 4.0 and water suspension agitated to avoid settling.

Do not apply more than 0.5 lb. active ingredient per acre per crop season regardless of formulation or method of application, unless specified within the crop-specific, application section for a given crop.

## MIXING INSTRUCTIONS

To prepare the application mixture, add a portion of the required amount of water to the spray tank and, with agitation, add MACHO® 4.0. Complete filling tank with balance of water needed. Maintain sufficient agitation during both mixing and application. MACHO® 4.0 may also be used with other pesticides and/or fertilizer solutions. Please see “Compatibility” section of this label. When tank mixtures of MACHO® 4.0 and other pesticides are involved, prepare the tank mixture as recommended above and follow suggested “Mixing Order” below.

### Mixing Order

When pesticide mixtures are needed, add wettable powders or wettable granules first, MACHO® 4.0 and other suspension concentrates (flowable) products second, and emulsifiable concentrates last. Ensure good agitation as each component is added. Do not add an additional component until the previous is thoroughly mixed. If a fertilizer solution is added, a fertilizer/pesticide compatibility agent may be needed. Maintain constant agitation during both mixing and application to ensure uniformity of spray mixture.



## Compatibility

Test compatibility of the intended mixture before adding MACHO® 4.0 to the spray or mix tank. Add proportionate amounts of each ingredient in the appropriate order to a pint or quart jar, cap, shake for 5 minutes, and let set for 5 minutes. Poor mixing or formulation of precipitates that do not readily redisperse indicates an incompatible mixture that should not be used.

## CHEMIGATION

**Types of Irrigation Systems:** Foliar chemigation applications of MACHO® 4.0 may be made to crops through overhead sprinkler systems if specified in crop-specific application sections. Soil chemigation applications of MACHO® 4.0 may only be made to crops through chemigation as specified in crop-specific application sections and only through low-pressure systems specifically recommended for a given crop. Do not apply MACHO® 4.0 through any other type of irrigation systems.

Make foliar chemigation applications of MACHO® 4.0 as concentrated as possible. Retention of MACHO® 4.0 on target site of insect infestation is necessary for optimum activity. Chemigation of MACHO® 4.0 in water volumes exceeding 0.10 inch per acre is not recommended. See crop-specific instructions sections of the label for more information.

**Uniform Water Distribution and System Calibration:** The irrigation system must provide uniform distribution of treated water. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. The system must be calibrated to uniformly apply the rates specified. If you have questions about calibration, you should contact Cooperative Extension Service specialists, equipment manufacturers, or other experts.

**Chemigation Monitoring:** 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.

**Drift:** Do not apply when wind speed favors drift beyond the area intended for treatment.

**Required System Safety Devices:** 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.

**Using Water from Public Water Systems:** Public water systems means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Chemigation systems connected to public water systems must contain a functional reduced-pressure zone, back flow preventer (RPZ), or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system must be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and to top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. The pesticide injection pipeline must contain a functional automatic quick-closing check valve to prevent the flow of the fluid back toward the injection. The pesticide injection pipeline must 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 or in cases where there is no water pump, 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.

## ROTATIONAL CROPS\*

Treated areas may be replanted with any crop specified on an imidacloprid label, or any crop for which a tolerance exists for the active ingredient, as soon as practical following the last application. For crops not listed on an imidacloprid label, or for crops for which no tolerances for the active ingredient have been established, a 12-month plant-back interval must be observed.

### IMMEDIATE PLANT-BACK:

All crops on this label plus the following crops not on this label: barley, canola, corn (field, pop, and sweet), rapeseed, sorghum, sugarbeet, and wheat

### 30-DAY PLANT-BACK:

Cereals (including buckwheat, millet, oats, rice, rye and triticale), soybeans, and safflower

### 10-MONTH PLANT-BACK:

Onion and bulb vegetables

### 12-MONTH PLANT-BACK:

All Other Crops

\* Cover crops for soil building or erosion control may be planted any time, but do not graze or harvest for food or feed.

## FIELD CROPS

### COTTON – soil treatment

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Cotton aphid, Plant bugs, Thrips, Whiteflies	0.65	8.5 – 10.55 (depending on row-spacing)
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>Maximum MACHO® 4.0 allowed per crop season when making soil applications: 10.55 fluid ounces per acre (0.33 lb. active ingredient per acre).</li> <li>Regardless of formulation or method of application, apply no more than 0.5 lb. active ingredient per acre per season, including seed treatment, soil, and foliar uses.</li> <li>Do not apply more than a total of 6 applications of the active ingredient per season.</li> <li>Do not graze treated fields after any application of MACHO® 4.0. See Resistance Management Section of this label.</li> </ul> <b>Applications: Apply specified dosage in one of the following methods:</b> <ul style="list-style-type: none"> <li>In-furrow spray during planting directed on or below seed.</li> <li>In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting.</li> <li>Chemigation into root-zone through low-pressure drip or trickle irrigation.</li> </ul>		

## COTTON – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Cotton aphid, Cotton leafhopper, Bandedwinged whitefly, Plant bugs (excludes <i>Lygus hesperus</i> ), Green stink bug, Southern green stink bug, Bollworm/bugworm (ovicidal effect)	1 – 2
Pests Suppressed	
Lygus bug ( <i>Lygus hesperus</i> ), Whiteflies (other than bandedwinged whitefly)	1.52 – 2

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to an infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pest.

**Restrictions:**

- Pre-harvest interval (PHI): 14 days
- Minimum interval between applications: 7 days
- Maximum MACHO® 4.0 allowed per crop season when making foliar applications: 10 fluid ounces per acre (0.31 lb. A.I. per acre)
- Regardless of formulation or method of application, apply no more than 0.5 lb. active ingredient per acre per season, including seed treatment, soil, and foliar uses.
- Do not graze treated fields after any application of MACHO® 4.0.
- MACHO® 4.0 may be applied through properly calibrated ground, aerial, or chemigation application equipment.
- Do not apply more than a total of 6 applications of the active ingredient per season.

## Tank Mix Instructions

Pests Controlled (in addition to pests listed above)	MACHO® 4.0 Rate fluid ounces per acre	Bidrin® 8* Rate fluid ounces per acre
<b>For early-season control of:</b> Thrips	1 – 1.52	1.6 – 3.2 <sup>(1)</sup>
<b>For mid- to late-season control of:</b> Plant bugs, Stink bugs (including Brown stink bug), Grasshoppers, Saltmarsh caterpillar, Cotton leafperforator	1 – 1.52	4.0 – 8.0 <sup>(2)</sup>

**Restrictions (in addition to Restrictions listed above):**

\*Refer to the Bidrin 8 product label for specific use instructions.

<sup>(1)</sup>Do not apply more than 3.2 fl. oz./acre during this growth period. Do not make more than one application during this growth period.

<sup>(2)</sup>Do not apply more than 16 fl. oz./acre during this growth period. Do not apply sooner than 14 days of first application or within 30 days of harvest. Do not graze livestock on treated fields or feed treated gin trash.



## POTATO – soil treatment

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Potato psyllid	0.45 – 0.65	6.5 – 10.0
Pests/Diseases Suppressed	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Symptoms of: Potato leaf roll virus (PLRV), Potato yellows, Net necrosis, Wireworms (with in-furrow spray at-planting)	0.45 – 0.65	6.5 – 10.0
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>Maximum MACHO® 4.0 allowed per crop season when making soil applications: 10.0 fluid ounces per acre (0.31 lb. active ingredient per acre)</li> </ul> <b>Applications: Apply specified dosage in one of the following methods:</b> <ul style="list-style-type: none"> <li>In-furrow spray during planting directed on seed pieces or seed potatoes.</li> <li>Subsurface side-dress on both sides of the row covered with 3 or more inches of soil.</li> <li>Narrow band spray at ground cracking directly over the row during hilling covered with 3 or more inches of soil.</li> <li>Narrow band directed below the eventual seed row in a bedding operation 7 or fewer days before planting. For effective pest control or suppression. MACHO® 4.0 applications must be placed below soil-surface and in contact with seed piece or within root-zone. For potatoes grown on highly permeable soils with shallow water table, at-plant applications of MACHO® 4.0 may be made in a 2 to 4 inch band (width of planter shoe opening) and completely covered.</li> </ul>		

## POTATO – seed piece treatment

Pests Controlled	Rate: Fluid ounces per 100 lbs. of seed	Rate: Fluid ounces per acre*
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Potato psyllid, Wireworms (seed-piece protection)	0.2 – 0.4	4.0 – 8.0
Pest/Diseases Suppressed	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Symptoms of: Potato leaf roll virus (PLRV), Potato yellows, Net necrosis	0.4	8.0
<b>Application:</b> Apply specified dosage as a diluted spray onto seed-pieces using a shielded spray system. Dilute with 3 parts water, or less, to 1 part MACHO® 4.0. Agitate or stir spray solution as needed. Fungicidal or inert absorbent dusts may be applied after MACHO® 4.0 application. Apply only in areas with adequate ventilation or in areas that are equipped to remove spray mist or dust. Plant seed pieces as soon as possible after treating avoiding prolonged exposure of MACHO® 4.0 treated seed-pieces to sunlight and in accordance with the specifications of your local Extension service.		
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>Maximum MACHO® 4.0 allowed per crop season when making seed piece treatment applications: 10.0 fluid ounces per acre (0.31 lb. active ingredient per acre)</li> <li>Do not use treated seed-pieces for food, feed, or fodder.</li> <li>Do not apply any subsequent application of MACHO® 4.0 (in-furrow), Gaucho, Leverage, or Provado following a MACHO® 4.0 seed-piece treatment.</li> </ul>		

\* Based on a seeding rate of 2000 lbs. per acre.

## POTATO – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Psyllids	1.52
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to an infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 7 days</li> <li>• Minimum interval between applications: 7 days</li> <li>• Maximum MACHO® 4.0 allowed per crop season when making foliar applications: 6.4 fluid ounces per acre (0.2 lb. AI per acre)</li> </ul>	

## TOBACCO – soil treatment

Pests Controlled	Rate: Fluid ounces per 1000 plants (as seeding tray drench)	Rate: Fluid ounces per 1000 plants (in-furrow or transplant-water)
Aphids, Flea beetles	0.5	0.7
Mole crickets, Whiteflies, Wireworms	0.7 – 1.4	0.9 – 1.4
Pests/Diseases Suppressed		
Cutworms Symptoms of: Tomato spotted wilt virus (TSWV)	0.7 – 1.4	0.9 – 1.4
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Uniform, broadcast foliar spray to seedlings in trays (tray drench) not more than 7 days prior to transplanting followed immediately by overhead irrigation to wash MACHO® 4.0 from foliage into potting media. Failure to wash MACHO® 4.0 from foliage may result in a reduction in pest control. Transplants should be handled carefully during setting to avoid dislodging treated potting media from roots.</li> <li>• In-furrow spray or transplant-water drench during setting.</li> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Maximum MACHO® 4.0 allowed per crop season when making soil applications or foliar sprays to seedlings: 16.0 fluid ounces per acre (0.5 lb. active ingredient per acre)</li> <li>• Pre-Harvest Interval (PHI): 14 days</li> </ul> <p><b>Important Note:</b> Proper tray drench applications of MACHO® 4.0 have been shown to be the most efficacious method of application. However, the specified rate of MACHO® 4.0 may be applied as combination of the tray drench in the planthouse and/or transplant-water drench in field. Adverse growing conditions may cause a delay in uptake of MACHO® 4.0 into the plant and a delay in control.</p>		

## TOBACCO – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids	0.8 – 1.6
Flea beetles, Japanese beetle	1.6
<b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to an infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank-mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.	
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 14 days</li> <li>• Minimum interval between applications: 7 days</li> <li>• Maximum MACHO® 4.0 allowed per crop season when making foliar applications: 8.9 fluid ounces per acre (0.28 lb. AI per acre)</li> </ul>	

## VEGETABLE AND SMALL FRUIT CROPS

### CUCURBIT VEGETABLES<sup>1</sup> – soil treatment

**Crops of Crop Group 9 Including:** Chayote (fruit), Chinese waxgourd (Chinese preserving melon), Citron melon, Cuban pumpkin, Cucumber, Gherkin, Gourd (edible, includes hyofan, cucuzza, hechima, Chinese okra), *Momordica* spp. (includes balsam apple, balsam pear, bitter melon, Chinese cucumber), Muskmelon (hybrids and/or cultivars of *Cucumis melo* including true cantaloupe, cantaloupe, casaba, Crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, snake melon, and Winter melon), Pumpkin, Squash (includes summer squash types such as: butternut squash, calabaza, crookneck squash, Hubbard squash, scallop squash, straightneck squash, vegetable marrow and zucchini, and winter squash types such as acorn squash and spaghetti squash), Watermelon (includes hybrids and/or varieties of *Citrullus lanatus*)

Field Application Instructions. See details below for additional planthouse recommendations.	
Pests Controlled	Rate: Fluid ounces per acre
Aphids, Cucumber beetles, Leafhoppers, Thrips (foliage-feeding thrips only), Whiteflies	8.0 – 12.0
Pests/Diseases Suppressed	
Bacterial wilt (as vectored by various cucumber beetles), Leaf silencing resulting from whitefly feeding	8.0 – 12.0
<b>Applications:</b> Apply the specified dosage in one of the following methods: <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> <li>• In-furrow spray directed on or below seed.</li> <li>• Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application.</li> <li>• Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting.</li> <li>• Post-seeding drench, transplant-water drench, or hill drench.</li> <li>• Subsurface side-dress on both sides of each row. MACHO® 4.0 must be incorporated into root-zone.</li> </ul>	
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 21 days</li> <li>• Maximum MACHO® 4.0 allowed per application when making soil applications: 12.0 fluid ounces per acre (0.38 lb./active ingredient per acre)</li> </ul>	

(continued)

## CUCURBIT VEGETABLES<sup>1</sup> – soil treatment (*cont.*)

Planthouse Application Instructions	
Pest Controlled	Rate: Fluid ounces per 1000 plants
Aphids, Whiteflies	0.05
<p><b>Applications:</b> Apply specified dosage to seedlings in trays in the planthouse, targeting soil media (tray drench), not more than 7 days prior to transplanting, in one of the following methods:</p> <ul style="list-style-type: none"> <li>Uniform, broadcast high-volume foliar spray, followed immediately by sufficient overhead irrigation to wash MACHO® 4.0 from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash MACHO® 4.0 from foliage may result in reduced pest control.</li> <li>Injection into overhead irrigation system, using adequate volume to thoroughly saturate soil media without loss of gravitational solution from the bottom of the tray.</li> </ul> <p>The application made in the planthouse will only provide short-term protection and is not intended as a substitution for a field application. An additional field application must be made within 2 weeks following transplanting to provide continuous protection. Applications of higher rates or increased number of applications in planthouse may result in significant plant injury. Transplants should be handled carefully during setting to avoid dislodging treated potting media from roots.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>Maximum amount MACHO® 4.0 applied in the planthouse: 0.05 fluid ounce (0.00156 lb. active ingredient per 1000 plants)</li> <li>Maximum number MACHO® 4.0 applications in planthouse: 1</li> </ul> <p><b>Important Note:</b> Not all varieties of cucurbit vegetables have been tested for tolerance to MACHO® 4.0 applied to seedling flats. It is therefore recommended to treat a small number of plants and confirm tolerance for 7 days prior to treating entire planthouse.</p> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## GREENHOUSE VEGETABLES<sup>1</sup> – soil treatment

(Mature plants in production greenhouses): Cucumber, Tomato only

Pests Controlled	Rate: Fluid ounces per 1000 plants
Aphids, Whiteflies	0.7
<p><b>Applications:</b> Apply specified dosage in a minimum of 16 gallons of water for tomatoes and 21 gallons of water for cucumbers using soil drenches, micro-irrigation, drip irrigation, or hand-held or motorized calibrated irrigation equipment. Application must be made only to plants grown in field-type soils, potting media, or mixtures thereof. Do not apply to plants grown in non-soil medias such as perlite, vermiculite, rock wool or other soil-less media, or plants growing hydroponically. Do not apply to immature plants since phytotoxicity may occur.</p> <p>Applications should be made when infestation pressure surpasses threshold and beneficials are not able to maintain pest populations below damage thresholds. Repellency of bumble bee pollinators and negative effects on some beneficials (<i>Orius</i> spp.) can occur when MACHO® 4.0 is applied.</p> <p>Many varieties of vegetables have been tested for tolerance to MACHO® 4.0 and show good safety. However, certain varieties may show more sensitivity to MACHO® 4.0. Therefore, treatment of a few plants is recommended before treating the whole greenhouse.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>Pre-Harvest Interval (PHI): 0 day</li> <li>Maximum number MACHO® 4.0 applications per crop season when making soil applications: 1</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## FRUITING VEGETABLES<sup>1</sup> – soil treatment

**Crops of Crop Group 8 plus Okra including:** Eggplant, Ground cherry, Okra, Pepper (including bell, chili, cooking, pimento, and sweet), Tomato, Pepinos, Tomatillo

Field Application Instructions. See details below for additional planthouse instructions.	
Pests Controlled	Rate: Fluid ounces per Acre
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	Okra and Pepper: 8.0 - 16.0 Other Crops: 8.0 - 12.0
Diseases Suppressed	
Symptoms of: Tomato mottle virus, Tomato spotted wilt virus, Tomato yellow leaf curl virus	Okra and Pepper: 8.0 - 16.0 Other Crops: 8.0 - 12.0
<b>Applications:</b> Apply specified dosage in one of the following methods: <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> <li>• In-furrow spray directed on or below seed</li> <li>• Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application.</li> <li>• Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting.</li> <li>• Post-seeding drench, transplant-water drench, or hill drench.</li> <li>• Subsurface side-dress on both sides of each row. MACHO<sup>®</sup> 4.0 must be incorporated into root-zone.</li> </ul>	
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 21 days</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed on pepper and okra crops per application when making soil applications: 16.0 fluid ounces/Acre (0.5 lb A.I. per acre)</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed on other fruiting vegetable crops per application when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. A.I./per acre)</li> </ul>	
Plant house Application Instructions	
Pests Controlled	Rate: Fluid ounces per 1000 plants
Aphids, Whiteflies	0.05
<b>Applications:</b> Apply specified dosage to seedlings in trays in the planthouse, targeting soil media (tray drench), not more than 7 days prior to transplanting, in one of the following manners: <ul style="list-style-type: none"> <li>• Uniform, broadcast high-volume foliar spray, followed immediately by sufficient overhead irrigation to wash MACHO<sup>®</sup> 4.0 from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash MACHO<sup>®</sup> 4.0 from foliage may result in reduced pest control.</li> <li>• Injection into overhead irrigation system, using adequate volume to thoroughly saturate soil media without loss of gravitational solution from the bottom of the tray.</li> </ul> <p>The application made in the planthouse will only provide short-term protection and is not intended as a substitution for a field application. An additional field application must be made within 2 weeks following transplanting to provide continuous protection. Applications of higher rates or increased number of applications in planthouse may result in significant plant injury. Transplants should be handled carefully during setting to avoid dislodging treated potting media from roots.</p>	
<b>Important Note:</b> Not all varieties of fruiting vegetables have been tested for tolerance to MACHO <sup>®</sup> 4.0 applied to seedling flats. It is therefore recommended to treat a small number of plants and confirm tolerance for 7 days prior to treating entire planthouse.	
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>• Maximum amount MACHO<sup>®</sup> 4.0 applied in the planthouse: 0.05 fluid ounce (0.00156 lb. A.I.) per 1000 plants</li> <li>• Maximum number MACHO<sup>®</sup> 4.0 applications in planthouse: 1</li> </ul>	

<sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

## FRUITING VEGETABLES<sup>1</sup> – foliar treatment

Crops of Group 8 plus Okra, Including: Eggplant, Ground cherry, Okra, Pepper (including bell, chili, cooking, pimento, and sweet), Tomato, Pepinos, Tomatillo

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Colorado potato beetle, Leafhoppers, Whiteflies	1.5 – 2.4
Pepper weevil	2.4

### Applications:

Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO<sup>®</sup> 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO<sup>®</sup> 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.

Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website ([www.epa.gov](http://www.epa.gov)) for latest Crop Groups.

For pepper weevil, apply specified dosage of MACHO<sup>®</sup> 4.0 by ground equipment only, timing applications prior to a damaging population becoming established. Good coverage of foliage and fruit is necessary for optimum control. Applications of MACHO<sup>®</sup> 4.0 must be incorporated into a full-season program where alternations of effective products from multiple classes of chemistry and different modes of action are utilized in a blocked or windowed approach.

For additional information, please contact your Albaugh, Inc. representative, Extension Specialist or crop advisor. When targeting adult whiteflies, use higher rates.

### Restrictions:

- Pre-harvest interval (PHI): 0 day
- Minimum interval between applications: 5 days
- Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making foliar applications: 7.6 fluid ounces per acre (0.24 lb. AI per acre)

<sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

## GLOBE ARTICHOKE – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers	1.6 - 4.0

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to infested areas as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO<sup>®</sup> 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO<sup>®</sup> 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pest.

Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website ([www.epa.gov](http://www.epa.gov)) for latest Crop Groups.

### Restrictions:

- Pre-harvest interval (PHI): 7 days
- Minimum interval between applications: 14 days
- Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making foliar applications: 16 fluid ounces per acre (0.5 lb AI per acre)



## HERBS – soil treatment

**Crops of Crop Subgroup 19A including:** Angelica, Balm (lemon balm), Basil (fresh and dried), Borage, Bumet, Camomile, Catnip, Chervil (dried), Chinese chive, Chive, Clary, Coriander (cilantro or Chinese parsley leaves), Costmary, Culantro (leaf), Curry (leaf), Dillweed, Horehound, Hyssop, Lavender, Lemongrass, Lovage (leaf), Marigold, Marjoram, Nasturtium, Parsley (dried), Pennyroyal, Rosemary, Rue, Sage, Savory (summer and winter), Sweet bay (bay leaf), Tansy, Tarragon, Thyme, Wintergreen, Woodruff, Wormwood

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	8.0 – 12.0
Pests Suppressed	
Thrips (foliage feeding thrips only)	8.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"><li>• In-furrow spray during planting directed on or below seed.</li><li>• In-furrow spray or transplant-water drench during setting or transplanting.</li><li>• Shankd-into or below eventual seed-line.</li><li>• Chemigation into root-zone through low-pressure drip, micro-sprinkler, or equivalent equipment.</li></ul> <p><b>Note:</b> Not all crops and/or varieties listed above have been tested for phytotoxic effects. Without specific knowledge about a particular crop and variety, Albaugh, Inc. strongly recommends that only small areas or numbers of plants of each be treated and evaluated prior to commercial use.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"><li>• Pre-Harvest Interval (PHI): 14 days</li><li>• Maximum MACHO® 4.0 per season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. AI/Acre)</li></ul>	

## HERBS – foliar treatment

**Crops of Crop Subgroup 19A including:** Angelica, Balm (lemon balm), Basil (fresh and dried), Borage, Bumet, Camomile, Catnip, Chervil (dried), Chinese chive, Chive, Clary, Coriander (cilantro or Chinese parsley leaves), Costmary, Culantro (leaf), Curry (leaf), Dillweed, Horehound, Hyssop, Lavender, Lemongrass, Lovage (leaf), Marigold, Marjoram, Nasturtium, Parsley (dried), Pennyroyal, Rosemary, Rue, Sage, Savory (summer and winter), Sweet bay (bay leaf), Tansy, Tarragon, Thyme, Wintergreen, Woodruff, Wormwood

Pests Controlled	Rate: Fluid ounces per Acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.4
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p>Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest Crop Groups.</p> <p>MACHO® 4.0 may be applied through properly calibrated ground and aerial application equipment. Thorough coverage with direct contact of the spray material to the target pests is required for optimum control. The addition of an organosilicone based spray adjuvant at a rate not to exceed the adjuvant manufacturer's specified use rate may improve coverage and control.</p> <p><b>Note:</b> Not all crops and/or varieties listed above have been tested for phytotoxic effects. Without specific knowledge about a particular crop and variety, Albaugh, Inc., strongly recommends that only small areas or numbers of plants of each be treated and evaluated prior to commercial use.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"><li>• Pre-Harvest Interval (PHI): 7 days</li><li>• Minimum interval between applications: 5 days</li><li>• Maximum MACHO® 4.0 allowed per season when making foliar applications: 4.2 fluid ounces per acre (0.13 lb. AI per acre)</li></ul>	

## BRASSICA (COLE) LEAFY VEGETABLES<sup>1</sup> – soil treatment

**Crops of Crop Group 5 including:** Broccoli, Broccoli raab (rapini), Brussels sprouts, Cabbage, Cauliflower, Cavalo broccoli, Chinese (gai lon) broccoli, Chinese (bok choy) cabbage, Chinese (napa) cabbage, Chinese mustard (gai choy) cabbage, Collards, Kale, Kohlrabi, Mizuna, Mustard greens, Mustard spinach, Rape greens, Turnip tops (leaves)

Pests Controlled	Rate: Fluid ounces per acre (on 36-inch rows)
Aphids, Leafhoppers, Thrips (foliage-feeding thrips only), Whiteflies	5.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-spinkler, or equivalent equipment.</li> <li>• In-furrow spray directed on or below seed.</li> <li>• Narrow (2 inches or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application.</li> <li>• Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting.</li> <li>• Post-seeding drench, transplant-water drench, or hill drench.</li> <li>• Subsurface side-dress on both sides of each row. MACHO<sup>®</sup> 4.0 must be incorporated into root-zone.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 21 days</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed per application when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. AI per acre)</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## BRASSICA (COLE) LEAFY VEGETABLES<sup>1</sup> – foliar treatment

**Crops of Crop Group 5 including:** Broccoli, Broccoli raab (rapini), Brussels sprouts, Cabbage, Cauliflower, Cavalo broccoli, Chinese (gai lon) broccoli, Chinese (bok choy) cabbage, Chinese (napa) cabbage, Chinese mustard (gai choy) cabbage, Collards, Kale, Kohlrabi, Mizuna, Mustard greens, Mustard spinach, Rape greens Turnip tops (leaves)

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.5
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO<sup>®</sup> 4.0 may not knock down established heavy insect populations. Two applications may be required to achieve control. Scout field and re-treat if needed. MACHO<sup>®</sup> 4.0 may be tank mixed with other insecticides as specified for knockdown of pest or for improved control of other pests. Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest Crop Groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 7 days</li> <li>• Minimum interval between applications: 5 days</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making foliar applications: 7.68 fluid ounces/Acre (0.24 lb. AI per acre)</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## LEAFY VEGETABLES<sup>1</sup> – soil treatment

**Crops of Crop Subgroup 4A plus Watercress including:** Amaranth (leafy amaranth, Chinese spinach, tampala), Arugula (Roquette), Chervil, Chrysanthemum (edible-leaved and garland), Cilantro, Corn salad, Cress (garden), Cress (upland, yellow rocket, winter cress), Dandelion, Dock (sorrel), Endive (escarole), Lettuce (head and leaf), Orach, Parsley, Purslane (garden and winter), Radicchio (red chicory), Spinach (including New Zealand and vine (Malabar spinach, Indian spinach)), Watercress (commercial production only, applications must not be made to native cress growing in streams or other bodies of water), Watercress (upland)

Pests Controlled	Rate: Fluid ounces per acre (on 36-inch rows)
Aphids, Leafhoppers, Thrips (foliage-feeding thrips only), Whiteflies	5.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> <li>• In-furrow spray directed on or below seed.</li> <li>• Narrow (2 inches or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application.</li> <li>• Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting.</li> <li>• Post-seeding drench, transplant-water drench, or hill drench.</li> <li>• Subsurface side-dress on both sides of each row. MACHO® 4.0 must be incorporated into root-zone.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 21 days</li> <li>• Maximum MACHO® 4.0 allowed per application when making soil applications: 12.0 fluid ounces per acre (0.38 lb. AI per Acre)</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## LEAFY VEGETABLES<sup>1</sup> – foliar treatment

**Crops of Crop Subgroup 4A plus Watercress including:** Amaranth (leafy amaranth, Chinese spinach, tampala), Arugula (Roquette), Chervil, Chrysanthemum (edible leaved and garland), Cilantro, Corn salad, Cress (garden), Cress (upland, yellow rocket, winter cress), Dandelion, Dock (sorrel), Endive (escarole), Lettuce (head and leaf), Orach, Parsley, Purslane (garden and winter), Radicchio (red chicory), Spinach (including New Zealand and vine (Malabar spinach, Indian spinach)), Watercress (commercial production only, applications must not be made to native cress growing in streams or other bodies of water), Watercress (upland)

Pests Controlled	Rate: Fluid ounces per acre (on 36-inch rows)
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.5
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p>Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest Crop Groups.</p> <p>For applications made to watercress, production fields must be drained of water at least 24 hours prior to application and water must not be reapplied to the field for a minimum of 24 hours following the applications. Applications must be made to fully leafed-up canopies only.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 7 days</li> <li>• Minimum interval between applications: 5 days</li> <li>• Maximum MACHO® 4.0 allowed per crop season when making foliar applications: 7.6 fluid ounces per acre (0.24 lb. AI per Acre)</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## LEAFY PETIOLE VEGETABLES<sup>1</sup> – soil treatment

**Crops of Crop Subgroup 4B including:** Cardoon, Celery, Celtuce, Chinese celery (fresh leaves and stalk only), Florence fennel (including sweet anise, sweet fennel, Finocchio), Rhubarb, Swiss chard

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Thrips (foliage-feeding thrips only), Whiteflies	5.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> <li>• In-furrow spray directed on or below seed.</li> <li>• Narrow (2 inches or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application.</li> <li>• Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting.</li> <li>• Post-seeding drench, transplant-water drench, or hill drench.</li> <li>• Subsurface side-dress on both sides of each row. MACHO® 4.0 must be incorporated into root-zone.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 45 days</li> <li>• Maximum MACHO® 4.0 allowed per application when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. AI per acre)</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## LEGUME VEGETABLES<sup>1</sup> except soybean, dry - soil treatment

**Crops of Crop group 6 including:**

**Edible Podded and Succulent Shelled Pea and Bean and Dried Shelled Pea and Bean**

**Bean** (*Lupinus* spp., includes grain lupin, sweet lupin, white lupin, and white sweet lupin)

**Bean** (*Phaseolus* spp., includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean)

**Bean** (*Vigna* spp., includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, Crowder pea, moth bean, mung bean, rice bean, Southern pea, urd bean, yardlong bean)

**Pea** (*Pisum* spp., includes dwarf pea, edible-pod pea, English pea, field pea, garden pea, green pea, snow pea, sugar snap pea)

**Other Beans and Peas** (Broad bean [fava], Chickpea [garbanzo bean], Guar, Jackbean, Lablab bean [hyacinth bean], Lentil, Pigeon pea, Soybean [immature seed], Sword bean)

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Thrips (foliage-feeding thrips only), Whiteflies	8.0 – 12.0
Diseases Suppressed	
Symptoms of: Bean common mosaic virus (BCMV), Bean golden mosaic virus (BGMV), Beet curly top hybridgeminivirus (BCTV)	8.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> <li>• In-furrow spray at planting directed on or below seed.</li> <li>• In a narrow (2 inches or less) surface band over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation with 24 hours following application.</li> <li>• In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting.</li> <li>• As a post-seeding drench, transplant drench, or hill drench.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 21 days</li> <li>• Maximum MACHO® 4.0 allowed per crop season when making soil application: 12.0 fluid ounces/Acre (0.38 lb. AI per acre)</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

**LEGUME VEGETABLES<sup>1</sup> except soybean, dry – foliar treatment**

**Crops of Crop-Group 6 including:**

**Edible Podded and Succulent Shelled Pea and Bean and Dried Shelled Pea and Bean**

**Bean** (*Lupinus* spp., includes grain lupin, sweet lupin, white lupin, and white sweet lupin)

**Bean** (*Phaseolus* spp., includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean)

**Bean** (*Vigna* spp., includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, Crowder pea, moth bean, mung bean, rice bean, Southern pea, urd bean, yardlong bean)

**Pea** (*Pisum* spp., includes dwarf pea, edible-pod pea, English pea, field pea, garden pea, green pea, snow pea, sugar snap pea)

**Other Beans and Peas** (Broad bean [fava], Chickpea [garbanzo bean], Guar, Jackbean, Lablab bean [hyacinth bean], Lentil, Pigeon pea, Soybean [immature seed] Sword bean)

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Whiteflies	1.4
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p>Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest Crop Groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"><li>• Pre-Harvest Interval (PHI): 7 days</li><li>• Minimum interval between applications: 7 days</li><li>• Maximum MACHO® 4.0 allowed per crop season when making foliar application: 4.2 fluid ounces/Acre (0.13 lb. AI per acre)</li></ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p>	

## ROOT VEGETABLES<sup>1</sup> – soil treatment

**Crops of Crop Subgroup 1B except Sugarbeet including:** Beet (garden)<sup>2</sup>, Burdock (edible)<sup>2</sup>, Carrot<sup>2</sup>, Celeriac<sup>2</sup>, Chervil (turnip-rooted)<sup>2</sup>, Chicory<sup>2</sup>, Gingseng, Horseradish, Parsley (turnip-rooted), Parsnip<sup>2</sup>, Radish<sup>2</sup>, Oriental radish (daikon)<sup>2</sup>, Rutabaga<sup>2</sup>, Salsify (oyster plant), Salsify (black)<sup>2</sup>, Salsify (Spanish), Skirret, and Turnip<sup>2</sup>.

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	0.35 – 0.85	5.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment</li> <li>• In-furrow spray (rate specified per 1000 row-feet) or, shanked-in 1 to 2 inches below seed depth during planting.</li> <li>• In a narrow (2 inches or less) band directly (1 to 2 inches) below the eventual seed row in a bedding operation 14 or fewer days before planting.</li> </ul> <p><b>Important Note:</b> The rate applied affects the length of control. Use higher rates where infestations occur later in crop development, or where pest pressure is continuous. MACHO<sup>®</sup> 4.0 rates less than 0.7 fluid ounces/1000 row-feet will not provide adequate residual pest control.</p> <p>MACHO<sup>®</sup> 4.0 treated crops grown on very high organic matter soils (muck) may also require additional pest management control.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 21 days</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. AI per acre)</li> <li>• Maximum MACHO<sup>®</sup> 4.0 soil applications per crop season: 1</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by a state-specific supplemental labeling.</p> <p><sup>2</sup> Tops or greens from these crops may be utilized for food or feed.</p>		

## ROOT VEGETABLES<sup>1</sup> – foliar treatment

**Crops of Crop Subgroup 1B except Sugarbeet including:** Beet (garden)<sup>2</sup>, Burdock (edible)<sup>2</sup>, Carrot<sup>2</sup>, Celeriac<sup>2</sup>, Chervil (turnip-rooted)<sup>2</sup>, Chicory<sup>2</sup>, Gingseng, Horseradish, Parsley (turnip-rooted), Parsnip<sup>2</sup>, Radish<sup>2</sup>, Oriental radish (daikon)<sup>2</sup>, Rutabaga<sup>2</sup>, Salsify (oyster plant), Salsify (black)<sup>2</sup>, Salsify (Spanish), Skirret, and Turnip<sup>2</sup>.

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.4
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO<sup>®</sup> 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO<sup>®</sup> 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p>Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest Crop Groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 7 days</li> <li>• Minimum interval between applications: 5 days</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making foliar applications: 1.4 fluid ounces per acre (0.044 lb. AI per acre) on Radish, 4.2 fluid ounces per acre (0.13 lb AI per acre) on other crops.</li> <li>• Maximum MACHO<sup>®</sup> 4.0 application(s) per crop season: 1 on radish, 3 on all other crops</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p> <p><sup>2</sup> Tops or greens from these crops may be utilized for food or feed.</p>	



## TUBEROUS and CORM VEGETABLES<sup>1</sup> – soil treatment

**Crops of Crop Subgroup 1C including:** Arracacha, Arrowroot, Artichoke (Chinese and Jerusalem), Canna (edible, Queensland arrowroot), Cassava (bitter and sweet)<sup>2</sup>, Chayote (root), Chufa, Dasheen (taro)<sup>2</sup>, Ginger, Leren, Sweet potato, Tanier (cocoyam)<sup>2</sup>, Turmeric, Yam bean (jicama, manioc pea), Yam (true)<sup>2</sup>. (For application rates on potato see "Field Crops" section.)

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	0.35 – 0.85	5.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>In-furrow spray (rate specified per 1000 row-feet) over planting materials (hulis) or shanked-in 1 to 2 inches below hulis depth at planting.</li> <li>Side-dress not more than 0.3 fluid ounces/1000 row-feet no later than 45 days after planting. Observe the same PHI as above.</li> </ul> <p><b>Important Note:</b> The rate applied affects the length of control. Use higher rates where infestations occur late in crop development, or where pest pressure is continuous. MACHO<sup>®</sup> 4.0 rates less than 0.35 fluid ounce/1000 row-feet may not provide adequate residential pest control. MACHO<sup>®</sup> 4.0 treated crops grown on very high organic matter soils (muck) may also require additional pest management control.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>Pre-Harvest Interval (PHI) from planting application: 3 days (leaves); 125 days (corms)</li> <li>Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. AI per acre)</li> <li>Maximum MACHO<sup>®</sup> 4.0 soil applications per crop season: 1</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p> <p><sup>2</sup> Tops or greens for these crops may be utilized for food or feed.</p>		

## TUBEROUS and CORM VEGETABLES<sup>1</sup> – foliar treatment

**Crops of Crop Subgroup 1C including:** Arracacha, Arrowroot, Artichoke (Chinese and Jerusalem), Canna (edible, Queensland arrowroot), Cassava (bitter and sweet)<sup>2</sup>, Chayote (root), Chufa, Dasheen (taro)<sup>2</sup>, Ginger, Leren, Sweet potato<sup>2</sup>, Tanier (cocoyam)<sup>2</sup>, Turmeric, Yam bean (jicama, manioc pea), Yam (true)<sup>2</sup>. (For application rates on potato see "Field Crops" section.)

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.4
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO<sup>®</sup> 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO<sup>®</sup> 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p>Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest Crop Groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>Pre-Harvest Interval (PHI): 7 days</li> <li>Minimum interval between applications: 5 days</li> <li>Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making foliar applications: 1.4 fluid ounces per acre (0.044 lb. AI per acre) on Radish, 4.2 fluid ounces per acre (0.13 lb. AI per acre) on other crops</li> <li>Maximum MACHO<sup>®</sup> 4.0 application(s) per crop season: 3 on all crops</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.</p> <p><sup>2</sup> Tops or greens from these crops may be utilized for food or feed.</p>	

## STRAWBERRY<sup>1</sup> – soil treatment

Annual and Perennial Crops	
Pests Controlled	Rate: Fluid ounces per acre
Aphids, Whiteflies	12.0 – 16.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment after plants are established or on perennial crops in early spring prior to bud opening.</li> <li>• As a plant material or plant hole treatment just prior to, or during transplanting.</li> <li>• As a band spray over-the-row in a minimum of 20 gallons of water per acre, followed immediately by overhead irrigation to incorporate product into root-zone. Plastic or other mulches that limit movement of MACHO<sup>®</sup> 4.0 into root-zone are not recommended. The rate applied affects the length of control. Use higher rates where infestations may occur later in crop development or where pest pressure is continuous.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 14 days</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed per crop season when making soil applications: 16.0 fluid ounces/Acre (0.50 lb. AI per acre)</li> </ul>	
Post-harvest Use on Perennial Crops	
Pests Controlled	Rate: Fluid ounces per acre
White grub complex (grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle, Oriental beetle)	8.0 – 12.0
<p><b>Applications:</b> Apply a single application post harvest to coincide with renovation of strawberry fields and during active egg-laying period of beetles. Apply specified dosage of MACHO<sup>®</sup> 4.0 in one of the following methods:</p> <ul style="list-style-type: none"> <li>• As a ground spray via boom or backpack sprayer in a minimum of 20 gallons of water per acre.</li> <li>• As a row-band spray using an adjusted amount of product based on the treated row band areas in proportion to the amount required per full acre. Adjust the bandwidth to be equivalent to the width of the anticipated fruiting bed.</li> <li>• As a chemigation application with 600 to 1000 gallons of water followed by 0.1 to 0.25 inch irrigation.</li> </ul> <p><b>Restrictions:</b> All soil-surface applications must be followed by 0.25 inch of rainfall or overhead irrigation water per acre within 2 hours of application. Failure to adequately incorporate MACHO<sup>®</sup> 4.0 into egg-deposition zone may result in decreased activity.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 14 days</li> <li>• Maximum MACHO<sup>®</sup> 4.0 allowed per season when making soil applications: 12.0 fluid ounces per acre (0.38 lb. AI per acre)</li> </ul>	

<sup>1</sup> Do not use both application methods on the same crop in the same season.

## STRAWBERRY – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Spittlebugs, Whiteflies	1.5
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested areas as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p>Crops contained within certain Groups recognized by EPA are subject to change. Refer to the EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest Crop Groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 7 days</li> <li>• Minimum interval between applications: 5 days</li> <li>• Maximum MACHO® 4.0 allowed per crop season when making foliar applications: 4.5 fluid ounces per acre (0.14 lb. AI per acre)</li> <li>• Do not apply during bloom or within 10 days prior to bloom or when bees are actively foraging.</li> </ul>	

## SUGARBEET<sup>1</sup> – soil treatment - For use only in CA

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Whiteflies, Flea beetles	3.0 – 5.8
Diseases Suppressed	
Symptoms of: Western yellow/Beet curly top hybridgeminivirus (BCTV)	3.0 – 5.8
<p><b>Applications:</b> Apply specified dosage in the following method:</p> <ul style="list-style-type: none"> <li>• Apply specified dosage in sufficient carrier volume to ensure uniform application. Apply directly below each seed furrow either during the bedding operation immediately prior to planting or at the time of planting.</li> </ul> <p>The low rate may be applied to aid establishment of stands in whitefly areas, or for early season control of the other pests listed.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Maximum MACHO® 4.0 allowed per crop season when making soil applications: 5.8 fluid ounces per Acre (0.18 lb. AI per A)</li> <li>• Do not apply immediately prior to bud opening or during bloom or when bees are actively foraging.</li> </ul> <p><sup>1</sup> Not for use on crops grown for seed unless allowed by state-specified supplemental labeling.</p>	

RATE fl. oz./Acre	RATE fluid ounces/1000 row-feet Based on average row spacing (in inches):							
	10	15	20	25	30	35	40	45
3.0	0.0285	0.04275	0.057	0.07125	0.0855	0.09975	0.114	0.12825
4.0	0.038	0.057	0.076	0.095	0.114	0.133	0.152	0.171
5.0	0.0475	0.07125	0.095	0.11875	0.1425	0.16625	0.19	0.21375
5.8	0.0551	0.08265	0.1102	0.13775	0.1653	0.19285	0.2204	0.24795

## TREE, BUSH, and VINE CROPS

### BANANA and PLANTAIN – soil treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers	8.0 – 16.0
Pests Suppressed	
Scales	8.0 – 16.0

**Applications:** Apply specified dosage in the following method:

- Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.

**Restrictions:**

- Pre-Harvest Interval (PHI): 0 day
- Maximum MACHO® 4.0 allowed per crop season when making soil applications: 16.0 fluid ounces per Acre (0.5 lb. AI per A)

### BANANA and PLANTAIN – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Thrips	3.2

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduce control relative to results from the ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.

Crops contained within certain crop groups recognized by the EPA are subject to change. Refer to the EPA website ([www.epa.gov](http://www.epa.gov)) for latest crop groups.

Apply specified dosage as a broadcast or directed spray to infested area ensuring thorough coverage. MACHO® 4.0 may be applied through properly calibrated ground or aerial application equipment. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to the results from ground application.

Addition of an organosilicone adjuvant at a rate not to exceed 2.0 fluid ounces per 100 gallons of finished spray solution may improve coverage and pest control.

**Restrictions:**

- Pre-Harvest Interval (PHI): 0 day
- Minimum interval between applications: 14 days
- Maximum MACHO® 4.0 allowed per crop season when making foliar applications: 16.0 fl. oz. per Acre (0.5 lb. AI per A)

## BUSHBERRY – soil treatment

**Crops of Crop Subgroup 13B including:** Blueberry, Currant, Elderberry, Gooseberry, Huckleberry, Juneberry, Lingonberry, Salal

Pests Controlled	Rate: Fluid ounces per acre
Japanese beetle: (adults, feeding on foliage) White grub complex: (grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle and Oriental beetle)	8.0 – 16.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"><li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li><li>• 18-inch band on each side of the row followed by irrigation immediately after application.</li></ul> <p>For optimal grub control, apply MACHO® 4.0 to control 1st or 2nd instar larvae. Application may be made post-bloom up to 7 days prior to harvest, or post-harvest until October 1st. For optimum control of Japanese beetle larvae, make applications from June 1 to July 15. Application to grass covered rows, row middles, drive lanes, headlands, and other grassy areas in and around the berry field will control resident grub populations. Applications directed to the root-zone will help protect berry plant roots from grub feeding.</p> <p>Apply MACHO® 4.0 to moist soil. If necessary, apply one hour of irrigation water immediately before application of MACHO® 4.0. To ensure maximum efficacy of soil surface spray, 1/2 to 1 inch of irrigation water or rainfall should be applied or received within 24 hours of application of MACHO® 4.0 to facilitate movement into the soil and into the root-zone.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"><li>• Pre-Harvest Interval (PHI): 7 days</li><li>• Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI per acre)</li><li>• Do not apply pre-bloom or during bloom or when bees are actively foraging.</li></ul>	

## BUSHBERRY – foliar treatment

**Crops of Crop Subgroup 13B including:** Blueberry, Currant, Elderberry, Gooseberry, Huckleberry, Juneberry, Lingonberry, Salal

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters	1.2 – 1.6
Blueberry maggot, Japanese beetle (adults), Thrips (foliage-feeding thrips only)	2.4 – 3.2
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.</p> <p>Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest crop groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"><li>• Pre-Harvest Interval (PHI): 3 days</li><li>• Minimum interval between applications: 7 days</li><li>• Maximum MACHO® 4.0 allowed per crop season when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb. AI per acre)</li><li>• Maximum number of MACHO® 4.0 applications per crop season when making foliar applications: 5</li><li>• Minimum application volume (water): 20.0 GPA-ground, 5.0 GPA-aerial.</li><li>• Do not apply pre-bloom or during bloom or when bees are actively foraging.</li></ul>	

## CANEBERRY – soil treatment – For use only in CA

### Crops of Crop Subgroup 13A including:

**Blackberry** (*Rubus eubatus*, including bingleberry, black satin berry, boysenberry, Cherokee blackberry, Chesterberry, Cheyenne blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, Himalayaberry, hullberry, Lavacaberry, Loganberry, lowberry, Lucretiaberry, Mammoth blackberry, marionberry, nectarberry, olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry, Shawnee blackberry, youngberry, and varieties and/or hybrids of these)

**Raspberry** (black and red, *Rubus occidentalis*, *Rubus strigosus*, *Rubus idaeus*)

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Whiteflies	8.0 – 16.0
Rednecked cane borer	12.0 – 16.0
Pests Suppressed	
Thrips (foliage-feeding thrips only)	8.0 – 16.0
<b>Soil Application:</b> Apply specified dosage in one of the following methods: <ul style="list-style-type: none"> <li>Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> <li>Basal, soil drench in a minimum of 500 gallons solutions per acre.</li> </ul> <b>Restrictions:</b> <ul style="list-style-type: none"> <li>Pre-Harvest Interval (PHI): 7 days</li> <li>Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI per acre)</li> <li>Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	

## CITRUS (Containerized) – soil treatment

**Crops of Crop Group 10 including:** Calamondin, Citrus citron, Citrus hybrids (includes chironja, tangelo, and tangor), Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Pummelo, Orange (sweet and sour), Satsuma mandarin, Tangelo, White sapote (*Casimiroa* spp.), and other cultivars and/or hybrids of these.

Pests Controlled	Rate ml/ft. <sup>3</sup> container media
Aphids, Asian citrus psyllid, Blackfly, Citrus leafminer, Leafhoppers/Sharpshooters, Mealybugs, Scales, Whiteflies	0.37
Citrus root weevil (larval complex)	0.62 – 1.2
Pest Suppressed	
Thrips (foliage-feeding thrips only)	1.25
<b>Applications:</b> Determine volume of container and calculate dosage necessary to treat container. Apply calculated dosage of MACHO® 4.0 per container as a soil drench or through low-pressure drip or trickle irrigation water. Use sufficient carrier volume to ensure thorough uniform distribution throughout the media without loss of gravitational water from the container. For optimal results, treatment should be made at planting prior to insect infestation. Retreat if necessary. For control of larvae of the citrus root weevil complex, application should be made prior to neonate larvae entering potting media. Utilize higher dosage for heavy infestations.	



## CITRUS (field) – soil treatment

**Crops of Crop Group 10 including:** Calamondin, Citrus citron, Citrus hybrids (includes chironja, tangelo, and tangor), Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Pummelo, Orange (sweet and sour), Satsuma mandarin, Tangelo, White sapote (*Casimiroa* spp.), and other cultivars and/or hybrids of these.

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Asian citrus psyllid, Blackfly, Citrus leafminer, Leafhoppers/Sharpshooters, Mealybugs, Scales, Termites (FL only), Whiteflies	8.0 – 16.0
Pests/Diseases Suppressed	
Citrus nematode, Symptoms of Citrus tristeza virus (CTV) through vector control, Citrus yellows, Thrips (foliage-feeding thrips only)	16.0

**Applications:** Apply specific dosage in one of the following methods:

- Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment. For optimum results, apply to newly planted trees or those previously trained to drip, trickle or micro-sprinkler irrigation. Pre-wet soil lightly to break soil surface tension prior to applications of MACHO® 4.0. Chemigation application can be made separate to normal irrigation but followed by 10 to 20 minutes of additional watering to move MACHO® 4.0 into root-zone. Allow 24 hours before initiating subsequent irrigations.
- Soil surface band spray on both sides of the tree. Bands should overlap at the tree base to create a continuous band within the drip-line area of the tree, to be followed immediately with light sprinkler irrigation sufficient to move the product into the upper portion of the root-zone. This method is suitable for very coarse soils with 0.75% organic matter or less.
- Drench to base of tree not exceeding one-quart total solution per tree immediately around trunk of tree and extending outward covering the entire fibrous root system of the tree. This method is only recommended for trees up to 8 feet tall.
- For control of existing termite infestations, apply specified dosage in 1 to 4 quarts of total solution volume, depending on size of tree, as a drench application to the basal portion of the tree trunk and surrounding soil in the immediate vicinity of the tree trunk.
- For suppression of citrus nematode, apply specified dosage through low-pressure chemigation or soil surface band spray only, ensuring complete coverage of the root system and utilizing application directions stated above for the respective application method. Repeated and regular use of MACHO® 4.0 over several consecutive growing seasons provides the greatest degree of nematode suppression and yields the greatest plant response.

### Restrictions:

- Pre-Harvest Interval (PHI): 0 day
- Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI per Acre)

## CITRUS (field) – foliar treatment

**Crops of Crop Group 10 including:** Calamondin, Citrus citron, Citrus hybrids (includes chironja, tangelo, and tangor), Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Pummelo, Orange (sweet and sour), Satsuma mandarin, Tangelo, White sapote (*Casimiroa* spp.), and other cultivars and/or hybrids of these.

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Asian citrus psyllid, Blackfly, Leafhoppers-Sharpshooters, Leafminers, Mealybugs, Scales, Whiteflies	4.0 – 8.0 (depending on tree size, target pest and infestation pressure)
Pests Suppressed	
Thrips (foliage-feeding thrips only)	4.0 – 8.0
<p><b>Applications:</b> Scales – time applications to the crawler stage. Treat each generation. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.</p> <p>Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest crop groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 0 day</li> <li>• Minimum interval between applications: 10 days</li> <li>• Maximum MACHO® 4.0 allowed per season when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb. AI per Acre)</li> <li>• Do not apply during bloom or within 10 days prior to bloom or when bees are actively foraging.</li> </ul>	

## COFFEE – soil treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Leafminers	8.0 – 16.0
Pests Suppressed	
Scales	8.0 – 16.0
<p><b>Applications:</b> Apply specified dosage in one of the following methods:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> <li>• Subsurface side-dress shanked into the root-zone on both side of the plants followed by irrigation.</li> <li>• Basal, soil drench in sufficient water to insure incorporation into the root-zone followed by irrigation.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 7 days</li> <li>• Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces per Acre (0.5 lb. AI per acre)</li> <li>• Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	

## COFFEE – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Leafminers	3.2
Pests Suppressed	
Scales	3.2

**Applications:** Apply specified dosage as a broadcast or directed spray to infested area ensuring thorough coverage. MACHO® 4.0 may be applied through properly calibrated ground or aerial application equipment. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.

Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website ([www.epa.gov](http://www.epa.gov)) for latest crop groups.

**Restrictions:**

- Pre-Harvest Interval (PHI): 7 days
- Minimum interval between applications: 7 days
- Maximum MACHO® 4.0 allowed per season when making foliar applications: 16.0 fluid ounces per Acre (0.5 lb. AI per acre)
- Do not apply pre-bloom or during bloom or when bees are actively foraging.

## CRANBERRY – soil treatment

Pest Controlled	Rate: Fluid ounces per acre
Rootgrubs ( <i>Scarabaeidae</i> ), Rootworms ( <i>Chrysoimelidae</i> )	8.0 – 16.0

**Applications:** Apply MACHO® 4.0 to moist soil. Apply specified dosage in one of the following methods:

- As a soil spray (ground application) directed to the root and crown area using a minimum of 20 gals of water per acre.
- As a chemigation application with 600 to 1000 gals water.

Immediately upon application, MACHO® 4.0 must be incorporated into root-zone by 0.1– 0.3 inch water/Acre, either with the chemigation application or through irrigation/rainfall if not applied through chemigation. Inadequate incorporation within 24 hours of application may result in reduced control.

**Rootgrubs and Rootworms**

Best control may be achieved when application is made post-bloom immediately after bees are removed. Target applications for early instar larvae.

MACHO® 4.0 has not been tested for crop response in tank mixes with other registered fungicides or insecticides. If tank mixing is desired, premix a sample of the MACHO® 4.0 and the desired fungicide or insecticide partner at labeled rates and apply to a small area. Evaluate crop response within 48 hours and for at least two weeks prior to utilizing the tank mix on larger acreage. If crop injury results from the premix test, do not apply the tank mix to larger acreage.

**Restrictions:**

- Pre-Harvest Interval (PHI): 30 days
- Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)
- Do not apply pre-bloom or during bloom or when bees are actively foraging.

## GRAPE – soil treatment

**Including:** American bunch grape, Muscadine grape and Vinifera grape

Pests Controlled	Rate: Fluid ounces per acre
European fruit lecanium, Leafhoppers/Sharpshooters, Mealybugs, <i>Phylloxera</i> * spp.	8.0 – 16.0
Pest/Disease Suppressed	
Grapeleaf skeletonizer, Nematodes, Pierce's disease	12.0 – 16.0

**Applications:** Apply specified dosage in one of the following methods:

- Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.
- Subsurface side-dress shanked into the root-zone on both sides of the plants followed by irrigation.
- Hill drench in sufficient water to insure incorporation into the root-zone followed irrigation.
- For suppression of nematodes, apply 7 fluid ounces in a single application or two 3.5 fluid ounce applications on a 30- to 45-day interval. Treatment(s) should be applied only by 1) chemigation into root zone through above ground low-pressure drip, trickle, micro-sprinkler, or equivalent equipment; or 2) French plow technique, followed immediately by sufficient irrigation to move the product into the entire root zone of the plant. Repeated and regular use of MACHO® 4.0 over several consecutive growing seasons provides the greatest degree of nematode suppression and yields the greatest plant response.

For optimum results, make application(s) between bud-break and the pea-berry stage. A total of 14.7 fluid ounces/Acre is specified under any of the following conditions:

1. Where vigorous vine growth is expected;
2. In warmer growing areas;
3. Where mealybugs and European fruit lecanium populations are expected to be heavy;
4. Where vine population exceeds 600 per acre, or;
5. For suppression of nematodes.

\*Repeated and regular use of MACHO® 4.0 over several consecutive growing seasons controls existing *Phylloxera* infestations over time or prevents *Phylloxera* from becoming established.

**Restrictions:**

- Pre-Harvest Interval: 30 days
- Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)

## GRAPE – foliar treatment

**Including:** American bunch grape, Muscadine grape and Vinifera grape

Pests Controlled	Rate: Fluid ounces per acre
Leafhoppers/Sharpshooters, Mealybugs	1.2 – 1.6
Grapeleaf skeletonizer	1.5 – 1.6

(continued)

## GRAPE – foliar treatment (cont.)

**Including:** American bunch grape, Muscadine grape and Vinifera grape

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.

Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website ([www.epa.gov](http://www.epa.gov)) for latest crop groups.

**Restrictions:**

- Pre-Harvest Interval: 0 days
- Minimum interval between applications: 14 days
- Maximum MACHO® 4.0 allowed per season when making foliar applications: 3.2 fluid ounces/Acre (0.1 lb. AI/Acre)
- MACHO® 4.0 may be applied by ground application only.

## HOP – soil treatment

Pest Controlled	Rate: Fluid ounces per acre
Aphids	9.6

**Applications:** Apply specified dosage in one of the following methods:

- Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.
- Subsurface side-dress shanked into the root-zone on both sides of the plants followed by irrigation.
- Hill drench in sufficient water to insure incorporation into the root-zone followed by irrigation.

Higher dosage is recommended where extended residual control is desired or for treating larger vines with dense foliage volume.

**Restrictions:**

- Pre-Harvest Interval (PHI): 60 days
- Maximum MACHO® 4.0 allowed per season when making soil applications: 9.6 fluid ounces/Acre (0.3 lb. AI/Acre)

## HOP – foliar treatment

Pest Controlled	Rate: Fluid ounces per acre
Aphids	3.2

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.

Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website ([www.epa.gov](http://www.epa.gov)) for latest crop groups.

**Restrictions:**

- Pre-Harvest Interval (PHI): 28 days
- Minimum interval between applications: 21 days
- Maximum MACHO® 4.0 allowed per season when making foliar applications: 9.6 fluid ounces/Acre (0.3 lb. AI/Acre)

## POME FRUIT – soil treatment

**Crops of Crop Group 11 including:** Apple, Crabapple, Loquat, Mayhaw, Pear (including Oriental pear), Quince

Pests Controlled	Rate: Fluid ounces per acre
Aphids (including Woolly apple aphid), Leafhoppers	8.0 – 12.0
<b>Applications:</b> Apply specified dosage in the following method: <ul style="list-style-type: none"> <li>Chemigation into the root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> </ul> <b>Restrictions:</b> <ul style="list-style-type: none"> <li>Pre-Harvest Interval (PHI): 21 days</li> <li>Maximum MACHO® 4.0 allowed per season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. AI/Acre)</li> <li>Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	

## POME FRUIT – foliar treatment

**Crops of Crop Group 11 including:** Apple, Crabapple, Loquat, Mayhaw, Pear (including Oriental pear), Quince

Pests Controlled	Rate: Fluid ounces per acre
Leafhoppers	1.6 – 3.2
Aphids (including Woolly apple aphid), Apple maggot, Leafminers, San Jose scale	3.2
<b>FOR PEAR ONLY:</b> Mealybugs, Pear Psylla	8
<b>Applications:</b> Applications targeting apple maggot should be combined with manufacturer's recommended rate of a sticker, such as Nu-Film 17. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines. Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website ( <a href="http://www.epa.gov">www.epa.gov</a> ) for latest crop groups.	
<b>Restrictions:</b> <ul style="list-style-type: none"> <li>Pre-Harvest Interval (PHI): 7 days</li> <li>Minimum interval between applications: 10 days</li> <li>Maximum MACHO® 4.0 allowed per season when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)</li> <li>Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	

## POMEGRANATE – soil treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Whiteflies	8.0 – 16.0
<b>Applications:</b> Apply specified dosage in the following method: <ul style="list-style-type: none"> <li>Chemigation into the root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> </ul> <b>Restrictions:</b> <ul style="list-style-type: none"> <li>Pre-Harvest Interval (PHI): 0 day</li> <li>Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI per acre)</li> <li>Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	



## POMEGRANATE – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Whiteflies	3.2
Pests suppressed	
Scales	3.2
<p><b>Applications:</b> Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.</p> <p>Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website (<a href="http://www.epa.gov">www.epa.gov</a>) for latest crop groups.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 7 days</li> <li>• Minimum interval between applications: 7 days</li> <li>• Maximum MACHO® 4.0 allowed per season when making foliar applications: 9.6 fluid ounces/Acre (0.3 lb. AI per acre)</li> <li>• Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	

## STONE FRUIT – soil treatment

**Crops of Crop Group 12 Including:** Apricot, Cherry (including sweet and tart), Nectarine, Peach, Plum (including Chickasaw, Damson, and Japanese), Plumcot, Prune (fresh and dried)

In-field, Soil Application	
Pests Controlled	Rate: Fluid ounces per acre
Aphids (including Woolly apple aphid), Leafhoppers	8.0 – 12.0
<p><b>Applications:</b> Apply specified dosage in the following method:</p> <ul style="list-style-type: none"> <li>• Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.</li> </ul> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Pre-Harvest Interval (PHI): 21 days</li> <li>• Maximum MACHO® 4.0 allowed per season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. AI/Acre)</li> <li>• Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	
Pre-plant, Root Dip Application	
Pest Controlled	Rate: Fluid ounces per 10 gallons root-dip solution
Black peach aphid (infesting roots)	1.0
<p>Mix MACHO® 4.0 at 1.0 fluid ounces per 10 gallons of water. Thoroughly wet bare-root transplant to slightly above the graft union by soaking roots in the MACHO® 4.0 solution for up to 5 minutes. Allow solution to dry on roots and transplant trees as soon as possible following treatment.</p>	

## STONE FRUIT – foliar treatment

**Crops of Crop Group 12 Including:** Apricot, Cherry (including sweet and tart), Nectarine, Peach, Plum (including Chickasaw, Damson, and Japanese), Plumcot, Prune (fresh and dried)

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Green June beetle, Japanese beetle, Leafhoppers/Sharpshooters, Plant bugs, Rose chafer, San Jose scale	1.6 – 3.2
Cherry fruit fly	2.4 – 3.2
Pests Suppressed	
Plum curculio, Stink bugs	3.2

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.

Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website ([www.epa.gov](http://www.epa.gov)) for latest crop groups.

### Restrictions for Apricot, Nectarine, Peach:

- Pre-Harvest Interval (PHI): 0 day
- Minimum interval between applications: 7 days
- Maximum MACHO® 4.0 allowed per season when making foliar applications: 9.6 fluid ounces/Acre (0.3 lb. AI/Acre)
- Minimum application volume (water): 50 GPA – ground application, 25 GPA – aerial application.
- Do not apply pre-bloom or during bloom or when bees are actively foraging.

### Restrictions for Cherries, Plums, Plumcot, Prune:

- Pre-Harvest Interval (PHI): 7 days
- Minimum interval between applications: 10 days
- Maximum MACHO® 4.0 allowed per season when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)
- Minimum application volume (water): 50 GPA – ground application, 25 GPA – aerial application.
- Do not apply pre-bloom or during bloom or when bees are actively foraging.

## TREE NUTS – soil treatment

**Crops of Crop Group 14 Including:** Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut [black and English]

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Mealybugs, Spittlebugs, Termites, Whiteflies	8.0 – 16.0
Pests/Diseases Suppressed	
Pecan scab (from reduction in honeydew deposition)	8.0 – 16.0
Thrips (foliage-feeding thrips only)	16.0

(continued)

TREE NUTS – soil treatment (cont.)

Crops of Crop Group 14 Including: Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut [black and English]

- Applications:** Apply specified dosage prior to or at onset of pest infestation using one of the following methods:
- Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent irrigation equipment. Pre-wet soil lightly to break soil surface tension prior to applications of MACHO® 4.0 and allow soil to dry following application and prior to subsequent irrigation.
  - Emitter or spot application in a minimum of 4 fluid ounces of mixture per emitter site.
  - Shank or subsurface side-dress, injected to a depth just above or just within the root zone and between the trunk and drip line of the tree canopy. Apply product with a minimum of 10 gallons per acre using multiple shanks on both sides of trees. Ensure product placement is below sod or orchard floor debris. Irrigate entire treated area in the following 48 hours to promote uptake by root system.
  - For control of termites, apply specified dosage to slightly moist soil as a high-volume drench to the basal portion of the tree trunk and surrounding soil in the immediate vicinity of the tree trunk. Utilize sufficient carrier volume to penetrate the soil to a depth of 18-24 inches to obtain optimum control. Allow soil to dry following treatment and prior to applying any irrigation.

Remarks: Use the higher rates when applied by shank or subsurface side-dress, used on larger trees, applied to soils with high clay content, used for high plant populations, and/or where extended control is desired. Under some conditions, control may not occur for 14 or more days or until two (2) irrigations have been made. Applications made later in the season may result in reduced efficacy.

- Restrictions:**
- Do not apply to almonds
  - Pre-Harvest Interval (PHI): 7 days
  - Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)
  - Do not apply pre-bloom or during bloom or when bees are actively foraging.
  - For pecans, applications can be made from May 15 up to July 15. Applications made later in the season may result in reduced efficacy.

TREE NUTS – foliar treatment

Crops of Crop Group 14 Including: Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut [black and English]

Pests Controlled	Rate: Fluid ounces per acre
Aphids (except black pecan aphid), Leafhoppers/Sharpshooters, <i>Phylloxera</i> spp. (leaf infestations), Spittlebugs, Whiteflies	1.4 – 2.8
Black pecan aphid, Mealybugs, San Jose scale	3.2

(continued)

## TREE NUTS – foliar treatment (*cont.*)

**Crops of Crop Group 14 Including:** Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut [black and English]

**Applications:** Application for control of San Jose scale should be timed according to crawler stage, treating each successive generation. Two applications on a 10- to 14-day interval may be required to achieve control.

Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO® 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.

Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website ([www.epa.gov](http://www.epa.gov)) for latest crop groups.

### Restrictions:

- Do not apply to almonds
- Pre-Harvest Interval (PHI): 7 days
- Minimum interval between applications: 6 days
- Maximum MACHO® 4.0 allowed per season when making foliar applications: 11.5 fluid ounces/Acre (0.36 lb. AI/Acre)
- Minimum applications volume (water): 50 GPA – ground application, 25 GPA – aerial application
- Do not apply pre-bloom or during bloom or during bloom or when bees are actively foraging.

## TROPICAL FRUIT – soil treatment

**Including:** Acerola, Atemoya<sup>1</sup>, Avocado, Birida<sup>1</sup>, Black sapote, Canistel, Cherimoya<sup>1</sup>, Custard apple<sup>1</sup>, Feijoa, Jaboticaba, Guava, Llama<sup>1</sup>, Longan, Lychee, Mamey sapote, Mango, Papaya, Passionfruit, Persimmon, Pulasan, Rambutan, Sapodilla, Soursop<sup>1</sup>, Spanish lime, Star apple, Starfruit, Sugar apple<sup>1</sup>, Wax jambu

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Avocado lacebug, leafhoppers, Whiteflies	12.0 – 16.0
Pests Suppressed	
Scales, Thrips (foliage-feeding thrips only)	16.0

**Applications:** Apply specified dosage in the follow method:

- Chemigation through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.

### Restrictions:

- Pre-Harvest Interval (PHI): 6 days
- Maximum MACHO® 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI/A)
- Do not apply pre-bloom or during bloom or when bees are actively foraging.

## TROPICAL FRUIT – foliar treatment

**Including:** Acerola, Atemoya<sup>1</sup>, Avocado, Birida<sup>1</sup>, Black sapote, Canistel, Cherimoya<sup>1</sup>, Custard apple<sup>1</sup>, Feijoa, Jaboticaba, Guava, Llama<sup>1</sup>, Longan, Lychee, Mamey sapote, Mango, Papaya, Passionfruit, Persimmon, Pulasan, Rambutan, Sapodilla, Soursop<sup>1</sup>, Spanish lime, Star apple, Starfruit, Sugar apple<sup>1</sup>, Wax jambu

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Mealybugs, Thrips (forage-feeding thrips only), Whiteflies	3.2
Pests Suppressed	
Scales	3.2

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO<sup>®</sup> 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO<sup>®</sup> 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests. Aerial application of MACHO<sup>®</sup> 4.0 may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, application rates are based on full-size, mature trees or vines.

Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website ([www.epa.gov](http://www.epa.gov)) for latest crop groups.

### Restrictions:

- Pre-Harvest Interval (PHI): 7 days
- Minimum interval between applications: 10 days
- Maximum MACHO<sup>®</sup> 4.0 allowed per season when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb. AI/A)
- Do not apply pre-bloom or during bloom or when bees are actively foraging.

## OTHER CROPS

### CHRISTMAS TREE – soil treatment

Pests Controlled	Rate: Fluid ounces per acre
White grub complex (damage from grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle and Oriental beetle)	8.0 – 16.0

**Applications:** Soil incorporation and movement of MACHO<sup>®</sup> 4.0 to the root-zone is required for activity. MACHO<sup>®</sup> 4.0 can be incorporated most readily when applied to moist soil. Apply specified dosage in one of the following methods:

- Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment.
- 18-inch band on each side of the row (small trees) to full broadcast application (large trees) followed by rainfall or 0.25 – 1.0 inch of irrigation within 12 hours after application.

For optimal grub control, apply MACHO<sup>®</sup> 4.0 during adult flight activity, or up to mid-July, when 1st instar larvae are present.

### Restrictions:

- Maximum MACHO<sup>®</sup> 4.0 allowed per season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)

## CHRISTMAS TREE – foliar treatment

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Adelgids, Sawflies	1.6 – 3.2
<p><b>Applications:</b> Gall-forming adelgids – time applications to coincide with full bud-swell of earliest bud-breaking trees. Once galls form spraying will be ineffective.</p> <p>Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Minimum interval between applications: 7 days</li> <li>• Maximum MACHO® 4.0 allowed per season when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)</li> </ul>	

## POPLAR/COTTONWOOD – soil treatment

(includes members of the genus *Populus* grown for pulp or timber)

Field Application. See details below for Cuttings/Whips Application.	
Pests Controlled	Rate: Fluid ounces per acre
Aphids, Cottonwood leaf beetle	8.0 – 16.0
Pest Suppressed	
<i>Phylloxera popularis</i>	8.0 – 16.0
<p><b>Applications:</b> Apply specified dosage in the following method:</p> <ul style="list-style-type: none"> <li>• Chemigation through low-pressure drip irrigation.</li> <li>• For narrow-row, cutting orchards/nurseries used for plant propagation, shank into root-zone followed by adequate irrigation to promote uptake. (Adequate irrigation depends on soil moisture level at application. Under dry conditions, irrigate with 0.25 inch/Acre). For Cottonwood leaf beetle, protection against damage will occur when application is made early-season, when the beetles first begin feeding. Larger trees may require earlier treatment as a result of slower uptake.</li> </ul> <p>For <i>Phylloxera</i>, apply early in the year from break of dormancy through May.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Maximum MACHO® 4.0 allowed at-plant per crop season: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)</li> <li>• Do not apply pre-bloom or during bloom or when bees are actively foraging.</li> </ul>	
Cutting/Whip Application. See details above for Field Application.	
Pests Controlled	Cutting/Whip Soaking Solution fluid ounces MACHO® 4.0 Needed per 100 gallons
Cottonwood leaf beetle	6.6 – 13.3 (unhydrated cuttings/whips) 13.3 – 20.0 (partially hydrated cuttings/whips)
Pests Suppressed	
Aphids, <i>Phylloxera popularis</i>	6.6 – 13.3 (unhydrated cuttings/whips) 13.3 – 20.0 (partially hydrated cuttings/whips)

(continued)



**POPLAR/COTTONWOOD – soil treatment (cont.)**

(includes members of the genus *Populus* grown for pulp or timber)

**Applications:** Moisture content of cuttings/whips prior to application, the solution concentration, and the length of soaking interval interact to affect the amount of product absorbed into plant material. For a constant soaking interval of 24 hours, drier cuttings/whips absorb a higher quantity of solution and require a lower concentration. Conversely, more hydrated cuttings/whips absorb less solution and require a higher concentration. Soaking of cutting/whips should occur in a covered container in absence of UV light. Not all *Populus* spp. clones/varieties/hybrids have been tested for crop safety. Without specific knowledge about a particular *Populus* spp. clone/variety/hybrid, Albaugh, Inc. recommends that small numbers of cuttings/whips of each be treated and evaluated prior to commercial use.

Apply MACHO® 4.0 in one of the following cuttings/whips soaking methods:

- For freshly cut (unhydrated) cuttings/whips, soak plant material in specified solution concentration for 24 hours prior to cold storage. After removal from cold storage, plant as needed.
- For previously hydrated cuttings/whips removed from cold storage, allow plant material to reach room temperature and soak in specified solution concentration for 24 hours prior to planting.

Proper care should be taken in disposal of any residual soaking solution. Solution may be applied to existing trees or other registered crops as long as all product label precautions and restrictions are observed.

**Restrictions:**

- Maximum MACHO® 4.0 allowed at-plant per crop season: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)

**POPLAR/COTTONWOOD – foliar treatment**

(includes members of the genus *Populus* grown for pulp or timber)

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leaf beetles	1.6 – 3.2

**Applications:** Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. MACHO® 4.0 may not knock down established and heavy insect populations. Two applications may be required to achieve control. Scout fields and re-treat if needed. MACHO® 4.0 may be tank mixed with other insecticides as specified for knockdown of pests or for improved control of other pests.

**Restrictions:**

- Minimum interval between applications: 10 days
- Maximum MACHO® 4.0 allowed per season when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb. AI/Acre)
- Do not apply pre-bloom or during bloom or when bees are actively foraging.

## POULTRY FACILITIES

Pests Controlled	Rate: Fluid ounces per acre
Darkling beetle, Hide beetle	3.2 fl. oz.* (95 mL*)  Diluted in 1/2 – 2 Gallons of water per 1,000 ft. <sup>2</sup>
<p><b>Applications:</b> Use MACHO® 4.0 as a surface, spot, or crack and crevice treatment to floors, walls and support beams of poultry facilities. Use inside or within 25 feet of the perimeter of poultry structure to control Darkling Beetles or Hide Beetles.</p> <p>Determine the area (number of square feet) to be treated. Mix the required amount of MACHO® 4.0 with the specified amount of water and apply as a spray. Fill the sprayer tank with 1/2 of the water desired for the treatment. Begin agitating the water and add the required amount of product to the tank. Continue mixing and add the remaining water. Maintain sufficient agitation during product application to ensure a uniform spray. Prepare a fresh spray mixture before each treatment.</p> <p>Apply between flocks following de-caking/sanitation procedures.</p> <p><b>Band Application:</b></p> <p>When darkling beetles are concentrated in certain areas, such as under feed or water lines, or along the perimeter walls, it may not be necessary to treat the entire poultry house. In these situations, certain portions of the house, or “bands”, may be treated. <i>For example</i>, MACHO® 4.0 to: a 3-foot wide band of litter under all of the feed and/or water lines in the house; a 3-foot-wide band of litter adjacent to the side and end walls; and the lower section of the walls, including 1 foot up onto wood surfaces above the concrete foundation. Be sure to measure the actual area to be treated in order to determine the amount of MACHO® 4.0 needed for the application.</p> <p><b>Whole House Application:</b></p> <p>When darkling beetle infestation is severe, the entire house may need to be treated. Apply diluted MACHO® 4.0 as a broadcast spray to the litter covering the entire floor area, especially to litter under feed and water lines, as well as to the lower sections of walls, including 1 foot up onto wood surfaces above the concrete foundation.</p> <p>In houses with support beams, treat the litter surface around each support post, and 1 foot up each post. Also apply diluted spray to cracks and crevices around wall insulation, where beetles have been seen or can find harborage.</p> <p><b>NOTE:</b> When pest exclusion at possible entry points is desired, supplement MACHO® 4.0 insecticide treatments with targeted applications of a pyrethroid insecticides to the building perimeter, foundation, doors and windows, utility entry points, and other places where pests may enter the structure.</p> <p><b>Restrictions:</b></p> <ul style="list-style-type: none"> <li>• Do not apply when birds are present.</li> <li>• Cover or remove exposed feed and water from the area to be treated.</li> <li>• Allow treated surfaces to dry before restocking/reintroducing birds into the facility.</li> </ul>	

\*Equivalent to 45.4 grams of imidacloprid a.i./1,000 ft.<sup>2</sup>

CONVERSION KEY: 128 fl. oz. = 1 gal., 16 fl. oz. = 1 pint, 8 pints = 1 gal., 1 fl. oz. = 29.5 mL

## RESISTANCE MANAGEMENT

Darkling beetles, like all insects, have the ability to develop resistance to insecticides. When a single chemical class is used continuously, this increases the likelihood that resistance to that chemical class will develop. MACHO® 4.0 contains imidacloprid, which belongs to the class of chloronicotinyl insecticides.

Use MACHO® 4.0 in a insecticide rotation program with other classes of insecticides including, but not limited to pyrethroids, organophosphates, and spinosyns, to prevent resistance and preserve the product's effectiveness for darkling beetle control.

- Read and follow ALL label directions when using MACHO® 4.0 or any other insecticide.
- Do not use MACHO® 4.0 or any other insecticide at less than the specified label rate. This exposes the insects to a sub-lethal dose and increases the development of resistance.
- Use Integrated Pest Management (IPM) strategies in addition to insecticide treatments to manage darkling beetle populations.

Contact your local Albaugh, Inc. representative or your local Cooperative Extension Service for advice concerning the use of MACHO® 4.0 and appropriate resistance management strategies.

## STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Store in a cool, dry place. Do not store diluted spray.

**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: Non-refillable containers (1, 2.5, 30 & 55 gallon):** Do not reuse or refill this container. Offer for recycling, if available. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

**(non-refillable ≤5 gallons):** Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling, if available, or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**(non-refillable >5 gallons):** Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling, if available, or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use for disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

**Refillable container (≥250 gallon & bulk):** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

To clean the container before final disposal, empty the remaining contents from the container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing process two more times. Then offer for recycling, if available, or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

## **LIMITATION OF WARRANTY AND LIABILITY**

Read the entire Directions for Use, Conditions of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following Conditions, Disclaimer of Warranties and Limitations of Liability.

**CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Albaugh, Inc. All such risks shall be assumed by the user or buyer.

**DISCLAIMER OF WARRANTIES:** To the extent consistent with applicable law, Albaugh, Inc. makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of Albaugh, Inc. is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, Albaugh, Inc. disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

**LIMITATIONS OF LIABILITY:** To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Albaugh, Inc.'s election, the replacement of product.



