



**CS 2005**  
**ALGICIDE, BACTERICIDE, FUNGICIDE**

**FOR USE ON CITRUS AND GROWING AGRICULTURAL  
COMMODITIES**

# CS 2005

## Algicide, Bactericide, Fungicide

### FOR USE ON CITRUS and GROWING AGRICULTURAL COMMODITIES

#### Ingredients

Copper Sulfate Pentahydrate*...(CAS No. 7758-99-8).....	19.8%
Other Ingredients .....	<u>80.2%</u>
Total .....	100.0%

\*Equivalent to 5.0% metallic copper  
A Chelated Copper Product

### Keep Out Of the Reach of Children

## DANGER

<b>FIRST AID</b>	
IF INHALED:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a Poison Control Center or Doctor for treatment advice.
IF ON SKIN OR CLOTHING:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a Poison Control 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 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 the Poison Control Center or Doctor. Do not give anything by mouth to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

EPA REG. NO. 66675-3  
EPA EST. NO. 66675-FL-001  
LOT NO. \_\_\_\_\_

Net Contents: 1 U.S. Gallon (3.78 Liters) - 9.9 lbs per U.S. Gallon (1.188 kg/l)

Manufactured by: MAGNA-BON II, LLC  
1531 NW 25th Drive  
Okeechobee, FL 34972  
863-357-0400

For Emergency Assistance Call  
CHEMTREC 1-800-424-9300

## STORAGE AND DISPOSAL

**Prohibition:** Do not contaminate water, food or feed by storage or disposal.

**Storage:** Store in a safe place away from PETS AND KEEP OUT OF THE REACH OF CHILDREN. Store away from excessive heat. Magna-Bon CS 2005 will freeze. Always keep container closed. Store Magna-Bon CS 2005 in its original container only. Bulk Magna-Bon CS 2005 shall be stored and handled in 316L stainless steel, fiberglass, PVC's, polypropylenes or plastic equipment. Keep away from galvanized pipe and any nylon storage handling equipment.

**Pesticide Disposal:** Excess Magna-Bon CS 2005 should be disposed of through label use. Do not contaminate lakes, rivers or streams as this may cause fish kill. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. In the event of a spill, neutralize with limestone or baking soda before disposal. Concentrate may deteriorate concrete.

**Container Disposal:** Do not reuse empty container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other approved State and local procedures. Rinsing and reuse of "totes" is permissible.

## PRECAUTIONARY STATEMENTS

### Hazards To Humans And Domestic Animals

**DANGER:** Corrosive: Causes irreversible eye damage and skin irritation. Do not get into eyes or on clothing. Wear goggles or safety glasses. Harmful if swallowed, inhaled or absorbed through the skin. May cause allergic skin response. Avoid contact with skin. Wash thoroughly with soap and water after handling.

## ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**For Terrestrial Uses:** This pesticide is toxic to fish and aquatic organisms. Do not apply directly to water or areas where surface water is present or to intertidal areas below the mean high mark. Do not contaminate water when disposing of equipment washwaters or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

## GENERAL INFORMATION

Magna-Bon CS 2005 is a copper sulfate pentahydrate formulation used on citrus and growing agricultural commodities to control bacteria and fungi.

Using water containing moderate to high amounts of sulfur may cause Magna-Bon CS 2005 to neutralize. Whenever possible, use a compatibility jar test before mixing a whole tank.

## DIRECTIONS FOR USE

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

**FOR USE AS A FUNGICIDE/BACTERICIDE ON CITRUS and GROWING AGRICULTURAL COMMODITIES:** For use as a systemic fungicide/bactericide on growing agricultural commodities, the following directions apply.

## GENERAL INSTRUCTIONS

Magna-Bon CS 2005 may be applied with any type of application equipment that gives uniform coverage of all foliage, including ground, aerial and low volume sprayers as specified on this label. Equipment used for application should be PVC or 316L stainless steel. Magna-Bon CS 2005 is compatible with most fungal and insecticidal biopesticides when applied at least two (2) days before or after application of the biopesticide.

**Phytotoxicity** – Although Magna-Bon CS 2005 has been tested on a wide variety of fruits, vegetables and nuts without phytotoxicity, there could be some varieties and cultivars that because of environmental factors and stages of growth could possibly foster systems. The per acre use rate of Magna-Bon CS 2005 is applicable for dilute

## GENERAL INSTRUCTIONS (cont'd)

spraying. Depending on the equipment used and the specific crop, the spray volume applied per acre will differ. Refer to the Minimum Recommended Spray Volume Table. Complete spray coverage is essential to assure optimum performance from CS 2005. When treating by aerial application or with low volume application equipment, unless you have had specific previous experience, it is advisable to test for compatibility and tolerance to crop injury prior to full scale commercial utilization.

Consult Magna-Bon CS 2005 label for specific rates and timing of application by crop. Where application rates and intervals are provided in a range (e.g., 2-4 fluid ounces and 7 to 10 days) the higher rates and shorter spray time intervals are recommended when rainfall is heavy and/or disease pressure is high. Use the higher rates for large mature tree crops. The use of a surfactant, such as Cell-U-Wett™ is acceptable for plants having waxy or hairy surfaces. CS 2005 works via surface contact with the plants and materials being treated. It is important to ensure that all surfaces are thoroughly wetted. CS 2005 does not produce any visible residue or have a distinct odor. It does have a residual, especially if applied with a surfactant.

### SPECIAL PRECAUTIONS

- **Do not** mix with acidic compounds such as Alliette™ within 14 days before or after application of same.
- This product may be reactive on masonry and metal surfaces such as galvanized roofing. Avoid contact with metal surfaces. Do not spray on cars, houses, lawn furniture, etc.
- Environmental conditions such as extended periods of wet weather, acid rain, etc., which alter the pH of the leaf surface may effect the performance of CS 2005 resulting in possible phytotoxicity or loss of effectiveness.
- **Do not** mix with pot ash.
- It must be determined in the selection process if proper application equipment is available and if the waste associated with its use can be properly handled. Materials used on the construction of application equipment is also an important factor as agricultural chemicals are often reactive with soft metals such as aluminum and even some synthetic materials such as plastics, rubbers, etc.. Therefore it is necessary when working with equipment containing these materials, that they are thoroughly flushed with clean water after each days use.

### Personal Protective Equipment

Personal Protective Equipment: Some materials that are chemical-resistant to this product are listed below. Applicators and other handlers must wear:

- Long sleeved shirt
- Long pants
- Chemical resistant gloves made of barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride or viton
- Protective eyewear
- Shoes plus socks

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

### USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Workers Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, 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), notification to workers, and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Workers Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.

PPE required for early entry to treated areas that is permitted under Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, water, is: coveralls, protective eyewear, chemical resistant gloves, and shoes plus socks.

### **NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this product that are not within the scope of the Workers Protection Standard for agricultural pesticides, 40 CFR part 170. The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses. Do not allow re-entry into treated areas until sprays have dried.

### **GENERAL CHEMIGATION INSTRUCTIONS**

Apply this product only through one or more of the following types of systems: Sprinkler including center pivot, lateral move, end row, side (wheel) roll, traveler, big gun, solid set or hand move: flood (basin); furrow; border or drip (trickle) irrigation and system(s). Do not apply this product through any other type of irrigation systems.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label prescribed safety device for public water systems are in place.

A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. Posting areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds or other public facilities not including public roads, or 2) when chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive area. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters of at least 2 ½ inches tall, and all letters and the symbol shall be in a color which sharply contrasts with their immediate background. At the top of the sign shall be the words KEEP OUT, followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDES IN IRRIGATION WATER.

This sign is in addition to any sign posted to comply with the Workers Protection Standard.

### **CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS**

Public water system 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, backflow 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 should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete break (air gap) between the flow outlet end of the fill pipe and the top of the 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 liquid 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.

### **CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS (cont'd)**

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 the pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (i.e. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

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

When mixing, agitation is not necessary. Adjust the pH of the water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc., add CS 2005 **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. Because of a wide variety of possible combinations which can be encountered, observe all cautions and limitations on the label of all products used in the mixtures.

CS 2005 may be added through a traveling system continuously or at the last 30 minutes of solid set or hand moved irrigation systems. CS 2005 readily disperses and needs no agitation.

### **SPRINKLER CHEMIGATION**

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 back flow.

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 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 pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

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

When mixing, agitation is not necessary. Adjust the pH of the carrier water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc., add the CS 2005 **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. Because of a wide variety of possible combinations which can be encountered, observe all cautions and limitations on the label of all products used in the mixtures.

May be added through a traveling irrigation system or at the last 30 minutes of solid set or hand moved irrigation systems. CS 2005 readily disperses and needs no agitation.

### **FLOOR (BASIN), FURROW AND BORDER CHEMIGATION**

Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from back flow if water flow stops.

Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:

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

### **FLOOR (BASIN), FURROW and BORDER CHEMIGATION (cont'd)**

- c. 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.
  - d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
  - e. 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 pump (i.e. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. When mixing, agitation is not necessary. Adjust the pH of the carrier water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc., add the CS 2005 **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. Because of a wide variety of possible combinations which can be encountered, observe all cautions and limitations on the labels of all products used on the mixtures.

CS 2005 may be added through a traveling irrigation system continuously or at the last 30 minutes of solid set or hand moved irrigation systems. CS 2005 readily disperses and needs no agitation.

### **DRIP (TRICKLE) CHEMIGATION**

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 back flow.

The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of liquid 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 pump 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 (i.e. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

When mixing, agitation is not necessary. Adjust the pH of the carrier water to 7 or below. If using stickers, spreaders, insecticides, nutrients, etc, add the CS 2005 **last**. If compatibility is in question, use a compatibility jar test before mixing a whole tank. Because of a wide variety of possible combinations which can be encountered, observe all cautions and limitations on the label of all products used in the mixtures. CS 2005 may be added through a traveling irrigation system continuously or at the last 30 of solid set or hand moved irrigation systems. CS 2005 readily disperses and needs no agitation.

### **FOR SPRAY AND SOIL DRENCH APPLICATIONS**

Always spray for total foliage coverage. When re-spraying the rates and severity of the disease vary with unforeseen conditions. However, in the event of severe disease, spraying intervals can be shortened to 3 to 5 days. At times, lower rates can be as effective as higher rates and should be tried first. Usually, preventive programs may be maintained at lower rates. Use of low volume spraying is effective against Botrytis and not effective against established powdery mildew and Xanthomonas infections. Also, applications on actively growing tissue may be more effective than applications on dormant tissue.

**MINIMUM RECOMMENDED SPRAY VOLUME (GALLONS) PER ACRE  
WHEN APPLYING CS 2005**

<b>GROUND</b>			
<b>CROP</b>	<b>AERIAL</b>	<b>DILUTE</b>	<b>CONCENTRATE*</b>
Vegetables	3	20	30
Field Crops	3	20	30
Small Fruits	5	150	30
Vines	5	150	30
Tree Crops	10	400	50
Citrus	10	125	30

\*Pesticide application equipment such as Curtec® or other similar sprayers which are capable of obtaining coverage at low volumes may be used at as low as 20 gpa of spray volume.

The following specific instructions are based on general application procedures. The recommendations of the State Extension Service should be closely followed as to timing, frequency and numbers of sprays per season.

**FROST INJURY PROTECTION  
BACTERIAL ICE NUCLEATION INHIBITOR**

Application of CS 2005 made to all crops listed on this label at rates and stages of growth indicated on this label, at least 24 hours prior to anticipated frost conditions, will afford control of ice nucleating bacteria (*Pseudomonas syringae*, *Erwinia herbicola* and *Pseudomonas fluorescens*) and may therefore provide some protection against light frost. Not recommended for those geographical areas where weather conditions favor severe frost.

The chart below is used to calculate correct ppm's\* of active ingredient (A.I.) per volume of carrier water. These volumes can be used for either conventional or concentrated sprays.

**AMOUNT OF CS 2005 PER VOLUME OF WATER  
FOR PROPER PPM'S\* OF APPLIED ACTIVE INGREDIENT (as Copper)**

ppm's* of A.I.	30 gallons per acre	50 gallons per Acre	100 gallons per Acre	125 gallons per Acre	250 gallons per Acre	500 gallons per Acre
50	.		12.8 oz.	16 oz.	32 oz.	64 oz.
75	.		19.2 oz.	24 oz.	48 oz.	96 oz.
100	.		25.6 oz.	32 oz.	64 oz.	1 gal.
125	.	16 oz.	32 oz.	40 oz.	80 oz.	1.25 gal.
150	.	19.2 oz.	38.4 oz.	48 oz.	96 oz.	1.5 gal.
200	16 oz.	25.6 oz.	51.2 oz.	64 oz.	1 gal.	2 gal.
250	19.2 oz.	32 oz.	64 oz.	80 oz.	1.25 gal.	2.5 gal.

\* ppm = parts per million (of copper)

**Low volume sprayers should use a minimum of 16 ounces for complete coverage.**

**CITRUS**

**Grapefruit, Kumquat, Lemon, Lime, Orange, Tangelo, Tangerine**

<b>Disease</b>	<b>Rate per Acre</b>	<b>ppm's (copper) per 100 gallons of water</b>	<b>Instructions</b>
Brown Rot	30-70 oz.	120-275 ppm	Apply at first indication of rain or first appearance of Brown Rot. Re-apply as needed during wet weather.
Greasy Spot, Pink Pitting	25.6-64 oz.	100-250 ppm	Apply during mid-summer.
Scab	25.6-64 oz.	100-250 ppm	Apply shortly before trees begin to flush. Re-apply at 2/3 petal fall. Re-apply 4 weeks later, if necessary.
Melanose	12.8-64 oz.	100-250 ppm	Apply 2 times per year before onset of spring and autumn rains.

\*\* Maximum Annual Load of copper applied per growing season (lb Cu<sup>2+</sup>/ A)<sup>2</sup>



## CITRUS (cont'd)

### Grapefruit, Kumquat, Lemon, Lime, Orange, Tangelo, Tangerine

Disease	Rate	Ppm's (copper) per 100 gallons of water	Instructions
Canker ( <i>Suppression</i> )	12.8-64 oz.  **12.6 lb.	50-250 ppm	Spray flushes 7 to 14 days after shoots begin to grow. Young fruit may require additional applications. Number and timing of applications will be dependent on disease pressure. Under heavy pressure, each new flush of growth should be sprayed. Heavily infected trees should be sprayed with a minimum dosage of 250 ppm with a follow up spray after 7 to 14 days at 200 ppm.

\*\* Maximum Annual Load of copper applied per growing season (lb Cu<sup>2+</sup>/ A)<sup>2</sup>

## FIELD CROPS

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Alfalfa	Cercospora Leaf Spot, Leptosphaerulina Leaf Spot	19.2-32 oz.  **1.12 lb.	75-125 ppm	Apply 10 to 14 days before each harvest or earlier if disease threatens. <b>NOTE:</b> Spray injury may occur with sensitive varieties such as Lahontan.
Corn (Field Corn, Popcorn, Sweet corn)	Bacterial Stalk Rot	19.2-32 oz.  **4.2 lb.	75-125 ppm	Begin treatment when disease first appears and repeat every 7 to 10 days or as needed. Use the higher rates and shorter spray intervals when conditions favor disease.
Peanut	Cercospora leaf Spot	19.2-25.6 oz.  **4.74 lb.	75-100 ppm	Begin spraying at 35 to 40 days after planting or when disease symptoms first appear and repeat at 10 to 14 day intervals or as needed. Reduce sprays to 7 day intervals during humid weather. Use the higher rates when conditions favor disease.
Potato	Early Blight, Late Blight	19.2-32 oz.  **25.0 lb.	75-125 ppm	Apply 75 to 125 ppm at 7 to 10 day intervals or as needed starting when plants are 2 to 6 inches high in locations where disease is light. Add up to 32 oz. per acre when disease is more severe.
Sugar Beets	Cercospora Leaf Spot	19.2-38.4 oz.  **7.86 lb.	75-150 ppm	Begin applications when conditions first favor disease development and repeat at 10 to 14 day intervals or as needed. Use higher rates when conditions favor disease. Addition of a sticker/spreader is recommended.
Wheat, Barley, Oats	Helminthosporium Spot Blotch, Septoria Leaf Blotch	19.2-25.6 oz.  **1.06 lb.	75-100 ppm	Make First application at early heading and follow with second spray 10 days later. Use the higher rates when conditions favor disease.

\*\* Maximum Annual Load of copper applied per growing season (lb Cu<sup>2+</sup>/ A)<sup>2</sup>

## SMALL FRUITS

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Blackberry (Aurora, Boysen, Cascade, Chehalem, Logan, Marion, Santiam, Thornless Evergreen)	Anthracnose, Cane Spot, Leaf Spot, Pseudomonas Blight, Purple Blotch, Yellow Rust	High 32 oz.	125 ppm	Make fall application after harvest. Apply delayed dormant spray after pruning/training in the spring. If needed, agricultural-type spray oil may be added.
	Anthracnose, Cane Spot, Leaf Spot, Purple Blotch, Yellow Rust	Low 19.2 oz.  **10.0 lb.	75 ppm	Apply when leaf buds begin to open and repeat when flower buds show white. If needed, agricultural-type spray oil may be added. NOTE: Crop injury may occur if applied to foliage under certain environmental conditions such as hot or prolonged moist periods. Discontinue applications if signs of crop injury appear.
Blueberry	Bacterial Canker	33-51.2 oz.	125-200 ppm	Make application before fall rains and a second application 4 weeks later. Use the higher rates when conditions favor disease.
	Fruit Rot, Phomopsis Twig Blight	25.6-51.2 oz.  **8.4 lb.	100-200 ppm	Dormant Application: Begin applications when bloom buds begin to swell. Make additional applications at 10 to 14 day intervals or as needed before blooms open.
Cranberry	Fruit Rot	51.2 oz.	200 ppm	Make application in late bloom. Apply one or two additional applications at 10 to 14 day intervals or as needed depending on disease severity.
	Rose Bloom	51.2 oz.	200 ppm	Apply three sprays on 10 to 14 day schedule or as needed as soon as symptoms are observed.
	Bacterial Stem Canker	51.2 oz.	200 ppm	Apply post harvest and again in spring at bud swell. Apply one or two additional applications at 10 to 14 intervals or as needed depending on disease severity.
	Leaf Blight, Red Leaf Spot, Stem Blight, Tip Blight ( <i>Monilinia</i> )	51.2 oz.  **6.3 lb.	200 ppm	Apply delayed dormant spray in the spring. Repeat at 10 to 14 day intervals or as needed through pre-bloom.
Currant, Gooseberry	Anthracnose, Leaf Spot	64 oz.	250 ppm	Make initial application after first leaves have expanded. Continue on a 10 to 14 day schedule or as needed during wet conditions in the spring. Make an additional application after harvest.

\*\* Maximum Annual Load of copper applied per growing season (lb Cu<sup>2+</sup>/ A)<sup>2</sup>



## TREE CROPS

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Almond, Apricot, Cherry, Plum Prune	Bacterial Blast ( <i>Pseudomonas</i> ), Bacterial Canker, Coryneum Blight (Shot Hole)	51.2-64 oz.	200-250 ppm	Make first application before fall rains and a second at late dormant. Use the higher rates when conditions favor disease. If needed, agricultural-type spray oil may be added. For Cherries: Where disease is severe, an additional application shortly after harvest may be required. NOTE: Foliar injury may occur from post-bloom sprays on almonds, especially on NePlus varieties.
	Blossom Brown Rot, Coryneum Blight (Shot Hole)	51.2-64 oz. on almond, All others 60-90 oz.	200-250 ppm	Apply during early bloom. Do not apply after full bloom or injury may occur. Use the higher rates when rainfall is heavy and disease pressure is high.
	Black Knot* (Plum)	32-64 oz.	125-250 ppm	Make application at bud swell up to early bloom for early disease suppression. Apply before full bloom. Use the higher rates when rainfall is heavy and disease pressure is high. NOTE: To avoid plant injury, do not use after full bloom.
	Cherry Leaf Spot* (Sour Cherries Only)	38.4-64 oz.	150-250 ppm	Apply at petal fall as well as 1 to 2 times after petal fall. Use the lower rates where disease infection is light and use the higher rates for a dormant application or where disease infection is moderate to heavy. Do not apply to sweet cherry or the English Morello variety as severe injury will result. NOTE: Moderate to severe injury such as leaf spotting and defoliation may occur from post bloom applications.

\*\*18.0 lb.

\*\* Maximum Annual Load of copper applied per growing season (lb Cu<sup>2+</sup>/ A)<sup>2</sup>

## TREE CROPS (cont'd)

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Apple	Anthracnose, Blossom Blast, European Canker ( <i>Necria</i> ), Shoot Blast ( <i>Pseudomonas</i> )	51.2-64 oz.	200-250 ppm	Apply before fall rains. Use the higher rates when conditions favor disease. NOTE: Use on yellow varieties may cause discoloration. To avoid discoloration, pick before spraying.
	Apple Scab, Fire Blight	High 51.2-64 oz.	200-250 ppm	Make application between silver-tip and green-tip. Apply as a full cover spray for early season disease suppression. NOTE: Moderate to severe crop injury may occur from late application; discontinue use when green-tip reaches ½ inch.
	Apple Scab	Low 19.2-32 oz.	75-125 ppm	Extended spray schedule where fruit finish is not a concern: Continued applications may be made at 5 to 7 day intervals or as needed between ½ inch green-tip and first cover spray. NOTE: Moderate to severe crop injury may result from this extended spray schedule. It is not intended for fresh market apples or for apples where fruit finish is a concern as it is likely to cause fruit russetting.
	Fire Blight	Low 19.2-25.6 oz.	75-100 ppm	
	Collar Rot, Crown Rot	32 oz.  **16.0 lb.	125 ppm	Mix 100 gallons of water. Apply 4 gallons of solution as a drench on the lower trunk area of each tree. Apply in early spring or in fall after harvest for best results. Do not apply to foliage or fruit.
Avocado	Anthracnose, Blotch, Scab	51.2-64 oz.  ** 18.9 lb.	200-250 ppm	Apply when bloom buds begin to swell and continue application at monthly intervals for five to six applications. Use the higher rates when conditions favor disease.

\*\* Maximum Annual Load of copper applied per growing season (lb Cu<sup>2+</sup>/ A)<sup>2</sup>

## TREE CROPS (cont'd)

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Banana	Sigatoka (Black and Yellow)	19.2 oz.	75 ppm	Apply by air in 3 gallons of water. If needed, agricultural-type spray oil may be added. Apply on a 14 day schedule or as needed throughout the wet season. Apply at 21 day intervals or as needed during dry periods.
	Black Pitting	32 oz.  **18.9 lb.	125 ppm	Mix 100 gallons of water. Apply to the fruit stem and the basal portion of the leaf crown. Apply during the first and second weeks after fruit emergence.
Cacao	Black Pod	19.2-64 oz.  **15.75 lb.	75-250 ppm	Begin applications at the start of the rainy season and continue while infection conditions persist.
Coffee	Coffee Berry Disease ( <i>Collectotrichum coffeanum</i> )	38.4-64 oz.	150-250 ppm	Apply first spray after flowering and before onset of long rains and then at 21 to 28 day intervals or as needed until picking. Use the higher rates when conditions favor disease.
	Bacterial Blight ( <i>Pseudomonas syringae</i> )	38.4-64 oz.	150-250 ppm	Begin spray program before the onset of long rainy periods and continue throughout the rainy season at 14 to 21 day intervals or as needed. The critical time for spraying to control disease is just before, during and after flowering(s), especially when coinciding with wet weather. Use the higher rates when rainfall is heavy and disease pressure is high.
	Leaf Rust ( <i>Hemileia vastatrix</i> )	19.2-32 oz.  **12.6 lb.	75 ppm	Apply before the onset of rain and then at 21 day intervals or as needed while the rains continue. Use the higher rates when rainfall is heavy and disease pressure is high.
Coffee	Iron Spot ( <i>Cercospora coffeicola</i> ), Pink Disease ( <i>Corticium salmonicolor</i> )	19.2 oz.  ** 12.6 lb.	75 ppm	Use concentrate or dilute spray. Begin treatment at the start of wet season and continue at monthly intervals for three applications.
Mango	Anthracnose	38.4-64 oz.  **18.2 lb.	150-200 ppm	Apply monthly after fruit set until harvest. Use t higher rates when rainfall is heavy and disease pressure is high.

Maximum Annual Load of copper applied per growing season (lb Cu<sup>2+</sup>/ A)<sup>2</sup>

## TREE CROPS (cont'd)

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Peach, Nectarine	Bacterial Spot	19.2oz.  **18.8 lb.	75 ppm	Post-bloom application applied at first and second cover sprays. <b>NOTE: do not spray 3 weeks prior to harvest. Use only recommended rates. Spotting of leaves and defoliation may occur from use in cover sprays.</b>
Pear	Fire Blight	19.2 oz.	75 ppm	Apply 5 day intervals or as needed throughout the bloom period. NOTE: Russetting may occur in copper sensitive varieties. Excessive dosages may cause fruit russet on any variety.
Pecan	Kernel Rot, Shuck Rot ( <i>Phytophthora cactorum</i> ), Zonate Leaf Spot ( <i>Cristulariella pyramidalis</i> )	19.2-32 oz.	75-125 ppm	For suppression, apply in sufficient water to ensure complete spray coverage at 2 to 4 week intervals or as needed, starting at kernel growth and continue until shucks open. Use the higher rates and shorter spray intervals if frequent rainfall occurs.
	Ball Moss, Spanish Moss	38.4-64 oz.  **8.4 lb.	150-250 ppm	Apply in 100 gallons of water in the spring when ball moss is actively growing, using 1 ½ gallons of spray per foot of tree height. Make sure to wet ball moss tufts thoroughly. The addition of a non-ionic surfactant will improve control. A second application may be required after 12 months.
Pistachio	Botryosphaeria Panicle and Shoot Blight, Late Blight ( <i>Alternaria alternata</i> ), Septoria Leaf Blight	32-64 oz.  **8.4 lb.	125-200 ppm	Make initial application at bud swell and repeat on a 14 to 28 day schedule or as needed. If disease conditions are severe, use the higher rates and shorter spray intervals.
Quince	Fire Blight	19.2 oz.  **16.0 lb.	75 ppm	Apply at 5 day intervals or as needed throughout the bloom period. Apply adequate water for thorough coverage.

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## TREE CROPS (cont'd)

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Walnut	Walnut Blight	38.4-64 oz.  **25.2 lb.	150-250 ppm	Apply at first spray at early pre-bloom prior to or when catkins are partially expanded. Make additional applications during bloom and early nutlet stage or as needed when frequent rainfall or extended periods of moisture occur. Thorough coverage of catkins, leaves and nutlets is essential for effective control. NOTE: Adequate control may not be obtained when copper tolerant species of <i>Xanthomonas</i> bacteria are present.

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## VEGETABLES

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Bean (Dry, Green)	Brown Spot, Common Blight, Halo Blight	19.2-25.6 oz.  **4.74 lb.	75-100 ppm	For protective sprays, make first application when plants are 6 inches high; repeat on a 7 to 14 day schedule or as needed depending on environmental conditions. Use the higher rates for more severe disease.
Beet (Table Beet, Beet Greens)	Cercospora Leaf Spot	19.2-32 oz.  **7.86 lb.	75-125 ppm	Begin applications when conditions first favor disease development and repeat at 10 to 14 day intervals or as needed. Use the higher rates when conditions favor disease.
Carrot	Alternaria Leaf Spot, Cercospora Leaf Spot	19.2 oz.  **5.0 lb.	75 ppm	Begin applications when disease first threatens and repeat at 7 to 14 day intervals or as needed depending on disease severity.
Celery, Celeriac	Bacterial Blight, Cercospora Early Blight, Septoria Late Blight	19.2 oz.  **5.3 lb.	75 ppm	Begin applications as soon as plants are first established in the field, repeating at 5 to 7 day intervals or as needed depending on disease severity and environmental conditions.

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## VEGETABLES (cont'd)

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Crucifers (Broccoli, Brussel Sprout, Cabbage, Cauliflower, Collard Greens, Mustard Greens, Turnip Greens)	Black Leaf Spot ( <i>Alternia</i> ), Black Rot ( <i>Xanthomonas</i> ), Downy Mildew	19.2-25.6 oz.  **2.65 lb.	75-100 ppm	Begin application after transplants are set in the field, or shortly after emergence of field seeded crops or when conditions favor disease development. Apply at 7 to 10 day intervals or as needed. Use the higher rates when conditions favor disease. <b>NOTE:</b> Reddening of older leaves may occur on broccoli and a flecking of wrapper leaves may occur on cabbage.
Cucurbits (Cantaloupe, Cucumber, Honeydew, Muskmelon, Pumpkin, Squash, Watermelon)	Alternia Leaf Spot, Angular Leaf Spot, Anthracnose, Downy Mildew, Gummy Stem Blight, Powdery Mildew, Watermelon Bacterial Fruit Blotch (suppression)	19.2-25.6 oz.  **5.25 lb.	75-100 ppm	Begin applications prior to disease development and continue while conditions are favorable for disease development. Repeat at 5 to 7 day intervals or as needed. Use the higher rates when conditions favor disease. <b>NOTE:</b> Crop injury may occur from application at higher rates and shorter intervals. Discontinue use if injury occurs.
Eggplant	Alternaria Blight, Anthracnose, Phomopsis	19.2 oz.  **7.9 lb.	75 ppm	Begin applications prior to development of disease symptoms. Repeat sprays at 7 to 10 day intervals or as needed depending on disease severity.
Okra	Anthracnose, Bacterial Leaf Spot, Leaf Spots, Pod Spot, Powdery Mildew	19.2-32 oz.  **5.25 lb.	75 ppm	Begin treatment when disease first threatens and repeat every 5 to 10 days or as needed depending on disease severity. Use the higher rates and shorter spray intervals when conditions favor disease.
Onion, Garlic	Bacterial Blight, Downy Mildew, Purple Blotch	19.2 oz. **6.0 lb.	75 ppm	Begin when plants are 4 to 6 inches high and repeat at 7 to 10 day intervals or as needed depending on disease severity. Can cause phytotoxicity to leaves.
Pea	Powdery Mildew	19.2- 5.6 oz.  **3.95 lb.	75-100 ppm	Begin applications when disease symptoms first appear and repeat at weekly intervals or as needed. Use the higher rates when conditions favor disease.
Pepper	Anthracnose, Bacterial Spot, Cercospora Leaf Spot	13-25 oz.  **11.85 lb.	50-100 ppm	Begin applications when conditions favor disease development and repeat at 7 to 10 day intervals or needed depending on disease severity. Use the higher rates when conditions favor disease.

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## VEGETABLES (cont'd)

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Spinach	Anthracnose, Blue Mold, Cercospora Leaf Spot, White Rust	19.2-25.6 oz.  **3.95 lb.	75-100 ppm	Begin application when disease first appears or when conditions favor disease development. Repeat at 7 to 10 day intervals or as needed. Use the higher rates when conditions favor disease. <b>NOTE:</b> Flecking may occur on spinach leaves.
Tomato	Anthracnose, Bacterial Speck, Bacterial Spot, Early Blight, Gray Leaf Mold, Late Blight, Septoria Leaf Spot	19.2-32 oz.  **17.4 lb.	75-125 ppm	Begin applications when disease first threatens and repeat at 5 to 10 day intervals or as needed depending on disease severity. Use the higher rates when conditions favor disease.
Watercress	Cercospora, Leaf Spot	19.2 oz.  **2.12 lb.	75 ppm	Begin applications when plants are first established in the field, repeating at 7 to 14 day intervals or as needed depending on disease severity. Do not exceed four applications per crop. Apply using ground spray equipment at no less than 50 gallons of spray solution per acre.

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## VINES

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Grape	Black Rot, Downy Mildew, Phomopsis, Powdery Mildew	19.2-32 oz.  **20.0 lb.	75-125 ppm	Begin applications at bud break with subsequent applications throughout the season depending on disease severity. Use the higher rates when conditions favor disease. <b>NOTE:</b> Foliage injury may occur on copper sensitive varieties such as Concord, Delaware, Niagara and Rosette.
Hops	Downy Mildew	19.2 oz. **2.65 lb.	75 ppm	Make crown treatments after pruning, but before training. Additional treatments are needed on 10 day intervals. <b>NOTE:</b> Discontinue use two weeks before harvest.
Kiwi	<i>Erwinia herbicola</i> , <i>Pseudomonas fluorescens</i> , <i>Pseudomonas syringae</i>	38.3 oz.  **6.3 lb.	150 ppm	Apply 200 gallons of water per acre. Make applications on a monthly basis. A maximum of three applications may be made.

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## MISCELLANEOUS

Crop	Disease	Rate/Acre	ppm's (copper) per 100 gallons of water	Instructions
Atemoya	Anthracnose	25.6-38.4 oz.  **12.6 lb.	100-150 ppm	Make initial application just before flowering and repeat on a weekly schedule until just before harvest. Apply in sufficient water for thorough coverage. Use the higher rates for severe disease.
Carambola	Anthracnose	38.4-64 oz.  **10.5 lb.	150-200 ppm	Make initial application before flowering and repeat on a weekly schedule until just before harvest. Apply in sufficient water for thorough coverage. Use the higher rates for severe disease.
Chives	Downy Mildew	19.2 oz.  **2.65 lb.	75 ppm	Begin application when plants are established in the field. Repeat every 7 to 10 days or as needed depending on disease conditions.
Dill	Phoma Leaf Spot, Rhizoctonia Foliage Blight	19.2-25.6 oz.  **3.95 lb.	75-100 ppm	Begin applications when plants are first established in the field and repeat at 7-10 day intervals or as needed depending on disease severity and environmental conditions. Use the higher rates for severe disease.
Guava	Anthracnose, Red Algae	25.6-38.4 oz.  **4.92 lb.	100-150 ppm	Make initial application just before flowering and repeat on a weekly schedule until just before harvest. Apply in sufficient water for thorough coverage. Use the higher rates for severe disease.
Litchi	Anthracnose	25.6-38.4 oz. **4.92lb.	100-150 ppm	Initial application just before flowering and repeat on a weekly schedule until just before harvest. Use the higher rates for severe disease.
Macadamia	Anthracnose	38.4-64 oz.	150-250 ppm	Initiate sprays at first sign of flowering and repeat on a weekly schedule until just before harvest. Apply in sufficient water for thorough coverage. Use the higher rates for severe disease.
	Phytophthora Blight ( <i>P. capsici</i> ), Raceme Blight ( <i>Botrytis cinerea</i> )	38.4-64 oz.  **9.44 lb	150-200 pm	Apply during raceme development and bloom periods. Apply in sufficient water for thorough coverage. Use the higher rates when conditions favor disease.
Mamey Sapote	Algal Leaf Spot	38.4-64 oz.  **8.4 lb.	150-200 ppm	Apply when conditions favor disease development. Repeat on a 14 to 30 day schedule or as needed as disease severity and environmental conditions dictate. Use the higher rates when conditions favor disease.

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## **LIMITED WARRANTY AND LIMITATION OF REMEDIES**

Seller warrants that the product conforms to the chemical description and is reasonably fit for the purpose stated on the label for use under normal conditions, but makes no other warranties of FITNESS or MERCHANTABILITY expressed or implied, or any other warranty if the product is used contrary to the label instructions or under abnormal conditions not foreseeable to the seller. In no case shall the seller be liable for more than the cost of the product to the buyer, and will in no event be liable for any consequential, special or indirect damages connected with the use or handling of this product. This product is offered and the buyer or user accepts it's subject to the foregoing terms which may not be varied.