



U.S. ENVIRONMENTAL PROTECTION AGENCY  
 Office of Pesticide Programs  
 Registration Division (7505T)  
 1200 Pennsylvania Ave., N.W.  
 Washington, D.C. 20460

EPA Reg. Number:

91664-4

Date of Issuance:

3/7/24

NOTICE OF PESTICIDE:

Registration  
 Reregistration  
 (under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

Biorend Cu

Name and Address of Registrant (include ZIP Code):

Eric Bosarge, Agent for AgNubio, Inc.  
 c/o SmithBosarge LLC  
 2323 Clear Lake City Blvd. #194  
 Houston, TX 77062

**Note:** Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.
2. The data requirements for storage stability and corrosion characteristics (Guidelines 830.6317 and 830.6320) are not satisfied. You have 18 months from the date of registration to provide these data.

*Continues page 2*

Signature of Approving Official:

Kristy Crews, Ph.D., Product Manager 22  
 Fungicide Branch, Registration Division (7505T)  
 Office of Pesticide Programs, USEPA

Date:

3/7/24

EPA Form 8570-6

3. Make the following label changes before you release the product for shipment:
  - Revise the EPA Registration Number to read, "EPA Reg. No. 91664-4."
4. Submit one copy of the final printed label for the record before you release the product for shipment.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6. Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records.

The record for this product currently contains the following CSF:

- Basic CSF dated 06/01/2019

If you have any questions, please contact Kristy Crews by phone at (202) 566-1813, or via email at Crews.Kristy@epa.gov; or Craig Reeves by phone at (202) 566-2869, or via email at Reeves.Craig@epa.gov.

Enclosure- Stamped Label

MASTER LABEL: All text present before the start of the first sub-label will be present on all labels.

COPPER	GROUP	M1	FUNGICIDE
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[Note to Reviewer: Resistance management box will only appear on agricultural use sub-labels.]

# BIOREND® Cu

## Bactericide, Fungicide & Plant Defense Booster

BIOREND® is a registered trademark of BioAgro, SA

**ACTIVE INGREDIENTS:**

Chitosan \* ..... 1.34%  
 Copper Sulfate Pentahydrate\* ..... 23.46%

**OTHER INGREDIENTS:** ..... 75.20%

Total ..... 100.00%

\*Contains 0.14 lbs. of chitosan and 0.617 lbs. metallic copper per gallon of product.

### KEEP OUT OF REACH OF CHILDREN

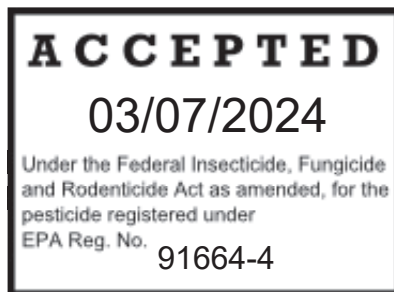
### DANGER/PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
 (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID	
<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for treatment advice.</li> <li>Have person sip a glass of water if able to swallow.</li> <li>Do not induce vomiting unless told to by a poison control center or doctor.</li> <li>Do not give anything by mouth to an unconscious person.</li> </ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>Move person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.</li> <li>Call a poison control center or doctor for further treatment advice.</li> </ul>
Have the product container or label with you when calling a poison control center, doctor, or going for treatment. For emergency medical treatment information, call the National Poison Control Center 24-hours a day at 1-800-222-1222.	
<b>NOTE TO PHYSICIAN:</b> Probable mucosal damage may contraindicate the use of gastric lavage.	

[Optional Text: See side/inside/back panel for additional precautionary statements, handling, Directions for Use and Storage and Disposal.]

Manufactured for:  
 Ag NuBio, Inc.  
 10300 Sunset Drive, Suite 179  
 Miami, FL 33173



EPA Reg. No. 91664-U  
 EPA Est. No. \_\_\_\_\_  
 Net Contents: \_\_\_\_\_

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**DANGER/PELIGRO: Corrosive.** Causes irreversible eye damage. Do not get in eyes or on clothing. Wear protective eyewear such as goggles, face shield, or safety glasses. Harmful if swallowed, absorbed through skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. Remove and wash contaminated clothing before reuse.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators, mixers, loaders and other handlers must wear:

- protective eyewear such as goggles, face shield, or safety glasses,
- long-sleeved shirt,
- long pants,
- chemical resistant gloves made of any waterproof material such as polyvinyl chloride  $\geq 14$  mils, nitrile rubber  $\geq 14$  mils or butyl rubber  $\geq 14$  mils, and
- shoes plus socks.

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

Discard clothing and other absorbent material that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them.

### Engineering Controls Statement:

Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

### USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.
- 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

This product is toxic to fish and aquatic invertebrates and may contaminate water through runoff. This product has a potential for runoff for several months or more after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters or rinsate. Do not allow runoff into lakes, streams, ponds or public waterways.

### PHYSICAL AND CHEMICAL HAZARDS

Do not mix or allow product to come in contact with oxidizing agents. Hazardous chemical reaction may occur.

## SUB-LABEL A: Agricultural Uses

### 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. READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

#### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

##### Engineering Controls Statement:

Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

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 the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is:

- Coveralls
- Protective eyewear such as goggles, face shield, or safety glasses
- Chemical-resistant gloves made of any water-proof material such as polyvinyl chloride  $\geq$  14 mils, nitrile rubber  $\geq$  14 mils or butyl rubber  $\geq$  14 mils, and
- Shoes plus socks

Do not enter or allow others to enter until sprays have dried.

#### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, and greenhouses.

Keep children, pets and other unprotected persons out of treated area until sprays have dried.

### PRODUCT INFORMATION

BIOREND® Cu is a combination fungicide, bactericide and plant defense booster. Complete coverage is essential to assure good product performance.

The chitosan, also known as poly-D-glucosamine, in BIOREND® Cu stimulates SAR (Systemic Acquired Resistance) mechanism, which allows plants to be less susceptible to bacterial and fungal diseases. BIOREND® Cu also supports the healing of wounds, to reduce the incidence of fungal and bacterial diseases.

When used as directed on this label BIOREND® Cu can enhance plant vigor, promote foliar growth, increase crop yields, improve crop vigor and quality, aid in suppression of diseases and pathogens, activate plant resistance to environmental stress, drought and disease pressure.

## RESISTANCE MANAGEMENT

BIOREND® Cu contains a Group M1 fungicide. Fungal isolates/bacterial strains with acquired resistance to Group M1 may eventually dominate the fungal/bacterial population if Group M1 fungicides/bactericides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by BIOREND® Cu or other Group M1 fungicides.

For resistance management, BIOREND® Cu contains a Group M1 fungicide. Any fungal population may contain individuals naturally resistant to BIOREND® Cu and other Group M1 fungicides. A gradual or total loss of pest control may occur over time if these fungicides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

To delay fungicide resistance take one or more of the following steps:

- Rotate the use of BIOREND® Cu or other Group M1 fungicides with other mode of actions fungicides within a growing season sequence with different groups that control the same pathogens.
- Use tank mixtures or premixes with fungicides from a different group that are equally effective on the target pest when such use is permitted. Use at least the minimum application rate as labeled by the manufacturer.
- Adopt an integrated disease management program for fungicide use that includes scouting, uses historical information related to pesticide use, and crop rotation, and which considers host plant resistance, impact of environmental conditions on disease development, disease thresholds, as well as cultural, biological and other chemical control practices..
- Where possible, make use of predictive disease models to effectively time fungicide applications. Note that using predictive models alone is not sufficient to manage resistance.
- Monitor treated fungal populations for resistance development.
- Contact your local extension specialist, certified crop advisors and/or manufacturer for fungicide/bactericide resistance management and/or integrated management recommendations for specific crops and resistant biotypes.
- For further information or to report suspected resistance, contact your local pesticide distributor or Ag Nubio, Inc. at [contactus@agnubioinc.com](mailto:contactus@agnubioinc.com). You can also contact your university extension specialist to report resistance.

### MANDATORY SPRAY DRIFT

#### Aerial Applications:

- Do not release spray at a height greater than 10 feet above the vegetative canopy or water, unless a greater application height is necessary for pilot safety.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Applicators must use ½ swath displacement upwind at the downwind edge of the field.
- Do not apply when wind speeds exceed 15 miles per hour at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- Do not apply during temperature inversions.

#### Ground Applications:

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or crop canopy.
- For all applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

**Boom-less Ground Applications:**

- Applicators are required to use a medium or coarser droplet size (ASABE S572.1) for all applications.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

**SPRAY DRIFT ADVISORIES**

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

**IMPORTANCE OF DROPLET SIZE**

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

**Controlling Droplet Size – Ground Boom**

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

**Controlling Droplet Size – Aircraft**

- Adjust Nozzles - Follow nozzle manufacturers recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

**BOOM HEIGHT – Ground Boom**

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

**RELEASE HEIGHT - Aircraft**

Higher release heights increase the potential for spray drift. When applying aurally to crops, do not release spray at a height greater than 10 ft. above the crop canopy, unless a greater application height is necessary for pilot safety.

**SHIELDED SPRAYERS**

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

**TEMPERATURE AND HUMIDITY**

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

**TEMPERATURE INVERSIONS**

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. 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 air mixing. Avoid applications during temperature inversions.

#### **WIND**

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

#### **Boom-less Ground Applications:**

Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

#### **Handheld Technology Applications:**

Take precautions to minimize spray drift.

### **PLANT SAFETY**

As plant varieties of stone fruit, pome fruit, grapes and cucurbits differ in sensitivity to copper, always evaluate injury potential to BIOREND® Cu prior to treating orchards or fields.

### **CHEMIGATION INSTRUCTIONS**

Apply this product only through overhead sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, big gun, solid set, or hand move; drip (trickle); or flood (basin) irrigation system(s). Do not apply this product through any other type of irrigation equipment. 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 devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

#### **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 backflow.
- The pesticide injection pipeline must contain a function, 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, inter-locking 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.
- Use a pesticide supply tank for the mixing and application of BIOREND® Cu in chemigation systems.
- Remove scale, pesticide residues, and other foreign matter from the chemical tank and entire injector system. Flush with clean water.



## MIXING AND APPLICATION INSTRUCTIONS

**Preparation of sprays:** Fill the application container up to 1/3 of its capacity. Add BIOREND® Cu according to the recommended dose with the agitation system on and make up to volume with water. To improve solution of water and BIOREND® Cu, use water of pH 5.5 to 6.5. If pH of the water is over 6.5, use a buffer to reduce pH to be within the mentioned range.

**Compatibility:** To determine the physical compatibility of BIOREND® Cu with any other product, use a small container to mix a small amount (e.g. 1 pint) of spray solution, containing all ingredients in the same order and ratio as the anticipated use. If any indication of physical incompatibility develops, do not use this mixture for spraying. Indications of incompatibility usually appear within 5-15 minutes after mixing. Read and follow all directions and precautions on this label and on the other labels of any products for which a tank mixture is being considered. To improve compatibility, use water of pH 5.5 to 6.5. If pH of the water is over 6.5, use a buffer to reduce pH to be within the mentioned range. When mixing with other products, add the other product(s) to the buffered water (pH 5.5 to 6.5) and add the BIOREND® Cu to the mixture last.

### Cleaning Application Equipment

To prevent contamination of the dilute solution of BIOREND® Cu by possible pesticides or other chemical residues in the spraying equipment, make sure that the equipment is thoroughly clean before and after use.

The following table shows suggested minimum spray volumes per acre; however, thorough coverage is essential for best results. The stage of growth and size are major factors in determining spray volume required to obtain thorough coverage. For questions regarding spray volumes needed, consult the local cooperative extension service for spray volume applicable to your particular crop.

Spray Volume (Gallons Per Acre) When Applying BIOREND® Cu	
	Ground Application
Field Crops	20
Citrus	50
Small Fruits	50
Tree Crops	100
Vegetables	20
Vines	50
Miscellaneous	50

## USE RESTRICTIONS

- DO NOT spray this product if rain is coming soon. Reapplication may be necessary if rain after application is heavy.
- DO NOT apply if wind is high.
- DO NOT use carbon steel tanks for mixing; use plastic, bronze or stainless steel tanks.
- For applications made to watercress, production fields must be drained of water at least 24 hours prior to each application and water must not be reapplied to the field for a minimum of 24 hours following each application. Copper must not be applied to watercress during the aquatic production phase.
- Do not apply more than 9.72 gallons of BIOREND® CU (6 lbs. copper) per acre per year to Apples, Pears and Strawberries.
- Do not apply more than 10.21 gallons of BIOREND® CU (6.3 lbs. copper) per acre per year to Pecans.

## USE PRECAUTIONS

BIOREND® Cu may be reactive on metal surfaces such as galvanized roofing. Avoid contact with cars, houses or other metal surfaces susceptible to damage. BIOREND® Cu may discolor sprayed surfaces such as masonry or wood.

Except as specified, begin applications before or at first sign of disease and repeat as needed to maintain control but observe use limitations. Maximum application is for a crop cycle. Crop cycle is defined as pre-bloom through post-harvest. Apply the high rate and/or spray at shorter intervals when climatic conditions favor disease(s). Apply the low rate and/or spray at larger intervals when climatic conditions least favor disease(s). If you are unaware of the climatic conditions favorable for disease(s) claimed for the specific use sites, you must consult your State Agricultural Extension Service to learn of these conditions.

### FIELD CROPS

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Alfalfa	Cercospora Leaf Spot, Leptosphaerulina Leaf Spot	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	3.5 (0.061 lbs. chitosan and 0.27 lbs. copper)	Apply 10-14 days before each harvest or earlier if disease threatens. <b>NOTE:</b> Spray injury may occur with sensitive varieties such as Lahontan. Minimum retreatment interval is 30 days.
Corn (Field Corn, Popcorn, Sweet Corn)	Bacterial Stalk Rot	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	Begin treatment when disease first appears and every 7 to 10 days or as needed. Use the higher rates and shorter spray intervals when conditions favor disease. Minimum retreatment interval is 7 days.
Peanut	Cercospora Leaf Spot	0.7 – 1.1 (0.012 – 0.019 lbs. chitosan and 0.05 – 0.08 lbs. copper)	7.7 (0.135 lbs. chitosan and 0.59 lbs. copper)	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. Flowable sulfur may be added. Minimum retreatment interval is 7 days.
Potato	Early Blight, Late Blight	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	19.3 (0.38 lbs. chitosan and 1.49 lbs. copper)	Apply 0.4 – 1.3 pints at 7 to 10 day intervals or as needed starting when plants are 2 to 6 inches high in locations where disease is light. Apply up to 1.35 pints per acre when disease is more severe. Under conditions of severe disease, control with BIOREND® Cu will be improved by tank mixing with other compatible fungicides registered for use on potatoes. Read and follow all label instructions of tank mix partners. Minimum retreatment interval is 5 days.
Sugar Beet	Cercospora Leaf Spot	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	6.66 (0.116 lbs. chitosan and 0.51 lbs. copper)	Begin application when conditions favor disease development and repeat at 10 to 14 day intervals or as needed. Use the higher rates when conditions favor disease. Addition of a spreader/sticker is recommended. Minimum retreatment interval is 10 days.
Wheat, Barley, Oats	Helminthosporium Spot, Blotch, Septoria Leaf Blotch	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	1.3 (0.023 lbs. chitosan and 0.10 lbs. copper)	Make first application at early heading and follow with second spray 10 days later. Use the higher rates when conditions favor disease. For wheat, BIOREND® Cu can be applied as a foliar application for early season disease control and again at early heading and followed with another application 10 days later. Minimum retreatment interval is 10 days.

### CITRUS

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Citrus (Grapefruit, Kumquat, Lemon, Lime, Oranges, Pummelo, Tangelo, Tangerine)	Citrus Canker (Suppression)	0.9 – 2.6 (0.016 – 0.046 lbs. chitosan and 0.07 – 0.2 lbs. copper)	44.8 (0.784 lbs. chitosan and 3.45 lbs. copper)	Spray flushes 7 to 14 days after shoots begin to grow. Young fruit may require an additional application. Number and timing of applications will be dependent upon disease pressure. Under heavy pressure, each flush of new growth should be sprayed. Minimum retreatment interval is 7 days,
	Algal Spot, Melanose, Scab	1.3 – 4.4 (0.023 – 0.077 lbs. chitosan and 0.10 – 0.34 lbs. copper)		Apply as pre-bloom and post bloom sprays Use higher rates when conditions favor disease. Minimum retreatment interval is 14 days.
	Alternaria Brown Rot	1.3 – 3.1 (0.023 – 0.054 lbs. chitosan and 0.10 – 0.24 lbs. copper)		On susceptible varieties apply when the first spring flush appears and each following flush. Application to fruit should start after 2/3 of the petals have fallen and be repeated on a 21 day schedule or as needed. Use the higher rates when conditions favor disease. Minimum retreatment interval is 14 days.
	Greasy Spot, Pink Pitting	0.4 – 2.2 (0.007 – 0.039 lbs. chitosan and 0.03 – 0.17 lbs. copper)		Apply in summer on expanded new flush. Repeat on subsequent flushes where disease pressure is severe. Use the higher rates when conditions favor disease. Minimum retreatment interval is 14 days.
	Phytophthora Brown Rot, Septoria Spot	1.3 – 3.1 (0.023 – 0.054 lbs. chitosan and 0.10 – 0.24 lbs. copper)		Begin application in fall before or just after the first rain and continue as needed. For Brown Rot only apply to skirts of trees to a height of at least 4 feet. For control of Septoria Sport or where fruit have already been infected with Brown Rot, apply to entire tree. Apply to bare ground one foot beyond skirt. Use the higher rates when conditions favor disease. Do not use in areas subject to copper injury. Minimum retreatment interval is 7 days.

### SMALL FRUITS

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Blackberry (Aurora, Boysen, Cascade, Chehalem, Logan, Marion, Santiam, Thornless Evergreen)	Anthraxnose, Cane Spot, Leaf Spot, Pseudomonas Blight, Purple Blotch, Yellow Rust	0.9 – 1.8 (0.016 – 0.032 lbs. chitosan and 0.07 – 0.14 lbs. copper)	3.5 (0.061 lbs. chitosan and 0.27 lbs. copper)	Make fall applications after harvest. Apply delayed dormant spray after pruning/training in the spring. If needed, agricultural-type spray oil may be added. Minimum retreatment interval is 7 days.
	Anthraxnose, Cane Spot, Leaf Spot, Purple Blotch, Yellow Rust	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)		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. Minimum retreatment interval is 7 days.

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Blueberries	Bacterial Canker	1.3 – 2.6 (0.023 – 0.046 lbs. chitosan and 0.10 – 0.20 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	Make first application before fall rains and a second application 4 weeks later. Use the higher rates when conditions favor disease.
	Fruit Rot, Phomopsis Twig Blight	0.9 – 1.8 (0.016 – 0.032 lbs. chitosan and 0.07 – 0.14 lbs. copper)		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	2.6 (0.046 lbs. chitosan and 0.20 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	Make first 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			Apply three sprays on 10 to 14 day schedule or as needed as soon as symptoms are observed.
	Bacterial Stem Canker			Apply post-harvest and again in spring at bud swell. Apply one or two additional applications at 10 to 14 day intervals or as needed depending on disease severity.
	Leaf Blight, Red Leaf Spot Stem Blight, Tip Blight			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	2.6 (0.046 lbs. chitosan and 0.20 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	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.
Raspberry	Anthracnose, Cane Spot, Leaf Spot, Pseudomonas Blight, Purple Blotch, Yellow Rust	0.9 – 1.8 (0.016 – 0.032 lbs. chitosan and 0.07 – 0.14 lbs. copper)	3.5 (0.061 lbs. chitosan and 0.27 lbs. copper)	Make fall application after harvest. Apply delayed dormant spray after training in the spring. If needed, agricultural-type spray oil may be added.
	Anthracnose, Cane Spot, Leaf Spot, Purple Blotch, Yellow Rust	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)		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 sign of crop injury appear.
Strawberry	Angular Leaf Spot (Xanthomonas) Leaf Blight, Leaf Scorch, Leaf Spot	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	19.3 (0.338 lbs. chitosan and 1.49 lbs. copper)	Begin application when plants are established and continue on a weekly schedule throughout the season. Apply in at least 20 gallons of water. Use the higher rates when conditions favor disease. NOTE: Discontinue applications if signs of crop injury appear.

### TREE FRUIT AND TREE NUTS

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Almonds Only	Bacterial Blast	0.4 (0.007 lbs. chitosan and 0.03 lbs. copper)	1.3 (0.023 lbs. chitosan and 0.10 lbs. copper)	<b>Almond Only:</b> For bacterial blast control in sprinkler irrigated orchards or where disease is severe, apply 0.4 pints per acre post-bloom at 2 week intervals or as needed or just before sprinkling. NOTE: Foliar injury may occur from post-bloom sprays on almonds, especially on NePlus Varieties. Minimum retreatment interval is 14 days.

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Almonds, Apricots, Cherry, Plum, Prune	Bacterial Blast (Pseudomonas), Bacterial Canker, Coryneum Blight (Shot Hole)	2.6 – 5.3 (0.046 – 0.093 lbs. chitosan and 0.20 – 0.41 lbs. copper)	10.5 (0.184 lbs. chitosan and 0.81 lbs. copper)	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. <b>For Cherries:</b> Where disease is severe, an additional application shortly after harvest may be required. Minimum retreatment interval is 7 days.
	Blossom Brown Rot, Coryneum Blight (Shot hole)	1.8 – 3.5 (0.032 – 0.061 lbs. chitosan and 0.14 – 0.27 lbs. copper)		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. Minimum retreatment interval is 5 days.
	Black Knot (Plum)	1.3 – 2.6 (0.023 – 0.046 lbs. chitosan and 0.10 – 0.20 lbs. copper)		Make an application at bud swell up to early bloom for early season 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. Minimum retreatment interval is 7 days.
	Cherry Leaf Spot	1.8 – 2.6 (0.032 – 0.046 lbs. chitosan and 0.14 – 0.20 lbs. copper)		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. As cherry varieties (such as sweet cherry and English Morello) differ in sensitivity to copper, always evaluate injury potential to BIOREND® Cu prior to treating orchards. Minimum retreatment interval is 7 days.
Apple	Anthracnose, Blossom Blast, European Canker (Nectria), Shoot Blast (Pseudomonas)	3.5 – 5.3 (0.061 – 0.093 lbs. chitosan and 0.27 – 0.41 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	Fall application: 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. Minimum retreatment interval is 7 days.
	Apple Scab, Fire Blight	2.6 – 5.3 (0.046 – 0.093 lbs. chitosan and 0.20 – 0.41 lbs. copper)		Fall/Late Dormant Application: 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. After green tip reaches ½ inch, use only on varieties not prone to fruit russetting. Do not tank mix with acidifying surfactants or non-buffered phosphite fungicides. Do not apply BIOREND® Cu just prior to predicted frosts. Only 1 application per season is permitted.
	Apple Scab	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	Growing Season Application ( <b>Extended spray schedule where fruit finish is not a concern</b> ): Continued applications may be made at 5 to 7 day intervals or as needed between ½ inch green-tip and first cover spray. The addition of spray oil may enhance coverage of the wood in dormant sprays. NOTE: Moderate to severe crop injury may result from this extended spray schedule depending on variety. Caution should be taken on varieties prone to fruit russetting. Minimum retreatment interval is 5 days.
	Fire Blight	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)		Mix in 100 gallons of water. Apply 4 gallons of suspension 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. NOTE: Do not use if soil pH is below 5.5 since copper toxicity may result. Minimum retreatment interval is 30 days.
	Collar Rot, Crown Rot	1.3 (0.023 lbs. chitosan and 0.1 lbs. copper)		

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Avocado	Anthrachnose, Blotch, Scab	1.8 – 3.5 (0.032 – 0.061 lbs. chitosan and 0.14 -0.27 lbs. copper)	21.1 (0.369 lbs. chitosan and 1.62 lbs. copper)	Growing Season Application: 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. Minimum retreatment interval is 14 days.
Banana	Sigatoka (Black and Yellow)	1.3 (0.023 lbs. chitosan and 0.1 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	Apply by air in 3 gallons of water. If needed, an 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. Minimum retreatment interval is 7 days.
	Black Pitting	1.3 (0.023 lbs. chitosan and 0.1 lbs. copper)		Mix in 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. Minimum retreatment interval is 7 days.
Cacao	Black Pod	0.4 – 2.6 (0.007 – 0.046 lbs. chitosan and 0.03 – 0.2 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	Begin applications at the start of the rainy season and continue while infections conditions persist. Apply 0.4 to 2.6 pts. at 14 to 21 day intervals or as needed depending on disease severity. For drier areas, make two to four applications using 2.2 to 3.3 pts. per acre according to disease incidence and planting density. Minimum retreatment interval is 14 days.
Coffee	Coffee Berry Disease ( <i>Colletotrichum coffeanum</i> )	1.8 – 2.6 (0.032 – 0.046 lbs. chitosan and 0.032 – 0.046 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	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. Minimum retreatment interval is 21 days.
	Bacterial Blight ( <i>Pseudomonas syringae</i> )	1.8 – 2.6 (0.032 – 0.046 lbs. chitosan and 0.032 – 0.046 lbs. copper)		Begin spray program before the onset of long rainy periods and continue through the rainy season at 14 to 21 day intervals or as needed. The critical time for spraying to control this 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. Minimum retreatment interval is 14 days.
	Leaf Rust ( <i>Hemileia vastatrix</i> )	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)		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. Minimum retreatment interval is 21 days.
	Iron Spot ( <i>Cercospora coffeicola</i> ), Pink Disease ( <i>Corticium salmonicolor</i> )	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)		Use concentrate or dilute spray. Begin treatment at the start of wet season and continue at monthly intervals for three applications. Minimum retreatment interval is 30 days.
Filbert	Bacterial Blight	5.3 – 7.9 (0.093 – 0.138 lbs. chitosan and 0.41 – 0.61 lbs. copper)	31.6 (0.553 lbs. chitosan and 2.43 lbs. copper)	Apply as a post-harvest spray. In seasons of heavy rainfall, apply a second spray when three-fourths of the leaves have dropped. Use the higher rates when rainfall is heavy and disease pressure is high. If needed, agricultural type spray oil may be added. Minimum retreatment interval is 14 days.
	Eastern Filbert Blight	5.3 – 7.9 (0.093 – 0.138 lbs. chitosan and 0.41 – 0.61 lbs. copper)		Apply as a dilute spray in adequate water for thorough coverage. Make applications starting at bud swell to bud break and continue at 2-week intervals or as needed until early May. Thorough coverage is essential. Use the higher rates when rainfall is heavy and disease pressure is high. If needed, agricultural-type spray oil may be added. Minimum retreatment interval is 14 days.



Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Mango	Anthracnose	1.3 – 2.6 (0.023 - 0.046 lbs. chitosan and 0.10 - 0.20 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	Apply monthly after fruit set until harvest. Use the higher rates when rainfall is heavy and disease pressure is high. Minimum retreatment interval is 30 days.
Olives	Peacock Spot, Olive Knot	2.6 – 4.4 (0.046 – 0.077 lbs. chitosan and 0.20 – 0.34 lbs. copper)	8.8 (0.154 lbs. chitosan and 0.68 lbs. copper)	Make first application before winter rains begin. A second application in early spring should be made if disease is severe. Apply the higher rates for heavy disease pressure or when conditions favor disease development. Minimum retreatment interval is 30 days.
Peach, Nectarine	Bacterial Blast ( <i>Pseudomonas</i> ) Bacterial Canker, Bacterial Spot ( <i>Xanthomonas</i> ) Coryneum Blight (Shot Hole), Leaf Curl	2.6 – 5.3 (0.046 – 0.093 lbs. chitosan and 0.20 – 0.41 lbs. copper)	17.6 (0.308 lbs. chitosan and 1.36 lbs. copper)	Make first application before fall rains and a second at late dormant. For peach leaf curl, late dormant application must be made before leaf buds swell. Use the higher rates when rainfall is heavy and disease pressure is high. If needed, agricultural-type spray oil may be added. Minimum retreatment interval is 21 days.
	Blossom Brown Rot, Coryneum Blight (Shot Hole), Leaf Curl	1.8 – 3.5 (0.032 – 0.061 lbs. chitosan and 0.14 – 0.27 lbs. copper)		Full cover spray at pink bud. Use the higher rates when conditions favor disease. Evaluate fruit finish impact on susceptible varieties prior to use. Minimum retreatment interval is 5 days.
	Bacterial Spot	0.22 – 0.4 (0.004 – 0.007 lbs. chitosan and 0.02 – 0.03 lbs. copper)		<b>NOTE:</b> Spotting of leaves and defoliation may occur from use in cover sprays – varietal differences occur. Minimum retreatment interval is 7 days.
Pear	Fire Blight	0.4 (0.007 lbs. chitosan and 0.03 lbs. copper)	10.5 (0.184 lbs. chitosan and 0.81 lbs. copper)	Apply at 5 day intervals or as needed throughout the bloom period. <b>NOTE:</b> Russetting may occur in copper sensitive varieties. Excessive dosages may cause fruit russet on any variety. Minimum retreatment interval is 5 days.
	Blossom Blast ( <i>Pseudomonas</i> )	3.5 – 5.3 (0.061 – 0.093 lbs. chitosan and 0.27 – 0.41 lbs. copper)		Apply before fall rains and again during dormancy before spring growth starts. Use the higher rates when disease pressure is high or when conditions favor disease development. <b>Only one application is permitted.</b>
Pecan	Kernel Rot, Shuck Rot, ( <i>Phytophthora cactorum</i> ) Zonate Leaf Spot ( <i>Cristulariella pyramidalis</i> )	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	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. Minimum retreatment interval is 14 days.
	Ball Moss, Spanish Moss	1.8 – 2.6 (0.023 – 0.046 lbs. chitosan and 0.14 – 0.20 lbs. copper)		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. A second application may be required after 12 months. Minimum retreatment interval is 14 days.
Pistachio	Botryosphaeria Panicle and Shoot Blight, Botrytis Blight, Late Blight ( <i>Alternaria alternata</i> ) Septoria Leaf Blight	1.3 – 2.6 (0.032 – 0.046 lbs. chitosan and 0.14 – 0.20 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	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. Minimum retreatment interval is 14 days.



Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Quince	Fire Blight	0.4 (0.007 lbs. chitosan and 0.03 lbs. copper)	3.5 (0.061 lbs. chitosan and 0.27 lbs. copper)	Apply at 5 day intervals or as needed throughout the bloom period. Apply in adequate water for thorough coverage. Minimum retreatment interval is 5 days.
Walnuts	Walnut Blight	2.6 – 5.3 (0.046 – 0.093 lbs. chitosan and 0.20 – 0.41 lbs. copper)	26.3 (0.460 lbs. chitosan and 2.03 lbs. copper)	Apply 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. Minimum retreatment interval is 7 days.

### VEGETABLES

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Bean (Dry, Green)	Brown Spot, Common Blight, Halo Blight	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	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. Minimum retreatment interval is 7 days.
Beet (Table Beet, Beet Greens)	Cercospora Leaf Spot	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	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. Minimum retreatment interval is 10 days.
Carrot	Alternaria Leaf Spot, Cercospora Leaf Spot	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	Begin applications when disease first threatens and repeat at 7 to 14 day intervals or as needed depending on disease severity. Minimum retreatment interval is 7 days.
Celery, Celeriac	Bacterial Blight, Cercospora Early Blight, Septoria Late Blight	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	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. Minimum retreatment interval is 7 days.
Crucifers (Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Collard Greens, Mustard Greens, Turnip Greens)	Black Leaf Spot ( <i>Alternaria</i> ) Black Rot ( <i>Xanthomonas</i> ) Downy Mildew	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	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. NOTE: Reddening of older leaves may occur on broccoli and a flecking of wrapper leaves may occur on cabbage. Minimum retreatment interval is 7 days.
Cucurbits (Cantaloupe, Cucumber, Honeydew, Muskmelon, Pumpkin, Squash, Watermelon)	Alternaria Leaf Spot, Angular Leaf Spot, Anthracnose, Downy Mildew, Gummy Stem Blight, Powdery Mildew, Watermelon	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	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. NOTE: Crop injury may occur from application at higher rates and shorter intervals. Discontinue use if injury occurs. Minimum retreatment interval is 5 days.

	Bacterial Fruit Blotch (suppression)			
Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Eggplant	Alternaria Blight, Anthracnose Phomopsis	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	Begin applications prior to development of disease symptoms. Repeat spray at 7 to 10 day intervals or as needed depending on disease severity. Minimum retreatment interval is 7 days.
Okra	Anthracnose, Bacterial Leaf Spot, Leaf Spots, Pod Spot, Powdery Mildew	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	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. Minimum retreatment interval is 5 days.
Onion, Garlic	Bacterial Blight, Downy Mildew, Purple Blotch	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	13.2 (0.231 lbs. chitosan and 1.02 lbs. copper)	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. Minimum retreatment interval is 7 days.
Pea	Powdery Mildew	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	6.1 (0.107 lbs. chitosan and 0.47 lbs. copper)	Begin applications when disease symptoms first appear and repeat at weekly intervals or as needed. Use the higher rates when conditions favor disease. Minimum retreatment interval is 7 days.
Pepper	Anthracnose, Bacterial Spot, Cercospora Leaf Spot	0.4 – 2.6 (0.007 – 0.046 lbs. chitosan and 0.03 – 0.2 lbs. copper)	26.3 (0.460 lbs. chitosan and 2.03 lbs. copper)	Begin applications when condition first favor disease development and repeat at 7 to 10 day intervals or as needed depending on disease severity. Use the higher rates when conditions favor disease. Minimum retreatment interval is 3 days.
Spinach	Anthracnose, Blue Mold, Cercospora Leaf Spot, White Rust	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	4.4 (0.077 lbs. chitosan and 0.34 lbs. copper)	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. NOTE: Flecking may occur in spinach leaves. Minimum retreatment interval is 7 days.
Tomato	Anthracnose, Bacterial Speck, Bacterial Spot, Early Blight Gray Leaf Mold, Late Blight, Septoria Leaf Spot	0.4 – 2.6 (0.007 – 0.046 lbs. chitosan and 0.03 – 0.2 lbs. copper)	35.1 (0.614 lbs. chitosan and 2.70 lbs. copper)	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. Minimum retreatment interval is 3 days.
Watercress	Cercospora Leaf Spot	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	3.5 (0.061 lbs. chitosan and 0.27 lbs. copper)	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 4 applications per crop. Apply using ground spray equipment at no less than 50 gallons of spray solution per acre. Minimum retreatment interval is 7 days.

### VINES

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Grapes	Block Rot, Downy Mildew, Phomopsis	0.9 – 2.6 (0.016 – 0.046 lbs. chitosan and 0.07 – 0.20 lbs. copper)	26.3 (0.460 lbs. chitosan and 2.03 lbs. copper)	Begin applications at bud break with subsequent applications throughout the season depending on disease severity. Use the higher rates when conditions favor disease. NOTE: Foliage injury may occur on copper sensitive varieties such as Concord, Delaware, Niagara and Rosette. Minimum retreatment interval is 3 days.
	Powdery Mildew	1.8 – 2.6 (0.032 – 0.046 lbs. chitosan and 0.14 – 0.2 lbs. copper)		
Hops	Downy Mildew	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	Make crown treatment after pruning, but before training. After training, additional treatments are needed at about 10 day intervals. NOTE: Discontinue use 2 weeks before harvest. Minimum retreatment interval is 10 days.
Kiwi	<i>Erwinia herbicola</i> , <i>Pseudomonas fluorescens</i> , <i>Pseudomonas syringae</i>	1.3 – 2.6 (0.023 – 0.046 lbs. chitosan and 0.10 – 0.20 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	Apply in 200 gallons of water per acre. Make applications on a monthly basis. A maximum of three applications may be made. Minimum retreatment interval is 30 days.

### MISCELLANEOUS

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Atemoya	Anthracnose	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	6.1 (0.107 lbs. chitosan and 0.47 lbs. copper)	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. Minimum retreatment interval is 7 days.
Carambola	Anthracnose	1.8 – 2.6 (0.032 – 0.046 lbs. chitosan and 0.14 – 0.2 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	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. Minimum retreatment interval is 7 days.
Chives	Downy Mildew	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	4.4 (0.077 lbs. chitosan and 0.34 lbs. copper)	Begin applications when plants are established in the field. Repeat applications every 7 to 10 days or as needed depending on disease conditions. Minimum retreatment interval is 7 days.
Dill	Phoma Leaf Spot, Rhizoctonia Foliage Blight	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	4.4 (0.077 lbs. chitosan and 0.34 lbs. copper)	Begin applications when plants are first established in the field and repeat at 7 to 10 day intervals or as needed depending upon disease severity and environmental conditions. Use the higher rates when conditions favor disease. Minimum retreatment interval is 7 days.

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Ginseng	Alternaria Leaf Blight, Stem Blight	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	Use as a tank mix with 1 lb. Iprodione in 100 gallons of water. Use in accordance with the most restrictive of label limitations and precautions. No label dosage rates should exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing. Begin BIOREND® Cu -Iprodione applications as soon as plants have emerged in spring. Applications should be repeated every 7 days or as needed until plants become dormant in fall. Apply fungicides at least 8 hours before rain. Use of a spread-sticker or sticker is advised. NOTE: Alternaria Leaf and Stem Blight is most severe in humid conditions such as those found in the dense canopies of 2 to 4 year old Ginseng. It is very important that the stems be thoroughly covered with fungicide; therefore, use a spray apparatus which distributes the fungicide throughout the canopy. Minimum retreatment interval is 7 days.
Guava	Anthracnose, Red Algae	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	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. Minimum retreatment interval is 7 days.
Litchi	Anthracnose	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	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. Minimum retreatment interval is 7 days.
Macadamia	Anthracnose	1.3 – 2.6 (0.023 – 0.046 lbs. chitosan and 0.10 – 0.20 lbs. copper)	10.5 (0.184 lbs. chitosan and 0.81 lbs. copper)	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 when conditions favor disease. Minimum retreatment interval is 7 days.
	Phytophthora Blight ( <i>P. capsici</i> ), Raceme Blight ( <i>Boytrytis cinerea</i> )	0.9 – 1.8 (0.016 – 0.032 lbs. chitosan and 0.07 – 0.14 lbs. copper)	8.8 (0.154 lbs. chitosan and 0.68 lbs. copper)	Apply during aceme development and bloom periods. Apply in sufficient water for thorough coverage. Use the higher rates when conditions favor disease. Minimum retreatment interval is 7 days.
Mamey, Sapote	Algal Leaf Spot, Anthracnose	1.8 – 2.6 (0.032 – 0.046 lbs. chitosan and 0.032 – 0.046 lbs. copper)	7.9 (0.138 lbs. chitosan and 0.61 lbs. copper)	Apply when conditions favor disease development. Repeat on 14 to 30 day schedule or as needed as disease severity and environmental conditions dictate. Use the higher rates when conditions favor disease. Minimum retreatment interval is 14 days.
Papaya	Anthracnose	1.3 – 2.6 (0.023 – 0.046 lbs. chitosan and 0.10 – 0.20 lbs. copper)	10.5 (0.184 lbs. chitosan and 0.81 lbs. copper)	Apply before disease appears. Apply at 10 to 14 day intervals under light disease pressure and 5 to 7 day intervals or as needed under heavy disease pressure. The addition of an approved spreader is desirable. Use the higher rates when conditions favor disease. Minimum retreatment interval is 7 days.
Parsley	Bacterial Blight ( <i>Pseudomonas sp.</i> )	0.4 – 1.3 (0.007 – 0.023 lbs. chitosan and 0.03 – 0.1 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	Begin applications when plants are first established in the field and repeat at 10 day intervals or as needed depending on disease severity and environmental conditions. Minimum retreatment interval is 10 days.
Passion Fruit	Anthracnose	1.3 – 2.6 (0.023 – 0.046 lbs. chitosan and 0.10 – 0.20 lbs. copper)	10.5 (0.184 lbs. chitosan and 0.81 lbs. copper)	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. Minimum retreatment interval is 7 days.

Crop	Disease	Use Rate in Pints Per Acre	Maximum Annual Rate in Pints per Acre	Application Instructions
Sugar Apple ( <i>Annona</i> )	Anthracnose	2.6 – 5.3 (0.046 – 0.093 lbs. chitosan and 0.20 – 0.41 lbs. copper)	21.1 (0.369 lbs. chitosan and 1.62 lbs. copper)	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. Minimum retreatment interval is 7 days.
Sycamore	Anthracnose	0.4 – 0.9 (0.007 – 0.016 lbs. chitosan and 0.03 – 0.07 lbs. copper)	5.3 (0.093 lbs. chitosan and 0.41 lbs. copper)	Apply as a full cover spray in 100 gallons of water or sufficient volume for thorough coverage. Make first application at bud crack and second application 7 to 10 days later at 10% leaf expansion. Use the higher rates when conditions favor disease. Minimum retreatment interval is 7 days.

### ORNAMENTAL PLANTS

Greenhouse, Field, Landscape and Interior: Annual & Perennial Bedding Plants, Potted Flowering Crops, Tropical Foliage, Cut Flower Crops & Nursery Crops

**Restriction:** Do not apply to trees that will bear fruit within one year.

Spray for thorough foliage coverage. Re-spray rates and intervals vary with severity of disease and adversity of environmental conditions. Lower rates may be as effective as higher rates and should be tried first. Routine preventive programs may be maintained at the lower rates.

Rates above 13 fl. oz. BIOREND® Cu per 100 gallons water may damage some tender, open blooms. Rates up to 61 fl. oz. BIOREND® Cu per 100 gallons water can be used for powdery mildew on roses if no blooms are open. Use of low volume equipment is effective against Botrytis and not effective against established powdery mildew and *Xanthomonas* infections.

Applications on actively growing tissue may be more effective than applications on dormant tissue.

For a single application, do not exceed 2.0 lbs. metallic copper per acre. Do not exceed 20 lbs. metallic copper per acre per year. BIOREND® Cu contains 0.62 lbs. of metallic copper per gallon of product. The minimum retreatment interval is 7 days.

**For a single application to Easter lilies**, do not exceed 2.5 lbs. metallic copper per acre. Do not exceed 75 lbs. metallic copper per acre per year. The minimum retreatment interval is 7 days. Do not apply any additional copper pesticide to this label for 36 months for field grown Easter lilies.

## Annual & Perennial Bedding Plants

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 gallons	Minimum Retreatment Interval
Alyssum	Botrytis	9 - 18	0.01 – 0.02 lbs. chitosan and 0.043 – 0.086 lbs. copper	7 days
	Downy Mildew	9 - 18		
Argyranthemum	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Erwinia	11 - 18		
Begonia	Botrytis	11 - 18	0.014 – 0.02 lbs. chitosan and 0.0624 – 0.086 lbs. copper	
	Powdery Mildew	13 - 18		
Chrysanthemum	Xanthaomonas	13 - 18	0.014 – 0.024 lbs. chitosan and 0.0624 – 0.106 lbs. copper	
	Botrytis	13 - 22		
Daylily	Pseudomonas	13 - 22	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Botrytis	11 - 18		
Dusty Miller	Erwinia	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Powdery Mildew	13 – 22		
Fuschia	Alternaria	13 – 22	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Botrytis	11 - 18		
Geranium	Botrytis	11 - 18	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Powdery Mildew	11 - 22		
	Botrytis	13 - 18	0.014 – 0.02 lbs. chitosan and 0.0624 – 0.086 lbs. copper	
	Rust (preventive)	13 - 18		
	Rust (therapeutic)	22 - 35	0.024 – 0.039 lbs. chitosan and 0.106 – 0.17 lbs. copper	
	Pseudomonas (preventive)	13 - 40	0.014 – 0.044 lbs. chitosan and 0.0624 – 0.19 lbs. copper	
	Psuedomonas (therapeutic)	44	0.048 lbs. chitosan and 0.21 lbs. copper	
Xanthomonas (preventive)	13 - 40	0.014 – 0.044 lbs. chitosan and 0.0624 – 0.19 lbs. copper		
Hollyhock	Xanthomonas (therapeutic)	44	0.048 lbs. chitosan and 0.21 lbs. copper	
	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Powdery Mildew	13 - 22		
Hosta	Rust	13 - 22	0.014 – 0.024 lbs. chitosan and 0.0624 – 0.106 lbs. copper	
	Botrytis	13 - 18	0.014 – 0.02 lbs. chitosan and 0.0624 – 0.086 lbs. copper	
Impatiens	Erwinia	13 - 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
	Alternaria	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
New Guinea Impatiens	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	
	Powdery Mildew	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Pseudomonas	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	
Pachysandra	Powdery Mildew	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Botrytis	11 - 18	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
Pachysandra	Volutella	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	

### Annual & Perennial Bedding Plants (Cont.)

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 gallons	Minimum Retreatment Interval
Pansy	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	7 days
	Cercospora	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Phytophthora	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Periwinkle	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Phytophthora	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
Ranunculus	Bacterial Blight	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Botrytis	11 - 18		
	Powdery Mildew	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Snapdragon	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Downy Mildew	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Rust	11 - 22		
Zinnia	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Powdery Mildew	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Pseudomonas	11 - 22		
	Xanthomonas	11 - 22		
<u>Additional Annuals &amp; Perennials</u> Anemone, Aster, Bacopa, Baptisia, Carnation, Coleus, Columbine, Coneflower, Coreopsis, Cuphea, Dahlia, Daisy, Dianthus, Delphinium, Echinacea, Ipomoea, Lantana, Lead Plant, Liatris, Lobelia, Lupine, Marigold, Monarda, Ornamental Grasses, Pentas, Petunia, Phlox, Poppy, Prairie Smoke, Primrose, Pulmonaria, Rudbeckia, Salvia, Scabiosa, Sedum, Silphium, Verbena, Veronica, Vinca, Viola	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Downy Mildew	13 - 26	0.014 – 0.029 lbs. chitosan and 0.0624 – 0.125 lbs. copper	
	Powdery Mildew	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Pseudomonas	13 - 22		



### Potted Flowering Crops

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 gallons	Minimum Retreatment Interval
African Violet	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	7 days
	Powdery Mildew	11 - 13		
Azalea	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Colletotrichum	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Cylindrocladium	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
Calla Lily	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Erwinia	11 - 18		
Chrysanthemum	Botrytis	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Crown Gall	13 - 22		
	Erwinia	13 - 22		
	Powdery Mildew	13 - 22		
Cineraria	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Cyclamen	Botrytis	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Erwinia	13 - 18		
Daffodil	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Easter Lily	Botrytis	11 - 18		
Exacum	Botrytis	11 - 18		
Gerbera	Botrytis	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Powdery Mildew	13 - 22		
Gloxinia	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Holiday Cactus	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Erwinia	13 - 44	0.014 – 0.048 lbs. chitosan and 0.062 – 0.21 lbs. copper	
	Psuedomonas	13 - 44		
	Xanthomonas	13 - 44		
Hyacinth	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Hydrangea	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Powdery Mildew	11 - 22		
Iris	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Erwinia	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
Kalanchoe	Botrytis	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Erwinia	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
	Powdery Mildew	13 - 31		
Lisianthus	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	

**Potted Flowering Crops (Cont.)**

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 gallons	Minimum Retreatment Interval
Orchid	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	7 days
	Erwinia	13 - 35	0.014 – 0.039 lbs. chitosan and 0.062 – 0.17 lbs. copper	
	Psuedomonas	13 - 35		
	Xanthomonas	13 - 35		
Poinsettia	Botrytis	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Scab	18 - 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
	Powdery Mildew (preventive)	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Powdery Mildew (therapeutic)	18 - 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
	Erwinia (preventive)	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Erwinia (therapeutic)	18 - 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
	Xanthomonas (preventive)	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Xanthomonas (therapeutic)	18 - 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
Primula	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Erwinia	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
Rose Bush	Black Spot (preventive)	13 – 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
	Black Spot (therapeutic)	31 - 44	0.034 – 0.048 lbs. chitosan and 0.15 – 0.21 lbs. copper	
	Botrytis (preventive)	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Botrytis (therapeutic)	22 - 44	0.024 – 0.048 lbs. chitosan and 0.106 – 0.021 lbs. copper	
	Cylindrocladium (preventive)	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Cylindrocladium (therapeutic)	22 - 44	0.024 – 0.048 lbs. chitosan and 0.106 – 0.021 lbs. copper	
	Downy Mildew (preventive)	13 - 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Downy Mildew (therapeutic)	22 - 44	0.024 – 0.048 lbs. chitosan and 0.106 – 0.021 lbs. copper	
	Powdery Mildew (preventive)	13 - 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
	Powdery Mildew (therapeutic)	31 - 44	0.034 – 0.048 lbs. chitosan and 0.15 – 0.21 lbs. copper	
Tulip	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	

## Nursery Crops

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 gallons	Minimum Retreatment Interval
Azalea	Anthrachnose	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	7 days
	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Cylindrocladium	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
	Phytophthora	18 - 22	0.02 – 0.024 lbs. chitosan and 0.086 – 0.106 lbs. copper	
Buxus	Volutella	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Cherry Laurel	Xanthomonas	18 - 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
Conifers	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Dipodia	9 - 11	0.01 – 0.012 lbs. chitosan and 0.043 – 0.053 lbs. copper	
Crape Myrtle	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Powdery Mildew	18 - 26	0.02 – 0.029 lbs. chitosan and 0.086 – 0.125 lbs. copper	
Dogwood	Anthrachnose	18 - 26	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Powdery Mildew	18 - 26	0.02 – 0.029 lbs. chitosan and 0.086 – 0.17 lbs. copper	
Elm	Erwinia	18 - 35	0.02 – 0.039 lbs. chitosan and 0.086 – 0.125 lbs. copper	
Euonymus	Anthrachnose	13 - 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
Hawthorn	Cedar Apple Rust	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Hydrangea	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Cercospora	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Powdery Mildew	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
Indian Hawthorn	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Entomosporium	13 - 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
Japanese Maple	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Verticillium	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Pseudomonas	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Juniper	Phomopsis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
Leyland Cypress	Cercospora	11 - 22		
Lilac	Botrytis	11 - 22		
	Pseudomonas	11 - 22		
	Powdery Mildew	13 - 22		
Nandina	Xanthomonas	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	

**Nursery Crops (Cont.)**

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 Gallons	Minimum Retreatment Interval
Oak	Anthraco nose	31	0.034 lbs. chitosan and 0.15 lbs. copper	7 days
	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
Oak Trunk Spray	Phytophthora	26 - 40	0.029 – 0.044 lbs. chitosan and 0.125 – 0.19 lbs. copper	
Photinia	Entomosporium	13 - 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
Pinus	Dothistroma	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Rosaceae: Cotoneaster, Malus, Mountain Ash, Ornamental Crabapple, Ornamental Pear, Pyracantha	Apple Scab	35	0.039 lbs. chitosan and 0.17 lbs. copper	
	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Fireblight	18 - 35	0.02 – 0.039 lbs. chitosan and 0.086 – 0.17 lbs. copper	
	Pseudomonas	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
Rhododendron	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Cylindrocladium	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
	Phytophthora	18 - 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
Rose	<i>See Flowering Potted Crops for Rates</i>			
Ruscus	Pseudomonas	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
Sycamore	Anthraco nose	31	0.034 lbs. chitosan and 0.15 lbs. copper	
	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
Viburnum	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Cercospora	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Phytophthora	18 - 22	0.02 – 0.024 lbs. chitosan and 0.086 – 0.106 lbs. copper	
<u>Shrubs/Vines:</u> Barberry, Bougainvillea, Clematis Cornus, Cotinus, Forsythia, Gardenia, Holly, Paeonia, Philadelphus, Physocarpus, Potentilla, Ribes, Rosa, Spirea, Weigela  <u>Deciduous:</u> Acer, Amelanchier, Betula, Celtis, Cercis, Crataegus, Ficus, Fraxinum, Ginkgo, Gelditisia, Magnolia, Malus, Populus, Prunus, Pyrus, Tilia  <u>Conifers:</u> Abies, Juniper, Picea, Pinus, Pittosporum, Pseudotsuga, Taxus, Thuja, Tsuga  <u>Non-Bearing Fruit Trees &amp; Vines:</u> Apple, Pear, Grape, Citrus	Botrytis	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Fireblight	18 - 35	0.02 – 0.039 lbs. chitosan and 0.086 – 0.125 lbs. copper	
	Powdery Mildew	18 - 22	0.02 – 0.024 lbs. chitosan and 0.086 – 0.106 lbs. copper	
	Pseudomonas	13 - 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
	Rhizoctonia	11 - 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	

### Cut Flower Crops

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 Gallons	Minimum Retreatment Interval
Alstromeria	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	7 days
Carnation	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Chrysanthemum	Botrytis	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Delphinium	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	
Freesia	Botrytis	11 - 13		
Gerbera	Botrytis	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Gladiola	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	
Lisianthus	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Orchid	Botrytis	11 - 15	0.012 – 0.017 lbs. chitosan and 0.053 – 0.072 lbs. copper	
Rose	Botrytis	13 - 44	0.014 – 0.048 lbs. chitosan and 0.062 – 0.21 lbs. copper	
Snapdragon	Botrytis	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Sweetpea	Botrytis	11 - 13	0.012 – 0.014 lbs. chitosan and 0.053 – 0.062 lbs. copper	

### Tropical Foliage Crops

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 Gallons	Minimum Retreatment Interval
Dracaena	Rust	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	7 days
Ferns	Botrytis	11 – 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Erwinia	11 – 18		
Hibiscus	Botrytis	11 – 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Pseudomonas	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Xanthomonas	13 – 22		
Ivy	Botrytis	11 – 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Xanthomonas	13 – 44	0.014 – 0.048 lbs. chitosan and 0.062 – 0.21 lbs. copper	
Palms	Botrytis	11 – 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
	Erwinia	11 – 18		
	Pseudomonas	11 – 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Xanthomonas	11 – 22		
Spathiphyllum	Botrytis	11 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Cylindrocladium	13 – 22		
	Phytophthora	13 – 26		
Tropical Foliage (General)	Botrytis	11 – 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Powdery Mildew	11 – 22		
	Erwinia	18 – 44	0.02 – 0.048 lbs. chitosan and 0.086 – 0.21 lbs. copper	
	Pseudomonas	18 – 44		
	Xanthomonas	18 – 44		

## Specific Directions for Spray and Dip Applications During Propagation

When harvesting cuttings on site, spray or fog stock plants 1 to 2 days prior to taking cuttings. Spray cuttings to drench again at the same rate 2 to 3 days after sticking in rooting media, or dip cuttings for a few seconds prior to sticking.

When using rooted, callused, or unrooted cuttings shipped in, spray cuttings to drench 2 to 3 days after planting or sticking, or dip cuttings for a few seconds prior to sticking. Under severe disease pressure repeat in 7 to 10 days.

### Herbaceous & Woody Stock Plants and Cuttings

Crop	Disease	Use Rate in fl. oz. per 100 gallons	Lbs. A.I./100 Gallons	Minimum Retreatment Interval
Azalea	Botrytis	11 – 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	7 days
	Cylindrocladium	13 – 31	0.014 – 0.034 lbs. chitosan and 0.062 – 0.149 lbs. copper	
Chrysanthemum	Botrytis	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Erwinia	13 – 22		
Geranium	Botrytis	13 – 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Xanthomonas	13 – 44	0.014 – 0.048 lbs. chitosan and 0.062 – 0.21 lbs. copper	
Holiday Cactus	Botrytis	11 – 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Erwinia	13 – 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
Hydrangea	Botrytis	11 – 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Xanthomonas	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Lavender	Botrytis	11 – 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	
Mini-Rose	Botrytis	13 – 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Cylindrocladium	13 – 44	0.014 – 0.048 lbs. chitosan and 0.062 – 0.21 lbs. copper	
Poinsettia	Botrytis	13 – 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
	Erwinia	18 – 31		
	Scab	18 – 31		
	Xanthomonas	18 – 31		
Tropical Foliage	Botrytis	11 – 22	0.012 – 0.024 lbs. chitosan and 0.053 – 0.106 lbs. copper	
	Cylindrocladium	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Erwinia	18 – 44	0.02 – 0.048 lbs. chitosan and 0.086 – 0.21 lbs. copper	

### Post-Harvest Dip Applications on Cut Flower Crops

Crop	Disease	Use Rate in Teaspoons/5 gal	Application Instructions
Alstroemeria	Botrytis	0.75 – 1	Dip cut flowers/buds for a few seconds soon after cutting
Carnation	Botrytis	2 – 3	
Chrysanthemum	Botrytis	2 – 3	
Delphinium	Botrytis	1 – 2	
Freesia	Botrytis	0.75 – 1	
Gerbera	Botrytis	2 – 3	
Gladiola	Botrytis	1.5 – 3	
Orchid	Botrytis	2 – 3	
Rose	Botrytis	3 – 3.75	
Snapdragon	Botrytis	1 – 2	
Sweetpea	Botrytis	1 – 2	

### Bulb Applications

Crop	Disease	Use Rate in fl.oz./100 gal	Application Instructions
Calla Lily	Erwinia	26	Dip bulbs for 5 minutes, or spray bulbs to drip then allow to dry before planting.

### Soil Drench Applications – Greenhouse, Field, Landscape & Interior

Crop	Disease	Use Rate in fl.oz./100 gal	Lbs. A.I./100 Gallons	Minimum Retreatment Interval
African Violet	Phytophthora	11 - 18	0.012 – 0.02 lbs. chitosan and 0.053 – 0.086 lbs. copper	7 days
Aster	Phytophthora	18 - 26	0.02 – 0.029 lbs. chitosan and 0.086 – 0.125 lbs. copper	
Azalea	Cylindrocladium	18 – 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
	Rhizoctonia			
Calla Lily	Erwinia	13 – 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
Cyclamen	Erwinia	13	0.014 lbs. chitosan and 0.062 lbs. copper	
Ferns	Rhizoctonia	13 – 26	0.014 – 0.029 lbs. chitosan and 0.062 – 0.125 lbs. copper	
Geranium	Botrytis	18 – 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
Hosta	Erwinia	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Impatiens	Phytophthora	18 – 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
Japanese Maple	Verticillium	22	0.024 lbs. chitosan and 0.106 lbs. copper	
Pansy	Phytophthora	13 – 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
	Pythium			
Periwinkle	Phytophthora	13 – 18	0.014 – 0.02 lbs. chitosan and 0.062 – 0.086 lbs. copper	
Pittosporum	Rhizoctonia	13 – 18	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	
Poinsettia	Phytophthora	13 – 22	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
	Rhizoctonia	18 – 31		
Rhododendron	Rhizoctonia	18 – 31	0.02 – 0.034 lbs. chitosan and 0.086 – 0.15 lbs. copper	
Rose	Black Spot	18 – 31		
	Cylindrocladium			
Spathiphyllum	Cylindrocladium	18 – 31		
	Phytophthora			
Vinca minor	Rhizoctonia	13 - 22	0.014 – 0.024 lbs. chitosan and 0.062 – 0.106 lbs. copper	



## STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store in a cool dry place. Avoid freezing.

**Pesticide Disposal:** To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local government or by industry).

Do not contaminate water when disposing of equipment wash water or rinsate. Pesticide wastes may be toxic. Improper disposal of unused pesticide, wash water or rinse water is a violation of federal law.

**Container Handling: Nonrefillable Container (five gallons or less):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. 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 reconditioning if appropriate or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

**Nonrefillable Container (greater than five gallons):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. 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 reconditioning if appropriate or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities

## Warranty Statement

Ag NuBio warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with 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 Ag NuBio. To the extent consistent with applicable law, Ag NuBio shall not be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. To the extent consistent with applicable law, the exclusive remedy of any buyer or user of this product for any and all losses, injuries, or damages resulting from or in any way arising from the use, handling, or application of this product, whether in contract, warranty, tort, negligence, strict liability, or otherwise, shall not exceed the purchase price paid for this product or at Ag NuBio election, the replacement of this product. Ag NuBio MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

## SUB-LABEL B: Consumer Label

### 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. **READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.**

### PRODUCT INFORMATION

BIOREND® Cu is a combination fungicide, bactericide and plant defense booster. Complete coverage is essential to assure good product performance.

The chitosan in BIOREND® Cu stimulates SAR (Systemic Acquired Resistance) mechanism, which allows plants to be less susceptible to bacterial and fungal diseases. BIOREND® Cu also allows the healing of wounds, to reduce the incidence of fungal and bacterial diseases.

When used as directed on this label BIOREND® Cu can enhance plant vigor, promote foliar growth, increase crop yields, improve crop vigor and quality, aid in suppression of diseases and pathogens, activate plant resistance to environmental stress, drought and disease pressure.

### HOW TO APPLY

*[For use when packaged as a concentrate for use in hose-end sprayers]*

Shake well before use. Most conventional liquid pesticide plant sprayers can be used to apply BIOREND® Cu to plants. Mix 0.1 to 0.5 fluid ounces of BIOREND® Cu in a gallon of water. Unless otherwise stated in specific application notes, apply 1.1 to 2.3 gallons of diluted spray per 1,000 square ft. Choose rate level according to disease pressure using the higher rate when pressure is highest unless directed otherwise in the crop specific directions.

*[For use when packaged with a hose-end attachment as part of the bottle]*

Shake well before use. The hose-end sprayer automatically dilutes the product to control listed diseases at a rate of 1.1 to 2.3 gallons of diluted spray per 1,000 square feet.

### WHEN TO APPLY

For best control, start spraying before the disease is visible or when disease is first visible on the plant. Spray all plant parts thoroughly (top and bottom of leaves), and unless otherwise directed in the crop table, repeat every 7 to 10 days. Use the higher rate to control diseases that may go dormant and overwinter. See application notes for the specific crop application interval. If possible, time applications so that at least 12 hours of dry weather follows application. Reapply after rain, following crop specific application interval.

When **powdery mildew** presence is expected on a plant, spray the plants at the minimum application interval during the first 2 weeks after emergence.

To control **downy mildews, leaf and fruit spots, blights, and rust**, begin treatment 2 weeks before disease normally appears or when weather forecasts predict a long period of wet weather. Alternatively, begin treatment when disease first appears, and repeat as long as needed.

To prevent **fruit rots**, apply at the start of flowering and unless otherwise directed in the crop table, repeat every 7 to 10 days until harvest. Fungicidal sprays are especially warranted when weather forecasts predict a long period of wet weather.

### Ornamentals and Turf

Do not use more than 101 fl.oz. of product/1000 sq. ft. per year on turf or more than 96 fl. oz. of product/1000 sq. ft. per year on ornamentals. BIOREND® Cu may cause some copper toxicity on some plant species. Before spraying a specific plant species consult your State Experiment Station or make a test spray.

Crop	Diseases Controlled	Application Instructions
Rose and Ornamental Shrubs (Such as; Crape Myrtle, Forsythia, Hydrangea, Willow, Mock- Orange, Deutzia, Pyracantha, Japanese quince, Abelia, Summersweet)	Blackspot, Downy mildew, Gray mold (Botrytis), Leafspots, Powdery mildew, Rust	May cause copper toxicity on some rose varieties. Copper toxicity appears as purple spots. For Black spot, mix 0.4 fl. ozs. of BIOREND® Cu per gallon of water. For Powdery Mildew, mix 0.3 fl. ozs. of BIOREND® Cu per gallon of water. In damp cool conditions (below 60°F), phytotoxicity is likely to occur. [Language to use with hose-end sprayer: The hose end sprayer applies product within the rates above.]
Shrubs/Vines (such as): Barberry, Bougainvillea, Clematis Cornus, Cotinus, Forsythia, Gardenia, Holly, Peonia, Philadelphus, Physocarpus, Potentilla, Ribes, Rosa, Spirea, Weigela	Downy mildew, Gray mold (Botrytis), Leafspots, Powdery mildew, Rust	Apply BIOREND® Cu when disease first appears. For Powdery Mildew, mix 0.3 fl. ozs. of BIOREND® Cu per gallon of water. In damp cool conditions (below 60°F), phytotoxicity is likely to occur. [Language to use with hose-end sprayer: The hose end sprayer applies product within the rates above.]
Fir, Juniper, Pine, Pittosporum	Gray mold (Botrytis), Powdery mildew, Needle Blight	Spray until needles are thoroughly wet with spray. Apply when new needles are just emerging.
Sycamore	Anthraco nose leaf spot	Make first application just before buds begin to swell, and repeat twice, at 7-day intervals.
Turf	Ascochyta leaf blight, Cercospora leaf spots, Dollar spot	Mix 0.4 to 1.5 fl. oz. with 2.5 gallons of water and apply to 1,000 sq. ft. For best control, begin treatment 2 weeks before disease normally appears. Alternatively, begin treatment when disease first appears, and repeat at 10 day intervals for as long as needed. To reduce Ascochyta leaf blight mow less frequently, only as necessary to maintain recommended height. Water before noon to allow grass to dry. Water thoroughly only as required to avoid moisture stress. Apply BIOREND® Cu when disease first appears, and repeat at 10 day intervals for as long as needed. In frequently diseased areas, prune adjacent trees and shrubs to reduce turf shading and to improve air movement. [Language to use with hose end sprayer: The hose end sprayer applies product within the rates above.]
	Rust	To reduce rust mow frequently to reduce rust spore production. Water and fertilize lawn as required to avoid moisture and nutrient stress. Water before noon to allow grass to dry. Apply BIOREND® Cu when disease first appears, and repeat at 10 day intervals for as long as needed. In frequently diseased areas, prune adjacent trees and shrubs to reduce turf shading and to improve air movement.
	Algae	For best control, begin treatment 2 weeks before disease normally appears. Alternatively, begin treatment when disease first appears, and repeat at 10 day intervals for as long as needed.

Crop	Diseases Controlled	Application Instructions
Non-Bearing Fruit Trees & Vines (including): Apple, Pear, Grape, Citrus	Blackspot, Downy mildew, Gray mold (Botrytis), Leafspots, Powdery mildew, Rust	Apply as a full cover spray for early season disease suppression.

### Fruits and Vegetables

Crop	Disease	Maximum Annual Rate in fl. oz. per 1,000 ft <sup>2</sup>	Minimum Retreatment Interval	Application Instructions
Corn	Bacterial Stalk Rot	85	7 days	Begin treatment when disease first appears and every 7 to 10 days or as needed. Use shorter spray intervals when conditions favor disease.
Strawberry	Angular Leaf Spot (Xanthomonas) Leaf Blight, Leaf Scorch, Leaf Spot	309	7 days	Begin application when plants are established and continue on a weekly schedule throughout the season. NOTE: Discontinue applications if signs of crop injury appear.
Bean (Dry, Green)	Brown Spot, Common Blight, Halo Blight	211	7 days	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	85	10 days	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.
Carrot	Alternaria Leaf Spot, Cercospora Leaf Spot	211	7 days	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	85	7 days	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.
Crucifers (Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Collard Greens, Mustard Greens, Turnip Greens)	Black Leaf Spot (Alternaria) Black Rot (Xanthomonas) Downy Mildew	85	7 days	Begin application after transplanting or shortly after emergence of seeds or when conditions favor disease development. Apply at 7 to 10 day intervals or as needed. Use the higher rates when conditions favor disease. NOTE: 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)	Alternaria Leaf Spot, Angular Leaf Spot, Anthracnose, Downy Mildew, Gummy Stem Blight, Powdery Mildew, Watermelon Bacterial Fruit Blotch (suppression)	211	5 days	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. NOTE: Crop injury may occur from application at higher rates and shorter intervals. Discontinue use if injury occurs.
Eggplant	Alternaria Blight, Anthracnose Phomopsis	126	7 days	Begin applications prior to development of disease symptoms. Repeat spray at 7 to 10 day intervals or as needed depending on disease severity.

Crop	Disease	Maximum Annual Rate in fl. oz. per 1,000 ft <sup>2</sup>	Minimum Retreatment Interval	Application Instructions
Grapes	Block Rot, Downy Mildew, Phomopsis, Powdery Mildew	421	3 days	Begin applications at bud break with subsequent applications throughout the season depending on disease severity. Use the higher rates when conditions favor disease. NOTE: Foliage injury may occur on copper sensitive varieties such as Concord, Delaware, Niagara and Rosette.
Okra	Anthrachnose, Bacterial Leaf Spot, Leaf Spots, Pod Spot, Powdery Mildew	126	5 days	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	211	7 days	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	98	7 days	Begin applications when disease symptoms first appear and repeat at weekly intervals or as needed. Use the higher rates when conditions favor disease.
Pepper	Anthrachnose, Bacterial Spot, Cercospora Leaf Spot	421	3 days	Begin applications when condition first favor disease development and repeat at 7 to 10 day intervals or as needed depending on disease severity. Use the higher rates when conditions favor disease.
Spinach	Anthrachnose, Blue Mold, Cercospora Leaf Spot, White Rust	70	7 days	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. NOTE: Flecking may occur in spinach leaves
Tomato	Anthrachnose, Bacterial Speck, Bacterial Spot, Early Blight Gray Leaf Mold, Late Blight, Septoria Leaf Spot	562	3 days	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.

#### STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store in a cool dry place. Avoid freezing. Store in a locked area away from children and domestic animals.

**Pesticide Disposal and Container Handling:** Non-refillable container. Do not reuse or refill this container. **If empty:** Place in trash or offer for recycling if available. **If partly filled:** Call your local solid waste agency for disposal instructions. Never place unused product down any indoor (including toilet) or outdoor (including sewer) drain.

#### Warranty Statement

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injuries, or damages resulting from or in any way arising from the use, handling, or application of this product, whether in contract, warranty, tort, negligence, strict liability, or otherwise, shall not exceed the purchase price paid for this product or at Ag NuBio election, the replacement of this product. Ag NuBio MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

Optional Marketing Claims – Applicable to both sub-labels (unless otherwise noted):

- This container will treat 32,000 to 160,000 square feet [use for 16 fl.oz. container – Sub-Label B]
- This container will treat up to 160,000 square feet [use for 16 fl.oz. container – Sub-Label B]
- This container will treat 16,000 to 80,000 square feet [use for 8 fl.oz. container – Sub-Label B]
- This container will treat up to 80,000 square feet [use for 8 fl.oz. container – Sub-Label B]
- For Roses, Listed Fruits and/& Listed Vegetables
- Controls Powdery Mildew, Black Spot & Rust
- Controls diseases that may go dormant overwinter
- Contains chitosan which boosts plant health
- Lawn fungicide
- Dormant and growing season liquid copper fungicide
- Contains chitosan which supports plants to defend for themselves against pathogens and disease
- Triggers defensive mechanisms in plants for better production
- Activates innate immunity