



**OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION**

WASHINGTON, D.C. 20460

April 29, 2024

Georgia Anastasiou  
Agent  
Phyton Corporation  
c/o Lewis & Harrison, LLC  
P. O. Box 385370  
Minneapolis, MN 55438

Subject: Label Amendment – Adding approved uses  
Product Name: Phyton-108XO  
EPA Registration Number: 49538-7  
Application Date: September 27, 2022  
Case Number: 480605

Dear Georgia Anastasiou:

The amended label referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable. This approval does not affect any conditions that were previously imposed on this registration. You continue to be subject to existing conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

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

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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.

Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6.

If you have any questions, please contact Thomas Harty at 202-566-0394 or at [harty.thomas@epa.gov](mailto:harty.thomas@epa.gov).

Sincerely,

A handwritten signature in cursive script that reads "Kristy Crews".

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

Enclosure- Stamped Label

**ACCEPTED**

04/29/2024

Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 49538-7

COPPER	GROUP	<b>M1</b>	FUNGICIDE
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# Phyton-108X0

[Alternate Brand Name: Instill O Bactericide<sup>^</sup> & Fungicide]

[Alternate Brand Name: Prev O Bactericide<sup>^</sup> & Fungicide]

**BACTERICIDE<sup>^</sup> & FUNGICIDE**

**BACTERICIDE + FUNGICIDE**

**Broad  
spectrum  
control**

Broad-spectrum bactericide<sup>^</sup> & fungicide for the control of diseases in ornamental plants and listed food crops grown in greenhouses, interiorscapes, fields, container and forest nurseries, lath saran and shade houses, and residential and commercial landscapes.

**ACTIVE INGREDIENT**

Copper Sulfate Pentahydrate**(CAS# 7758-99-8) .....	12.58%
OTHER INGREDIENTS .....	87.42%
TOTAL .....	100.00%
**Copper as Metallic.....	3.1%

Contains 1.28 lbs. active ingredient and 0.32 lbs. of metallic copper per gallon of product.

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION AVISO**

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.)

[See [attached label brochure] [inside of booklet] for directions for use and precautionary statements]

**DO NOT FREEZE**

E.P.A. REG. NO. 49538-7  
E.P.A. EST. NO. 49538-MN-001  
[Distributed by:]



**Phyton Corporation**  
P. O. Box 385370  
Minneapolis, MN 55438  
800-356-8733  
(Net) Contents: \_\_\_\_\_

**PHYSICAL OR CHEMICAL HAZARDS**

For spills, you may contact CHEMTREC at 1-800-424-9300

<sup>^</sup>non-public health bacteria



### FIRST AID

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

#### If in Eyes:

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

#### If Swallowed:

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

#### If on Skin or Clothing:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

**Note to Physician:** Skin symptoms may be similar to copper allergic reactions and can be treated similarly, including the use of steroid-containing lotion. If swallowed, probable mucosal damage may contraindicate the use of gastric lavage.

For medical emergencies, call the poison control center at 1-800-222-1222.

[See side panel for additional precautionary statements.]

### NOTICE:

Our directions for use of this product are based upon tests believed to be reliable. The use of this product being beyond the control of the manufacturer, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice, including but not limited to over-fertilization or senescing plant tissue. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions, abnormal conditions, presence of other materials, the manner of application, or other factors, all of which are beyond the control of the manufacturer. All such risks shall be assumed by the buyer. To the extent consistent with applicable law the exclusive remedy is the product purchase price. Phyton-108XO is reported compatible with many registered pesticides. However, before adopting the use of additives and/or combinations for general applications, test for physical compatibility and noninjury under your conditions of use. To the extent consistent with applicable law the buyer must assume all responsibility, including injury or damage, resulting from its misuse as such or in combination with other materials as tank mix or applied separately.

### PRECAUTIONARY STATEMENTS

#### HAZARD TO HUMANS (& DOMESTIC ANIMALS)

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wear protective eyewear. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

#### Personal Protective Equipment (PPE)

Mixers, loaders, applicators and other handlers must wear the following:

- Long-sleeved shirt and long pants
- Chemical resistant gloves (e.g., barrier laminate, butyl rubber ≥14 mils, neoprene rubber ≥14 mils)
- Shoes and socks
- Goggles or face shield

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

**Engineering Controls Statements:**

When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-6), the handler PPE requirements may be reduced or modified as specified in the WPS. Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

**USER SAFETY RECOMMENDATIONS**

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

**ENGINEERING CONTROLS**

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

**ENVIRONMENTAL HAZARDS**

This pesticide 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, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash-waters or rinsate.

**PHYSICAL CHEMICAL HAZARDS**

Do not mix or allow contact with oxidizing agents or reducing agents such as metals, as hazardous chemical reactions may occur

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

**AGRICULTURAL USE REQUIREMENTS**

Use this product 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 intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

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

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, wear:

- Coveralls
- Shoes plus socks

- Chemical-resistant gloves made of any waterproof material (such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, natural rubber ≥ 14 mils, polyethylene polyvinyl chloride (PVC) ≥ 14 mils, viton ≥ 14 mils).
- Protective eyewear

The restricted entry interval (REI) for greenhouse use is 24 hours if the following conditions are met:

- For at least seven days following the application of copper sulfate pentahydrate in greenhouses:
  - At least one container or station designed specifically for flushing eyes is available in operating condition with the WPS-required decontamination supplies for workers entering the area treated with copper-containing products
- Workers are informed orally, in a manner they can understand:
  - a. that residues in the treated area may be highly irritating to their eyes
  - b. that they should take precautions, such as refraining from rubbing their eyes, to keep the residues out of their eyes
  - c. that if they do get residues in their eyes, they should immediately flush their eyes with the eyeflush container or eye flush station that is located with the decontamination supplies and
  - d. how to operate the eyeflush container or eye flush station

[Not for use in greenhouses in California]

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

The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for Agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. Do not enter or allow others to enter until the sprays have dried.

#### **RESISTANCE MANAGEMENT**

For resistance management, Phyton-108XO contains a Group M01 fungicide/bactericide<sup>^</sup>. Any fungal/bacterial population may contain individuals naturally resistant to Phyton-108XO and other Group M01fungicides/bactericides. A gradual or total loss of pest control may occur over time if these fungicides/bactericides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

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

- Rotate the use of Phyton-108XO or other Group M01 fungicides/bactericides<sup>^</sup> within a growing season sequence with different groups that control the same pathogens.
- Use tank mixtures with fungicide/bactericides 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/bactericide 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/bactericide applications. Note that using predictive models alone is not sufficient to manage resistance.
- Monitor treated fungal/bacterial populations for resistance development.
- Contact your local extension specialist or certified crop advisor for any additional pesticide resistance-management and/or IPM recommendations for specific crops and pathogens.
- For further information or to report suspected resistance contact Phyton Corporation at 1-800-356-8733. You can also contact your pesticide distributor or university extension specialist to report resistance.



## STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE**— Do not freeze or store below 45° F. Store in original container.

**PESTICIDE DISPOSAL**—Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance. Open dumping is prohibited.

**CONTAINER DISPOSAL**—Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) 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 ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or 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 or reconditioning, if available, or dispose of in a sanitary landfill, or by incineration if allowed by state and local authorities. Do not reuse these containers.

## PRODUCT INFORMATION

Phyton-108XO is a bactericide<sup>^</sup> & fungicide that when mixed with the appropriate volume of water, provides preventive and curative activity on a broad-spectrum of bacterial and fungal diseases listed on this label. Phyton-108XO will not leave any visible residue when mixed and applied according to the USE DIRECTIONS listed on this label. Phyton-108XO may be applied by spray, drench, dip or injection. Equipment must be properly calibrated before use.

### Resistance Management:

For resistance management, please note that Phyton-108XO contains a Group M01 fungicide/bactericide. Any fungal/bacterial population may contain individuals naturally resistant to Phyton-108XO and other Group M01 fungicides/bactericides. A gradual or total loss of pest control may occur over time if these fungicides/bactericides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

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

- Rotate the use of Phyton-108XO or other M01 fungicides/bactericides within a growing season sequence with different groups that control the same pathogens.
- Use tank mixtures with fungicides/bactericides 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/bactericide 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/bactericide applications. Note that using predictive models alone is not sufficient to manage resistance.
- Monitor treated fungal/bacterial populations for resistance development.
- Contact your local extension specialist or certified crop advisor for any additional pesticide resistance-management and/or IPM recommendations for specific crops and pathogens.
- For further information or to report suspected resistance contact Phyton Corporation at 1-800-356-8733. You can also contact your university extension specialist to report resistance.

## USE DIRECTIONS

1. Shake well before mixing with water. Use within 48 hours after mixing.
2. Phyton-108XO can be applied with any type of application equipment that gives uniform coverage of all foliage, including ground, aerial, and low volume sprayers and chemigation equipment specified on this label. The volume of water needed will depend on the spray equipment and the size of the crop. Use in sufficient water to provide thorough coverage.
3. Phyton-108XO can be used up to the time of harvest.
4. Do not apply this product through any system using aluminum parts or components as damage to the system may occur.
5. Compatible with most fungal and insecticidal biopesticides when applied at least 2 days before or after application of the biopesticide.
6. Do not tank mix Phyton-108XO with B-NINE (or other Daminozide product) and do not apply Phyton-108XO within seven (7) days either before or after applications of B-NINE (or other Daminozide product), as burning of leaves may result.
7. Do not tank mix Phyton-108XO with strongly acidic compounds such as Aliette (or other Fosetyl-Al product), and do not apply Phyton-108XO within 14 days either before or after applications of such products.
8. Phytotoxicity: Phyton-108XO has been tested on a wide variety of agricultural and ornamental plants without phytotoxicity symptoms. However, because it is not possible to test all plant species, varieties and cultivars and because environmental factors and varietal stage of growth may affect phytotoxic expression, it is recommended that a small group of test plants be treated at the anticipated dosage rate and observed for 5 to 7 days to determine phytotoxicity before treating large numbers of those plants.
9. Crop injury may occur if applied to foliage under certain environmental conditions such as hot or prolonged moist periods.
10. Application on buds and open blooms: Phyton-108XO is not phytotoxic at the lowest dosage rates on most buds and open blooms. It is recommended to treat a small group of test plants at the anticipated dosage rate and observe to determine phytotoxicity before treating large numbers of those plants.
11. Liquid equivalents: one fluid ounce = 29.5 milliliters = 6 teaspoons.
12. For all types of application equipment, apply specified amount of Phyton-108XO in 100 gallons of water to affected area to be treated depending on the size of the crop, disease to treat and application equipment. Do not apply more than 200 gallons of spray solution per acre.

**[SEE ATTACHED BOOKLET FOR DIRECTIONS OF USE]**

## SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and the method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

**Droplet Size:** Apply only as a medium or coarser spray (ASAE standard 572) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles.

**Wind Speed:** Do not apply at wind speeds greater than 15 mph. Only apply this product if the wind direction favors on-target deposition (approximately 3 to 10 mph), and there are no sensitive areas within 250 feet downwind.



**Temperature Inversions:** If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or unstable atmospheric conditions.

**Other State and Local Requirements:** Applicators must follow all state and local pesticide drift requirements regarding application of copper compounds. Where states have more stringent regulations, they must be observed.

**Equipment:** All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers or surrogates.

**For aerial application:**

- Do not release spray at a height greater than 10 ft. 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).
- Do not apply when wind speed exceeds 15 mph 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.
- Applicators must use ½ swath displacement upwind at the downwind edge of the application area.
- Do not apply during temperature inversions.

**For groundboom application:**

- Apply with the spray release height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Do not apply during temperature inversions.

**For airblast application:**

- Sprays must be directed into the canopy.
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- User must turn off outward pointing nozzles at row ends and when spraying outer rows.
- 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.

#### **RESTRICTIONS**

- Do not mix with acidic compounds such as products containing aluminum or apply to crops within 14 days before or after application of same.
- Do not spray on cars, houses, lawn furniture, etc.
- Do not mix with pot ash.
- Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

## **ORNAMENTALS**

Begin application at first sign of disease, repeat applications every 7 to 14 days; use shorter intervals when severe disease conditions persist. The minimum retreatment interval is 7 days. Applications of Phyton-108XO should be in water volumes that provide throughout coverage of plant parts.

Routine preventive programs may be maintained at the lower rates. Rates above 15 fl. oz. Phyton-108XO per 100 gallons water may damage some tender, open blooms. 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/A (800 fl. oz. Phyton-108XO/A). Do not exceed 20 lbs. metallic copper/A/year (8,000 fl. oz. Phyton-108XO/A/year). Phyton-108XO contains 0.32 lbs. of metallic copper per gallon of product.

**For a single application to Easter lilies**, do not exceed 2.5 lbs. metallic copper/A (1,000 fl. oz. Phyton-108XO/A). Do not exceed 75 lbs. metallic copper/A/year (30,000 fl. oz. Phyton-108XO/A/year). The minimum retreatment interval is 7 days. Do not apply any additional copper pesticide to this land for 36 months for field grown Easter lilies.

## SPECIFIC DIRECTIONS FOR FOLIAR SPRAY APPLICATIONS

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

Annual & Perennial Bedding Plants		
CROP	PATHOGEN	RATE (fl. oz./100 gal.)
Alyssum	Botrytis	17 – 35
	Downy Mildew	17 – 35
Argyranthemum	Botrytis	20 – 35
	Erwinia	20 – 35
Begonia	Botrytis	20 – 35
	Powdery Mildew	25 – 50
	Xanthomonas	25 – 50
Chrysanthemum	Botrytis	25 – 50
	Pseudomonas	25 – 50
Daylily	Botrytis	20 – 35
	Erwinia	25 – 40
	Powdery Mildew	25 – 40
Dusty Miller	Alternaria	25 – 40
	Botrytis	20 – 35
Fuchsia	Botrytis	20 – 35
	Powdery Mildew	20 – 40
Geranium	Botrytis	25 – 35
	Rust (preventive)	25 – 35
	Rust (therapeutic)	40 – 65
	Pseudomonas (preventive)	25 – 75
	Pseudomonas (therapeutic)	85
	Xanthomonas (preventive)	25 – 75
Hollyhock*	Botrytis	20 – 35
	Powdery Mildew	25 – 40
	Rust	25 – 40
Hosta	Botrytis	25 – 35
	Erwinia	25 – 35
Impatiens	Alternaria	25 – 60
	Botrytis	20 – 25
	Powdery Mildew	20 – 40
	Pseudomonas	25 – 60
New Guinea Impatiens	Botrytis	20 – 25
	Powdery Mildew	20 – 35

Pachysandra*	Botrytis	20 – 35		
	Volutella	20 – 40		
Pansy	Botrytis	20 – 35		
	Cercospora	25 – 35		
	Phytophthora	20 – 35		
Periwinkle	Botrytis	20 – 35		
	Phytophthora	25 – 35		
Ranunculus	Bacterial Blight	20 – 35		
	Botrytis	20 – 35		
	Powdery Mildew	25 – 40		
Snapdragon	Botrytis	20 – 35		
	Downy Mildew	20 – 40		
	Rust	20 – 40		
Zinnia	Botrytis	20 – 35		
	Powdery Mildew	20 – 40		
	Pseudomonas	20 – 40		
	Xanthomonas	20 – 40		
Additional Annuals & Perennials:	Botrytis	20 – 35		
	Downy Mildew	35 – 50		
	Powdery Mildew	25 – 40		
	Pseudomonas	25 – 40		
Anenome*	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*

\*Not approved for use in California

### Potted Flowering Crops

CROP	PATHOGEN	RATE (fl. oz./100 gal.)
African Violet	Botrytis	20 – 25
	Powdery Mildew	20 – 25
Azalea	Botrytis	20 – 40
	Colletotrichum	25 – 40
	Cylindrocladium	25 – 60
Calla lily	Botrytis	20 – 35
	Erwinia	20 – 35
Chrysanthemum	Botrytis	25 – 40
	Crown Gal.l	25 – 40
	Erwinia	25 – 40
	Powdery Mildew	25 – 40
Cineraria*	Botrytis	20 – 35
Cyclamen	Botrytis	25 – 35
	Erwinia	25 – 35
Daffodil	Botrytis	20 – 35
Easter lily	Botrytis	20 – 35
Exacum*	Botrytis	20 – 35
Gerbera	Botrytis	40 – 65
	Powdery Mildew	25 – 40

Gloxinia*	Botrytis	20 – 35
Holiday Cactus*	Botrytis	20 – 40
	Erwinia	25 – 85
	Pseudomonas	25 – 85
	Xanthomonas	25 – 85
Hyacinth*	Botrytis	20 – 35
Hydrangea	Botrytis	20 – 40
	Powdery Mildew	20 – 40
Iris*	Botrytis	20 – 35
	Erwinia	25 – 40
Kalanchoe	Botrytis	25 – 40
	Erwinia	25 – 60
	Powdery Mildew	25 – 60
Lisianthus	Botrytis	20 – 35
Orchid	Botrytis	20 – 25
	Erwinia	25 – 65
	Pseudomonas	25 – 65
	Xanthomonas	25 – 65
Poinsettia	Botrytis	25 – 35
	Scab	35 – 60
	Powdery Mildew (preventive)	25 – 35
	Powdery Mildew (therapeutic)	35 – 60
	Erwinia (preventive)	25 – 35
	Erwinia (therapeutic)	35 – 60
	Xanthomonas (preventive)	25 – 35
	Xanthomonas (therapeutic)	35 – 60
Primula	Botrytis	20 – 35
	Erwinia	25 – 35
Rose bush	Black Spot (preventive)	25 – 50
	Black spot (therapeutic)	60 – 85
	Botrytis (preventive)	25 – 35
	Botrytis (therapeutic)	40 – 85
	Cylindrocladium (preventive)	25 – 35
	Cylindrocladium (therapeutic)	40 – 85
	Downy Mildew (preventive)	25 – 35
	Downy Mildew (therapeutic)	40 – 85
	Powdery Mildew (preventive)	25 – 50
	Powdery Mildew (therapeutic)	60 – 85
Tulip	Botrytis	20 – 35

\*Not approved for use in California

### Nursery Crops

CROP	PATHOGEN	RATE (fl. oz./100 gal.)
Azalea	Anthracnose	25 – 40
	Botrytis	20 – 40
	Cylindrocladium	25 – 60
	Phytophthora	35 – 40
Buxus	Volutella	25 – 40
Cherry Laurel*	Xanthomonas	35 – 60
Conifers*	Botrytis	20 – 40

	Diplodia	17 – 20
Crape Myrtle*	Botrytis	20 – 40
	Powdery Mildew	35 – 50
Dogwood	Anthraco-nose	35 – 50
	Botrytis	20 – 40
	Powdery Mildew	35 – 50
Elm*	Erwinia	35 – 65
Euonymus	Anthraco-nose	25 – 50
	Botrytis	20 – 40
Hawthorn	Cedar Apple Rust	25 – 40
Hydrangea	Botrytis	20 – 40
	Cercospora	25 – 40
	Powdery Mildew	20 – 40
Indian Hawthorn	Botrytis	20 – 40
	Entomosporium	25 – 50
Japanese Maple	Botrytis	20 – 40
	Verticillium	25 – 40
	Pseudomonas	25 – 40
Juniper*	Phomopsis	20 – 40
Leyland Cypress*	Cercospora	20 – 40
Lilac*	Botrytis	20 – 40
	Pseudomonas	20 – 40
	Powdery Mildew	25 – 40
Nandina*	Xanthomonas	25 – 40
Oak*	Anthraco-nose	60
	Botrytis	20 – 40
Oak Trunk Spray*	Phytophthora	50 – 75
Photinia*	Entomosporium	25 – 50
Pinus*	Dothistroma	25 – 40
Rosaceae:* Cotoneaster, Malus, Mountain Ash, Ornamental Crabapple, Ornamental Pear, Pyracantha	Apple Scab	65
	Botrytis	20 – 40
	Fireblight	35 – 65
	Pseudomonas	25 – 60
Rhododendron	Botrytis	20 – 40
	Cylindrocladium	25 – 60
	Phytophthora	35 – 60
Rose	<i>See Flowering Potted Crops for Rates</i>	
Ruscus*	Pseudomonas	20 – 40
Sycamore*	Anthraco-nose	60
	Botrytis	20 – 40
Viburnum*	Botrytis	20 – 40
	Cercospora	25 – 40
	Phytophthora	35 -4 0
Additional Nursery Plants:	Botrytis	20 – 40
	Powdery Mildew	35 – 40
	Pseudomonas	25 – 60
	Rhizoctonia	25 – 40

**Shrubs/Vines\***

Barberry	Bougainvillea	Clematis	Cornus	Cotinus
Forsythia	Gardenia	Holly	Paeonia	Philadelphus
Physocarpus	Potentilla	Ribes	Rosa	Spirea
Weigela	Wisteria			



**Deciduous\***

Acer	Amelanchier	Betula	Celtis	Cercis
Crataegus	Ficus	Fraxinus	Ginkgo	Gleditsia
Magnolia	Malus	Populus	Prunus	Pyrus
Tilia				

**Conifers\***

Abies	Juniper	Picea	Pinus	Pittosporum
Pseudotsuga	Taxus	Thuja	Tsuga	

\*Not approved for use in California

**Cut Flower Crops**

CROP	PATHOGEN	RATE (fl. oz./100 gal.)
Alstromeria*	Botrytis	20 – 25
Carnation*	Botrytis	20 – 35
Chrysanthemum	Botrytis	25 – 40
Delphinium*	Botrytis	20 – 25
Freesia	Botrytis	20 – 25
Gerbera	Botrytis	25 – 40
Gladiola	Botrytis	20-- 25
Lisianthus	Botrytis	20 – 25
Orchid	Botrytis	20 – 25
Rose	Botrytis	25 – 85
Snapdragon*	Botrytis	20 – 35
Sweetpea	Botrytis	20 – 25

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**Tropical Foliage Crops**

CROP	PATHOGEN	RATE (fl. oz./100 gal.)
Dracaena*	Rust	25 – 40
Ferns*	Botrytis	20 – 35
	Erwinia	20 – 35
Hibiscus	Botrytis	20 – 40
	Pseudomonas	25 – 40
	Xanthomonas	25 – 40
Ivy	Botrytis	20 – 35
	Xanthomonas	25 – 85
Palms*	Botrytis	20 – 35
	Erwinia	20 – 40
	Pseudomonas	20 – 40
	Xanthomonas	20 – 40
Spathiphyllum	Botrytis	20 – 40
	Cylindrocladium	25 – 40
	Phytophthora	25 – 50
Tropical Foliage (general)	Botrytis	20 – 40
	Powdery Mildew	20 – 40
	Erwinia	35 – 85
	Pseudomonas	35 – 85
	Xanthomonas	35 – 85

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**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 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.

<b>Herbaceous &amp; Woody Stock Plants and Cuttings</b>		
<b>CROP</b>	<b>PATHOGEN</b>	<b>RATE (fl. oz./100 gal.)</b>
Azalea	Botrytis	20 – 40
	Cylindrocladium	25 – 60
Chrysanthemum	Botrytis	25 – 40
	Erwinia	25 – 40
Geranium	Botrytis	25 – 35
	Xanthomonas	25 – 85
Holiday Cactus	Botrytis	20 – 40
	Erwinia	25 – 35
Hydrangea	Botrytis	20 – 40
	Xanthomonas	25 – 40
Lavender	Botrytis	20 – 35
Mini-Rose	Botrytis	25 – 35
	Cylindrocladium	25 – 85
Poinsettia	Botrytis	25 – 35
	Erwinia	35 – 60
	Scab	35 – 60
	Xanthomonas	35 – 60
Tropical Foliage	Botrytis	20 – 40
	Cylindrocladium	25 – 40
	Erwinia	35 – 85

## Post-Harvest Dip Applications on Cut Flower Crops

Dip cut flowers/buds for a few seconds soon after cutting.

CROP	PATHOGEN	RATE (teaspoons/5 gal.)
Alstromeria	Botrytis	1.75 – 2.5 tsp.
Carnation	Botrytis	3.5 – 5 tsp.
Chrysanthemum	Botrytis	3.5 – 5 tsp.
Delphinium	Botrytis	3.5 – 5 tsp.
Freesia	Botrytis	1.75 – 2.5 tsp.
Gerbera	Botrytis	2.5 – 5 tsp.
Gladiola	Botrytis	2.5 – 5 tsp.
Orchid	Botrytis	3.5 – 5 tsp.
Rose	Botrytis	5 – 6.5 tsp.
Snapdragon	Botrytis	2.5 – 5 tsp.
Sweetpea	Botrytis	2.5 – 5 tsp.

## Bulb Applications

Dip bulbs. for 5 minutes, or spray bulbs. to drip, then allow to dry before planting.

CROP	PATHOGEN	RATE (fl. oz./100 gal.)
Calla Lily	Erwinia	50

## SPECIFIC DIRECTIONS FOR SOIL DRENCH APPLICATIONS

Greenhouse, Field, Landscape & Interior

CROP	PATHOGEN	RATE (fl. oz./100 gal.)
African Violet	Phytophthora	20 – 35
Aster	Phytophthora	35 – 50
Azalea	Cylindrocladium	35 – 60
	Rhizoctonia	
Calla Lily	Erwinia	25 – 50
Cyclamen	Erwinia	25
Ferns	Rhizoctonia	25 – 50
Geranium	Botrytis	35 – 60
Hosta	Erwinia	25 – 40
Impatiens	Phytophthora	35 – 60
Japanese Maple	Verticillium	40
Pansy	Phytophthora	25 – 40
	Pythium	
Periwinkle	Phytophthora	25 – 35
Pittosporum	Rhizoctonia	25 – 35
Poinsettia	Phytophthora	25 – 40
	Rhizoctonia	35 – 60
Rhododendron	Rhizoctonia	35 – 60
Rose	Black Spot	35 – 60
	Cylindrocladium	
Spathiphyllum	Cylindrocladium	36 – 60
	Phytophthora	
Vinca minor	Rhizoctonia	25 – 40

## FRUIT, VEGETABLES & FIELD CROPS

Spray for thorough foliage coverage. Lower rates may be as effective as higher rates and should be tried first. Routine preventive programs may be maintained at the lower rates. Use of low volume equipment is effective against Botrytis and not effective against established powdery mildew and Xanthomonas infections.

### SPECIFIC DIRECTIONS FOR SPRAY APPLICATIONS

Greenhouse, Nursery & Field.

<b>Vegetables and Field Crops</b>				
<b>CROP</b>	<b>DISEASE</b>	<b>RATE (fl. oz./100 gal.)</b>	<b>Use instructions</b>	<b>†Use restrictions</b>
<b>Alfalfa</b>	Cercospora Leaf Spot, Leptosphaerulina Leaf Spot	13-25  (0.03 – 0.06 lbs. metallic copper/100 gal.)	Apply 10 to 14 days before each harvest or earlier if disease threatens.	Spray Injury May Occur with sensitive varieties such as Lahontan.  <b>For single applications:</b> Do not exceed 0.12 lbs. metallic copper/A. (50 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 3.0 lbs. metallic copper/A  <b>Minimum interval:</b> 30 days
<b>Artichoke*</b>	Powdery Mildew, bacterial spot, bacterial soft spot, and bottom rot.	48 – 60  (0.11 – 0.14 lbs. metallic copper/100 gal.)	For powdery mildew, plants that are very susceptible should be sprayed every 7 days during the first 2 weeks after emergence and weekly after that.	<b>For single applications:</b> Do not exceed 0.28 lbs. metallic copper/A. (120 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed .35 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Asparagus*</b>	Rust	32 – 60  (0.07 – 0.14 lbs. metallic copper/100 gal.)	Recommended for tank mixtures with other products registered for the control of rust. For suppressions, begin applications when conditions first favor disease development and repeat at 10-day intervals.	Addition of spreader sticker is recommended.  <b>For single applications:</b> Do not exceed 0.28 lbs. metallic copper/A. (120 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed .35 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days

<b>Cacao*</b>	Black Pod	13 – 80  (0.03 – 0.20 lbs. metallic copper/100 gal.)	Begin applications at the start of the rainy season and continue while infection conditions persist. Apply at 14- to 21-day intervals or as needed depending on disease severity.	For drier areas, make 2 to 4 applications using 4.25 to 6.25 pints per acre according to disease incidence and planting density.  <b>For single applications:</b> Do not exceed 0.2 lbs. metallic copper/A. (8 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 1.2 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days
<b>Carrots</b>	Alternaria and Cercospora leaf spot	25 – 35  (0.06 – 0.09 lbs. metallic copper/100 gal.)	Begin applications prior to usual disease occurrence and repeat every 7 to 10 days.	<b>For single applications:</b> Do not exceed 1.0 lb. metallic copper/A. (400 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 5 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Celery and Celeriac</b>	Bacterial leaf spot; Cercospora (early) blight; Septoria (late) blight	25 – 35  (0.06 – 0.09 lbs. metallic copper/100 gal.)	Begin applications as soon as plants are established in the field. Repeat every 7 to 10 days depending on disease severity and environmental conditions.	<b>For single applications:</b> Do not exceed 1.0 lb. metallic copper/A. (400 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 5 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Chives</b>	Bacterial soft rot Downy Mildew, Gray Mold, ( <i>Botrytis</i> )	17 – 35  (0.04 – 0.09 lbs. metallic copper/100 gal.)	Begin applications when plants are established in the field. Repeat every 7 to 10 days depending on disease conditions.	<b>For single applications:</b> Do not exceed 0.53 lbs. metallic copper/A. (212 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 2.65 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Clover*</b>	Anthracnose, Bacterial Blight, Bacterial Leaf Spot, Cercospora Leaf Spot, Powdery Mildew	8 – 32  (0.02 – 0.08 lbs. metallic copper/100 gal.)	Begin Applications when conditions first favor disease development and repeat at 7- to 14-day intervals.	<b>For single applications:</b> Do not exceed 0.50 lbs. metallic copper/A. (200 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 2.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Coffee</b>	Coffee Berry Disease, ( <i>Colletotricum coffeanum</i> _	50 – 75  (0.13 – 0.19 lbs. metallic copper/100 gal.)	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.  <b>For single applications:</b> Do not exceed 0.38 lbs. metallic copper/A. (150 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 12.0 lbs. metallic copper/A  <b>Minimum interval:</b> 21 days

<b>Coriander, Mint, Rosemary</b>	Gray Mold ( <i>Botrytis</i> ), Powdery mildew	17 – 35 (0.04 – 0.09 lbs. metallic copper/100 gal.)	Apply at first sign of disease or when conditions are favorable for disease development. Repeat at 10-day intervals.	<b>For single applications:</b> Do not exceed 0.53 lbs. metallic copper/A. (212 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 2.65 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days
<b>Crucifer crops</b> (broccoli, brussel sprouts, cauliflower, cabbage, kale, collard greens, mustard greens, turnip greens)	Black leaf spot ( <i>Alternaria</i> ); Black rot ( <i>Xanthomonas</i> ); Downy mildew	17 – 42 (0.04 – 0.11 lbs. metallic copper/100 gal.)	Begin applications after transplants are set in the field. Repeat every 7 days depending on disease pressure.	<b>For single applications:</b> Do not exceed 1.26 lbs. metallic copper/A. (504 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 2.65 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Cucurbits</b> (cucumbers, cantaloupe, squash, pumpkins, zucchini, watermelon)	Alternaria leaf spot; Angular leaf spot; Anthracnose; Downy Mildew; Gray Mold ( <i>Botrytis</i> ); Powdery Mildew	25 – 42 (0.06 – 0.11 lbs. metallic copper/100 gal.)	Begin applications when disease is expected. Repeat every 5 to 7 days depending on conditions favorable for disease development.	<b>For single applications:</b> Do not exceed 1.26 lbs. metallic copper/A. (504 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.3 lbs. metallic copper/A  <b>Minimum interval:</b> 5 days
<b>Dill</b>	Leaf spots	17 – 35 (0.04 – 0.09 lbs. metallic copper/100 gal.)	Begin applications when plants are first established in the field. Repeat every 7 to 10 days depending upon disease pressure.	<b>For single applications:</b> Do not exceed 1.05 lbs. metallic copper/A. (420 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 4.25 lbs. metallic copper/A  <b>Minimum interval:</b> 7days
<b>Eggplant</b>	Alternaria blight; Anthracnose; Gray Mold ( <i>Botrytis</i> )	25 – 35 (0.06 – 0.09 lbs. metallic copper/100 gal.)	Begin application prior to appearance of disease symptoms. Repeat every 7 to 10 days depending on disease severity.	<b>For single applications:</b> Do not exceed 1.05 lbs. metallic copper/A. (420 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 4.25 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Filberts*</b>	Bacterial Blight	64 – 128 (0.16 – 0.32 lbs. metallic copper/100 gal.)	Apply as a postharvest spray. In seasons of heavy rainfall, apply a second spray when $\frac{3}{4}$ of the leaves have dropped. Use higher rates when rainfall is heavy and disease pressure is high.	<b>For single applications:</b> Do not exceed 3.84 lbs. metallic copper/A. (1,536 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 7.65lbs. metallic copper/A  <b>Minimum interval:</b> 14 days



	Eastern Filbert Blight	64 – 128 (0.16 – 0.32 lbs. metallic copper/100 gal.)	Apply as a dilute spray in adequate water for thorough coverage. Make an application after harvest in October before winter rains begin. Additional applications should be made at bud swell to bud break and continued at a 2-week interval or as needed until early May. Use higher rates when rainfall is heavy and disease pressure is high.	<b>For single applications:</b> Do not exceed 3.84 lbs. metallic copper/A. (1,536 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 15.36 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days
<b>Garlic, Leek, Onion, Shallot</b>	Bacterial soft rot; Downy Mildew; Gray Mold ( <i>Botrytis</i> )	17 – 35 (0.04 – 0.09 lbs. metallic copper/100 gal.)	Apply at first sign of disease or when conditions are favorable for disease development.	<b>For single applications:</b> Do not exceed 1.0 lbs. metallic copper/A. (400 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Ginseng</b>	Alternaria leaf and stem blight	25 – 51 (0.06 – 0.13 lbs. metallic copper/100 gal.)	Begin applications as soon as plants emerge in the spring. Continue applications every 7 days until plants become dormant in the fall.	<b>For single applications:</b> Do not exceed 1.05 lbs. metallic copper/A. (420 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 5.25 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Hops*</b>	Downy Mildew	6 – 28 (0.02 – 0.07 lbs. metallic copper/100 gal.)	Make crown treatment after pruning but before training. After training, additional treatments will be needed at 10-day intervals.	Discontinue use 2 weeks before harvest.  <b>For single applications:</b> Do not exceed 0.56 lbs. metallic copper/A. (224 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 2.8 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days
<b>Lettuce</b>	Downy mildew Gray Mold ( <i>Botrytis</i> ); Bacterial soft rot	25 – 35 (0.06 – 0.09 lbs. metallic copper/100 gal.)	Apply at first sign of disease or when conditions favor disease development. Repeat every 7 to 10 days. Lower rates are advised for copper sensitive varieties.	<b>For single applications:</b> Do not exceed 1.0 lbs. metallic copper/A. (400 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 8.0 lbs. metallic copper/A  <b>Minimum interval:</b> 5 days

<b>Macadamia*</b>	Anthracnose	64 – 128 (0.16 – 0.32 lbs. metallic copper/100 gal.)	Begin applications at the first sign of flowering and repeat on a weekly schedule until just before harvest	<p><b>For single applications:</b> Do not exceed 3.84 lbs. metallic copper/A. (1,536 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 23.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>
	Phytophthora Blight (P. capsid), Raceme Blight (Botrytis cinereal)	64 – 128 (0.16 – 0.32 lbs. metallic copper/100 gal.)	Apply during raceme development and bloom periods. Apply in sufficient water for thorough coverage. Use higher rates when conditions favor disease development.	<p><b>For single applications:</b> Do not exceed 3.84 lbs. metallic copper/A. (1,536 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 23.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>
<b>Mango*</b>	Anthracnose	64 – 128 (0.16 – 0.32 lbs. metallic copper/100 gal.)	Apply at 7-day intervals after fruit set until harvest. Use the higher rates when rainfall is heavy and disease pressure is high.	<p><b>For single applications:</b> Do not exceed 3.84 lbs. metallic copper/A. (1,536 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 23.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>
<b>Okra*</b>	Anthracnose, Bacterial Leaf Spot, Leaf Spots, Pod Spot, Powdery Mildew	16 – 32 (0.04 – 0.08 lbs. metallic copper/100 gal.)	Apply when disease first appears and reapply every 5 to 7 days if needed	<p><b>For single applications:</b> Do not exceed 0.96 lbs. metallic copper/A. (384 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 3.84 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 5 days</p>
<b>Parsley</b>	Leaf scorch; Leaf spot	34 – 68 (0.09 – 0.17 lbs. metallic copper/100 gal.)	Begin applications when plants are first established in the field. Repeat every 7 to 10 days depending upon disease severity and environmental conditions.	<p><b>For single applications:</b> Do not exceed 2.0 lbs. metallic copper/A. (800 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 10.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>
<b>Peanut</b>	Cercospora Leaf Spot	19 – 31 (0.05 – 0.08 lbs. metallic copper/100 gal.)	Begin spraying 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.	<p>Use the higher rates when conditions favor disease. Flowable sulfur may be added.</p> <p><b>For single applications:</b> Do not exceed 0.16 lbs. metallic copper/A. (62 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 3.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>

<b>Peas</b>	Powdery Mildew	25 – 42  (0.06 – 0.11 lbs. metallic copper/100 gal.)	Apply at first sign of disease or when conditions favor disease development. Repeat weekly and use higher rates when conditions are favorable for disease development.	<b>For single applications:</b> Do not exceed 0.79 lbs. metallic copper/A. (316 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 3.95 lbs. metallic copper/A  <b>Minimum interval:</b> 7days
<b>Pecans*</b>	Kernel Rot (Phytophthora) Shuck Rot, Zonate Leaf Spot (Cristulariella pyramidalis)	64 – 128  (0.16 – 0.32 lbs. metallic copper/100 gal.)	For suppression, apply in sufficient water volume to ensure complete coverage at 2- to 4-week intervals starting at kernel growth and continuing until shucks open. Use the higher rate and shorter interval if frequent rainfall occurs.	<b>For single applications:</b> Do not exceed 1.26 lbs. metallic copper/A. (504 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.3 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days
<b>Pepper</b>	Bacterial Spot ( <i>Xanthomonas</i> ); Cercospora leaf spot Gray Mold ( <i>Botrytis</i> );	25 – 60  (0.06 – 0.15 lbs. metallic copper/100 gal.)	Begin applications when conditions favor disease to develop. Apply every 7 to 10 days depending on disease severity and environmental conditions. Use higher rates when conditions are favorable for disease.	<b>For single applications:</b> Do not exceed 1.8 lbs. metallic copper/A. (720 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 9.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Potato</b>	Early Blight, Late Blight	8 – 24  (0.02 – 0.06 lbs. metallic copper/100 gal.)	Apply 0.5 to 1.5 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 1.5 pints per acre when disease is more severe.	Under conditions of severe disease, control with Phyton-108XO 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.  <b>For single applications:</b> Do not exceed 0.12 lbs. metallic copper/A (48 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 5.0 lbs. metallic copper/A  <b>Minimum re-treatment interval:</b> 7 days

<b>Radishes*, Rutabaga*, Turnip*</b>	Alternaria, Anthracnose, Bacterial Leaf Spot, Cercospora Leaf Spot, Downy Mildew, White Rust	4 – 8 (0.01 – 0.02 lbs. metallic copper/100 gal.)	Begin application when disease first appears or when conditions favor disease development. Repeat application every 10 days.	<b>For single applications:</b> Do not exceed 0.20 lbs. metallic copper/A. (80 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 1.2 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days
<b>Rhubarb*</b>	Leaf Spot	4 – 8 (0.01 – 0.02 lbs. metallic copper/100 gal.)	When disease first appears or when conditions favor disease development. Repeat application every 7 to 10 days.	<b>For single applications:</b> Do not exceed 0.24 lbs. metallic copper/A. (96 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 1.2 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Spinach</b>	Anthracnose, Downy Mildew, White rust	25 – 35 (0.06 – 0.09 lbs. metallic copper/100 gal.)	Apply at first sign of disease or when conditions favor disease development. Repeat at 7- to 10-day intervals.	<b>For single applications:</b> Do not exceed 1.05 lbs. metallic copper/A. (420 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 4.2 lbs. metallic copper/A  <b>Minimum interval:</b> 7days
<b>Sugar Beet, Table Beets, Beet Greens, Chard</b>	Cercospora Leaf Spot	13-38 (0.03 – 0.10 lbs. metallic copper/100 gal.)	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 as spreader/ sticker is recommended.  <b>For single applications:</b> Do not exceed 0.20 lbs. metallic copper/A. (72 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 3.6 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Sugar Cane*</b>	Rusts (Brown and Orange)	14 (0.03 lbs. metallic copper/100 gal.)	Recommended to be tank mixed with other products registered for rust control. For suppression of rust, begin applications when conditions first favor rust disease development and repeat at 10- to 14-day intervals.	Addition of a spreader sticker is recommended.  <b>For single applications:</b> Do not exceed 0.06 lbs. metallic copper/A. (28 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 2.1 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days

<b>Table Beets/Beet* Greens, Chard*</b>	Cercospora Leaf Spot	10-38 (0.02 – 0.09 lbs. metallic copper/100 gal.)	Begin application when conditions favor disease development and repeat at 10- to 14-day intervals or as needed. Use higher rates when conditions favor disease.	<b>For single applications:</b> Do not exceed 0.18 lbs. metallic copper/A. (72 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 7.2 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Tobacco</b>	Angular leaf spot; Downy Mildew	25 – 35 (0.06 – 0.09 lbs. metallic copper/100 gal.)	Apply at first sign of disease or when conditions favor disease development.	<b>For single applications:</b> Do not exceed 1.05 lbs. metallic copper/A. (420 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 5.25 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days
<b>Tomato (processing)</b>	Anthrachnose; Bacterial Speck( <i>Pseudomonas</i> ); Bacterial Spot ( <i>Xanthomonas</i> ); Bacterial Wilt ( <i>Ralstonia</i> ) Early blight; Gray Mold ( <i>Botrytis</i> ); Late blight; Powdery Mildew; Septoria Leaf Spot	34 – 68 (0.09 – 0.17 lbs. metallic copper/100 gal.)	Begin applications before first sign of disease. Use higher rates when conditions are favorable for disease development. Repeat at 7- to 10-day intervals.	<b>For single applications:</b> Do not exceed 2.04 lbs. metallic copper/A. (816 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 12.2 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Tomato (fresh market)</b>	Anthrachnose; Bacterial Speck( <i>Pseudomonas</i> ); Bacterial Spot ( <i>Xanthomonas</i> ); Bacterial Wilt ( <i>Ralstonia</i> ) Early blight; Gray Mold ( <i>Botrytis</i> ); Late blight; Powdery Mildew; Septoria Leaf Spot	34 – 68 (0.09 – 0.17 lbs. metallic copper/100 gal.)	Begin applications before first sign of disease. Use higher rates when conditions are favorable for disease development. Repeat at 7- to 10-day intervals.	<b>For single applications:</b> Do not exceed 2.04 lbs. metallic copper/A. (816 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 8.16 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days

†P-108XO contains 0.32lbs. of metallic copper per gallon of product.

\*Not approved for use in California

## Other Field Crops

CROP	DISEASE	RATE (fl. oz./Acre)	Use instructions	†Use restrictions
<b>Corn*</b> (field corn, Popcorn, Seed Corn, Sweet Corn)	Bacterial Silk Rot	8 – 40  (0.02 – 0.10 lbs. metallic copper/100 gal.)	Begin treatment when disease first appears and repeat every 7 to 10 days. Use shorter spray intervals when conditions favor disease development.	<b>For single applications:</b> Do not exceed 1.2 lbs. metallic copper/A. (480 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Rice*</b>	False Smut, Panicle Blight	15 – 40  (0.04 – 0.10 lbs. metallic copper/100 gal.)	First application at late boot stage and repeat at 7- to 10-day intervals or as needed depending on the weather conditions until 80% heading. Use higher rate and shorter spray interval when disease pressure is high or environmental conditions are favorable for disease development.	DO NOT drain the field for at least 14 days after last application.  Apply in a minimum of 20 gallons per acre of spray solution.  Copper may be applied at a maximum rate of 0.9 lbs. of metallic copper per application with 2 applications per year (1.8 lbs. metallic copper annual maximum (720 fl. oz. Phyton-108XO/A)).
<b>Wheat, Barley and Oats</b>	Fusarium Head Blight; Helminthosporium Spot Blotch; Powdery Mildew; Stagonospora Glume; Stem Blotch; Stem Rust	13-38  (0.03 – 0.10 lbs. metallic copper/100 gal.)	Make first application at early heading and follow with second spray 10 days later. Use the higher rates when conditions favor disease.  For wheat, Phyton-108XO 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.	Apply in a minimum of 20 gallons per acre of spray solution.  Do not apply more than 0.20 lb. copper per acre per year. (72 fl. oz. Phyton-108XO/A)

†P-108XO contains 0.32 lbs. of metallic copper per gallon of product.

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## SOYBEAN\*

DISEASE	RATE (fl. oz./100 gal.)	Use instructions	†Use restrictions
Alternaria Leaf Spot	32 – 64  (0.07 – 0.15 lbs. metallic copper/100 gal.)	Apply when mechanical injury, insect damage or another disease has occurred. Continue on a 7- to 10-day schedule if weather conditions remain cool and wet.	<b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
Bacterial Blight (Pseudomonas syringae), Bacterial Pustule(Xanthomonas campestris)	32 – 64  (0.07 – 0.15 lbs metallic copper/100 gal.)	Begin applications from the first node through third node development on the main stem with fully developed leaves beginning with the unifoliate leaves (V1 – V3 growth stages) or when extended periods of wet weather are favorable for disease development. Continue on a 7- to 10-day schedule when conditions favor disease development.	<b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
Brown Spot (Septoria glycines)	32 – 64  ((0.07 – 0.15 lbs metallic copper/100 gal.)	Begin application at full bloom to when pods are 3/16" in length (R2 – R3 growth stages) or when extended periods of wet weather are favorable for disease development. Continue on a 7- to 10-day schedule when conditions are favorable for disease development.	<b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
Cercospora Leaf Blight (Cercospora kikuchii)	32 – 64  (0.07 – 0.15 lbs. metallic copper/100 gal.)	Begin application when seed pods are 1/8" in length through beginning of pod maturity (R5-R7 growth stages). Continue on a 7- to 10-day schedule when conditions are cool and wet.	<b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
Downy Mildew (Peronospora manchurica)	32.- 64  (0.07 – 0.15 lbs. metallic copper/100 gal.)	Begin applications when conditions favor disease development (high humidity and cool temperatures). Continue on a 7- to 10-day schedule when conditions remain cool and wet.	<b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days

Frogeye Leaf Spot ( <i>Cercospera sojina</i> )	32 – 64 (0.07 – 0.15 lbs. metallic copper/100 gal.)	Begin applications when wet conditions exist. Continue on a 7- to 10-day schedule when conditions are favorable for disease development.	<p><b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>
Pod and Stem Blight ( <i>Diaporthe phaseolorum</i> and <i>Phomopsis longicola</i> )	32 – 64 (0.07 – 0.15 lbs. metallic copper/100 gal.)	Begin application when seed pods are 1/8" in length through beginning of pod maturity (R5-R7 growth stages) or when extended periods of wet weather are favorable for disease development. Continue on a 7- to 10-day schedule when conditions are favorable for disease development.	<p><b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>
Powdery Mildew ( <i>Microsphaera manshurica</i> )	32 – 64 (0.07 – 0.15 lbs metallic copper/100 gal.)	Begin applications when conditions favor disease development (cool humid nights and mild daytime temperatures). Continue on a 7- to 10-day schedule when weather conditions remain cool and wet.	<p><b>For single applications:</b> Do not exceed 0.30 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)</p> <p><b>Annually:</b> Do not exceed 6.0 lbs. metallic copper/A</p> <p><b>Minimum interval:</b> 7 days</p>

<sup>†</sup>P-108XO contains 0.32 lbs. of metallic copper per gallon of product

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## TREE CROPS AND SMALL FRUITS

CROP	DISEASE	RATE (fl. oz./100 gal.)	Use instructions	†Use restrictions
<b>Almond, Apricot, Cherry, Nectarine, Peach, Plum, Prunes</b>	Bacterial canker, Bacterial blast, Bacterial spot, Shot-hole	34 – 68  (0.09 – 0.17 lbs. metallic copper/100 gal.)	<p><b><u>Dormant, late dormant, up to pink bud</u></b></p> <p>Make first application before fall rains and a second application at late dormant stage before foliage and buds begin to swell. The higher rates should be used when conditions favor disease.</p> <p><b><u>Bloom/ growing season</u></b></p> <p>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.</p>	<p><b><u>Dormant, late dormant, up to pink bud</u></b></p> <p><b>For single applications:</b> Do not exceed 0.34 lbs. metallic copper/A (136 fl. oz. Phyton-108XO/A)</p> <p><b>Minimum re-treatment interval:</b> 7 days</p> <p><b><u>Bloom/growing season</u></b></p> <p><b>For single applications:</b> Do not exceed 0.34 lbs. metallic copper/A (136 fl. oz. Phyton-108XO/A)</p> <p><b>Minimum re-treatment interval:</b> 5 days</p> <p><b><u>Annually</u></b> Do not exceed 18 lbs. metallic copper/A</p>

<b>Apple, Pear and Quince</b>	Anthracnose; Blossom blast; European canker shoot blast - fall	111  (0.27 lbs. metallic copper/100 gal.)	<b><u>Fall, late dormant</u></b>  Apply as a full cover spray. Use the higher rates under severe disease conditions. After harvest, apply before fall rains.	<b><u>Fall, late dormant</u></b>  <b>For single applications:</b> Do not exceed 0.54 lbs. metallic copper/A (222 fl. oz. Phyton-108XO/A)  Only one application is permitted.
	Apple scab; Fire Blight ( <i>Erwinia</i> ) – fall, late dormant	80– 164  (0.20 – 0.41 lbs. metallic copper/100 gal.)	<b><u>Between silver- tip and green-tip</u></b>  For fireblight, apply between silver-tip and green tip.	<b><u>Between silver-tip and green-tip</u></b>  <b>For single applications:</b> Do not exceed 0.54 lbs. metallic copper/A (222 fl. oz. Phyton-108XO/A)  Only one application is permitted.
	Apple scab; Fire Blight ( <i>Erwinia</i> ) – growing season	12– 40  (0.03-.10 lbs. metallic copper/100 gal.)	<b><u>Bloom/ growing season</u></b>  <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.	<b><u>Bloom/growing season</u></b>  <b>For single applications:</b> Do not exceed 0.54 lbs. metallic copper/A (222 fl. oz. Phyton-108XO/A)  <b>Minimum re-treatment interval:</b> 5 days  <b><u>Annually</u></b> Do not exceed 16 lbs. metallic copper/A
<b>Atemoya*</b>	Anthracnose	32 – 96  (0.08 – 0.23 lbs. metallic copper/100 gal.)	Make initial application just before flowering and repeat every 7 days.	<b>For single applications:</b> Do not exceed 0.46 lbs. metallic copper/A. (192 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 9.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Avocado</b>	Algal. leaf spot, Anthracnose, Scab	51 – 84  (0.13 – 0.21 lbs. metallic copper/100 gal.)	Start applications when bloom buds begin to swell. Use higher rates when conditions favor disease.	<b>For single applications:</b> Do not exceed 3.15 lbs. metallic copper/A. (1,260 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 18.9 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days

<b>Banana*</b>	Sigatoka (Black and Yellow)	40 (0.09 lbs. metallic copper/100 gal.)	Apply by air in 3 gallons of water. If needed and agricultural-type spray oil may be added.	Apply on a 7- to 14-day schedule or as needed throughout the wet season. Apply at 21-day intervals or as need during dry periods.  <b>For single applications:</b> Do not exceed 0.18 lbs. metallic copper/A. (80 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed .6.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Blackberries, Raspberries</b>	Anthraco­nose, Leaf Spot, Pseudomonas blight	34 – 68 (0.09 – 0.17 lbs. metallic copper/100 gal.)	Make fall application after harvest. Apply late dormant spray after pruning/training in the spring.  Apply when leaf buds begin to open and repeat when flower buds show white.	<b>For single applications:</b> Do not exceed 2.0 lbs. metallic copper/A. (800 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 10.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Blueberries</b>	Bacterial canker	34 – 68 (0.09 – 0.17 lbs. metallic copper/100 gal.)	Make first application before fall rains and a second application after 4 weeks later.	<b>For single applications:</b> Do not exceed 2.1 lbs. metallic copper/A. (840 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 8.4 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Cherimoya*</b>	Anthraco­nose	32 – 128 (0.08 – 0.31 lbs. metallic copper/100 gal.)	Begin applications when conditions favor disease development and repeat using a 14-day spray schedule. Apply in sufficient water for thorough coverage.	Make first application to a small area to test for phytotoxicity.  <b>For single applications:</b> Do not exceed 0.62 lbs. metallic copper/A. (256 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 19.2 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days

<b>Chestnut*</b>	Leaf Spot	32 – 128 (0.08 – 0.31 lbs. metallic copper/100 gal.)	Begin applications when conditions favor disease development. Make applications to protect shoot growth throughout the season. Use lower rates where disease infection is light and use higher rates for a dormant application or where disease infection is moderate to heavy.	<b>For single applications:</b> Do not exceed 4.0 lbs. metallic copper/A. (1,600 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 20.0  <b>Minimum interval:</b> 10 days
<b>Cranberries*</b>	Fruit Rot, Rose Bloom, Bacterial Stem Canker, Leaf Blight, Red Leaf Spot, Stem Blight, Tip Blight.	64 (0.16 lbs. metallic copper/100 gal.)	Apply at the start of flowering and reapply every 7 to 10 days until harvest.	<b>For single applications:</b> Do not exceed 2.0 lbs. metallic copper/A. (800 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 8.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Currants*, Gooseberries</b>	Powdery Mildew, Anthracnose, Leaf Spot	76 (0.19 lbs. metallic copper/100 gal.)	Apply at the start of flowering and reapply every 7 to 10 days until 10 days before harvest.	Do not apply within 10 days of harvest.  <b>For single applications:</b> Do not exceed 0.38 lbs. metallic copper/A. (152 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 24.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Douglas Fir*</b>	Rhabdocline	32 – 96 (0.08 – 0.24 lbs. metallic copper/100 gal.)	Begin applications at bud break and repeat at 3- to 4-week intervals. Apply in a tank mix with another registered compatible fungicide if moderate to severe disease pressure is present.	<b>For single applications:</b> Do not exceed 3.0 lbs. metallic copper/A. (1,200 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 30.0 lbs metallic copper/A  <b>Minimum interval:</b> 21 days
<b>Guava*</b>	Anthracnose, Red Algae	4 – 8 (0.01 – 0.02 lbs. metallic copper/100 gal.)	Apply just before. Flowering and reapply every 7 to 14 days until harvest.	<b>For single applications:</b> Do not exceed 0.24 lbs. metallic copper/A. (96 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 1.2 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days



<b>Kiwi</b>	Erwinia herbicola, Pseudomonas fluorescens, Pseudomonas syringae	34 – 68  (0.09 – 0.17 lbs. metallic copper/100 gal.)	Apply in 200 gallons of water per acre. Make first application before conditions favor disease. Use higher rates for conditions that favor heavy disease pressure.	<b>For single applications:</b> Do not exceed 2.1 lbs. metallic copper/A. (840 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.3 lbs. metallic copper/A.  <b>Minimum Interval:</b> 30 days
<b>Live Oak*</b>	Ball Moss Spanish Moss	300 – 600  (0.75 – 1.5 lbs. metallic copper/100 gal.)	Apply in 100 gallons of water in the spring when ball moss is actively growing using 1.5 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.	<b>For single applications:</b> Do not exceed 5.6 lbs. metallic copper/A. (2,240 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 5.6 lbs. metallic copper/A  <b>Minimum interval:</b> 12 months
<b>Lychee*</b>	Anthracoese	4 – 8  (0.01 – 0.02 lbs. metallic copper/100 gal.)	Apply just before. Flowering and reapply every 7 to 14 days until harvest.	<b>For single applications:</b> Do not exceed 0.24 lbs. metallic copper/A. (96 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 1.44 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Mamey Sapote*</b>	Algal. Leaf Spot, Anthracoese	28 – 36  (0.07 – 0.09 lbs. metallic copper/100 gal.)	Apply when disease first appears. Reapply every 14 to 30 days if needed.	<b>For single applications:</b> Do not exceed 1.08 lbs. metallic copper/A. (432 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.5 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days
<b>Olives</b>	Olive knot, Peacock Spot	80 – 136  (0.19 – 0.32 lbs. metallic copper/100 gal.)	Apply before winter rains begin. Reapply in early spring if needed and continue every 30 days if needed.	<b>For single applications:</b> Do not exceed 0.64 lbs. metallic copper/A (272 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 9.6 lbs. metallic copper/A  <b>Minimum re-treatment interval:</b> 30 days
<b>Papaya*</b>	Anthracoese	64  (0.16 lbs. metallic copper/100 gal.)	Apply before disease appears and reapply every 10 to 14 days if needed.	<b>For single applications:</b> Do not exceed 0.32 lbs. metallic copper/A. (128 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 11.5 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days

<b>Passion Fruit*</b>	Anthracoze	28 – 36 (0.07 – 0.09 lbs. metallic copper/100 gal.)	Apply just before flowering and reapply every 7 days until harvest	<b>For single applications:</b> Do not exceed 1.08 lbs. metallic copper/A. (432 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6.48 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Persimmon*</b>	Cercospora Leaf Spot	24 – 48 (0.06 – 0.12 lbs. metallic copper/100 gal.)	Begin applications in May/June at leaf flush and repeat application every 14 days depending on disease severity and environmental conditions.	<b>For single applications:</b> Do not exceed 1.4 lbs. metallic copper/A. (560 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 5.6 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days
<b>Pistachio</b>	Alternaria leaf blight Septoria leaf blight	34 – 68 (0.09 – 0.17 lbs. metallic copper/100 gal.)	Begin application at bud swell and repeat every 14 to 28 days depending on disease pressure. Use higher rates when disease conditions are severe.	<b>For single applications:</b> Do not exceed 2.0 lbs. metallic copper/A. (800 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 8.0 lbs. metallic copper/A  <b>Minimum interval:</b> 14 days
<b>Sugar Apple (Annona)</b>	Anthracoze	76-152 (0.19 – 0.38 lbs. metallic copper/100 gal.)	Apply just before flowering and reapply every 7 days until harvest.	<b>For single applications:</b> Do not exceed 0.72 lbs. metallic copper/A. (304 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 9.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Starfruit (Carambola)*</b>	Anthracoze,	35 – 50 (0.09 – 0.13 lbs. metallic copper/100 gal.)	Apply at the start of flowering and reapply every 7 to 14 days.	<b>For single applications:</b> Do not 1.5 lbs. metallic copper/A. (600 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 9.0 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Strawberries</b>	Angular leaf spot ( <i>Xanthomonas</i> ), Leaf spot	25 – 51 (0.06 – 0.13 lbs. metallic copper/100 gal.)	Begin application when plants are established and continue throughout the season using higher rates when conditions favor disease.	<b>For single applications:</b> Do not exceed 1.5 lbs. metallic copper/A. (600 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 6 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days

<b>Sycamore*</b>	Anthracnose	36 – 72 (0.09 – 0.18 lbs. metallic copper/100 gal.)	Apply as a full cover spray in 100 gallons of water or sufficient volume for thorough coverage. Makes first application at bud crack and second application 7 to 10 days later at 10% leaf expansion.	<b>For single applications:</b> Do not exceed 2.1 lbs. metallic copper/A. (840 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 4.2 lbs. metallic copper/A  <b>Minimum interval:</b> 7 days
<b>Walnut</b>	Walnut blight	51 – 85 (0.13 – 0.21 lbs. metallic copper/100 gal.)	Apply first spray at early pre-bloom prior to or when catkins are partially extended. Make additional applications during bloom and early nutlet stage if frequent rainfall occurs. For effective control, coverage of catkins, leaves and nutlets is essential.	<b>For single applications:</b> Do not exceed 0.42 lbs. metallic copper/A (168 fl. oz. Phyton-108XO/A) (168 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 12.75 lbs. metallic copper/A  <b>Minimum re-treatment interval:</b> 7 days

<sup>†</sup>P-108XO contains 0.32lbs. of metallic copper per gallon of product.

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### CITRUS CROPS (Grapefruit, Lemon, Kumquat, Lime, Orange, Pumelo, Tangerine)

DISEASE	RATE (fl. oz./100 gal.)	Use instructions	<sup>†</sup> Use restrictions
Algal. spot; Melanose	34 – 68 (0.09 – 0.17 lbs. metallic copper/100 gal.)	Apply as a pre-bloom and post bloom spray. Higher rates should be used when conditions favor disease.	<b>For single applications:</b> Do not exceed 0.34 lbs. metallic copper/A (136 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 12.6 lbs. metallic copper/A  <b>Minimum re-treatment interval:</b> 7 days
Alternaria brown spot		Apply when first flush of spring appears and each flush thereafter. Application to fruit should start after most petals have fallen and be repeated depending on rainfall and disease pressure.	
Black Spot		Begin applications in late spring, post-petal fall and continue once per month through early fall.	
Citrus Canker (suppression)		Apply to flushes 7 to 14 days after shoots begin to grow. Young fruit may require additional application. Disease pressure will determine timing and number of applications. Each flush of new growth should be sprayed under heavy disease pressure.	

Greasy spot		Apply in summer on expanded new flush. Repeat on subsequent flushes if conditions favor disease development. Use higher rate when disease pressure is severe.	
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†P-108XO contains 0.32 lbs. of metallic copper per gallon of product.

## GRAPES

DISEASE	RATE (fl. oz./100 gal.)	Use instructions	†Use restrictions
Downy Mildew; Gray Mold; Powdery Mildew	25 – 42  (0.06 – 0.11 lbs. metallic copper/100 gal.)	Begin applications at bud break with following applications throughout the season, depending on disease severity.  Foliage injury may occur on copper sensitive varieties such as Concord, Delaware, Niagara and Rosette.	<b>For single applications:</b> Do not exceed 0.22 lbs. metallic copper/A (88 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 20.0 lbs. metallic copper/A  <b>Minimum re-treatment interval:</b> 3 days

†P-108XO contains 0.32 lbs. of metallic copper per gallon of product.

## GRASSES

CROP	DISEASE	RATE (fl. oz./Acre)	Use instructions	†Use restrictions
<b>Turf Grasses</b>	Algae	96 – 128  (0.24 – 0.32 lbs. metallic copper/100 gal.)	May be used as a maintenance spray as needed. May be used in combination with other fungicides. Use a minimum application volume of 100 gallons of water per acre. Apply to a small area prior to large area applications to check for phytotoxicity. If phytotoxicity is present discontinue use.	<b>For single applications:</b> Do not exceed 3.84 lbs. metallic copper/A. (1,536 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 15.3 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days
<b>Timothy Grass</b>	Brown Leaf Rust	8 – 28  (0.02 – 0.07 lbs. metallic copper/100 gal.)	Apply as a foliar treatment for early season disease control and again at early heading and then followed with another application 10 days later. Use higher rates when conditions favor disease development.	<b>For single applications:</b> Do not exceed 0.84 lbs. metallic copper/A. (336 fl. oz. Phyton-108XO/A)  <b>Annually:</b> Do not exceed 3.36 lbs. metallic copper/A  <b>Minimum interval:</b> 10 days

### **USE DIRECTIONS FOR CHEMIGATION**

The following precautions must be observed when using this product in any type of irrigation system.

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.

Do not apply this product through any system using aluminum parts or components as damage to the system may occur.

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 specialists, equipment manufacturers or other experts.

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

A person with knowledge of the chemigation system and responsible for its operation, or under supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Agitation in the pesticide supply tank is recommended at least once every 2 hours and may be more frequent or continuous.

The dosage rate should not be diluted by additional water applied as irrigation. Apply the prescribed rate and allow foliar surfaces to dry before irrigating. If irrigation precedes Phyton-108XO application, allow foliage to drip off before beginning the application.

To optimize dilution of the pesticide in the supply tank, first add Phyton-108XO to a small amount of water, room temperature or warmer, and mix gently until evenly dispersed.

### **POSTING**

Posting of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes, or any public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when the chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along routes of approach from the listed sensitive areas. When there are no usual points of entry, signs must be posted in the corner of the treated areas and in any other location affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The signs shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters at least 2 1/2 inches tall, and all letters and the symbol shall be a color which sharply contrasts with their immediate background. At the top of the sign shall be the words KEEP OUT, followed by an octagonal stop symbol at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDES IN IRRIGATION WATER.

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

Public water system means a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

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

The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.

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

### **REQUIREMENTS FOR SPRINKLER & DRIP CHEMIGATION**

Observe all the requirements in the USE DIRECTIONS FOR CHEMIGATION section and the following additional requirements:

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.

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

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

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

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



## REQUIREMENTS FOR FLOOD CHEMIGATION

Observe all the requirements in the USE DIRECTIONS FOR CHEMIGATION section and the following additional requirements.

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

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

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

*NOTE – The following are optional marketing language and graphics*

- Broad Spectrum
- Will Not Leave Any Visible Residue
- Bactericide<sup>^</sup> & Fungicide

- Citrus –



- Grapes –



- Apples –

