

Phyton-27[®] is a fully systemic bactericide and fungicide labeled for a wide variety of ornamental plants, nursery crops and trees. Its unique composition goes beyond the traditional disease control of copper-based products without the traditional side effects. Phyton-27[®] works within the plant to provide integral disease control and often enhances overall plant health and vitality.

Phytotoxicity Parameters

Genera

Phyton-27[®] has been applied to flowers, buds, and plant tissue with no phytotoxicity except for some reports of damage on very thin leaved plants such as *Miltonia* and *Encyclia*. Proceed with caution when treating these types. Try a reduced rate.

The following genera have been treated successfully with Phyton-27[®]:

<i>Brassia</i>	<i>Paphiopedilum</i>
<i>Cattleya</i>	<i>Phaius</i>
<i>Cymbidium</i>	<i>Phalaenopsis</i>
<i>Dendrobium</i>	<i>Phragmipedium</i>
<i>Epidendrum</i>	<i>Stanhopea</i>
<i>Miltonia</i>	<i>Vanda</i>
<i>Oncidium</i>	<i>Zygopetalum</i>

Recently a grower reported an unusual reaction on a particular type of *Dendrobium* (Lautoria). The situation involved application of Phyton-27[®] on a wide variety of orchid species. The application was made approximately 24 hours after Cygon 2E insecticide was applied. Only the one type of *Dendrobium* was affected. None of the other orchids were affected including other types of *Dendrobium* and more sensitive genera such as *Zygopetalum*. The reaction was noticed approximately a week after the Phyton-27[®] application. Fully formed, but not yet hardened off, leaves showed cell tissue collapse. Leaves that were hardened off and meristematic tissue were not affected.

Blooms

Phyton-27[®] has been tested on various tender open blooms and under varying conditions without phytotoxicity at spray rates of 1.3 to 1.5 fluid ounces per 10 gallons water. However, environmental factors, certain varieties and cultivars, and maturity of blooms could affect sensitivity. Senescing blooms are the first to be desiccated. Test a few plants, including some with mature or senescing flowers, before treating the whole crop.

One grower has reported white or faded spotting on purple and red blooms of Masdevillas after application of Phyton-27[®].

Tissue Culture

Although orchid plantlets coming out of the flask are presumed to be very sensitive to chemical application, a grower from an orchid tissue culture lab reports spraying Phyton-27[®] at the rate of 1.5 fluid ounces per 10 gallons water with no phytotoxicity. A second tissue culture lab reports using Phyton-27[®] to protect plant pieces during shipping. They were having problems with bacterial infection and "melt-down" in route. The grower dipped the plant pieces in Phyton-27[®] (2 fluid ounces per 10 gallons water) prior to shipping. The plant pieces actually remain wet during shipping.

A third lab dips the plant pieces in Phyton-27[®] before plating onto the growth medium. A stock solution of 4 parts water to 1 part Phyton-27[®] was prepared. One milliliter of this stock solution was mixed with 200 ml distilled water to make the dipping solution. They observed that dipping in Phyton-27[®] encouraged growth and controlled the bacteria. When using Phyton-27[®] for dipping plant material, keep in mind the guidelines established for cut flower dipping and only submerge for a few seconds.

Desiccation of Disease-damaged Plant Tissue

If plant tissue is already partially damaged by disease, applying Phyton-27[®] may desiccate it. Do not confuse this desiccation with phytotoxicity.

Efficacy & Methods

Erwinia, Pseudomonas, and Xanthomonas

Bacteria often enter plants through wounds, are water-borne, and prefer warm, moist conditions. Bacterial infections are highly contagious. If infection occurs, keep leaves dry, reduce temperature and relative humidity if possible, and increase air circulation. Avoid overhead watering which can facilitate the spread of the bacteria.

The exudate from disease damaged tissue is often laden with infectious bacteria which are easily spread through dripping or splashing water as well as by insect vectors, plant to plant contact, or unclean hands or tools. Remove visibly diseased plants from growing area. Cut away disease damaged tissue and apply Phyton-27[®] to the remaining plants and plant tissue. Treat all plants to prevent spread of infection but particularly those plants near a center of infection.

Efficacy & Methods (Cont.)

For Prevention of Bacterial Diseases, apply 1.5 to 2.0 fluid ounces per 10 gallons every 10 to 14 days. Low volume applicators may be used. Consult your low volume equipment vendor for conversion rates.

When bacterial disease is present, remove severely diseased plants, cut off and destroy all tissue showing infection, and disinfect surfaces in the growing area. Apply a wet foliar spray at the rate of 2.5 to 4 fluid ounces per 10 gallons water every 5 to 7 days, depending on the severity of the infection and the environmental conditions. Spray intervals can be shortened to every 3 days under intense disease pressure. Continue to monitor for disease symptoms between spray applications and remove diseased-damaged plants and tissue.

Botrytis

The *Botrytis* fungus tends to be most active during damp, cool weather, but infection may occur anytime. Careful sanitation, (removing infected plant material and debris to reduce inoculum), increased circulation, (particularly horizontal air movement), reduced humidity and warmer night temperatures along with preventive applications of Phyton-27® can greatly reduce the risk of *Botrytis* infection.

For Prevention of Botrytis, apply 1.3 to 1.5 fluid ounces per 10 gallons of water every 10 to 14 days. Intervals can be shortened when environmental conditions are conducive to *Botrytis* infection. Low volume applications are effective preventively. Consult your low volume equipment vendor for conversion rates.

When Botrytis is present, remove visibly diseased plants and disease damaged tissue. Apply a wet foliar spray at the rate of 1.5 fluid ounces per 10 gallons every 5 to 7 days. Intervals can be shortened to every 3 days under severe disease pressure. Low volume applications may be effective.

"Micro-fungus"

Orchid disorders caused by a "Micro-fungus" remain a mystery to most orchidists and researchers. One researcher reported that a new, still unidentified bacilliform virus was isolated from all plants with "Micro-fungus" symptoms sent to his lab. A grower reported that the causal organism is a mycoplasma-like organism, which are now referred to as phytoplasmas. These are very small phloem-inhabiting organisms.

Reference to "Micro-fungus" has been made in passing by orchidists during the course of consultations regarding

Phyton-27® over the past several years. Recently, numerous reports of effective "Micro-fungus" control have been observed in the course of using Phyton-27® for labeled antibacterial and antifungal uses.

STB is soliciting information on the "Micro-fungus" disorder including: a.) observations involving Phyton-27® used on orchids which had "Micro-fungus", b.) rates and intervals used, c.) type of orchids involved, d.) degree of disease at the outset, e.) temperature and humidity, and f.) results observed. We are also interested in the description of symptoms that lead growers to believe their orchids have "Micro-fungus". Please contact us by FAX, telephone, mail or email.

Reminders

Greenhouse cleanliness and good cultural practices along with preventive applications of fungicides, bactericides and insect control optimize plant protection.

- > Use new or sterile potting medium.
- > Prevent points of entry for pathogens by avoiding physical injury to plants.
- > Keep greenhouse clean and debris free.
- > Identify and remove, (or isolate), any diseased plants.
- > Use periodic applications of Phyton-27® bactericide and fungicide preventively.

Routine preventive programs can be maintained at dosages as low as 5 ounces per 100 gallons water. Full dosage rates are recommended to control serious disease problems on a spot treatment basis.

Preferred pH range for the spray solution is 5.5 to 6.5. Use any acidification method to adjust pH to this range. Phyton-27® concentrate has a pH of 4.7 and will contribute to lowering the pH of the water.

Conversion Charts

fl. oz. P-27 per 10 gal.	tsps P-27 per 1 gal.	ml P-27 per liter water	PPM	Fl. oz. P-27 per 100 gal. water
1.5	one tsp.			
2.0	one & one-fourth	1.0	1000	12.8
2.5	one & one-half	1.5	1500	19.2
3.0	one & three-fourths	2.0	2000	25.6
3.5	two teaspoons	2.5	2500	32.0
4.0	two & one-half	3.0	3000	38.4

Liquid Equivalents:

- one fl. ounce = 29.5 mL = 6 tsps.
- 3 teaspoons = 1 table spoon
- 1 Liter = 0.2642 gallon
- 1 gallon = 3.785 Liters

Source Tech Bio • 7449 Cahill Road • Edina, MN 55439 USA

Toll-free U.S. and Canada: 1-800-356-8733 • Phone: (952) 944-9779 • Fax: (952) 944-7755

E-mail: info@sourcetechnbio.com • Website: www.phyton27.com

California residents should consult the current California Phyton-27® label for registered uses.