

CUT FLOWER APPLICATION GUIDELINES

October 2002

Phyton-27[®] offers broad-spectrum control of fungal and bacterial diseases on a wide variety of cut flower crops. Use Phyton-27[®] as a pre-harvest spray to keep flower-bearing plants healthy and as a post-harvest dip to maximize Botrytis control.

Botrytis

Spores of *Botrytis* are everywhere and germinate whenever free moisture is present. The fungus grows rapidly in the humid environment of the flower head, even at low temperatures.

Pre-harvest Spray - Phyton-27[®] as a foliar spray keeps plants clean going into the cutting season. Spray plants in the growing area to prevent or cleanup *Botrytis*, particularly during the heavy cutting season. Plants with cutting wounds need the extra protection of Phyton-27[®] as wounds are a perfect entry-point for *Botrytis* infection.

Post-harvest Dip - A post-harvest dip will keep last minute surprises from popping up which you don't want to ship to your customer. Dip flowers or buds in a solution of Phyton-27[®] for a few seconds after cutting for post-harvest Botrytis control.

Downy Mildew

Downy mildew infection is favored by cool temperatures, high humidity and leaf wetness. Heavy precipitation, fog and dew tend to increase incidence making fall, winter and early spring prime times for disease development. The downy growth of the fungus is found on the under surfaces of the leaves, along with corresponding discolored areas on the upper surface of foliage.

Control - Apply Phyton-27[®] as a foliar spray to prevent downy mildew. For curative applications, rogue diseased plants and treat the remaining plants with a foliar spray of Phyton-27[®].

Powdery Mildew

Powdery mildew is a threat during periods of warm days and cool nights. While not generally fatal, powdery mildew can reduce yield and quality of cut flowers.

The number and variety of annual and perennial flowering crops grown as alternative cut flowers is growing as rapidly as their counterparts grown for landscape use. Phyton-27[®] offers broad labeling of annual and perennial plants for control of powdery mildew.

Control - Apply Phyton-27[®] as a foliar spray to prevent and control powdery mildew. Removing mildew infected tissue may help to reduce inoculum and re-infection.

Rust

Along with Botrytis and powdery mildew, rust is widespread, persistent and highly opportunistic. Leaves, stems and flowers of snapdragons can become infected by the *Puccinia antirrhini* fungus which appears as pustules of reddish-brown spores.

Control - Apply 1.3 to 2.5 fluid ounces per 10 gallons water as a foliar spray. Phyton-27[®] provided very good control of rust on snapdragon in trials run at Chase Research Gardens in California.

Phytophthora Root Rot

The *Phytophthora* fungus can cause root and crown rot. Infected roots are typically darkly colored and water-soaked in appearance. Aboveground symptoms include sudden flagging or wilting of the plant. Anything that stresses or slows root growth, such as poor aeration or drainage in the growing media or high soluble salts and root wounding, can lead to a root rot infection.

Control - Apply Phyton-27[®] as a drench to prevent Phytophthora root rot. For curative applications, rogue wilted or visibly diseased plants and treat the remaining crop with a drench of Phyton-27[®].

Bacterial Diseases - *Erwinia*, *Xanthomonas*, *Pseudomonas* & *Agrobacterium* Crown Gall

Moisture and warmth are conducive to the development and spread of bacterial diseases. Bacterial pathogens of cut flower crops can cause leaf spots, soft rots and vascular wilts. *Erwinia* thrives in the warmest and most humid cut flower growing environments (indoors and out). *Pseudomonas* likes cooler temperatures.

Leaf Spots - The above mentioned bacteria can cause leaf spots on a variety of crops. The best defense is keeping the leaves as dry as possible to avoid infection and spread by splashing water along with preventive applications of Phyton-27[®] which gives you protection against bacterial and fungal leaf spots.

Soft Rots - Two subspecies of *Erwinia* are the primary culprits for soft rots. The bacteria produce an enzyme that “digests” the plant structure resulting in soft, mushy plant tissue. Cuttings are particularly vulnerable to soft rot because of the presence of a wound combined with free moisture from misting.

Vascular Wilts - Certain bacteria, *Xanthomonas*, *Erwinia* and *Raulstonia* (previously known as *Pseudomonas*), can invade the xylem and cause lethal, systemic wilts.

Galls - *Agrobacterium* causes galls on crowns and roots. The bacterium survives in the soil and infects through fresh wounds.

Control - Apply Phyton-27[®] as a foliar spray to prevent bacterial infections. For curative applications, rogue diseased plants and treat the remaining plants with a foliar spray of Phyton-27[®].

Post-Harvest Quality Assurance

Phyton-27[®] assures a top quality cut flower crop. It is invisible and gentle. Pre- and Post-harvest treatments with Phyton-27[®] for Botrytis control, maintain the quality of cut flowers during storage, shipping and in the customer’s vase.

Increased Vase Life

Increased fresh weight gain and longer time to peak fresh weight associated with post-harvest dipping of cut flowers in Phyton-27[®] translate into longer vase-life for treated flowers.

Application Guidelines

- Thoroughly but carefully stir dip solution. Roses dipped in a sudsy or frothy solution may have a glossy appearance.
- Preferred pH range for the spray, drench or dip solution is 5.5 to 6.5. Use any acidification method to adjust to this range. Adjust the pH to this range to avoid darkening of the petal edges on dark-colored flowers. Phyton-27[®] concentrate has a pH of 4.7 and will contribute to lowering the pH of the mixed solution.
- Dip flowers/ buds for a few seconds soon after cutting for post-harvest Botrytis control.
- Use dip solution within 48 hours of mixing.
- Low volume applications may not be effective against established Powdery Mildew or bacterial infections.

General Use Guidelines

Safety on Open Blooms - Open flowers can be sprayed without damage, but should be trialed first. Older and diseased blooms are likely to be desiccated.

Tank Mixes - Phyton-27[®] is reported compatible with many registered pesticides. Before using combinations for general applications, test for physical compatibility and noninjury under your conditions of use. Do not tank mix Phyton-27[®] with B-Nine and do not apply Phyton-27[®] within 7 days before or after applications of B-Nine. Do not tank mix Phyton-27[®] with strongly acidic compounds such as Aliette and do not apply Phyton-27[®] within 14 days either before or after the application of such products.

Adjuvants - Before using additives for general applications, test for physical compatibility and noninjury under your conditions of use. Most nonionic spreaders are compatible, but avoid stickers and horticultural oils. Use ionically active spreaders only at low rates.

Metals Alert - Phyton-27[®] can interact with some metals, such as galvanized metal, and cause phytotoxicity or possible defoliation. This interaction has not been reported with stainless steel, painted or coated steel, brass or plastic. Use aluminum equipment with caution.

