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GUIDELINES FOR THE CONTROL OF ANTHURIUM BACTERIAL BLIGHT

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Introduction

Two antibiotics, streptomycin sulfate and oxytetracycline, have been shown to provide good control in the field against *Xanthomonas campestris* pv. *dieffenbachiae* when used in conjunction with sanitation. Streptomycin is the active ingredient in Agri-mycin 17* and Agri-Strep;* oxytetracycline is the active ingredient in Mycoshield.* Although both of these chemicals are effective against the anthurium blight pathogen, the main concern we have about their use is the eventual selection of antibiotic-resistant strains.

Streptomycin is more effective than oxytetracycline in the control of this disease; it should be used first. It should reduce the population of bacteria to low levels, but only in conjunction with strict sanitation: the removal of diseased leaves and systemically infected plants from the field before each spraying. Oxytetracycline can then be used when the bacterial population is low. In addition to further reducing the population of bacteria, the rotation of oxytetracycline with streptomycin may reduce the chances of selecting streptomycin-resistant strains. Although it is possible to reduce the disease to economically tolerable levels, complete eradication is a virtual impossibility.

Application of antibiotics should *not* be considered a routine part of an anthurium pest control program. It should be combined with strict sanitation in an *intense* effort to reduce the population of bacteria before the disease becomes too serious. The chances of selecting antibiotic-resistant strains are too great to use antibiotics routinely, at low concentrations, or for extended periods of time.

Antibiotics will not cure diseased leaves, nor will they cure systemically infected plants. These antibiotics work to prevent unaffected leaves and plants from becoming infected. This is another reason for the importance of sanitation; it reduces the source of new bacteria, which spread the disease to healthy plants in the field.

Step-by-Step Control Procedures

1. Sanitize the field. This is accomplished by removing diseased leaves and systemically infected plants from the field. It is very important that you know the difference between foliar blight and systemic blight; your extension agent can help you with this. Plants with early symptoms of foliar infection may be saved by removing the diseased leaves. Rather than cutting off the diseased leaves, remove them by breaking the petioles just below the leaf blades. Plants with systemic infections, however, should be rogued. Do not prune diseased leaves from systemically infected plants; remove the entire plant instead. Since bacteria move in water, try to sanitize during dry conditions. Place the diseased material in plastic trash bags or other convenient containers and remove from the field; do not leave diseased materials on the ground. Disinfest gloves, especially after pruning severely affected areas, or wear disposable gloves. Disposing of the greater bulk of diseased material from the field reduces the population of bacteria so there is less chance of selecting antibiotic-resistant mutants. It also reduces the source of inoculum that spreads the disease to healthy plants.

2. After removing the diseased material, spray streptomycin (21.2 percent formulated product) at 6 to 12 ounces per 100 gallons plus a small amount of spreader-sticker such as 2 fluid ounces Triton B-1956* per 100 gallons. Use 1 to 2 pounds of streptomycin per acre. For 1 gallon, use 2 level

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teaspoons of streptomycin plus an appropriate spreader-sticker (e.g., ⅛ teaspoon Triton B-1956*). Both streptomycin and oxytetracycline are systemic; therefore, you should apply sprays to the entire plant to run off, and try to cover both upper and lower leaf surfaces, stems, and flowers. Clean nozzles and screens often, and agitate the spray mixture frequently. Remember to prune diseased leaves and remove systemically infected plants *before each spray*. Spray streptomycin once a week for 6 to 8 weeks. A reduction in disease level is usually noticed after the third or fourth spray. If possible, apply the sprays when the leaves are dry. Some phytotoxicity has been observed on the cultivar Marian Seefurth when treated with higher than recommended concentrations or when drenched with high volumes of streptomycin. The most characteristic symptom is a temporary chlorosis of the young expanding leaves.

3. If the disease level starts to increase, spray oxytetracycline (17 percent formulated product) at 1 to 2 pounds per acre. For 1 gallon, use 1 to 2 level teaspoons plus a spreader-sticker. Practice strict sanitation before each spraying, as before. Spray once a week for 6 weeks. Do not apply either antibiotic for more than the prescribed number of sprays.

4. Continue to monitor and remove diseased material from the field after the sprays have stopped. If flowers and leaves are being harvested from the field, frequent disinfestation with 70 percent alcohol or another disinfestant is very important, especially if you cut flowers or leaves from fields with systemically infected plants. Generally a minimum of 3 minutes is required to properly disinfest tools. Use several cutting tools and rotate them in disinfestant between times when harvesting flowers and leaves, pruning leaves, or transplanting plants. Continuing the sanitation after the sprays have stopped is important; although the population of bacteria may be low, it can build up again very rapidly.

Obviously, this control program will be more difficult and costly on larger farms, especially on older plantings. These control measures should be implemented as soon as blight is found in the field; otherwise the cost and effort required for control will increase dramatically. Unchecked, and under the right environmental conditions, bacterial blight of anthurium is capable of killing entire fields.

Summary of Key Points

1. Check with your county agent to determine if your plants have anthurium bacterial blight or not.

2. Once the disease is present in a field it can be spread within the field from leaf to leaf by splashing rain or irrigation, and by personnel brushing against infected leaves during wet weather. Systemic infection is spread mainly by cutting tools during harvesting and leaf pruning.

3. You must sanitize (remove infected leaves and systemically infected plants) before each spray.

4. Spray with an antibiotic weekly for 6 to 8 weeks; then stop but continue with sanitation at least weekly.

5. *Do not* use antibiotics as a routine spray material.

6. Some varieties appear to be more susceptible than others, so symptoms on different cultivars may differ.

7. When harvesting in infested houses, start in the areas with the lowest blight incidence and work to the highest.

8. Implement control measures as soon as the disease is verified. Control will be much more difficult the longer one waits.