UPDATE ON CHEMICAL CONTROL OF SPATHIPHYLLUM DISEASES

by A. R. Chase

There are many serious diseases that Spathiphyllum producers face each production cycle. The most common and important of these include Cylindrocladium root and petiole rot, Myrothecium petiole rot and leaf spot and Phytophthora aerial blight and root rot. As their names indicate each disease is complex and can cause damage to various parts of the Spathiphyllum plant from the leaves to the roots. Myrothecium petiole rot is most common on small tissue-cultured plants as they become established in potting medium in the greenhouse for the first time. At later stages the pathogens mainly causes leaf spots. Cylindrocladium root and petiole rot causes problems throughout the production of the plant and even in the interiorscape. This fungal pathogen can also cause a leaf spot disease when conditions are hot and very wet with plants exposed to overhead irrigation or frequent rainfall. These conditions are also primary contributors to Phytophthora aerial blight. When the weather is cooler and dry, Phytophthora can cause root rot on Spathiphyllum and many other foliage plants.

Cylindrocladium Diseases

Far and away the most serious disease of spathiphyllum is Cylindrocladium root and petiole rot caused by *Cylindrocladium spathiphylli*. This disease was discovered in the early 1980's and rapidly spread throughout all states and countries producing spathiphyllum. One of the first symptoms of this root rot disease is yellowing of lower leaves, sometimes accompanied by slight wilting. Elliptical dark brown spots may be found on leaves and petioles; lower portions of petioles frequently rot. At this stage, plant roots are severely rotted and few healthy roots are found. Tops of such plants are easily removed from the pot without any adhering roots.

Chemical treatments have not been completely effective unless disease pressure is low. Under conditions of high disease pressure, (especially prevalent during the summer), triflumizole (Terraguard from Uniroyal) has provided better control than available alternatives. In 1996, Norman at the Central Florida Research and Education Center in Apopka, FL reported an efficacy trial using certain fungicides not previously tested for Cylindrocladium control on Spathiphyllum. His results indicated that fluazinam (an experimental compound from ISK Biotech - recently purchased by Zeneca), copper pentahydrate (Phyton 27 from Source Technology Biologicals), and thiophanate methyl (3336 from W. A. Cleary Corporation) each showed a significant degree of efficacy.

Some products perform well under low to moderate disease pressure (such as Phyton 27 and Rootshield) but not as well under high disease pressure. Similarly, Heritage 50WP gives good control when used at 1 to 8 oz/100 gal. Cleary's 3336 50WP (8 to 32 oz/100 gal) and Medallion 50WP (1 to 4 oz/100 gal) produced the highest quality plants in most trials when they were used. Terraguard 50WP continues to give good disease control when used at rates of 4 to 8 oz/100 gal as a weekly drench. Mixtures of Terraguard and Medallion did not perform better than the products used alone. Medallion and Heritage performed the best under all levels of disease pressure and perhaps should be saved for conditions when other products may fail. Phyton 27 worked well when used at 32 to 35 oz/100 gal with lower levels of control seen when lower rates were employed.

Myrothecium diseases

Myrothecium roridum is a fungus that causes serious diseases of many greenhouse ornamentals including bedding plants; foliage plants and some potted flowering crops. Some of the most commonly affected foliage plants are lipstick vine, aglaonema, zebra plant, dieffenbachia, ferns, hoya, spathiphyllum and syngonium.

Chemical controls have been investigated for a number of important ornamentals including dieffenbachia, gloxinia, spathiphyllum and syngonium. Chlorothalonil (Daconil 2787) has especially been effective for Myrothecium leaf spot control on many foliage plants and mancozeb compounds also provide excellent control of this disease. Iprodione (Chipco 26019) may also be effective in controlling this disease. Control of Myrothecium petiole rot on syngoniums was poor with Daconil or Manzate but good with Terraguard and Chipco 26019. Applications must be directed to the crowns of the plants since this is where the fungus attacks the plants.

Over the past two years several trials on Myrothecium diseases on ornamentals have been conducted using some newly labeled and some experimental fungicides. Medallion 50W (fludioxinil from Novartis) is labeled throughout the US (except California). It is effective on Rhizoctonia, Fusarium, Botrytis and Alternaria diseases on ornamentals. Tests for control of Myrothecium leaf spot and petiole rot have shown it to be very effective at low rates (1 oz/100 gal). An experimental compound, also from Novartis (Compass – a strobilurin) is also very effective at 1 oz/100 gal for control of Myrothecium leaf spot on dieffenbachias. Excellent control in the same tests was found with 1 oz/100 gal of Heritage 50W. This fungicide was recently labeled for use on ornamentals and should be available from Zeneca in the next few months. Finally, Rootshield (a biofungicide from BioWorks) also showed good control of Myrothecium petiole rot on spathiphyllum. Daconil Ultrex (Zeneca) remains a good choice for controlling Myrothecium leaf spot on ornamentals.

Phytophthora diseases

Phytophthora diseases on spathiphyllum are caused by *Phytophthora parasitica*. Initial symptoms are usually large (up to an inch wide) black or dark brown dead spots on leaf margins and centers. Spots are wet and mushy under moist conditions but dry out rapidly when plants are protected from overhead irrigation and rainfall. Other plants that are commonly affected by this pathogen include philodendron, anthurium, dieffenbachia, and schefflera. In addition to aerial blight, the fungus can cause root rot which is virtually indistinguishable from other root diseases. Plant roots become dark and mushy and tops may be yellowed, wilted and stunted.

Disease is most severe when temperatures are between 75 and 90°F. Keep plant foliage dry and grow plants in a sterilized potting medium on raised benches away from the native soil. Soil drenches and foliar sprays with etridiazole, fosetyl aluminum and metalaxyl are generally effective in controlling this problem. Always treat both soil and foliage since the pathogen moves from the potting medium onto the foliage. A recent article from Norman at the Central Florida Research and Education Center-Apopka, reported that Subdue Maxx, Aliette and Phyton 27 were the most effective fungicides used as soil drenches for control of this disease. For foliar sprays, Dr. Norman reports best results with Aliette and Phyton 27.

Conclusions:

Controlling diseases of Spathiphyllum must still be based on good cultural practices and especially use of pathogen-free plants. Ignoring the basics of providing the best environment for the crop will only lead to production losses. The spectrum of effective fungicides for control of these diseases is greater now than it has been at any time during the past 18 years. Wise use of a variety of products, both chemical and biological fungicides should lead to the best control programs for most growers. With the advent of products such as Heritage, Subdue Maxx and Compass whose active ranges can be in single ounces per 100 gallons, the possibility of making a critical application error have increased. If you read the label and apply fungicides at the rates and intervals that are legal to the plants listed only for the diseases recommended successful disease control is most probable. Always follow labeled directions for these products carefully.