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Start off the New Year disease-free and increase your bottom line in 2008 by cutting your plant losses.

By Colleen Warfield

Planning can reduce disease losses

WHEN IT COMES TO keeping New Year's resolutions, psychology experts warn us that to be successful we should "keep it real" by setting attainable goals. Advance planning and a strong initial commitment are critical, and we should have a method to track our progress.

If starting off 2008 with a disease-free growing facility was on your list of resolutions, how successful are you likely to be in reaching that goal? To "keep it real," I would have to say the odds are not in your favor.

A broader, more attainable resolution might be, "This season I resolve to increase company profits through a reduction in losses due to insect and disease pests." How to accomplish this may vary from operation to operation, but in all cases, some advance planning is in order.

Focus on prevention

If you've been in the growing business for any length of time, you know how important prevention is to successfully manage plant diseases. Several of the most problematic diseases are caused by pathogens capable of infecting a diversity of plant species.

Pythium, Phytophthora, Rhizoctonia and Thielaviopsis are all fungal root pathogens that infect particular hosts more frequently. Each is also capable of infecting different plant hosts. As a result, it's not unusual to have a susceptible crop growing in the greenhouse at any time during the year.

For a plant pathogen, having a continuous supply of susceptible plants to infect is probably close to paradise. Should a host plant temporarily disappear (be removed from production), each of these pathogens can produce various structures that enable it to survive for a long time, often in soil or plant debris, in the absence of the host. As a result, once introduced into a growing facility, eradication of pathogens can be difficult.

Phytophthora can be introduced into irrigation ponds via recycled water. Placing rhododendron leaf baits in the water is one method to detect the presence of *Phytophthora*.

If you experienced problems with disease caused by any one of these pathogens last season, you will probably encounter the same problem again this year. Therefore, successful management of this group of pathogens must focus on prevention:

1. Good sanitation. Disinfest trays, pots, benches and floors.

2. Preventive fungicide applications. Preventive applications are always more effective than curative applications.

3. Appropriate cultural practices. Modify growing conditions so temperature, light and nutrition favor optimal plant growth.

4. Careful scheduling. You don't want to be caught trying to hold your plants to size specs while waiting for the market to be ready. Withholding water from plants to slow growth can promote disease development.

Holdover plants

If you encountered coleus downy mildew in your greenhouse this past season, think twice about holding over coleus plants to use for cuttings

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Downy mildew may cause no visible symptoms on the top surface of coleus leaves, so it is important to scout the undersides of leaves for sporulation of the fungus.

in spring. Although plants may show no visible symptoms, they could still be infected with the fungus as it grows systemically inside the plants.

Last spring in the Southeast, growers experienced severely stunted coleus plants early in the season. As the temperatures began to rise during summer the plants appeared to "grow out" of the disease. But with the onset of cooler nights, the telltale sign of the fungus — white-to-purplish patches of sporulation on the underside of the leaves — became evident once again.

Although there are differences in susceptibility among coleus cultivars it is probably not worth the risk to keep any plants for stock if they have been in the same houses as downy mildew-infected coleus. Like most other species of downy mildew, this one has a very narrow host range.

By removing all susceptible host plants from a growing facility, the bridge between crops is removed, which leads to the eventual death of the fungus since it requires a living host for survival. While the fungus can produce survival structures, their role is not well understood.

Virus survival tactics

For many operations, poinsettias are the last crop grown before the start of the spring bedding plant season. Poinsettias are not susceptible to impatiens necrotic spot virus (INSV) or tomato spotted wilt virus (TSWV).

If you had problems with either of these viruses last season, you may have forgotten all about them since your poinsettias looked so good. But don't be fooled, many greenhouse weeds are susceptible to these viruses and can serve as reservoirs of the viruses, as well as feeding grounds for the thrips that transmit them.

Due to the sensitivity of poinsettia bracts, there is often reluctance to apply any chemicals during production that are not absolutely necessary. As a result, weed populations often get out of hand. Weed removal and thrips monitoring (sticky cards are effective) before placing bedding plants into production houses are essential. The presence of thrips doesn't necessarily mean that the thrips are infectious, but there is always that risk.

Because stock plants can be another prime source of viral inoculum, any plants kept over from the previous season should be screened for viruses before propagation. Rapid diagnostic test kits are available for in-house testing. It's not uncommon to find hosts that test positive for one of these viruses, yet exhibit no symptoms.

If INSV has been an ongoing problem, it may be time to take a closer look at what plants are being carried over from season to season. While scouting and thrips control will help prevent spread of these viruses, the removal of infected stock plants is going to be

Weeds may serve as reservoirs of impatiens necrotic spot virus as well as feeding hosts for thrips.

less expensive and more effective in the long term.

Bacterial survival tactics

While some bacterial pathogens are very host specific, others have a wide host range. A narrow host range doesn't always mean that a pathogen won't survive until the next season in the absence of a host.

A University of Minnesota study of Xanthomonas campestris pv. pelargonii in greenhouses found that the bacterium survived in geranium leaf debris placed on the soil surface under the greenhouse bench for more than 200 days. Needless to say, never underestimate your efforts in keeping your greenhouses clean.

The bacterium that causes *Xanthomonas* bacterial blight on geranium can survive in air-dried leaves on bench tops and on the ground under benches.

Eliminating rust pathogens

Rust pathogens, like downy mildew, are typically limited to only one or a few hosts. And like downy mildew, they are obligate parasites, so they will survive for only as long as they have a host plant. As a result, rusts that infect annual crops are generally not carried over from season to season in the greenhouse due to periods in the production cycle when no susceptible hosts are grown.

Effective management of rusts should rely more on scouting rather than preventive fungicide applications. However, in the case of perennials, some rust fungi can be carried over to the next season. In those cases, preventive fungicides are often necessary.

Monitoring your success

If you've set an attainable goal of reducing losses from disease pathogens, how can you track your progress? The easiest way is to monitor the size of the mound of plants you've discarded behind your greenhouse. You'll really know just how well you did when you see the last line on your income statement at the end of next year.

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