The Importance of Proper Diagnosis

By Kevin Ong, PhD
Director - Texas Plant Disease Diagnostic Laboratory

Starting on the right footing: Good Knowledge.
A big challenge in Integrated Pest Management (IPM) to greenhouse and nursery operations is the diversity of crops that are produced. Unlike traditional agriculture, a greenhouse or nursery operation may be dealing with over a dozen or more different types of plants at any given time. Many times, these plants have inherent differences in nutritional and water requirements, growth habits and pests/pathogens that occur on them. So how can an effective IPM program be developed for more complicated production systems?

I believe that it all begins with knowledge, starting with knowledge about the production system in general and then specifically for each plant. Success also hinges on the knowledge about the plants you are growing and the environmental conditions that exist and occur at the growing location. Knowledge about pests and pathogens, and the general methods to managing them is helpful – especially for being prepared for prevention and early intervention. Knowing what the pests and pathogens are or might be helps to identify and use proper and effective control methods.

The key to successful and sustainable IPM practices is being able to take all of these knowledge pieces and fitting them together to formulate and plan a comprehensive approach to your production system – then utilizing it to be proactive – and then for the potential disease and pest situations that may occur - in order to make sound decisions and minimize loss.

Unfortunately, no simple formula exists to guarantee success 100% of the time. IPM programs must be tailored for each production system. However, there are several key components that should be established.

Having clear thresholds or action points.
Economic threshold – How much damage can this crop sustain before I lose too much money? This is the breaking point for whether to keep or discard a crop.

Action threshold – What condition must exist or how much damage must be observed before I need to take action?

The action threshold should be a lot sooner than the economic threshold. By establishing action thresholds, you most likely have developed some plan of action. Being proactive in planning not only helps to minimize the impact of the pest or disease, but also reduces possible panic that may arise from pressure.

Having a plan for monitoring.
Monitoring means being aware of the state of a system – for example, observing for any changes which may occur. In the case of monitoring for pests or pathogens, the objective is to look for the presence of the insect or symptoms of a developing disease problem.

What to look for? Here, one must take the initiative to learn what to look for regarding a
particular pest/pathogen. The first question should be “What are some common pest and disease problem that plague this particular crop?” Then a search for information can be initiated for the list of pest and disease problems that you discover. Always take the extra step to have a confirmed diagnosis to ascertain the causal agent of the problem.

**Importance of knowing your pest or pathogen.**
Today, we have an arsenal of registered chemicals and biologicals that are somewhat broad spectrum. But do not be lulled into believing that a particular single product can take care of all the problems. In many cases, a chemical or biological pesticide may have a larger impact in suppressing a particular insect or pathogen but not another. Hence, it is important to get to know your “enemy” and the products that are labeled for management of that enemy. An accurate diagnosis or pest/pathogen identification contributes greatly to our ability to plan out monitoring and then establish the economic threshold.

Knowledge is important whether it is establishing economic and action thresholds, or coming up with a plan for monitoring. Understanding the strengths and limitations of your production system and the plants that you are growing will help you make decisions on where to set your thresholds. Knowing and understanding the pest and pathogen that may affect your crop will help you develop good monitoring and action plans for early intervention.

**Where do I get diagnostic help?**
In many states in the U.S., plant diagnostic clinics exist to help diagnose plant problems. These facilities, both public and private, are valuable tools to consider for proper identification of pest and pathogen problems. To find a diagnostic lab in your state, visit the National Plant Diagnostic Network website (http://npdn.org).