Devastating Nursery Diseases & Common Sense Management Strategies

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Summary: New plant diseases continue to cause major issues and present themselves as unwelcome game changers. Learn to recognize the issues ahead of a full-blown catastrophe and gain understanding of how a system-based management approach is your best strategy for success.

Ornamental Plant Diseases that have been game changers: Boxwood Blight, Dogwood anthracnose, Phytophthora Diseases (including those caused by *Phytophthora ramorum*), Rose Rosette, Hosta virus X, others (Black Root Rot, Cedar Rusts, crown gall, Downy Mildews, Fire Blight, Fungal Canker Diseases, Powdery Mildews, Leaf Spots, Blights, etc.)

Ornamental Diseases may be game changers due to:
- Widespread damage or death to ornamental plants
- Likelihood of infection and damage is ever present
- Negative publicity, decreased sales
- Caused by pathogens that are exotic and/or invasive.
- Caused by pathogens that are long lived in soil, media, water
- Leads to increased enforcement, regulation by state and federal agencies
- Leads to increased cost of production
- Spread primarily by the movement of infected plants

Some prominent ornamental diseases:

**Dogwood Anthracnose**
- Pathogen: *Discula destructiva*
- Identified on dogwood species on the East and West Coasts by the early 80’s
- Found in the Southern Appalachian Region by the mid 90’s in forests and nurseries
- Led to increased scrutiny of dogwood production
- Increased cost of production
- Dogwood hybrids, resistant cultivars, Appalachian series of dogwoods

**Phytophthora ramorum (Sudden Oak Death, Phytophthora leaf blights)**
- Pathogen: *Phytophthora ramorum*
- Causal agent of Sudden oak death (West Coast), coastal live oak
- Foliar blight of many ornamentals: Rhododendron spp., Kalmia, Camellia, etc.
- Increased regulations, quarantines, inspections, trace forwards/backs
- Stop sales, destruction of plant material
- Contamination of soil and/or water
- Spawns the “Systems based approach of plant production”
- New Phytophthora species are being identified that cause foliar blights, root rots, collar rot

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Boxwood Blight
- Pathogen: *Calonectria pseudonaviculata* syn *Cylindrocladium pseudonaviculata, C. buxicola*
- First found in U.S. in 2011 (CT, NC); later: MA, MD, VA, NC, OH, RI, OR, NY, DE, PA, NJ, KY, TN, GA, AL, FL; Canadian provinces: British Columbia, Ontario, Quebec
- AmericanHort –BoxwoodBlight.org – establishes information clearinghouse
- Research programs at NC State (Ivors)
- All cultivars tested were susceptible to some degree
- State, not Federal regulation
- Fungicide research to determine preventative treatments
- Identified for first time in AL & FL in 2015

Rose Rosette
- Rose rosette virus
- Vectored by an eriophyid mite, *Phyllacoptes fructiphylus*
- Has existed as a pathogen of multiflora rose since the 70’s
- Become more widespread with the use of mass plantings of shrub roses
- Symptoms often show up within 2-3 years of planting
- Death may occur within 2-3 yrs of infection
- No curative treatment
- Rogueing and destruction of infected plants
- USDA funds 5 yr multi-state, multi-institution research project in 2015

What is Systems-based Pest/Disease Management?
A systems based pest management plan starts by looking at the production path of ornamental plants. High risk, vulnerable points of production are identified. These high risk points are called, “critical control points”. These critical points in the production of plant material are points where pests or plant pathogens may be introduced into the system.

Critical Control Points
Common critical control points may include, but are not limited to: receiving area, propagation houses, container storage areas, substrate piles and storage areas, irrigation sources, cull piles etc. Once critical control points are identified, a set of practices are put into place that allow for the prevention of introduction of plant pathogens, early detection and control.

Examples of Reducing Risk at Critical Control Points
- Receiving and shipping: sharpen diagnostic skills by attending workshops, seminars to that you will be able to inspect incoming and outgoing plant materials for signs and symptoms of disease; work cooperatively with state regulatory and Extension personnel; protect your business and reputation by following all shipping regulations.
- Propagation is a key control point. You can reduce risk by propagating on site or by buying locally to reduce the chance of introducing a plant pathogen that is regulated federally or by your state. Grow your own stock plants for cuttings or source cuttings locally. Take cuttings from disease-free plants. Propagate in raised beds or on benches to eliminate soil contamination. Pay attention to detail and sanitation practices.
- Production areas. Avoid using ornamental species or cultivars known to have low resistance to common diseases. Avoid planting susceptible nursery stock in fields known to be conducive to
certain diseases or sites of past problems. If growing in containers, use new containers, stored on concrete pads, free of soil contamination. Disinfect any container, flat or tool to be used more than once. Ground pads should be contoured so that water drains. Cover soil with fabric and/or gravel to prevent standing water and splashed dispersal of soil and soil-borne pathogens. Muddy containers indicate potential problems. Limit visitors from propagation and production areas.

- Water management. Too much, too little or ill-timed irrigation can predispose plants to diseases. Check water quality. Assay water for plant pathogens. Disinfect or filter water known to be contaminated with Phytophthora. Use drip irrigation on plants likely to have foliar diseases.

- Integrated Pest Management. If possible designate at least one person to monitor/scout for pest and diseases. Post images and information about the “Top Ten Pests/Diseases” in break areas with instructions on how to handle, who to notify if found. Outbreaks of diseases should be plotted on a map of your nursery and records recorded for future use. Use of publications, books, apps for training and education of employees is strongly encouraged. Social media can be invaluable for notifications of pests and/or diseases that are active.

- Working with Regulatory/University/Extension personnel. Build a relationship of trust with persons that work in these agencies. Your input in proposed regulation, research projects and outreach can be invaluable. Building a relationship with a young government/educational employee can be mutually beneficial to all parties. Make suggestions on workshops, seminars, publications, methods of outreach that would benefit the nursery industry. Interact with policy makers and university administrators to let them know that the nursery industry is as deserving of research and outreach as any other commodity in agriculture. Be active in local and regional organizations that promote the nursery industry.

References:


**Other Resources:**

- IPM for Shrubs in Southeastern US Nursery Production: Volume I
- IPM for Select Deciduous Trees in Southeastern US Nursery Production
- Fungicide Efficacy Table for Ornamental Crops

The Southern Nursery Association Research Conference. 24 years of proceedings are available online at sna.org with free access.

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