An overview of disease management in small fruit crops

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Small fruit crop characteristics

- Woody and herbaceous perennials
- High cost of establishment
- Long-term investment
- Vegetatively propagated
- High-value, perishable fruit crop
- Diseases build up in plantings over time; weather determines outbreaks
Common diseases of small fruit crops

- Powdery mildew
- Leaf and cane spots
- Twig, cane blight
- Botrytis gray mold
- Anthracnose
- Rust
- Root rot
A fungus, bacterium or virus

THE DISEASE TRIANGLE
When these three elements coincide, plant disease will occur. Eliminating just one of them will keep your plants healthy.

PATHOGEN
A fungus, bacterium or virus

ENVIRONMENT
Conditions favorable to a particular disease

HOST
A plant that is susceptible to disease
DISEASE MANAGEMENT STRATEGIES

- Disease avoidance
- Resistant cultivars
- Sanitation
- Environment modification
- Biological control
- Chemical control
Disease avoidance

• Select a suitable site with no history of disease

• Sample soil for nutrients and plant-parasitic nematodes

• Buy clean, virus-tested plants from a reputable nursery
Blueberry necrotic ringspot decline
Tomato ringspot virus, Tobacco ringspot virus

Transmitted by dagger nematodes
Grapevine Leaf roll
Grapevine leafroll-associated viruses

Transmitted by scale and mealybugs
Resistant cultivars

• Avoid susceptible cultivars and root stocks where possible

• Know the disease resistance profile of cultivars so you know what to expect and where to plant

• Plant susceptible cultivars together to facilitate management
Environment modification (reduce moisture)

- Plant spacing and row orientation
- Improve drainage
- Pruning and training to create open canopy
- Limit overhead irrigation
- Control tall weeds
- Avoid over-fertilization
Leaf pulling around grape clusters

- Reduced moisture
- Improves spray penetration
- Thicker berry skin and cuticle
- Higher phenolics
Phytophthora root rot (*Phytophthora* spp.)

Plant on raised beds or install drain tile
Sanitation (remove inoculum sources)

- Prune out and destroy diseased plant parts
- Remove and destroy crown gall- and virus-infected plants, including roots
- Burning is most effective, but flail-mowing will also speed decomposition
Disease monitoring

• Scout regularly throughout the season
• Walk several rows in different parts of the field, including hot spots
• Know what symptoms and signs to look for
• Inspect leaves and fruit clusters, roots as well
• Send samples to diagnostic lab if needed
A Pocket Guide to IPM Scouting in Highbush Blueberries

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A Pocket Guide for Grape IPM Scouting in the North Central and Eastern United States

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Chemical and biological control

• Choose the right fungicides for the diseases you are trying to control
• Calibrate sprayer for optimal coverage
• Follow label directions
• Alternate fungicide classes
• Select ‘softer’ products; use lower rates and stretch spray intervals when low disease pressure
Use crop phenology to time fungicide sprays

• In general, young tissues are most susceptible to disease

• For blossom and early fruit infections, apply sprays at bloom – avoid sprays when pollinators are active

• For Botrytis and post-harvest rots, fruit becomes more susceptible as it ripens – pre-harvest sprays

• For root rots, apply treatments during active root growth, e.g., spring and fall for Phytophthora
Timing of fungicide applications in grapes

Dormant sprays

Critical period for fruit protection

Bud swell      Shoot growth       Bloom       Berry-touch       Veraison       Pre-Harvest

Botrytis

Anthracnose

Phomopsis

Black rot

Powdery mildew

Downy mildew

Black rot
Harvest/ post-harvest

- Timely harvest
- Rapid cooling
- Process good lots before bad lots
- Clean processing line between fruit batches
Any Questions?