

# A Checklist of Disease Management Recommendations for Small Fruit Production

Various diseases threaten small fruit (e.g., blueberries, caneberries, grapes/muscadines, strawberries) production in Mississippi throughout the growing season. While some diseases may not cause severe damage, others may cause significant yield losses. To minimize the impact of diseases, commercial producers and home gardeners should implement a disease management program.

Various disease management practices are available, but each one will not be effective against every disease. Choosing which disease management practices to use depends on several factors. These include the biology of the pathogen(s) causing the disease(s), the options available and preferences for effective disease management, and the feasibility of available practices for producers/gardeners. The best approach is integrated disease management, which uses a combination of biological, cultural, physical, and chemical practices.

Below are general practices that can be incorporated into a disease management program at different times in the growing season. These practices help prevent the introduction of pathogens into new areas, reduce the spread of pathogens to new plants or plantings, decrease pathogen buildup in a field, lessen the severity or occurrence of disease, and make conditions for disease development less favorable. Some practices in the list below may be more practical for annual small fruit crops (e.g., strawberry) than for perennial small fruit crops or cane-producing or vining fruit crops. Specific disease management recommendations for a particular fruit disease can be found in various MSU Extension resources or by [contacting your local Extension agent](#) or plant pathologist.

The following steps can also help producers and gardeners improve their ability to manage diseases:

- ▶ Know the plant; be able to recognize normal plant growth as well as the symptoms of common nutritional deficiencies.
- ▶ Know the common diseases of the crops(s) in Mississippi and their signs and symptoms.
- ▶ Know what information to collect when assistance with plant problems is needed.
- ▶ Know where to look for information and who to contact for help.

## Before Planting and/or At Planting

- Choose an appropriate planting site that provides good sunlight, airflow, and drainage.
- Collect and submit soil samples to the [MSU Soil Testing Lab](#) to obtain appropriate fertility recommendations.
- Collect and submit soil samples to the [MSU Extension Plant Diagnostic Lab](#) for nematode identification and quantification. If disease-causing nematodes are detected in a potential planting site, nematode treatment options must be implemented prior to planting or a different site should be chosen.
- Prepare a proper garden plan to help ensure the practice of crop rotation.
- Consider the disease history of a planting site and avoid replanting or planting susceptible fruits in that location, or implement additional disease-management practices, as necessary.
- Select recommended varieties for commercial or home garden production for your area.
- Select varieties that have resistance, if available, to common diseases in your area.
- Purchase disease-free plants from reputable sources.
- Follow planting recommendations regarding planting timing, depth, and spacing.
- Plant only healthy-looking plants; discard plants with signs or symptoms of disease.
- Plant during the appropriate season for plant establishment.
- Use mulch and/or trellises, when appropriate for the crop.
- Apply effective fungicides, bactericides, etc., as needed; follow label directions and resistance management guidelines (e.g., rotation or tank-mixing of products with different modes of action [FRAC groups]).

## During the Growing Season

- Follow recommendations for fertilization (soil and plant tissue analysis); do not overfertilize.
- Place mulch around blueberry plants in early spring to cover remaining berry debris.
- Avoid practices that leave foliage wet for long periods (e.g., substitute drip irrigation or adjust the timing of overhead irrigation); do not overwater.
- Maintain a weed-free strip or low groundcover under plants and low groundcover in row-middles, when appropriate for the crop, to allow for good airflow.
- Regulate temperature and humidity in enclosed structures.
- Clean and disinfest tools and equipment between fields and after each use.
- Clean hands, shoes, etc., between fields and before entering enclosed structures.

- Remove and destroy crop debris, including fallen berries.
- Rogue plants infected with vascular (e.g., *Xylella fastidiosa*) or soilborne pathogens (e.g., *Ralstonia solanacearum*), when disease is first detected or is limited in incidence in a planting.
- Avoid using diseased plants or plant tissue in compost.
- Avoid pruning and harvesting when plants are wet.
- Stake or trellis cane-producing or vining plants.
- Scout regularly for diseases and insects.
- Monitor local disease epidemics; sign up for newsletters or alerts from county agents, specialists, or disease monitoring programs.
- Apply effective fungicides, bactericides, etc., as needed; follow label directions and resistance management guidelines (e.g., rotation or tank-mixing of products with different modes of action [FRAC groups]). Adjust spray volume as needed as plants increase in size to achieve effective coverage.
- Maintain separate sprayers for fungicides/insecticides and herbicides.
- Manage insect vectors known to transmit pathogens, if warranted by specific disease management recommendations.
- Collect and submit plant samples to the [MSU Extension Plant Diagnostic Lab](#) for disease identification and appropriate disease management recommendations.
- Collect and submit plant tissue and/or soil samples to the [MSU Soil Testing Lab](#) to obtain appropriate fertility recommendations for the following year and if potential nutrient issues are observed.

## During and/or After Harvest

- Apply effective fungicides, bactericides, etc., as needed; follow label directions and resistance management guidelines (e.g., rotation or tank-mixing of products with different modes of action [FRAC groups]).
- Harvest mature berries/fruits promptly.
- Practice proper handling and storage of harvested crops.

- Remove overripe fruits from plants and properly discard.
- Remove and destroy or bury (till) crop debris (e.g., berries) remaining in fields.
- Avoid using diseased plants or plant tissue in compost.

## Throughout the Year

- Keep detailed disease and disease management records.
- Remove weeds or volunteer plants that can harbor plant pathogens.
- Clean and disinfest tools and equipment between fields and after each use.
- Clean hands, shoes, etc., between fields and before entering enclosed structures.

## Pruning and Propagation

- Follow pruning recommendations for plant maintenance and fruit production.
- Remove and destroy broken, dead, or diseased canes at recommended times.
- Clean and disinfest tools and equipment between fields and after each use; more frequent cleaning and disinfesting (after each cut) may be necessary for some diseases.
- Collect cuttings from disease-free plants that do not exhibit symptoms of disease; if cuttings are made during dormancy, monitor plants for disease symptoms during the previous growing season. Consider testing mother plants for viruses and other graft-transmissible pathogens prior to collecting graft wood.

## Before the Growing Season

- Calibrate and maintain sprayer equipment; arrange nozzles on sprayers as needed for appropriate coverage.
- Determine a tentative spray-program plan and identify fungicides, bactericides, etc., to be used in your spray program; follow resistance management guidelines (e.g., rotation or tank-mixing of products with different modes of action [FRAC groups]).

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By **Rebecca A. Melanson**, PhD, Associate Extension Professor, Plant Pathology, Central Mississippi Research and Extension Center. Reviewed by Clarissa Balbalian, Diagnostic Laboratory Manager, Plant Pathology; Alan Henn, PhD, Extension Professor, Plant Pathology; Brenton Breland, Extension Agent, Pike County; and Aaron Cato, Extension Specialist, Horticulture IPM, University of Arkansas.

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