

A Checklist of Disease Management Recommendations for Tree Fruit Production

Various diseases threaten tree fruit (e.g., apple, citrus, peach, pear, plum) 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 disease management 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. Specific disease management recommendations for a particular fruit disease can be found in various Mississippi State University Extension Service 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 crop(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.
- Consider the disease history of a planting site and avoid replanting or planting susceptible tree 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 trees from reputable sources.
- Follow planting recommendations regarding timing, depth, and spacing.
- Plant only healthy-looking trees; discard trees with signs or symptoms of disease.
- Plant during the appropriate season for tree establishment.
- Apply effective fungicides, bactericides, antibiotics, etc., as needed; follow label directions and resistance management guidelines (e.g., rotation or tank-mixing of products with different modes of action [Fungicide Resistance Action Committee, or FRAC, groups]).

During the Growing Season

- Follow recommendations for fertilization (soil and plant tissue analysis); do not overfertilize.
- 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 trees and low groundcover in row middles to allow for good airflow.
- Clean and disinfect tools and equipment between fields and after each use.
- Clean hands, shoes, etc., between fields.
- Remove trees infected with vascular (e.g., *Xylella fastidiosa*) or soilborne pathogens (e.g., *Armillaria* spp.), when disease is first detected or limited in incidence in an orchard; in the latter situation, removal of large roots may also be beneficial.

- Avoid placing diseased plants or plant tissue in compost.
- Avoid pruning and harvesting when plants are wet.
- 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, antibiotics, 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]).
- 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, antibiotics, 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 fruits promptly.
- Practice proper handling and storage of harvested fruits.
- Remove overripe fruits from plants and properly discard.
- Remove and destroy fruit and, in some cases, leaf debris remaining in orchards.
- Avoid placing diseased plants or plant tissue in compost.

Throughout the Year

- Keep detailed disease and disease management records.
- Avoid injuring tree trunks and roots with lawn equipment (e.g., mowers, trimmers, etc.).
- Avoid practices that may cause soil compaction around trees.
- Clean and disinfest tools and equipment between fields and after each use.
- Clean hands, shoes, etc., between fields.

Pruning and Propagation

- Follow pruning recommendations for tree structure and shape.
- Remove and destroy broken or diseased branches.
- Remove and destroy (preferably) or flail-mow prunings in row middles; the latter helps speed up decomposition.
- 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 graft wood from disease-free trees that do not exhibit symptoms of disease; if cuttings are made during dormancy, monitor trees for disease symptoms during the previous growing season. Consider testing mother trees 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, antibiotics, 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]).

This work is partially supported by Crop Protection and Pest Management, Extension Implementation Program, award nos. 2021-70006-35580 and 2024-70006-43496 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author and do not necessarily reflect the view of the U.S. Department of Agriculture.

Publication 4037 (POD-09-24)

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Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. ANGUS L. CATCHOT JR., Director