Martin-Gatton
College of Agriculture,
Food and Environment
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Sanitation Practices for Backyard Fruit: Clean-up Today to Keep Plant Diseases Away

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What is plant disease?

- The damage done to a plant that is the result of a microscopic organism.
  - Fungi
  - Bacteria
  - Viruses
  - Nematodes
  - Phytoplasmas
  - Parasitic Plants

…aka Germs

Plant pathogens are like germs…

Infection before symptoms

Disease = Symptoms

Symptoms VS. Signs

- SYMPTOMS

- A plant's outward expression of infection by a plant pathogen

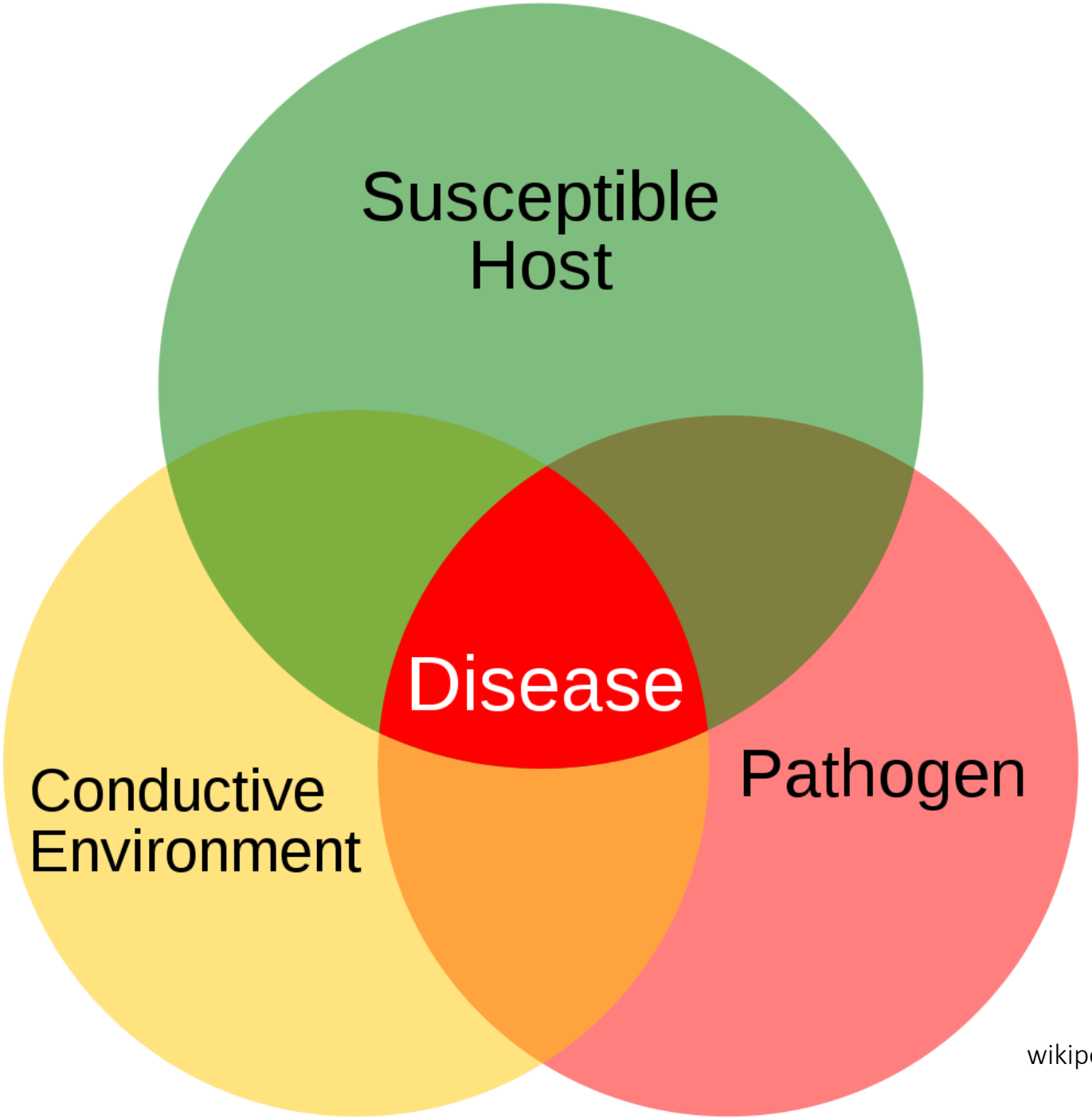
- Frequent symptoms:
  - Leaf spots
  - Blighting
  - Cankers
  - Wilting
  - Dieback
  - Death

- SIGNS

- The physical structures of a plant pathogen

- Frequent signs:
  - Fungal mycelia
  - Fungal fruiting structures
  - Bacterial ooze

Without the pathogen, there is no disease.



wikipedia.org

Where is the Pathogen?

Microscopic propagules are in

- Plant material
- Plant debris
- Soil
- Water


Nicole Gauthier, UKY

How do Pathogens Spread?

Wind

Water
- Irrigation
- Runoff
- Splash
- Hoses

Clothing

Soil
- Dirty surfaces
- Tools
- Shoes

Infected plants
- Sap
- Insect vectors
- Pruners

Sanitation is:

Practices that remove pathogen structures that may survive winter months and result in disease next season

Adam Leonberger, KY Extension

Sanitation is Critical for:

A Productive Growing Season

Conventional or Organic Production

Potted Plants or Plants in the Ground

Any Number of Plants

Penn State Department of Plant Pathology & Environmental Microbiology Archives , Penn State University, Bugwood.org

Sanitation: How-To Guide

Part 1:

Collect infected leaves

- Do not leave fallen leaves at the base of plants
- Burn, burry, or destroy
- DO NOT home compost

Sanitation: How-To Guide

Part 2:

Collect fallen or decaying fruit

- Do not leave fallen fruit at the base of plants
- Burry or destroy
- DO NOT home compost

Sanitation: How-To Guide

Part 3:

Remove infected woody tissues

- Ideally prune when trees are dormant
- Do not prune right before or after a rain event
- Make cuts 6-12 inches behind last visible symptom or at branch union
- Clean tools
- Do not leave pruned parts at the base of plants
- Burn, burry, or destroy
- DO NOT home compost

Sanitation:

Important for all stages of the growing season!

Before:

- Prune existing plants to remove dead, dying, diseased plant tissues
- Inspect and quarantine new plants prior to planting
- Manage weed species

During:

- Remove infected plants and plant parts
- Manage weed species
- Work with healthy plants first
- Clean tools after each use
- Limit movement from unhealthy to healthy areas

Benefits of Sanitation Practices

- Helps to reduce the amount of pathogen structures that can cause disease next year
- Allows plants to have a head start against diseases
- Improves effectiveness of other disease management strategies
- Chemical free option for disease management

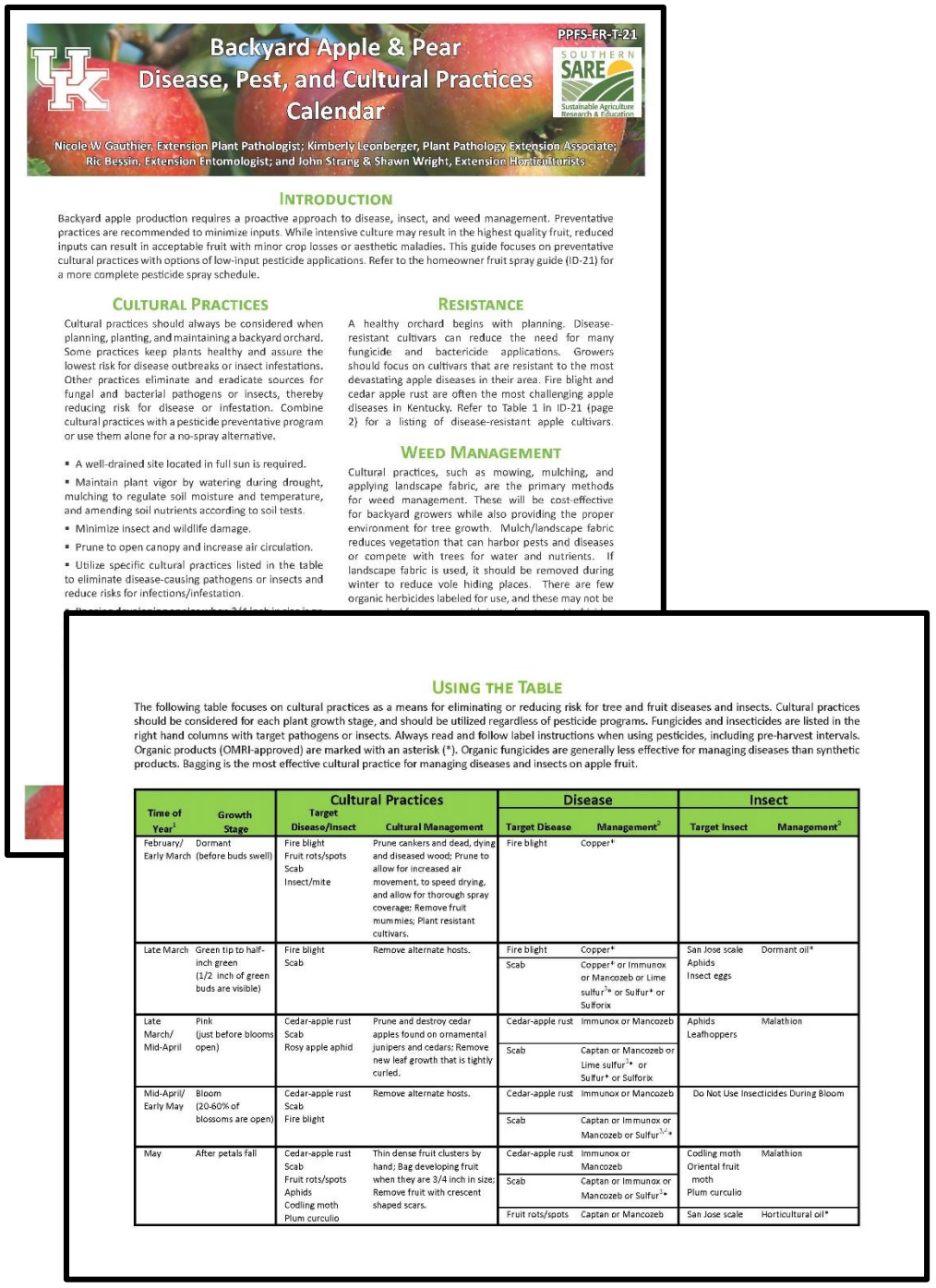
So Why Can’t We Just Spray to Manage Diseases?

- Need to know what disease you have to know what chemical to use
- Timing of applications is important
- Adequate application of product is difficult
- Small number of products available for homeowners
- Efficacy is often limited
- Unnecessary sprays may result in:
  - Additional chemicals in the environment
  - Development of resistance to chemical

Sanitation May Not Result in Disease Free Plants…..

So What Do You Do If You Think You Have A Disease Problem

- Contact your Cooperative County Extension Agent
  - Make a phone call
    - Be descriptive and honest about the issue
  - Send some pictures
    - Include close-up of symptoms, whole plant, and entire site images
  - Bring a sample
    - Make sure to bring the right part of the plant and enough of a sample
- University of Kentucky Plant Disease Diagnostic Laboratory
  - County agents submit samples
  - Form required for submission – the more information the better!
  - Send healthy and affected tissue



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Backyard Apple & Pear Disease, Pest, and Cultural Practices Calendar

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Introduction

Backyard apple production requires a proactive approach to disease, insect, and weed management. Preventative practices are recommended to minimize inputs. While intensive culture may result in the highest quality fruit, reduced inputs can result in acceptable fruit with minor crop losses or aesthetic maladies. This guide focuses on preventative cultural practices with options of low-input pesticide applications. Refer to the homeowner fruit spray guide (ID-21) for a more complete pesticide spray schedule.

Cultural Practices

Cultural practices should always be considered when planning, planting, and maintaining a backyard orchard. Some practices keep plants healthy and assure the lowest risk for disease outbreaks or insect infestations. Other practices eliminate and eradicate sources for fungal and bacterial pathogens or insects, thereby reducing risk for disease or infestation. Combine cultural practices with a pesticide preventative program or use them alone for a no-spray alternative.

- A well-drained site located in full sun is required.
- Maintain plant vigor by watering during drought, mulching to regulate soil moisture and temperature, and amending soil nutrients according to soil tests.
- Minimize insect and wildlife damage.
- Prune to open canopy and increase air circulation.
- Utilize specific cultural practices listed in the table to eliminate disease-causing pathogens or insects and reduce risks for infections/infestation.

Resistance

A healthy orchard begins with planning. Disease-resistant cultivars can reduce the need for many fungicide and bactericide applications. Growers should focus on cultivars that are resistant to the most devastating apple diseases in their area. Fire blight and cedar apple rust are often the most challenging apple diseases in Kentucky. Refer to Table 1 in ID-21 (page 2) for a listing of disease-resistant apple cultivars.

Weed Management

Cultural practices, such as mowing, mulching, and applying landscape fabric, are the primary methods for weed management. These will be cost-effective for backyard growers while also providing the proper environment for tree growth. Mulch/landscape fabric reduces vegetation that can harbor pests and diseases or compete with trees for water and nutrients. If landscape fabric is used, it should be removed during winter to reduce vole hiding places. There are few organic herbicides labeled for use, and these may not be

Using the Table

The following table focuses on cultural practices as a means for eliminating or reducing risk for tree and fruit diseases and insects. Cultural practices should be considered for each plant growth stage, and should be utilized regardless of pesticide programs. Fungicides and insecticides are listed in the right hand columns with target pathogens or insects. Always read and follow label instructions when using pesticides, including pre-harvest intervals. Organic products (OMRI-approved) are marked with an asterisk (*). Organic fungicides are generally less effective for managing diseases than synthetic products. Bagging is the most effective cultural practice for managing diseases and insects on apple fruit.

Time of Year[1]	Growth Stage	Cultural Practices: Target Disease/Insect	Cultural Practices: Cultural Management	Disease: Target Disease	Disease: Management[2]	Insect: Target Insect	Insect: Management[2]
February/ Early March	Dormant (before buds swell)	Fire blight Fruit rots/spots Scab Insect/mite	Prune cankers and dead, dying and diseased wood; Prune to allow for increased air movement, to speed drying, and allow for thorough spray coverage; Remove fruit mummies; Plant resistant cultivars.	Fire blight	Copper*		
Late March	Green tip to half-inch green (1/2 inch of green buds are visible)	Fire blight Scab	Remove alternate hosts.	Fire blight	Copper*	San Jose scale Aphids Insect eggs	Dormant oil*
				Scab	Copper* or Immunox or Mancozeb or Lime sulfur[3]* or Sulfur* or Sulforix		
Late March/ Mid-April	Pink (just before blooms open)	Cedar-apple rust Scab Rosy apple aphid	Prune and destroy cedar apples found on ornamental junipers and cedars; Remove new leaf growth that is tightly curled.	Cedar-apple rust	Immunox or Mancozeb	Aphids Leafhoppers	Malathion
				Scab	Captan or Mancozeb or Lime sulfur[3]* or Sulfur* or Sulforix		
Mid-April/ Early May	Bloom (20-60% of blossoms are open)	Cedar-apple rust Scab Fire blight	Remove alternate hosts.	Cedar-apple rust	Immunox or Mancozeb	Do Not Use Insecticides During Bloom	
				Scab	Captan or Immunox or Mancozeb or Sulfur[3]*		
May	After petals fall	Cedar-apple rust Scab Fruit rots/spots Aphids Codling moth Plum curculio	Thin dense fruit clusters by hand; Bag developing fruit when they are 3/4 inch in size; Remove fruit with crescent shaped scars.	Cedar-apple rust	Immunox or Mancozeb	Codling moth Oriental fruit moth Plum curculio	Malathion
				Scab	Captan or Immunox or Mancozeb or Sulfur[3]*		
				Fruit rots/spots	Captan or Mancozeb	San Jose scale	Horticultural oil*

Resources

County Extension Agents

Plant Pathology Extension Publications - https://plantpathology.ca.uky.edu/extension/publications

Kentucky Pest News - https://plantpathology.ca.uky.edu/extension/kpn

Google search common problems and rely on .edu sites

QUESTIONS?

CONNECT WITH US ON SOCIAL MEDIA

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