Backyard Apple Disease Management Using Cultural Practices

(with Low Spray, No Spray & Organic Options)

PPFS-FR-T-21

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Introduction

Backyard apple production requires a proactive approach to disease 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 fungicide 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. Other practices eliminate and eradicate sources for fungal and bacterial pathogens, thereby reducing risk for disease. Combine cultural practices with a fungicide 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 and reduce risks for infections.
- Bagging developing apples when 3/4 inch in size is an effective way of managing pests without spraying. Use the method outlined in EntFacts-218 (bagging apples); remove bags 3 weeks prior to harvest so fruit will color properly.

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.

Using the Table

The following table focuses on cultural practices as a means for eliminating or reducing risk for vine and fruit disease. Cultural practices should be considered for each plant growth stage, regardless of fungicide program; target diseases are listed for each practice. Fungicides are listed in the right-hand column; organic fungicides (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 on apple fruit.

Resources

- Plant Pathology Extension Publications
http://www2.ca.uky.edu/agcollege/plantpathology/extension/pubs.html
- Disease and Insect Control Program for Homegrown Fruit in Kentucky (ID-21)
http://www.ca.uky.edu/agc/pubs/id/id21/id21.pdf
- Bagging Apples: Alternative Pest Managnement for Hobbyists (EntFacts-218)
http://www.ca.uky.edu/entomology/entfacts/entfactpdf/ef218.pdf
- Fruit, Orchard, and Vineyard Sanitation (PPFS-FR-T-05)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-05.pdf
- Homeowner's Guide to Fungicides (PPFS-GEN-07)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-07.pdf

Time of Year[1]	Growth Stage	Target Disease	Cultural Management	Target Disease	Chemical Management[2]
February/ Early March	Dormant (before buds swell)	Fire blight Fruit rots/spots Scab	Prune cankers and dead, dying and diseased wood; Prune to allow for increased air movement and to speed drying; 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*
				Scab	Copper* or Immunox or Mancozeb or Lime sulfur[3]* or Sulfur*
Late March/ Mid-April	Pink (just before blooms open)	Cedar-apple rust Scab	Prune and destroy cedar apples found on ornamental junipers and cedars.	Cedar-apple rust	Immunox or Mancozeb
				Scab	Captan or Mancozeb or Lime sulfur[3]* or Sulfur*
Mid-April/ Early May	Bloom (20-60% of blossoms are open)	Cedar-apple rust Scab Fire blight	Remove alternate hosts.	Cedar-apple rust	Captan or Immunox or Mancozeb
				Scab	Captan or Immunox or Mancozeb or Sulfur[3,4]*
May	After petals fall	Cedar-apple rust Scab Fruit rots/spots	Thin dense fruit clusters by hand. Bag developing fruit when they are 3/4 inch in size.	Cedar-apple rust	Immunox or Mancozeb
				Scab	Captan or Immunox or Mancozeb or Sulfur[3]*
				Fruit rots/spots	Captan
June-July	Summer growth	Fruit rots/spots Scab	Remove any diseased or rotted fruit from trees or the ground; Irrigate and mulch, especially during dry seasons.	Fruit rots/spots	Captan
August - September	Late summer/fall growth	Fruit rots/spots Scab	Remove any diseased or rotted fruit from trees or the ground; Irrigate and mulch, especially during dry seasons.	Fruit rots/spots	Captan
October-November	After harvest	Scab Cedar apple rust Fruit rots/spots	Remove all fruit from tree and clean up all fallen fruit; Rake fallen leaves and destroy (do not compost); Remove cedar galls from juniper.		

[1] The growth stage indicated typically occurs during this time of year; however, this may vary from year to year depending on environmental conditions.

[2] Products noted with an * indicate those that may be used in organic production. For a list of products approved by Organic Materials Review Institute (OMRI) please see University of Kentucky publication *Homeowner's Guide to Fungicides* (PPFS-GEN-07).

[3] Either a liquid or wettable formulation is appropriate.

[4] Use of lime sulfur affects fruit by causing russetting; switch to sulfur (liquid or wettable formulation) for the remainder of growing season.

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