



Backyard Apple Disease & Pest Management Using Cultural Practices

(with Low Spray, No Spray & Organic Options)



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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.
- 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.

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 economical for growers with just a few trees. Herbicides that can be used include pelargonic acid (OMRI-approved contact herbicide) and glyphosate (a systemic herbicide); neither of these herbicides provide residual weed control. Herbicides, in combination with mulch during summer, will improve weed control beneath trees and help prevent mower damage to trunks. Herbicide applications should be made with low spray pressure to avoid drift and precautions should be taken to avoid contact with tree trunks, leaves, and fruit. Check labels for full use information and pre-harvest intervals.



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		Disease		Insect	
		Target Disease/Insect	Cultural Management	Target Disease	Management ²	Target 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 Scab	Copper* Copper* or Immunox or Mancozeb or Lime sulfur ^{3*} or Sulfur* or Sulfurix	San Jose scale Aphids Insect eggs	Dormant oil*
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 Scab	Immunox or Mancozeb Captan or Mancozeb or Lime sulfur ^{3*} or Sulfur* or Sulfurix	Aphids Leafhoppers	Malathion
Mid-April/ Early May	Bloom (20-60% of blossoms are open)	Cedar-apple rust Scab Fire blight	Remove alternate hosts.	Cedar-apple rust Scab	Immunox or Mancozeb Captan or Immunox or Mancozeb or Sulfur ^{3,4*}	Do Not Use Insecticides During Bloom	
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 Scab Fruit rots/spots	Immunox or Mancozeb Captan or Immunox or Mancozeb or Sulfur ^{3*} Captan or Mancozeb	Codling moth Oriental fruit moth Plum curculio	Malathion Horticultural oil*

Time of Year ¹	Growth Stage	Cultural Practices		Disease		Insect	
		Target Disease/Insect	Cultural Management	Target Disease	Management ²	Target Insect	Management ²
June-July	Summer growth	Fruit rots/spots	Remove any diseased or rotted fruit from trees or the ground; Irrigate and mulch, especially during dry seasons; Pick up and dispose of fallen fruit; Remove fruit with insect frass protruding.	Fruit rots/spots	Captan or Mancozeb	Codling moth	Alternate Malathion and Spinosad every 2 weeks
		Scab				Oriental fruit moth	
		Stink bug				Japanese beetle	
		Plum curculio				Mites	Insecticidal soap*
August - September	Late summer/fall growth	Fruit rots/spots Scab Codling moth Oriental fruit moth Plum curculio	Remove any diseased or rotted fruit from trees or the ground; Irrigate and mulch, especially during dry seasons; Dispose of fallen fruit; remove fruit with protruding insect frass; Remove fruit bags 2 weeks before harvest.	Fruit rots/spots	Captan or Mancozeb	Codling moth Oriental fruit moth Stink bug	Alternate Malathion and Spinosad every 2 weeks
October- November	After harvest	Scab Cedar apple rust Fruit rots/spots Codling moth Oriental fruit moth	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.



RESOURCES

- Entomology Extension Publications/Fruit Pests
<https://entomology.ca.uky.edu/fruit>
- Horticulture Extension Publications/Home Fruit
<http://www.uky.edu/hort/document-list-home-fruit>
- Plant Pathology Extension Publications
<http://www2.ca.uky.edu/agcollege/plantpathology/extension/pubs.html>
- Bagging Apples: Alternative Pest Management for Hobbyists (EntFacts-218)
<http://www.ca.uky.edu/entomology/entfacts/entfactpdf/ef218.pdf>
- Disease and Insect Control Program for Homegrown Fruit in Kentucky (ID-21)
<http://www.ca.uky.edu/agc/pubs/id/id21/id21.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

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