



FRUITS & VEGETABLES

Backyard orchard: apples and pears no. 2.800

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Quick Facts...

Wormy apples and pears are caused by the codling moth.

Spray apples and pears with Diazinon every 10 to 14 days during the summer to have worm-free fruit.

If apples or pears are damaged by hail, apply a spray of Agristrep, Agrimycin or a copper spray as soon as possible (within four to 18 hours) to help prevent fire blight.

Crown rot causes a dark brown discoloration just under the bark at the soil line.

Never spray insecticides when the tree is in bloom; they will kill the bees that pollinate the blossoms.

Introduction

Insect control on fruit trees should begin with prebloom sprays (dormant or delayed dormant) for scale insects, aphids and mites. Applications of a dormant Superior or Supreme type horticulture oil in combination with Diazinon or Thiodan will control these insects if applied any time during late winter or early spring, before buds open. Do not apply dormant oil if a heavy freeze is expected; damage to the tree could occur. Oil sprays must have ample time to dry before freezing weather in order to avoid injury; usually at least 10 to 12 hours is needed for this. Oil sprays speed up spring bud development and reduce flower bud ability to withstand cold temperatures. It is therefore best to delay dormant oil sprays until the buds are starting to break.

The amount of spray to apply should be based on the size of the tree (except when mentioned otherwise). A tree 20 feet in diameter and 20 feet tall needs 4 gallons of prepared spray; 3 gallons for a tree 15 feet by 15 feet; 2 gallons for a tree 10 feet by 10 feet; and one gallon of diluted spray for a tree 5 feet by 5 feet. A poorly pruned tree with dense foliage may need up to double these amounts to achieve good coverage of the tree interior.

Apples and Pears

For pears, apply a dormant spray to help control pear psylla (reported in western Colorado, Fremont County and the Fort Collins area). Spray trees with a mixture of water plus Superior oil and either Thiodan or Diazinon when pear psylla egg-laying first begins. This usually occurs the first to second week in March. In areas of Colorado where psylla is not reported, apply dormant oil plus Diazinon or Thiodan to control scale insects, aphids and mites.

Apples also should have a dormant spray of oil plus Diazinon or Thiodan applied to control mites, aphids and scales. Apples and pears need additional summer treatments of Diazinon, summer weight horticultural oil, or both, to control codling moth. Avoid using Sevin (carbaryl). This insecticide can thin fruit in early season and kill mite predators, which leads to mite buildups later in the season.

Late March: mites, scales, aphids and pear psylla

What: Scale insects, mites and aphids overwinter on apple and pear trees. Psylla will be present on pear trees as early as January. A spray applied in late March just after pruning will help control these pests. Spray apples and pears with a mixture of dormant oil plus Diazinon or Thiodan.

How: In each gallon of water mix 5 tablespoons Superior or Supreme oil and one of the following: 2 teaspoons 25 percent Diazinon liquid concentrate, 1 tablespoon Diazinon 50WP (wetttable powder), 1 tablespoon Thiodan 50WP, or 2 teaspoons Thiodan 3 E.C.

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Prebloom (before bloom): Powdery mildew on Jonathan, Rome, MacIntosh, Golden Delicious, Akane, Granny Smith, Yellow Transparent and Lodi apples.

What: Powdery mildew shows up as a grayish-white powdery coating on terminal shoots and leaves. Do not confuse this with the normal hairiness of twigs and leaves. Powdery mildew is mostly a problem on Jonathan, Rome, Akane, Granny Smith, Gala, Fuji, Braeburn and Yellow Transparent (Lodi) apples and does damage Golden Delicious. Red Delicious occasionally are attacked. Apply fungicide at petal fall and at two-week intervals through June or July. If powdery mildew is not controlled on highly susceptible varieties, there may be a poor bloom the following year. Flower buds are injured by the disease fungus and infected buds are killed by moderately cold winter temperatures (10 to 15 degrees below zero F.).

How: In each gallon of water, mix 2 to 4 tablespoons of wettable sulfur or 1 tablespoon of summer weight horticultural spray oil plus 1/2 teaspoon of Benlate 50WP (benomyl).

Note: Avoid the use of sulfur within two weeks of any oil spray (e.g. dormant oil) especially when temperatures above 80 degrees F are expected within several days after the sulfur application.

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Blossom period (fire blight)

Bartlett pear and Jonathan, Lodi, Rome, Gala, Fuji, Braeburn and Yellow Transparent apples are susceptible to fire blight infection. Delicious and Winesap apples and Moonglow, Magness, Harrow Delight, Harvest Queen, Potomac and Maxine (Starking Delicious) pears are resistant.

What: Potential fire blight infection periods are those of 18 hours or more in which the average hourly temperatures are 65 to 90 degrees F with rain or relative humidity above 65 percent. For areas prone to fire blight (Colorado's Front Range), apply protective sprays at three- to five-day intervals during bloom period.

How: Use 1 teaspoon streptomycin (Agrestrep or Agrimycin) per 1 gallon of water (= 100 ppm), or a 53 percent fixed copper sulfate at 1 teaspoon per gallon of water.

Petal fall (Powdery mildew on apples)

See discussion and control recommendations under "Prebloom."

Stop spraying Diazinon 10 days before picking apples (14 days on pears) to allow the pesticide residue to degrade.

Late spring and summer sprays (codling moth, powdery mildew, fire blight)

What: Spray with Diazinon, summer weight horticultural oil, or a combination of both to control codling moth (larvae cause wormy apples). Moths usually start flying at bloom time. Eggs laid by these moths begin to hatch about two weeks after petal fall, depending on the weather. Apply the first codling moth spray at this time to prevent larvae from entering the fruit. Diazinon residues last 10 to 14 days. Since moths are continuously present throughout the summer, apply a spray every 10 to 14 days to prevent later broods of codling moth larvae from entering apple and pear fruits.

Stop spraying Diazinon 10 days before picking apples (14 days on pears) to allow the pesticide residue to degrade. The wettable powder formulation is preferable where agitation of the spray mixture is possible; otherwise use Diazinon liquid and apply sprays during the evening when temperatures are cool (the carrier in liquid formulations can burn foliage on hot days).

The use of a high quality horticultural spray oil (summer weight) on a 10 to 14 day interval at 1.5 percent concentration (4 tablespoons per gallon of water) has been found to provide good control by itself of codling moth and mites on both apples and pears. Combining Diazinon with summer weight horticultural

oil at 1 percent concentration (3 tablespoons per gallon of water) will help control mites and can help the Diazinon be more effective in codling moth control.

If powdery mildew was noted earlier or if Romes, Jonathans or MacIntosh are in the orchard, spray at 10 to 14-day intervals with Benlate + oil, or flowable sulfur. Mildew sprays generally can be stopped by early July (although young, non-bearing mildew-susceptible varieties need protection until late July). Avoid sulfur products when daily temperatures exceed 80 degrees F. Do not spray Benlate within 30 days of harvest.

If apples or pears are damaged by hail, apply a spray of Agristrep, Agrimycin or a copper spray as soon as possible (within four to 18 hours) to help prevent fire blight. Do not use copper sprays on Golden Delicious or Anjou pears because russetting may occur. Streptomycin cannot be used within 30 days of harvest on pears or within 50 days of harvest on apples. Copper sprays can be used to the day of harvest, but can cause severe fruit russet if applied when fruit is present (especially on Anjou Pears).

Remove branches infected with fire blight as soon as possible in order to reduce the possibility for disease spread. Cut affected branches 6 inches below the lowest evidence of infection (sunken or reddened bark, ooze, etc.). Peel bark from the cut toward the branch tip for 6 inches or so and examine for evidence of red-brown discoloration of the cambium and bark. This is the true limit of the infection. If the cut was not below the infection limit, sterilize the pruning equipment by dipping in a 70 percent alcohol solution or spray with Lysol disinfectant spray and make a second cut 6 to 12 inches below the first cut. Repeat the examination process to be sure all the infected tissue is removed. Disinfect the cut and tools before moving to a different tree or branch. Allow the cut to air dry and do **not** seal with pruning paint.

Control sucking insects during the summer months to prevent shoot and/or fruit fire blight infections.

How: Use 1 tablespoon Diazinon 50WP or 2 teaspoons 25 percent liquid Diazinon in each gallon of water for codling moth control. Add 3 tablespoons of high quality summer weight oil in each gallon of spray for better codling moth and mite control (not on Golden Delicious). Alternatively, use 4 tablespoons of this oil in each gallon of water without the Diazinon for moderate control of codling moth and mites. For powdery mildew use rates of sulfur or Benlate as indicated under "Prebloom." For fire blight prevention use rates of streptomycin or copper as indicated under "Blossom period."

Fall treatment (Crown Rot)

What: Visible signs of crown rot infection include poor growth with reduced leaf size, prematurely bronzed or reddened leaves, small and brightly colored fruit, and a weak rooting structure. Crown rot causes a dark brown discoloration just under the bark at the soil line. The discoloration is described as similar to chocolate swirl ice cream because the dark diseased tissue is interspersed with swirls and stripes of living white or yellowish tissue. To check for discolored tissue, cut away bark at ground line with a sharp knife but be careful to avoid girdling the tree. Over-watering often is a major contributing factor for this disease and should be avoided. Drench the base of infected trees with copper sulfate after removing soil to expose and dry the diseased tissue. After treatment, replace the soil prior to winter to avoid additional damage due to winter injury.

How: Use 6 tablespoons of a 53 percent copper sulfate material per gallon of water. Spray infected trees from ground level to a height of 2 to 3 feet, thoroughly saturating the lower trunk and soil. Alternatively, apply a copper paint (1 pound of 53 percent copper sulfate + 1 gallon water + 1 tablespoon spray oil) to affected tree roots and trunks after they have been excavated and before the soil is replaced. This latter treatment should provide protection for several years if you can avoid over-watering.

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Visible signs of crown rot infection include poor growth with reduced leaf size, prematurely bronzed or reddened leaves, small and brightly colored fruit, and a weak rooting structure.

References

For additional information see 2.804, *Backyard orchard: stone fruits*; 2.907, *Fire blight*; 5.507, *Spider mites*; 5.519, *Apple and pear insects*; 5.560, *Pear slugs*; and 5.569, *Spray oils for insect and mite controls*.

For more recommendations see XCM-41, *Colorado Tree Fruits: Pest and Crop Management Guide*. All can be obtained from your Colorado State University Cooperative Extension county office or The Other Bookstore (Cooperative Extension Resource Center) at (970) 491-6198.

(Author's note: This fact sheet contains up-to-date information for homeowner control of insect and disease problems on tree fruits. Insect and disease controls have been combined in an easy-to-follow format. Recommended chemicals usually are readily available to homeowners. In some cases, the concentration of the product listed and what is available locally may differ. Always read the label directions. Labels often are updated yearly or more often. If there is a conflict between recommendations in this fact sheet and the product label, always follow the product label. Restricted use chemicals – for use by certified applicators only – are not included.)