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Healthy Garden Tips
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WINTER FUNGICIDE TREE SPRAYS

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Why is protection needed? Along the North Coast of California, the wet winter months favor fungus pathogens. Many pathogens attack a wide range of plant species, while others invade only a few host species. Most fungi are favored by prolonged wet weather with mild temperatures. Fruit tree species native to other parts of the world (such as pear, apple, peach, prune and apricot), are especially susceptible to our wet winter weather. Example diseases on fruit trees include branch and twig cankers, blights, leaf curl and fruit rots. As part of an on-going disease reduction program, local fruit trees benefit from annual fungicide treatments to protect against disease pathogens that attack tree branches, buds or new spring shoot growth.

Sanitation and orchard clean-up is equally important. Our forefathers discovered the importance of removing diseased plant parts as a regular fall clean-up process. Removing and destroying diseased plant parts reduces the level of fungus spores in the garden and discourages the spread of diseases. Diseased plant parts can generally be chopped and composted safely. Fungi are also discouraged by free air flow across plant parts, so thinning foliage in mid-summer also aids control. Regular pruning and removal of diseased plant parts are essential practices for home garden disease management.

How do fungicides work? For practical purposes, home garden fungicides are all protectants. That means they prevent fungus growth on plant surfaces, but they do not kill fungi already inside plant tissue. When fungicides have been applied to the plant surface, molecules of fungicide interfere with fungus spore growth and development, preventing disease symptoms. In that way fungicides 'protect' plants from fungus invasion. Some fungicides called 'systematic', penetrate plant tissue a very short distance although they do not move inside the vascular system. These types of fungicides may give better protection with poorer spray coverage; however, they do not move from one part of the plant to another and they still work as protectants. Also, some products claimed to be 'eradicants' work only on plant surfaces—they do not control fungus parts established in internal plant tissues. To prevent fungus development, fungicide deposits must be in place before fungi begin growing.

What should I use? Commonly available types of fungicides used on fruit trees are listed below.

Compound	Type	Use
basic copper sulfate	inorganic	controls scab, bacterial blight, anthracnose, leaf curl
Bordeaux mix	inorganic	Bordeaux is a slurry made of hydrated lime and copper sulfate, controls apple scab, cankers, blights, leaf curl and many other fungus diseases

copper oxychloride sulfate	inorganic	controls bacterial blight, powdery mildew, scab and others
copper sulfate	inorganic	suppresses development of fungi and bacteria
lime sulfur	inorganic	controls powdery mildew, scab, and other fungi
sulfur	inorganic	controls apple scab, powdery mildew and other fungi

When should I apply fungicide sprays to my fruit trees? Two applications are needed most years. Most effective for protecting against common local fungi is a fall application (November) followed by a second application as buds swell in February. In dry rainfall years, the second spray can be eliminated. In years with wet spring weather, a third spray may be required near bloom time. Consult product labels for specific treatment timing and application details. For the serious gardener, predictive computer models based on local weather conditions give accurate timing for common plant diseases. Consult: http://www.ipm.ucdavis.edu

What is the key to control using fungicides?

Here are the keys to success:

1) Clean out diseased parts before you treat.
2) Treat to protect.
3) Thorough coverage, thorough coverage, thorough coverage.
4) Use the treatment rate indicated on the product label. Most fungicide 'failures' result from incomplete spray coverage. It is better to use more spray volume than to increase the 'dosage'.

Additional Reading:

Safe and Effective Use of Pesticides, UC ANR Publication #3324, 2016
Integrated Pest Management for Apples and Pears, 2nd Ed., UC ANR Publication #3340, 1999
Integrated Pest Management of Stone Fruits, UC ANR Publication #3389, 2016