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Disease Control in the Home Fruit Planting

Paul C. Pecknold, Donald H. Scott and Walter R. Stevenson,
Extension Plant Pathologists

Properly cared for, your home fruit trees provide beauty in spring, shade during summer and fruit for your fall table. If care is lacking, diseases may appear which result in blighted blossoms, yellow leaves and scarce, moldy fruit. By following good cultural practices and the proper spray program, your fruit plantings can be kept relatively disease-free -- assuring yourself of beauty, shade and fresh fruit for the coming year.

Spraying Your Fruit Plantings

No single chemical will control all fruit diseases. Neither will one or two sprays applied at random. To achieve fresh, disease-free fruit, the proper chemical must be applied at the proper time in the prescribed amounts.

Good Cultural Practices -- A Prerequisite to Disease Control

Good cultural practices are essential for disease control. They must be done every year throughout the year. Good cultural practices are: (a) select the proper planting site; (b) use recommended resistant varieties; (c) provide properly balanced fertilization at the correct time, so as to favor the plant and not the disease; (d) space plants far enough apart to allow good air movement, thus permitting faster drying of leaves; (e) prune diseased plant parts which harbor disease-causing organisms; (f) maintain cleanliness in the home yard throughout the year.

A. Multipurpose Fruit Sprays (MPFS)

Commercial "general purpose" or multipurpose fungicide-insecticide preparations have greatly simplified disease and insect control for the amateur grower. These multipurpose sprays usually contain at least one fungicide and one insecticide.
Table 1. Spray chart for APPLES and PEARs*

<table>
<thead>
<tr>
<th>Time to spray</th>
<th>Material to use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed Dormant:</td>
<td>Superior oil</td>
<td>Use a &quot;Superior type&quot; oil (60 to 70 viscosity) to control scale insects on apples.</td>
</tr>
<tr>
<td>When tips of leaves start to protrude from buds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half-Inch Green:</td>
<td>benomyl or captan</td>
<td>For Apples Only: If rainy weather prevails apply additional sprays between this and pink spray.</td>
</tr>
<tr>
<td>When leaves show 1/2 inch of green tissue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pink Spray:</td>
<td>Multipurpose spray</td>
<td>May be omitted on pears. If cedar rust has been a problem, add zineb to multipurpose spray in this and next two sprays.</td>
</tr>
<tr>
<td>When first pink shows in opening blossoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bloom Spray:</td>
<td>Captan -- to protect bees, do not use insecticides during bloom</td>
<td>If fireblight has been a problem use streptomycin at manufacturer's direction.</td>
</tr>
<tr>
<td>When 50% of blossoms are open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petal Fall:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>When 75% of petals have fallen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Cover:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>7-10 days after petal fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Cover:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>7-10 days after first cover spray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Cover Sprays:</td>
<td>Multipurpose spray</td>
<td>Read container label for days between final spray and harvest.</td>
</tr>
<tr>
<td>Apply at 2-week intervals until 2 weeks of harvest</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For additional information on apple and pear diseases, consult the following publications: BP-3-2, Apple Scab Control in the Home Orchard; BP-3-3, Fireblight of Fruits and Ornamentals; BP-3-9, Summer Rots Diseases; BP-3-10, Botryosphaeria Disease on Apple.

The MPFS has the advantage of making it unnecessary for the home fruit grower to know what disease or insect he or she is controlling; the only requirement for control is to spray at the proper time. Multipurpose fruit sprays do not afford the high degree of control given by specific fungicides or insecticides. However, in small fruit plantings MPFS will give a fair degree of disease and insect control with minimal effort.

MPFS are available from most garden or farm supply stores, or you can buy the
Table 2. Spray chart for STONE FRUITS: PEACH, PLUM, CHERRY*

<table>
<thead>
<tr>
<th>Time to spray</th>
<th>Material to use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dormant:</td>
<td>Ferbam</td>
<td>Ferbam is for control of peach leaf curl -- only a pest on peaches. On</td>
</tr>
<tr>
<td>Before buds swell in</td>
<td></td>
<td>plums: If black knot is present prune out all knots and spray with lime-</td>
</tr>
<tr>
<td>spring (peaches only)</td>
<td></td>
<td>sulfur.</td>
</tr>
<tr>
<td>Prebloom:</td>
<td>Multipurpose spray</td>
<td>If rainy weather occurs during bloom, apply additional sprays of captan</td>
</tr>
<tr>
<td>When blossom buds</td>
<td></td>
<td>or benomyl.</td>
</tr>
<tr>
<td>show pink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petal Fall:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>When 75% of petals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>have fallen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shuck Fall:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>When most shucks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>have fallen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Cover:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>10 days after shuck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Cover Sprays:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>Apply at 2-week intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preharvest Sprays:</td>
<td>captan or benomyl</td>
<td>Read container label for days between final spray and harvest.</td>
</tr>
<tr>
<td>Apply 14, 7 and 2 days before harvest</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For additional information on stone fruit diseases, consult the following publications:
BP-3-4, Black Knot of Plum; BP 3-5, Peach and Plum Brown Rot; PB 3-6, Peach Leaf Curl;
BP-3-7, Cherry Leaf Spot; BP 3-8, Bacterial Spot of Peaches.

materials separately and mix them at home. IN EITHER CASE, READ THE LABELS ON CONTAINERS AND FOLLOW DIRECTIONS FOR USE. An effective and safe MPFS can be prepared as shown on the right.

B. Specific Fruit Sprays

Chemical spraying is the most widely used and effective means of protecting fruits from diseases. However, as with MPFS, each individual fungicide must be properly applied and timed. For the homeowner who wishes to use more effective chemicals for

HOME-MADE MULTIPURPOSE SPRAY

<table>
<thead>
<tr>
<th>Material*</th>
<th>1 gal.</th>
<th>5 gal.</th>
<th>25 gal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captan 50% WP plus</td>
<td>2 tbsp.</td>
<td>1 cup</td>
<td>3/4 lb.</td>
</tr>
<tr>
<td>Methoxychlor 50% WP plus</td>
<td>2 tbsp.</td>
<td>1 cup</td>
<td>3/4 lb.</td>
</tr>
<tr>
<td>Malathion 25% WP</td>
<td>2 tbsp.</td>
<td>3/4 cup</td>
<td>1/2 lb.</td>
</tr>
</tbody>
</table>

* WP = Wetable Powder.
** Use level measurements.
### Table 3. Spray chart for STRAWBERRIES*

<table>
<thead>
<tr>
<th>Time to spray</th>
<th>Material to use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>When first blossom buds</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>appear in spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Every 10 days until first</td>
<td>Multipurpose spray</td>
<td>Read the Label! Do not apply</td>
</tr>
<tr>
<td>blooms start to open</td>
<td></td>
<td>insecticide after bloom. Repeat captain or benomyl sprays as</td>
</tr>
<tr>
<td>Every 10 days to harvest</td>
<td>Captain or benomyl</td>
<td>needed, even between pick-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ings.</td>
</tr>
<tr>
<td>Post-harvest</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
</tbody>
</table>

For additional information on strawberry diseases, consult the following publications:
BP-4-3, Strawberry Leaf Spot; BP-4-4, Strawberry Root Rot; BP-4-5, Strawberry Harvest Rot.

Specific disease problems, the following fungicides have been shown effective.

**REMEMBER: READ THE CONTAINER LABEL FULLY AND FOLLOW ALL DIRECTIONS AND PRECAUTIONS.**

1. **Benomyl** (sold as Benlate 50% WP): Very effective against apple scab.

In addition to use on apples and pears benomyl is labeled for use on peaches, nectarines, apricots, cherries, prunes, and plums for the control of blossom blight brown rot, fruit brown rot, peach scab, powdery mildew, cherry leaf spot, and post-harvest fruit rots. It may also be used for control of diseases on caneberrties, grapes, and strawberries; refer to label for specific diseases and rates of use.

2. **Captan** (sold as Orthocide 50W, Captain 50W, etc.): An effective and reliable fungicide, especially favored for use on russet-susceptible apple varieties. Good against apple scab and summer leaf and fruit spotting diseases. Also good for brown rot control of stone fruits, strawberry leafspots, raspberry anthracnose, grape black rot and grape downy mildew.

3. **Dikar** (sold as Dikar): A good fungicide to use for apple diseases in general. Controls most major apple diseases including apple scab, powdery mildew, rust, apple rots and spots.

4. **Dodine** (sold as Cyprex 65W): Effective against apple scab and cherry leaf spot.

5. **Ferbam** (sold as Fermate, Karbam, etc.): Effective against cedar apple rust, quince rust, grape black rot, raspberry anthracnose and peach leaf curl.

6. **Folpet** (sold as Ortho Phaltan 50W, Stauffer Phaltan 75W, etc.): Especially good against grape diseases. It is one of the few fungicides that controls both downy and powdery mildew and black rot of grapes.

7. **Karathane** (sold as Karathane WD, Mildex, etc.): Specific against powdery mildew diseases of fruit crops.

8. **Mancozeb** (sold as Dithane M-45, Manzate 200, etc.): For control of apple scab, rust diseases and summer apple fruit rots.
Table 4. Spray chart for RASPERRIES*

<table>
<thead>
<tr>
<th>Time to spray</th>
<th>Material to use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed-Dormant:</td>
<td>Liquid lime sulfur (2 cups per gallon of water)</td>
<td>Very important spray for controlling Anthracnose.</td>
</tr>
<tr>
<td>When tips of buds show</td>
<td></td>
<td></td>
</tr>
<tr>
<td>green.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prebloom Spray:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>Apply one week before bloom.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postbloom Spray:</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>Apply immediately after bloom.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postharvest Spray:</td>
<td>Multipurpose spray</td>
<td>Removal of old canes is essential to prevent disease spread.</td>
</tr>
<tr>
<td>After harvest is completed and old canes removed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For additional information on raspberry diseases, consult BP-4-1, Raspberry Anthracnose.

9. Thiram (sold as Thylate, Arasan 75, etc.): For control of apple scab, cedar apple rust, strawberry leaf spot and strawberry fruit rots.

10. Zineb (sold as Dithane Z-78, Parzate 'C', Ortho Zineb 75W, Stauffer Zineb, etc.): Use in combination with captan for control of summer apple fruit rots, frog-eye leaf spot, cedar rust, and sooty blotch.

Steps to Follow for Safe and Effective Spraying

1. **READ THE CONTAINER LABEL FULLY AND FOLLOW ALL DIRECTIONS AND PRECAUTIONS.**

   Never use or store unlabeled chemicals. Always store chemicals in a suitable cabinet not accessible to children or pets. Always store in original container with label clearly visible.

2. Follow a complete spray program. One or two sprays in the spring will not be adequate in most years. Sprays must be applied at specific intervals according to disease and plant development. Additional sprays will be needed during prolonged wet periods.

3. Prune during the dormant months to make the spray job easier. Old apple trees should be cut back to 20 feet or lower if possible. Young trees should be trained to reach a height no more than 18 feet. Remove and destroy neglected or worthless trees.

4. Collect and destroy rotten fruits on the ground. Also remove dead twigs, branches, or canes and rake infected leaves in the fall.

5. Control weeds since they frequently harbor viruses which attack strawberries and raspberries.

6. For the home fruit grower who has a sufficiently large planting, small power sprayers are needed to do an efficient job. For the small fruit planting, hand operated or compressed air sprayers may be used.

7. After each spray application, empty
Table 5. Spray chart for GRAPES*

<table>
<thead>
<tr>
<th>Time to Spray</th>
<th>Material to use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>When new shoots are 2-4 inches long</td>
<td>Multipurpose spray</td>
<td>If black rot has been a problem, add Ferbam to multipurpose spray in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>this and next two sprays,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When new shoots are 8-10 inches long</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Just before blossoms open</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>Just after blossoms have fallen</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>When grapes are size of small peas</td>
<td>Multipurpose spray</td>
<td></td>
</tr>
<tr>
<td>Apply additional sprays if problems occur</td>
<td>Multipurpose spray</td>
<td>Read container label for days between final spray and harvest.</td>
</tr>
</tbody>
</table>

* For additional information on grape diseases, consult BP-4-2, Diseases of Grapes.

and rinse out the sprayer promptly and thoroughly with clean water. Do not discharge chemicals into sinks, drains, sewers, etc. in the same sprayers used for fungicides.

9. If all else fails, fruit trees make excellent firewood.

8. Do not use weed killers (herbicides)

***

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