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SPRAYING HOME FRUIT PLANTINGS

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These programs are designed for families who are growing fruit for home use. They are easier to use than the programs suggested for commercial growers. The schedules given here, if carefully used on insects and diseases against which sprays are effective, usually will give good enough control to produce a quality of fruit acceptable for home use.

APPLY THOROUGHLY

The sprays must thoroughly cover the plants at the correct times if satisfactory pest control is to be obtained. Spray until dripping begins or at least until the material has collected in large drops and is just ready to run off. Sprays for the control of diseases are generally more effective when applied before rather than after rains. Wet weather favors the development of diseases, and in rainy seasons spraying at shorter intervals than given in the following schedules may be well worthwhile.

SPRAY MATERIALS

In a number of instances several materials are listed in the spray schedules in order that the grower may choose the sprays that are locally available.

The materials suggested are as follows:

Insecticides (for Insect Control)

1. Lead arsenate.
2. DDT (use the 50 per cent wettable powder prepared for spraying fruits and vegetables.)
3. Benzene hexachloride (BHC) 50 per cent wettable powder of 5 or 6% gamma content.
4. Rotenone or pyrethrum—either the preparations for dusting or the preparations for making liquid sprays may be used. These materials are commonly used on flowers and vegetables.

5. Miscible oil—this type of spray oil stores, keeps and mixes well and is suggested in preference to oil emulsion stocks for use in spraying home fruit plantings. Some miscible oils are Dendrol, Scalecide, Dormasol and Sunoco.
6. Liquid lime sulfur—as an insecticide it is used only as a dormant spray for the control of San Jose scale. Miscible oil is preferred for this purpose.

Fungicides (for Disease Control)

1. Liquid lime sulfur and dry lime sulfur.—Dry lime sulfur is the more easily obtained and the more convenient to handle. They are about equally effective in disease control when used as suggested.
2. Microfine wettable sulfur powders—these are the “micro” type of sulfurs with most of the particles 5 microns or less in size. They are suitable for all purposes where a sulfur is to be used. Some of the more finely divided sulfurs are Mike, Sulforon X, Flotox, Micronized, Micro-Dritomic, Mulsoid and others.

NOTE: It is recommended that coarser sulfurs than the above be used on peaches only. Some of the sulfur powders on the market are of the coarser type.

3. Fermate—a relatively new organic fungicide—comes as a black powder.

MEASURING THE MATERIALS

For mixing small quantities of spray, use standard household measuring spoons and cups sold at ten-cent stores. Do not use tableware or utensils which will be used in preparing food. All the measures given here are in *level* spoonfuls and cupfuls. The bulkiness varies some with different brands but the measures given here usually will approximate the correct amounts by weight.

SPRAY SCHEDULES

Spraying Raspberries, Dewberries and Boysenberries

This should be a regular practice with these fruits to control anthracnose and scale if scale is present.

1. When the buds break in the spring (as the green leaf tips appear)

Liquid lime sulfur (preferred) 1 pt. (2 cups) in 1 gal.—
5 pts. in 5 gals—6½ gals. in 50 gals.

or Dry lime sulfur—1½ cups in 1 gal.—6 cups in 5 gals.—20 lbs. in 50 gals.

2. When the first new shoots at the bases of the plants are 2 to 4 inches above ground level.

Fermate (preferred) 2 tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.—1 lb. in 50 gals.

First wet the Fermate with a small amount of water and stir until reduced to a smooth paste before adding to the full amount of water. Small quantities of Fermate may be shaken in a bottle or jar with a small amount of water until it is completely wetted before adding to the remainder of the water.

or Dry lime sulfur 5 tablespoons in 1 gal.—1 cup in 5 gals.—4 lbs. in 50 gals.

or Liquid lime sulfur $\frac{1}{3}$ cup in 1 gal.— $1\frac{2}{3}$ cups in 5 gals.—1 gal. in 50 gals.

Fermate is the preferred material. It is less likely to burn the leaves than the lime sulfurs, Bordeaux, or other copper sprays. Avoid spraying with lime sulfur in warm "muggy" weather. With day temperatures of 85°F or higher, spray in the cool of the morning or evening.

Fermate appears to be safe under all weather conditions.

3. Continue spraying about every 10 days until blooming begins, using the same materials as in the second spray.

Gooseberries and Currants

Usually the most destructive pest of these fruits is the currant worm. Watch the interior of the bushes where the insects begin feeding. Generally one application of a commercial rotenone (derris) or pyrethrum spray or dust, as soon as the insects are noticed, will control them. Use the materials according to the directions on the package for treating fruits and vegetables. If these materials are not available a nicotine spray or dust may be applied. Use 1 to 2 teaspoonfuls of nicotine sulfate such as "Black Leaf 40" to 1 gallon of water or 4 to 5 tablespoonfuls of nicotine sulfate to 10 gallons of water. When nicotine sulfate is not used with other spray materials its value is enhanced by dissolving in the water a piece of soap about the size of a 1 inch cube for 1 gal. of spray and about $\frac{1}{2}$ cupful of soap for 10 gals. of spray. Do not apply nicotine sulfate sprays or dusts within 2 weeks of the time the fruit is to be harvested. If scale should be present (currants are very susceptible to scale) apply in the spring before growth begins any of the materials at the same dilutions recommended for the dormant spraying of apples.

Grapes

1. When shoots are 8-12 inches long or when flower buds are well separated in the cluster.
 Fermate—2 tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.—1 lb. in 50 gals. (for method of mixing see under raspberries) in combination with
 Lead arsenate—2 $\frac{1}{2}$ tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.—1 $\frac{1}{2}$ lbs. in 50 gals.
2. As blooming begins.
 Same as No. 1 spray.
3. As soon as blooming is over or 10 to 14 days after No. 2 spray.
 Same as No. 1 spray.
4. About 2 weeks after No. 3 spray.
 Fermate—2 tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.—1 lb. in 50 gals.
 in combination with either:
 DDT (50% wettable powder)—4 teaspoons in 1 gal.—7 tablespoons in 5 gals. 1 lb. in 50 gals.
or Lead arsenate—2 $\frac{1}{2}$ tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.—1 $\frac{1}{2}$ lbs. in 50 gals.

Peaches, Plums, Apricots

1. Dormant Sprays

On peaches two pests are troublesome, San Jose scale and leaf curl. If dry lime sulfur is to be used for the control of leaf curl apply it in the fall shortly after the leaves have fallen and follow it with a spray in the spring just before or as the buds swell of miscible oil. Use dry lime sulfur at the rate of 1 cup in 1 gal.—4 cups in 5 gals.—15 lbs. in 50 gals. Use miscible oil at the rate $\frac{1}{2}$ cup in 1 gal.—2 $\frac{1}{2}$ cups in 5 gals.—1 $\frac{1}{2}$ gals. in 50 gals. *or* Liquid lime sulfur may be used in the place of both dry lime sulfur and miscible oil to control both scale and leaf curl. Use at the rate of 2 cups in 1 gal.—10 cups in 5 gals.—6 $\frac{1}{2}$ gals. in 50 gals. and apply in the spring shortly before growth starts.

A curl spray is not needed on plums and apricots. Use either miscible oil or liquid lime sulfur in the spring shortly before growth begins. For miscible oil use $\frac{1}{2}$ cup in 1 gal.—2 $\frac{1}{2}$ cups in 5 gals.—1 $\frac{1}{2}$ gals. in 50 gals. For liquid lime sulfur use 2 cups in 1 gal.—10 cups in 5 gals.—6 $\frac{1}{2}$ gals. in 50 gals.

2. When most of the petals have fallen (peaches, plums and apricots are sprayed alike from here on).

Benzene hexachloride (BHC) at 4 teaspoons in 1 gal.—
7 tablespoons in 5 gals.—1 lb. in 50 gals.

in combination with

Microfine sulfur 8 teaspoons in 1 gal.—1 cup in 5 gals.—
2 lbs. in 50 gals.

3. About 8 to 10 days after petal fall spray.

Same as No. 2 spray.

4. About 8 to 10 days after No. 3 spray.

Same as No. 2 spray.

5. About 8 to 10 days after No. 4 spray.

Same as No. 2 spray.

The No. 5 spray may be omitted where worms have not been serious.

6. One month before expected harvest (do not use BHC at this time or later). From this time until the fruit ripens is when the fruit is most susceptible to attack by brown rot.

Use microfine sulfur at 8 teaspoons in 1 gal.—1 cup in 5 gals.—
—2 lbs. in 50 gals. If rains occur repeat about 2 weeks before ripening time and again as the fruit ripens.

NOTE: Lead arsenate at $2\frac{1}{2}$ tablespoons in 1 gal., $\frac{1}{2}$ cup in 5 gals., or $1\frac{1}{2}$ lbs. in 50 gals. may be used in the place of BHC, but it is important that a safener be added to reduce the risk of severe arsenical injury. Do not use lead arsenate within one month of harvest.

Safener:

Zinc sulfate—2 tablespoons in 1 gal.— $\frac{3}{4}$ cup in 5 gals.—
2 lbs. in 50 gals.

Fresh hydrated lime 4 tablespoons in 1 gal.— $1\frac{1}{2}$ cups in 5
gals.—2 lbs. in 50 gals.

First dissolve the zinc sulfate in a small amount of water, then add enough water to bring to about $\frac{1}{2}$ the total amount to be used. Next mix the lime in a small amount of water and pour it into the diluted zinc sulfate solution, stirring while adding. Mix the lead arsenate in water and add it next and lastly the sulfur. Then add enough water to bring to the volume of spray to be made.

Sour Cherries

The copper sprays are more effective in controlling cherry leaf spot than the sulfurs and Fermate. They may be used at the manu-

facturer's recommendation but either sulfur or Fermate usually will be found to be more convenient for the home producer.

1. Before or just as the buds swell. Once every 2 or 3 years is usually sufficient to control scale on cherries.
 Miscible oil at $\frac{1}{2}$ cup in 1 gal.— $2\frac{1}{2}$ cups in 5 gals.— $1\frac{1}{2}$ gals. in 50 gals.
or Liquid lime sulfur at 2 cups in 1 gal.—10 cups in 5 gals.— $6\frac{1}{2}$ gals. in 50 gals.
2. When most of the petals have fallen.
 Lead arsenate— $2\frac{1}{2}$ tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.— $1\frac{1}{2}$ lbs. in 50 gals.
 with either
 Fermate—2 tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.—1 lb. in 50 gals.
or Microfine sulfur $4\frac{1}{2}$ tablespoons in 1 gal.— $1\frac{1}{2}$ cups in 5 gals.—4 lbs. in 50 gals.
or Dry lime sulfur 5 tablespoons in 1 gal.— $1\frac{1}{2}$ cups in 5 gals.—4 lbs. in 50 gals.
3. About 10 days after petal fall.
 Same as No. 2 spray.
4. At about 10-day intervals until the fruit begins to color. (Do not use lead arsenate).
 Fermate—2 tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gal.—1 lb. in 50 gals.
or Microfine sulfur $4\frac{1}{2}$ tablespoons in 1 gal.— $1\frac{1}{2}$ cups in 5 gals.—4 lbs. in 50 gals.
or Dry lime sulfur 5 tablespoons in 1 gal.— $1\frac{1}{2}$ cups in 5 gals.—4 lbs. in 50 gals.
5. As soon as fruit has been picked.
 Same as No. 4 spray.
 If rains occur repeat in 3 or 4 weeks with Fermate or microfine sulfur at above dosage. Do not apply but one after harvest spray of dry lime sulfur.

Apples and Pears

1. Dormant to late dormant (just as the tips of the buds show green)
 Miscible oil (preferred)— $\frac{1}{2}$ cup in 1 gal.— $2\frac{1}{2}$ cups in 5 gals.— $1\frac{1}{2}$ gals. in 50 gals.
or Liquid lime sulfur 2 cups in 1 gal.—10 cups in 5 gals.— $6\frac{1}{2}$ gals. in 50 gals.
2. When most of blossom buds are showing pink.
 Lead arsenate— $2\frac{1}{2}$ tablespoons in 1 gal.— $\frac{1}{2}$ cup in 5 gals.—

1½ lbs. in 50 gals.

with either

Dry lime sulfur—6 tablespoons in 1 gal.—1½ cups in 5 gals.

—4½ lbs. in 50 gals.

or Liquid lime sulfur—½ cup in 1 gal.—2 cups in 5 gals.—1½ gals. in 50 gals.

3. When most of the petals have fallen.

Same as No. 2 spray.

4. About 2 weeks after petals have fallen.

Lead arsenate—2½ tablespoons in 1 gal.—½ cup in 5 gals.

—1½ lbs. in 50 gals.

with either

Microfine wettable sulfur—4½ tablespoons in 1 gal.—1½ cups in 5 gals.—4 lbs. in 50 gals.

or Fermate 2 tablespoons in 1 gal.—½ cup in 5 gals.—1 lb. in 50 gals.

or Dry lime sulfur—5 tablespoons in 1 gal.—1½ cups in 5 gals.—4 lbs. in 50 gals. (may cause some injury)

5. About 2 weeks after No. 4 spray.

Lead arsenate—3 tablespoons in 1 gal.—¾ cup in 5 gals.—2 lbs. in 50 gals.

If weather has been rainy since the last spray add Fermate to the lead arsenate at the same rate as in the No. 4 spray or wettable sulfur at one-half the dosage in the No. 4 spray.

6. Where worms have been troublesome on varieties ripening in September and October apply another spray the first week in July.

Lead arsenate—2½ tablespoons in 1 gal.—½ cup in 5 gals.—1½ lbs. in 50 gals.

Where worms have been serious repeat the No. 6 spray the latter part of July or early in August.