

SPRAYING HOME FRUIT

Fruit and fruit trees are subject to attack by a number of insects, mites, and diseases. But you can produce fruit that is relatively free of disease and insects if you follow a good spray program. Fruit and foliage should be protected with pesticides throughout the growing season. Some commercially prepared pesticides are suitable as all-purpose sprays, and can be applied to nearly all fruit. Occasionally, special spray material is needed.

All-Purpose Spray

The mixture presented below has proved satisfactory as an all-purpose spray. If mixed and applied correctly, this material can be used on many different fruits. It is necessary to begin spraying early in the growing season for effective insect and disease control. A thorough application is a must--there are no short cuts.

Materials	AMOUNT USED FOR			
	1 gallon	10 gallons	25 gallons	100 gallons
*Methoxychlor-50% wettable powder PLUS Malathion-25% wettable powder PLUS Captan (50% wettable powder) or Ferbam (76% wettable powder)	2 tbsp.	3.2 oz.	8 oz.	2 lb.
	3 tbsp.	4.8 oz.	12 oz.	3 lb.
	2 tbsp.	3.2 oz.	8 oz.	2 lb.
	1.5 tbsp.	2.2 oz.	6 oz.	1.5 lb.

* In early June, change to carbaryl (Sevin) for Japanese beetle control.

Use the correct number of tablespoonfuls or weight of each chemical to correspond with the number of gallons of spray mixed for each application. Spray the plants thoroughly, making an effort to wet the fruit, changing to carbaryl (Sevin) for Japanese beetle control, mites may become a problem. If this occurs, a special spray of dicofol (Kelthane) or other miticide may be needed. Use as directed on the label. These combinations of materials will control most insects and diseases in home plantings. You can use them on fruits, ornamentals, shrubs, flowers, vines, and small trees. If they do not give satisfactory results, ask your Extension Agent for more information. (See Note, page 4)

Dormant Spray Note: Scale insects are often present on trees that have not been sprayed. Spraying in the dormant period is the best time to control scales and red mite eggs. Apply 2% superior oil spray just as the

SPRAY CHART

The chart bases the timing of applications on the development of apple trees since apples require the largest number of sprays. Do not spray under poor drying conditions or when temperatures are expected to go below 35F or above 85F. Injury to foliage may be severe.

SPRAY AT TIMES INDICATED BY FILLED-IN SQUARES UNDER EACH FRUIT.

Apple Tree Development	Usual Dates	Apple	Peach and Nectarine	Pear	Plum and Cherry	Grape	Raspberry	Strawberry	Remarks
Buds dormant	March 1-15	Dormant	Dormant						Use dormant spray for leaf curl on PEACH, NECTARINE. Use ferbam ^{**} , 2 tbsps./gal. SEE DORMANT SPRAY NOTE.
Buds tight in cluster	April 4-12	Pre-pink	Bloom	Buds starting to open				New leaves and buds.	Apply early sprays before rain or long wet period is predicted. Very important sprays for scab-susceptible varieties of apples such as, Staymen and Delicious. Also an important spray on peach, plum and nectarine to prevent blossom blight. Use captan on peaches and nectarines. Do not use captan on D'anjou pears.
Buds separated in cluster	April 7-22	Pink	Petal-fall				Buds breaking	One-third blossoms open.	Avoid full bloom sprays unless needed to control cedar rust on apples or brown rot on peaches. Using ferbam with captan gives better rust control than captan alone. Using captan with malathion may cause foliage injury on certain varieties of plants under poor drying conditions.***
Bloom varies with variety	April 12 May 5	Bloom	Shucks splitting	Petal-fall	Petal-fall	Pre-bloom 3 leaves		Use no insecticide after fruit is formed.	
90% Petal-fall	April 20	Petal-fall	Shucks falling	Fruit 1/2"	Shucks splitting	Pre-bloom 5-8 leaves	New shoots 4" to 6"		See nectarine remarks above. Most important to control curculio. Folpet (phaltan) is the preferred fungicide for grape and raspberry.
10 days after petal-fall	April 30	First cover	Shucks off	Fruit 1/2"	Shucks falling	Post-bloom		Use captan for mold as needed.	If mildew is a problem, add wettable sulfur (6 tbsps.) Zineb when used as directed on label, may be used on all fruits plum, peach, and nectarine have a 30 to 40 day waiting period.
3 weeks after petal-fall	May 21 June 10	Second cover	Fruit 1/2"		Fruit 1/2"	Fruit growing	Pre-bloom	As above	
2 weeks after last spray	June 10 June 24	Third cover	Fruit growing	Fruit growing	Fruit	Fruit growing			Last spray before harvest on cherries and early maturing varieties of peaches. Change to carbaryl (Sevin) for Japanese beetle control. Use dicofol (Kelthane) if mites are a problem. Do not repeat dicofol spray on cherry and plum within 30 days.
Same as above	June 24 July 8	Fourth cover							Important for control of psylla on pears and peach fruit worm. Special spray for peach tree borer control on stone fruits only.† Use 1 1/2 tbsps./gal. endosulfan (Thiodan) spray. Apply only to trunk from ground level to 2' above, thoroughly wet trunk and surrounding soil. Keep off fruit. Do not use within 30 days of harvest. Apply not more than twice in one fruiting season, extremely toxic.
Same as above	July 8	Fifth cover	Fruit growing		Fruit growing	Fruit growing	Post harvest	Post harvest	Important for Japanese beetle control on all fruits, and for worm control on apples and peaches. Last sprays on fruits to be harvested in August.
*During harvest if needed.	July 22 Sept. 15	Sixth cover		Fruit growing		Fruit growing	During harvest if needed.	During harvest if needed.	
Minimum sprays required for satisfactory results.		8-9	8-9	4-6	4-6	5-7	3-5	4-7	Spray only fruits to be harvested in September and October. Continue to spray for Japanese beetles if needed. Raspberries and strawberries should be sprayed after harvest (August 1) to protect growth for next year's crop. Repeat special peach tree borer spray in late August.

* Captan can be used during harvest for rot control on all fruits listed above.

** Ferbam should not be used on nectarines later than full bloom.

***Do not spray with captan and malathion late in afternoon.

+ Except plumes.

buds begin to break in the spring, when the temperature is not likely to go below freezing before the spray dies. Ferbam can be added to the oil spray for peach leaf curl control. Do not use lime sulfur with oil.

Precautions

Pesticides, as a whole, are relatively safe when used as recommended, but they can become dangerous in the hands of a careless or inexperienced person. Read the label and instructions on all pesticides before the containers are opened. Do not breathe pesticide powders while opening containers or placing the materials in the spray tank. To avoid having the spray or dust blown onto you, always apply pesticides "with the wind." Never leave pesticides or spray materials unattended because children or pets may become injured. Always wash exposed skin surfaces and change clothes after spraying.

Comments and Suggestions

Timing. Proper timing and thorough application of sprays are essential for quality fruit production. Make certain that the spray reaches all parts of the tree. If coverage is not uniform, it may be necessary to adjust or change the sprayer nozzle.

Pruning. Spray coverage can be improved through good pruning practices. Trees should be "opened up" to allow spray and sunlight penetration. Prune out all dead and decaying branches, because such wood may harbor insects and diseases. Keep the height of the tree low to enable good spray coverage.

Varieties. It is almost impossible to produce high quality fruit in the home orchard on old large trees because spray pressure is inadequate to force the pesticides to the top of such trees. Therefore, old trees should be replaced with swarf or semidwarf trees that are allowed to obtain a height of no more than 12 to 15 feet.

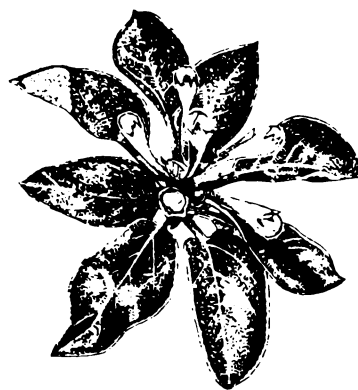
STAGES IN APPLE BLOSSOM DEVELOPMENT



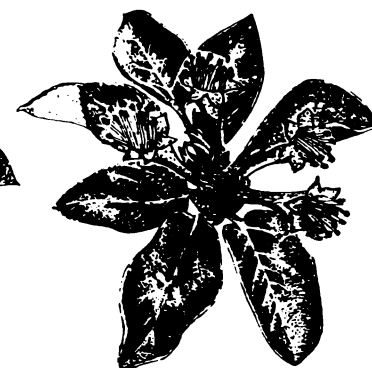
Dormant



Tight cluster



Separated
cluster



90%
Petal fall

Wm. H Robinson, Extension Specialist, Entomology
C. R. Drake, Extension Specialist, Plant Pathology

Waiting Period in Days Before Harvest After Application

CHEMICAL	Apple	Pear	Peach	Nectarine	Plum	Cherry	Grape	Raspberry	Strawberry
Methoxychlor	7	7	21	21	7	7	14	14	14
Malathion	3	1	7	7	3	3	3	1	3
Carbaryl (Sevin)	1	1	1	3	1	1	0	7	1
Ferbam	7	7	21	*	7	0	7	40	14
Zineb	15	7	30	40	30	7	7	14	7
Captan	0	0	1	0	0	0	0	0	0
Folpet (Phaltan)	0	----- not cleared -----				0	0	0	0
Dicofol (Kelthane)	7	7	14	14	7	7	7	2	2
Endosulfan (Thiodan)	----		30	30		21	---	not cleared	----

* Apply no later than immediately after bloom.

Residue Tolerance in Parts Per Million

CHEMICAL	Apple	Pear	Peach	Nectarine	Plum	Cherry	Grape	Raspberry	Strawberry
Methoxychlor	14	14	14	14	14	14	14	14	14
Malathion	8	8	8	8	8	8	8	8	8
Carbaryl (Sevin)	10	10	10	10	10	10	10	12	10
Ferbam	7	7	7	7	7	7	7	7	7
Zineb	2	7	7	7	7	7	7	7	7
Captan	25	25	50	50	50	100	50	25	25
Folpet (Phaltan)	25	----- not cleared -----				50	25	25	25
Dicofol (Kelthane)	5	5	10	10	5	5	5	5	5
Endosulfan (Thiodan)	----		2	2		2	-----	Not Cleared	----

EQUIPMENT

Several types of hand-operated sprayers suitable for use in the small planting are available. These include the wheelbarrow-type force pump, trombone-type force pump, knapsack sprayer, and compressed-air sprayer.

NOTICE: If you sprayed thoroughly at the right time and did not control insects or disease on certain crops, you may want to seek further information in VIRGINIA SPRAY BULLETIN FOR TREE FRUITS, Publication 219.

Trade and brand names are used only for the purpose of information and the Virginia Cooperative Extension Service does not guarantee nor warrant the standard of the product, nor does it imply approval of the product to the exclusion of others which may also be suitable.

KEYS TO PROPER USE OF PESTICIDES

1. Read the label on each pesticide container before each use. Follow instructions to the letter; heed all cautions and warnings, and note precautions about residues.
2. Keep pesticides in the containers in which you bought them. Put them where children or animals cannot get to them, preferably under lock and away from food, feed, seed, or other material that may become harmful if contaminated.
3. Dispose of empty containers in the manner specified on the label.

SEE YOUR DOCTOR IF SYMPTOMS OF ILLNESS OCCUR DURING OR AFTER USE OF PESTICIDES.

The Virginia Cooperative Extension Service by law and purpose is dedicated to serve all people on an equal and nondiscriminatory basis.
An Equal Opportunity/Affirmative Action Employer

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. W. E. Skelton, Dean, Extension Division, Cooperative Extension Service, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061.