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SPRAYING CALENDAR

1954 Supplement

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MICHIGAN STATE COLLEGE
COOPERATIVE EXTENSION SERVICE
EAST LANSING

The Spraying Calendar:

Supplement for 1954

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The information contained in this supplement is intended to be used with the 1953 Spraying Calendar (Michigan State College Extension Bulletin 154).

There have been no major changes in pest control chemicals for use on fruit during the past year, and thus there are no basic changes suggested for 1954. For this reason the information contained in the 1953 Spraying Calendar is still valid.

During the 1953 growing season certain pests were more difficult to control than others. Thus the control measures for those pests causing difficulty in 1953 have been included in this Spraying Calendar Supplement, along with discussions relating to the value of the various chemicals for their economic control.

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INSECTS AND DISEASES CAUSING DIFFICULTY IN 1953 AND SUGGESTED METHODS FOR CONTROL

TIME	MATERIALS AND AMOUNT PER 100 GAL.	DISCUSSION OF CONTROL MEASURES
		APPLE SCAB
Green Tip through Delayed Dormant	2 gal. lime-sulfur	Lime-sulfur offers more advantages at this time than other chemicals. It is effective as any fungicide; it is both eradicative and protective; it offers little possibility of injury at this time owing to the small amount of foliage present. The protective chemicals, wettable sulfur, sulfur paste and protective organic fungicides, or Phygon or combinations of protective fungicides and eradicative phenyl mercury compounds also may be used.
From Delayed Dormant through Petal Fall	7 lb. sulfur paste *or* 5 lb. microfine wettable sulfur or 1½ lb. ferbam *or* 2 pt. glyodin, plus ⅛ lb. hydrated lime *or* 1½-2 lb. captan *or* ½ lb. Phygon	The phenyl mercury compounds, Tag, Puratized and Coromerc, are of *value only after infection* is assumed *established* and *should not* be used *after First Cover*. They have no protective value but may be combined with a protective fungicide. At half-strength, they are effective no longer than 36-40 hours after beginning of a rain period. When spraying has been delayed longer than 36 hours, full-strength mercury should be used. Full-strength mercury is an effective eradicant up to 72 hours from the beginning of a scab infection period. Phygon has both eradicative and protective properties and at ½ lb. dosage it is effective for controlling scab when applied within 40-48 hours from the beginning of a rain period. Phygon *should not* be used after Petal Fall. This material caused severe fruit russeting in 1953 when used on Red Delicious through First Cover, but only on this variety. The mercury compounds, Phygon and liquid lime-sulfur are valuable as emergency materials for eradication of scab. DN No. 1 or No. 2, at ½ lb. with 3 lb. of lime per 100 gal., has been used to eradicate visible established scab lesions. This treatment may be effective, but it is dangerous as it may cause severe burning of fruit and leaves, particularly if the weather turns humid and warm several days after application.
From Petal Fall until danger of scab infection has passed	¾-1½ lb. ferbam *or* 1½ pt.-2 pt. glyodin, plus ⅛ lb. hydrated lime *or* 1-2 lb. captan	The value of *wettable sulfur* and *ferbam* is well known. *Captan* has proven to be a good protective fungicide, and has resulted in good foliage and good fruit finish. It is conceded as the best material on Golden Delicious to obtain good fruit finish. Glyodin (Crag Fruit Fungicide) gave good results in 1953 on all varieties except Golden Delicious; on this variety it caused severe fruit russeting. The fruit russeting may have been caused by its use with parathion. It resulted in excellent finish on McIntosh, Red Delicious, Jonathan and Northern Spy. There is some evidence also that glyodin (Crag Fruit Fungicide) may reduce the buildup of mites. Zineb (Dithane Z-78 and Parzate) appear promising as a non russeting, in bloom spray material to reduce fire-blight infection, and as a material for the control of scab after bloom in the cover sprays.

TIME	MATERIALS AND AMOUNT PER 100 GAL.	DISCUSSION OF CONTROL MEASURES
	FIRE BLIGHT (APPLES AND PEARS)	
Period of blossom opening and during full bloom	2-6-100 Bordeaux *or* 2 lb. zineb *or* For trial—strepto-mycin-teramycin 50-100 ppm	First and most important, spray should be applied when 25 percent of the blossoms are open. Two or three sprays may be necessary depending on the weather. Bordeaux may cause russeting. Zineb is suggested on varieties susceptible to russeting. Usually three sprays of zineb are required to be effective. Mixture of streptomycin-teramycin at 50-100 parts per million have given almost perfect control of fire blight experimentally in Ohio, Arkansas and California, but more experience is needed to determine timing of sprays and number of applications.
	BROWN ROT (BLOSSOM BLIGHT) COMMON FORM ON PEACHES AND CHERRIES	
Period of blossom opening and during bloom (*Caution*—Use lime-sulfur as suggested only in Early Bloom)	2 gal. lime-sulfur (on peaches only) *or* ½-1 lb. Phygon *or* 5 lb. wettable sulfur *or* 7 lb. sulfur paste	Peach blossoms are very susceptible to infection while opening and until they have been open for approximately 5 days. Because peach blossoms continue to open over a period of 8 to 10 days, continuous protection against infection is necessary. Applications just preceding wet weather are most effective. Lime-sulfur at 2 gal. per 100 is more effective than wettable sulfur or sulfur paste. Phygon is equal to lime-sulfur in control and has mild eradicative properties. Sulfur dusting during rains has also been very effective. ***Lime-sulfur is not suggested for use on cherries to control Blossom Blight.*** For In-Bloom sprays on cherries, use 6-8-100 Bordeaux, when first flowers are opening, followed by either wettable sulfur, sulfur paste or Phygon.
	BROWN ROT (BLOSSOM BLIGHT) EUROPEAN FORM FOUND ON SOUR CHERRIES	
Dormant (Just as buds start to swell)	3 lb. calcium arsenite *Caution*—Calcium arsenite will burn face and skin	This spray, when thoroughly applied, kills the fungus sporulating on dead infected twigs and gives 85 to 90 percent control. Phenyl mercury at double the strength suggested for apple scab may be effective after buds have cracked open, but it is suggested *only if the dormant spray has been missed.*
Early Bloom (When first blossoms open)	6-8-100 Bordeaux *or* ½ lb. Phygon	Bordeaux 6-8-100, when blossoms open, should follow a dormant application of calcium arsenite to give complete control of European Brown Rot. Several sprays of Phygon in place of Bordeaux during bloom, just before wet periods, have reduced infection.

TIME	MATERIALS AND AMOUNT PER 100 GAL.	DISCUSSION OF CONTROL MEASURES
		CHERRY LEAF SPOT
From Early Petal Fall through After-Harvest Cover	3 lb. fixed copper (¾ lb. actual copper), plus 3 lb. hydrated lime *or* 1½ lb. ferbam *or* 1 qt. Dithane D-14, plus ½ lb. mono-zinc sulfate, plus ¼ lb. hydrated lime *or* 2 lb. captan *or* 1½ pt. glyodin, plus ⅛ lb. hydrated lime	Actidione at 2 parts per million has given good control of leaf spot on young non-bearing cherry trees, when applied at First Cover and followed by a second and third application at intervals of 3 to 4 weeks. This material has also given good control of leaf spot when used as an After-Harvest spray on bearing trees. Until approved by the Pure Food and Drug Administration, Actidione should not be used before harvest on bearing trees. A 2-4-100 Bordeaux or fixed copper (¾ lb. actual copper) with 3 lb. lime are also effective After-Harvest sprays. It has been found that dolomitic lime with copper fungicides has reduced copper injury below that resulting from the use of high calcium lime. When using lead arsenate with glyodin (Crag Fruit Fungicide), increase the amount of hydrated lime to that of the lead arsenate. *Do not use lime with ferbam or captan.*
		APHIDS ON APPLES
Dormant	2 qt. Elgetol or Krenite *or* 1 qt. DN-289 or Elgeton-318	Rosy Aphids are controlled best with a dormant spray using DN compounds, while Green Apple Aphids are controlled most practically when they appear. If Rosy Aphids are not controlled in the dormant period, Metacide or parathion at the time of Pre-Pink and Pink are effective.
When Aphids appear during growing season	½-1 lb. 15% wettable parahtion plus wetting agent *or* ½ pt. Metacide *or* 2 lb. malathion	Green Apple Aphids migrate from orchard to orchard and from tree to tree. Weather influences buildup and duration of aphid problem. Moist, cool, cloudy weather favors buildup of aphids and makes control by insecticides more difficult. TEPP may be used against this pest but this compound has no practical residual action.

TIME	MATERIALS AND AMOUNT PER 100 GAL.	DISCUSSION OF CONTROL MEASURES
		MITES—EUROPEAN RED MITE AND TWO-SPOTTED MITE
Dormant	2 qt. DN-289 *or* 2 qt. Elgetol-318	This spray controls *European Red Mite, not Two-Spotted Mite.* Two-Spotted Mites over-winter usually on the ground and under cover.
When Mites appear during growing season	½-1 lb. 15% wettable parathion *or* ½ lb. EPN-300 *or* ¼-½ lb. Ovotran *or* 1 pt. DiMite *or* 1½ lb. Aramite	During the growing season, mites are usually controlled when the buildup reaches an average number of 7-10 mites per leaf. This average number is determined from mite counts of the tree. The value of the organic phosphates and the fact that they also control other pests is well known. If mites cannot be controlled with the organic phosphates, specific miticides such as Ovotran, DiMite and Aramite may be used. Their use, if not necessary, increases the cost of the spraying schedule. Ovotran has ovicidal properties killing the eggs as well as the mites. One application is effective for approximately 4 weeks. Each miticide should be used as suggested by the manufacturer. TEPP will control mites but it has no residual action. *Caution*—Ovotran should not be used later than 30 days before harvest.
		ORIENTAL FRUIT MOTH ON PEACHES
Second Cover (Approx. 4-6 weeks before harvest) Third Cover (Approx. 4 weeks before harvest) Fourth Cover (7-10 days after Third Cover)	1½ lb. 50% wettable DDT (Same materials as for Second Cover) (Same materials as for Second Cover)	Oriental Fruit Moth in peaches sold to the housewife and processor hurts the market, and reduces the demand and price of Michigan peaches. The use of dieldrin or lead arsenate for the control of curculio does not give protection against Tarnished Plant Bug or Oriental Fruit Moth. As Tarnished Plant Bug causes cat-facing of peaches at the time of Shuck Fall, through First Cover, DDT is often used with dieldrin and lead arsenate. The use of parathion or EPN-300 for the control of curculio during the period of Shuck Fall and First Cover automatically controls Tarnished Plant Bug and reduces early buildup of Oriental Fruit Moth. There may be excessive residue of DDT on the fresh fruit if DDT is used after Fourth Cover on peaches. However, this is not a problem on Amber Gem which is grown for the processor. Parathion, 15% wettable at the rate of 1 lb. per 100 gal., may be used as late as 2 weeks before harvest without excessive residue, when a late spray is necessary on fruit for fresh market.

TIME	MATERIALS AND AMOUNT PER 100 GAL.	DISCUSSION OF CONTROL MEASURES
		LESSER PEACH BORER
Mid-June (Time announced by County Agricultural Agent)	1 lb. 50% wettable DDT, plus 1 lb. 15% wettable parathion	This insect enters wounds in crotches and branches of peach trees causing secondary injury. Best control is to avoid, as far as possible, the occurrence of injury. If cankers by hail, winter injury or breakage are present, sprays should be made specifically to control Lesser Peach Borer. Thorough coverage of the main branches and crotches is important for good control. Control measures taken for the regular Peach Borer are made *too late* to control the Lesser Peach Borer.
		PLUM CURCULIO (APPLES, PEACHES, PLUMS AND CHERRIES)
Petal Fall through Third Cover on apples and Petal Fall through Second Cover on Peaches, Plums, and Cherries	1 lb. 50% wettable dieldrin (On apples and peaches only) *or* ½ lb. 15% wettable parathion. *Increase to 1½ lb. on stone fruits* *or* 2 lb. methoxychlor *or* 3 lb. lead arsenate, plus 6 lb. hydrated lime *on peaches*	Dieldrin can be used only on apples and peaches. This chemical *controls only curculio. One spray* at *Petal Fall* followed by a *second application* at *Second Cover* will give effective control against this pest. The effective period for a single application of dieldrin is 2 to 3 weeks. More than 2 sprays of dieldrin at the rate given and if used after Second Cover will result in excessive residues. Parathion and EPN-300 are very effective against curculio at the rates given and will kill also leafroller, mites, aphids and other harmful pests that may be present. *However,* a single application of parathion or EPN-300 is effective against curculio for only 4 or 5 days. Thus repeated applications are necessary during the period this pest is present. Parathion with ferbam and glyodin (Crag Fruit Fungicide) has caused fruit russeting on Golden Delicious. Methoxychlor is effective against curculio and to a minor degree against Red-Banded Leafroller. This compound is safe to use from the standpoint of fruit finish. A single application is effective against curculio for only about 5 days. Thus repeated applications are necessary. The effectiveness of lead arsenate is less than the organic compounds mentioned but the residue from a single application persists for 10 to 14 days.

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