

Leaflet C.

SPRAYING
APPLE ORCHARDS

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Diseases and insects of apple orchards.

Apple orchards are attacked by many diseases and insects. Systematic spraying protects the trees and increases crop production. The common apple diseases are apple scab, sooty blotch, leaf spot and canker. The insects are of two kinds: (1) Fruit and leaf-eating species, as canker worms, codling-moth worm, casebearers, etc.; and (2) sucking insects, as scales and plant lice. Plant diseases are controlled by bordeaux mixture (or dilute lime-sulphur); leaf-eating insects by poisons, and sucking insects by soapy mixtures, see Leaflet D.

The important applications.

The bordeaux mixture, (or lime-sulphur) with poison protect trees from most diseases and from many of the more destructive fruit and leaf-eating insects. Application of one or the other of these sprays should be made as follows: (1) Spray trees as buds burst and before blossoms open, for scab, leaf spot, bud moth, casebearers, cankerworms, etc.; (2) spray just after blossoms drop. This is the most important treatment for scab and codling-moth, and it also controls or destroys many other pests. Some fruit growers spray again 10 or 14 days after (2) and also late in July or early in August for second brood of codling-moth, and late infections of scab and sooty blotch.

Some insects require special treatment.

The bordeaux mixture with poison is of no use for scale insects, plant lice and blister-mite. These pests require special treatment as

follows:

**San Jose scale
and other
scales.**

To combat the San Jose scale, spray late in the fall after majority of leaves have fallen or preferably early in spring before buds burst, with the lime-sulphur wash, oil emulsion or miscible oil. See Leaflet E, and Circular 9. The lime-sulphur wash is especially recommended. For oyster-shell scale and scurfy-louse, spray trees late in May or early in June as young scales hatch, with whale oil or fish oil soap, 1 lb. to 4 or 6 gals. of water, see Leaflet D, or with kerosene emulsion, diluted with 6 parts of water, see Leaflet D. Successive years' spraying with lime-sulphur wash, with plenty of lime, will clean the bark of these scales.

**Plant lice or
aphids.**

On the appearance of lice in destructive numbers spray trees thoroughly with soap, 1 lb. to 5 or 7 gals. of water; or with kerosene emulsion, diluted with 10 or 15 parts of water. See Leaflet D. A commercial nicotine preparation may be used, at the strength recommended by the makers. The lice may appear any time after buds burst. It is important to give infested trees one, or as is often necessary, two thorough applications before leaves have curled. Direct the spray on the underside of the leaves.

**Leaf blister
mite.**

Spray the trees late in fall after the majority of the leaves have fallen or early in spring before buds burst, with lime-sulphur wash, oil emulsion or miscible oil. The sulphur wash for spring treatment is especially recommended. Commercial concentrated preparations of the lime-sulphur are excellent substitutes for home-made mixture. See Leaflet E. Concentrated lime-sulphur mixture can now be made at home also. See Bulletin 329.

Diseases controlled by spraying.

Scab is the most destructive disease in New York apple orchards. While more common in some seasons than in others it is sufficiently abundant, on the average, to warrant spraying regularly. Ordinarily, three applications of bordeaux (or lime-sulphur) are sufficient to keep it well under control. Pink rot is destructive only occasionally. Since the pink rot fungus attacks only apples affected with scab, spraying which prevents scab will likewise prevent pink rot. Sooty blotch, also, is usually controlled fairly well by the three regular sprayings prescribed for scab. The kind of leaf spot attacking apples in this State seems to be but slightly affected by spraying. The Sphæroopsis canker can not be controlled by spraying, but it is believed that trees sprayed regularly from their youth up are less affected with canker. The bacterial twig blight or fire blight and the blight canker which sometimes follows it are not materially checked by spraying. Of fruit spot there are two forms, one of which may be controlled with bordeaux while the other can not. Owing to the fact that bordeaux sometimes injures apple foliage and fruit some orchardists prefer to use lime-sulphur (1 to 40). It should be a regular practice to use either bordeaux or lime-sulphur at least twice (once before blooming and again just after blossoms drop) and probably a third application (10 to 14 days after the second one) is profitable.