



Pruning and Spraying with Good Cultivation are Reclaiming Hundreds of Ontario Apple Orchards. A Simcoe County Orchard.

## Spraying the Apple Orchard: What it Costs

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THE question as to whether it will pay to spray has long since been answered in the affirmative, so it will not be necessary to enter upon any argument in regard to this phase of the subject. As to its relation to hygiene, it is sufficient to say that spraying is absolutely essential to the health and vigor of the tree, for protection against insects and fungus diseases and to the production of clean fruit.

There are still a few growers who do not believe in spraying. We hope they are few. On the other hand many growers realize the importance of spraying, pruning, cultivation, and fertilization, and yet they fall down in spraying because they regard the work as disagreeable and expensive, hard to understand, and difficult to accomplish. A few general principles are easy to learn. It is not expensive, considering results. Spraying is an insurance. It pays, and pays well.

In order to obtain results it is necessary that the fruit grower spray intelligently. The proper mixtures should be used, applied at the proper time, and the spraying done very thoroughly with the right kind of an outfit—one capable of giving good pressure and not a makeshift appliance made solely to sell.

Apple orchards are attacked by many diseases and insect pests, which are steadily on the increase. These cause an immense yearly loss in the apple crop of Ontario. The farmer must know what he is spraying for; in other words

he must know the habits or life histories of these pests in order to know how best to combat them and attack them during the most vulnerable period of their life.

### INSECTS AND DISEASES

The chief insects attacking apple trees and fruit are: San Jose Scale, Oyster Shell bark louse, blister mite, aphids, bud moths, codling moth, tent caterpillars, case bearers, canker worms, plum curculio, and railroad worm. There are a few others of minor importance. The chief diseases are: Apple scab, apple leaf spot, sooty blotch, bitter rot, black rot, canker, and blight. Practically all these insects and diseases can be controlled by spraying, with the exception of railroad worm, blight, and canker.

### HOW TO CONTROL THEM

To control the scale insects and blister mite, spray with lime-sulphur, commercial strength, one to ten, just before the leaf buds burst. The scale insects can be controlled by spraying any time on the dormant wood with the foregoing mixture; but the only time to catch the blister mite is just before or as the buds begin to burst. Hence we "kill two birds with one stone." The little mites winter underneath the bud scales, and as soon as growth takes place in the spring they leave their hiding place and push their way through to the leaves where they enter the epidermis of the lower surface of the leaf and form blisters which later turn reddish brown. They don't affect the fruit directly, but

impair the function of the leaf in the manufacture of food and hence weaken the vitality of the tree.

The bud moth, canker worm, case bearer, and caterpillars may be controlled by spraying with a poison, two pounds Arsenate of Lead to forty gallons of water, just before the blossoms burst or as pink is beginning to show in the leaves. As this is also the time for the first spraying to ward off apple scab, and other fungus diseases, and to protect the young stems of the forming fruit, lime sulphur, one to thirty-five commercial strength, could be used with the poison for insects just named.

For aphids, it is advisable to examine the twigs and leaf buds, and if present to spray with kerosene emulsion, which is made by dissolving half pound of soap in one gallon of rain water and then adding two gallons of kerosene and stirring vigorously until the mixture is of the consistency of cream. Dilute one gallon with nine of water for spraying. The efficacy lies in the fact that every little louse should be hit with the emulsion; hence, the need for doing thorough work. A preparation known as "black leaf forty"—directions given on can for use—has given good results in control of aphids when applied along with the lime-sulphur for the second spraying. The writer has not used this material, so cannot vouch for its effectiveness.

Spraying with lime-sulphur, one to forty with two pounds arsenate of lead added to forty gallons of the mixture, if done thoroughly and immediately after the blossoms have fallen, will control codling worm and curculio. This is also the second spraying for the control of apple scab.

A fourth spraying about two weeks later will be effective in warding off scab, especially so if the season is at all damp.

The only remedy for twig blight is to cut out well below the affected area and burn. Be sure to disinfect the tools after each cut in order to prevent the spread of the bacterial spores. Canker on old trees should be cut out and the cut surface disinfected and given a coat of white lead and oil to prevent the entrance of spores.

The railroad worm adult lays its eggs underneath the skin of the apple about the first week in July—too late to spray for it. The only remedy is to pick up all fruit as it falls to the ground and get rid of it in some way. Pasturing with hogs or sheep serves the same purpose.

Proper equipment for spraying operations is necessary. A good pump, with all accessories in the way of strainer and hose, nozzles, fittings, and extension rods, together with a tower for tall trees, are essential to economical and