

sure good agitation and even distribution of the poison. The ease and accuracy of measuring out a powder as compared with a paste only needs to be mentioned to be appreciated by the practical grower.

Agitation.

The black sludge or lead-sulphide precipitate has always been a great detriment to the proper agitation of the lime-sulphur-arsenate-of-lead combination. Where arsenate of lime is used no lead-sulphide sludge is precipitated, and so better agitation results even when inferior types of agitators are used.

Insecticidal Value.

On the whole, it is found that arsenate of lead acts a little more rapidly than arsenate of lime, but the difference is scarcely worth considering. The reduction in injury and the lower cost resulting from the use of arsenate of lime more than overbalances the very slightly reduced insecticidal value resulting from a combination containing less soluble arsenic than the lime-sulphur-lead-arsenate combination.

Formula for Using.

With lime-sulphur solutions the following amounts are advised to vary with the specific gravity of the lime-sulphur:

| Lime-sulphur. | Arsenate of Lime. |
|--------------------------|-----------------------|
| 1 to 33 or 1.069 sp. gr. | 2 lbs. per 100 gals. |
| 1 to 37½ or 1.008 " | 2 lbs. per 100 gals. |
| 1 to 43 or 1.007 " | 2 lbs. per 100 gals. |
| 1 to 50 or 1.006 " | 1½ lbs. per 100 gals. |
| 1 to 60 or 1.005 " | 1¼ lbs. per 100 gals. |

When used alone or with excessively dilute sulphide solutions, arsenate of lime in excessive quantities will cause some leaf injury, but with excessively dilute-sulphide solutions there is not so much injury as with a corresponding quantity of arsenate of lead.

Arsenate of lime when properly used is undoubtedly the best poison on the market to-day to use with lime-sulphur and all other sulphide sprays. With Bordeaux mixture arsenate of lime is safe, but so far as is known at the present time it has no advantages, excepting in cost, over arsenate of lead for use with that fungicide.

The First Fruit Crop Report.

The first Canadian Fruit Crop Report, which is a welcome precursor of the series which follows monthly throughout the season, and issued by Donald Johnson, Dominion Fruit Commissioner, has been distributed. Apple growers have been anxiously watching for a summary of conditions, remembering that the British embargo is liable to interfere with marketing. The Fruit Commissioner points out that while trade may be somewhat perturbed on account of existing regulations nevertheless, judging by past records the growers who have clean good-quality apples to market will not experience so much difficulty as they anticipate.

The June Fruit Crop Report is based largely upon bloom but in some localities the set of fruit can be judged to a limited extent. Unfavorable climatic conditions may, of course, cause a considerable drop after the estimation is made. Weather conditions generally have not been favorable. In Ontario spring was very cold and wet and encouraged the development of apple scab, which in many sections is now showing on the foliage. Nova Scotia had a particularly wet spring and spraying was impossible in some sections on account of wet land. No adverse reports have been received from British Columbia.

Apples.

Norfolk County reports a 25 per cent. crop of fall apples and 10 per cent. of winter apples. In Elgin County the most promising are Kings and Greenings. Fall and winter varieties showed about 10 per cent. of a normal bloom. The bloom is also light in Essex, particularly on Baldwins which is the principal variety, but Kings, Spys and Snows were fair. Lambton County reports 5 per cent. of an average bloom on winter apples, and 15 per cent. on fall varieties, except along the Lake shore where there is a prospect of a fair crop. All varieties are very light in Wentworth, Halton and Lincoln, except Greenings and early fall apples.

In Middlesex County only about 5 per cent. is showing on winter varieties and 10 per cent. on fall apples. Oxford County reports both fall and winter varieties at 25 per cent. The crop will be light in Huron and Bruce Counties and the same may be said of Brant and Peel, excepting Greenings which are fairly good.

More favorable reports come from fruit-growing areas east of Toronto. Around Newcastle and Whitby the total crop has been estimated at about half an average yield. Baldwins and Spys, however, are very light. In and around Bowmanville early varieties are fair; Spys are very light and so are Ben Davis and Baldwins. Kings and Starks are fair to good. In the Port Hope area early varieties are fair to good; winter varieties had a good bloom with the exception of Russets. Starks were above medium. Near Colborne and Cobourg there was a fair to good bloom on winter varieties, with the exception of Baldwins which were light, and Spys which were very light. Snows are showing up well in the Brighton area, but other kinds were light. Early varieties have an average bloom in the Trenton area. Greenings are fair in some places, but on the whole are very light. Kings and Snows in some orchards showed a full bloom. Fairly optimistic reports come from Prince Edward County. Along the shore of Lake Ontario, in the vicinity of Wellington, there was about 65 per

cent. of a full bloom, while in some sections the blossom was almost full.

In some areas of the St. Lawrence and Ottawa Valleys the bloom on early varieties was light, yet for the whole district very good. McIntosh Red and Fameuse were very light. There was a full bloom in the Georgian Bay district and the prospects are for half a crop. In Quebec early varieties will be very light; winter varieties, which are the main crop, are also light. Fameuse and McIntosh Reds give good promise.

Apple trees were only coming into bloom in New Brunswick (June 17 and 18) being about two weeks later than usual. Buds were plentiful on early and fall varieties, with winter varieties somewhat less.

The latest reports received by the Commissioner before his estimate was published stated that the bloom in Nova Scotia was very heavy and that spraying was more general than usual. The continued wet weather which delayed the bloom about two weeks was the only drawback that might prevent the crop from being considerably above the average.

Reports from all sections in British Columbia have been very favorable. Estimates placed the crop about 25 per cent. larger than in 1916.

Peaches.

The Niagara peach crop, the report says, has set well and promises a medium crop. This applies more particularly to orchards in Lincoln County, east of Beamsville. Later telegrams from St. Catharines state that the weather conditions there were causing a heavy drop and the indications were for a medium crop with some orchards very light. Some peaches are expected along the Lake Huron shore in Lambton County. Essex County reports a very light crop. In British Columbia trees blossomed heavily and the fruit was setting well. Leaf-curl was quite common in Ontario.

Cherries.

In the Niagara Peninsula sour varieties were setting well and promised a fairly heavy crop. Sweet varieties were not doing so well. Essex County reported a full crop. In the Clarkson district all varieties were setting well. Elgin and Norfolk Counties reported a 50 per cent. crop and the Georgian Bay district about 75 per cent. Favorable reports come from British Columbia.

Pears.

In the Burlington district the prospects were fair for Keiffers, Anjou, etc., but other varieties, especially Bartletts, were setting light. The same report will apply to Wentworth County. Optimistic reports came from the Niagara District, as well as from Essex County, while the Georgian Bay district should produce a medium crop. East of Toronto, Bartletts were light, but Flemish Beauty and Clapp's Favorite showed a good bloom.

Plums.

All varieties of plums were setting well in Niagara and promised a good crop if the drop is not too heavy. In some sections Japanese varieties were reported light. In Western Ontario there was a full bloom and the set was favorable.

Strawberries and Raspberries.

In the commercial small-fruit district, between Toronto and Hamilton, strawberries were in excellent condition, having blossomed heavily. The acreage is about the same as last year, and there should be practically a full crop. In the Niagara Peninsula the prospects were for about 25 per cent. less than in 1916. Strawberries were recorded at about 75 per cent. of a normal crop in Norfolk, and 60 per cent. in Middlesex. British Columbia reports a full crop of both strawberries and raspberries. As a general thing raspberries were looking well, although some winter-killing was reported.

United States Prospects.

Indications are that Greenings and Baldwins will be light in New York State. Bartlett pears are practically a failure, while Duchess, Clairgeau and Seckle promised a fair crop. Sweet cherries are very light and sour cherries fair to good. In Oregon the blossom on apples was uniformly heavy and the pear crop is expected to be extremely large. Prospects for all kinds of fruit in Idaho were never better. Apples promise better than normal in Montana, while in Washington the prospects are exceedingly good for all kinds of fruit. Growers in Yakima Valley expect nearly a fifty per cent. increase over last year's crop. A later report received from the afore-mentioned States indicates that unfavorable weather in some of the districts will seriously interfere with the set. In Michigan early apples promise a good crop and winter varieties, with the exception of Baldwins, fair to good. Peaches, although having a good bloom, will not much exceed 25 per cent. of a normal crop; Elbertas especially are light. Bartlett pears are light, while "Clapp's", Clairgeau and Duchess are normal. Keiffers had a very heavy bloom.

Be Fair With the Trade.

It will be to the advantage of all producers to watch carefully the standard for quality which their name or brand implies. The Dominion Fruit Commissioner has issued the following advice in this regard:

"Instruct your pickers not to put into any package berries which are immature, decayed or in any way defective.

"Have all your packages well filled.

"Do not overface crates by putting the finest looking berries or the best filled boxes on the top layer;

see that the boxes in the lower layers are just as well filled and contain as good fruit.

"Do not ship crates without seeing that these conditions are observed. Early last season we received a great many complaints regarding the overfacing of crates shipped into the larger markets, and several prosecutions followed. It will, therefore, be in the interests of growers to see that every effort is made this year to maintain a high standard, not only of the fruit itself but of the manner in which it is packed. When consumers pay a high price for strawberries which are half green and practically tasteless they are discouraged from buying that fruit even when the properly-matured berries reach the market at reasonable prices. Our inspectors have been instructed to give special attention to this matter and to report all cases of overfacing to this office."

A Few Insects Worth Watching.

After one has spent time and labor in preparing the land, sowing the seed and bringing the young crop along, it is discouraging to have it mutilated by insects or destroyed by disease. The spring has been unfavorable for the rapid reproduction of some insects and consequently their depredations have not been so extensive and serious as usual, but the season is not yet over and no doubt we shall hear from many of them ere the harvest begins.

The first point to bear in mind is that some insects actually bite or chew the foliage, while others suck the juices by means of special equipment with which they are armed. Those in the first-mentioned category can be controlled with arsenicals or poisons, while the latter class must be combated with some preparation that will kill by contact. Aphids or plant lice come in this latter classification and since they are sometimes exceedingly troublesome and attack a great variety of foliage, it is well to discuss them here.

APHIDS OR PLANT LICE.—Almost anyone, having anything to do with agriculture in any form, has made the acquaintance of these little insects known as "plant lice", "Aphis", or "green fly". Fruit trees, berry bushes, vegetable and field crops are all likely to suffer from these little criminals. They reproduce in an alarming manner and congregate in great numbers. In the forms most commonly seen the body is pear-shaped and they have long legs and antennae. Sometimes they are winged, but frequently they are not, especially early in the season. They are sucking insects pure and simple. The leaves of plants infested by them will begin to curl or fold up, and inside of the closed-up leaf will usually be found a small army of these lice. Since they do not chew the leaves they must be killed by a contact poison, the most effective being Black Leaf 40, kerosene emulsion or whale-oil soap. The first-mentioned material, which is a nicotine preparation, is perhaps the most efficient. The directions for use of this insecticide are on the cans. A little soap with it helps. If whale-oil soap, which can be obtained at almost any drug store, is used, follow these recommendations: For brown or black aphids, 1 lb. in 4 gallons rain water; for green aphids, thrip or leaf hopper, 1 lb. in 6 gallons rain water. To make kerosene emulsion take:

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|---------------------|-----------|
| Kerosene (coal oil) | 2 gallons |
| Rain water | 1 gallon |
| Soap | ½ pound |

Dissolve the soap in water by slicing and boiling; take from fire, and while hot pour in kerosene and churn vigorously for five minutes. For use dilute with 9 parts of water, so the 3 gallons of stock emulsion will make 30 gallons of spray mixture. Spray for aphids before the leaves are too much curled. When enclosed in the leaves the insecticide will not strike them and the operation is ineffective.

CABBAGE WORM.—There are few who do not know the cabbage worm, which chews the leaves of the plant and mutilates the head. When plants are young spray with Paris green and water at the rate of one ounce Paris Green to 2 or 2½ gallons of water. An effective remedy is pyrethrum powder—1 pound thoroughly mixed with 4 pounds of flour and placed in an air-tight jar for 24 hours so that the poison may become thoroughly incorporated with the flour. Dust the plants lightly with this mixture from a cheese cloth bag. Pyrethrum powder is perfectly harmless to humans but it will kill insects. Pyrethrum can also be applied with a liquid as follows: Dissolve 2 ounces of the powder in 3 gallons of luke-warm water and spray at once. Pyrethrum powder exposed to the air becomes worthless.

FLEA BEETLES.—Potatoes, cabbage, tomatoes, turnips and other crops both farm and garden, are often infested with these minute dark insects. They are great leapers and in consequence are known as the "potato flea" or "cabbage flea," according to the plant attacked. They are particularly common this year, owing no doubt to the moist weather which is favorable to their reproduction. Dry, hot weather is inimical to the flea beetle. This particular insect punctures the leaves, making numerous small holes. The surface of the leaves frequently presents a yellowish, spotted appearance indicative of their work. The best remedies are Bordeaux mixture and arsenicals, such as Paris green or arsenate of lead. Dust the plants with Paris green mixed with a little flour, or spray with Paris green and water, as mentioned under cabbage worm. On potatoes or tomatoes Bordeaux mixture with Paris green or arsenate of lead will prove effective.

THE CURRANT WORM.—The foliage of the currant and gooseberry is often riddled and frequently destroyed entirely by a small, greenish worm known as the currant

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