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Bulletins of Immediate Information are distributed only among the farmers of this State. They contain matter which is of immediate practical importance and which should be made known at once instead of waiting for publication in the regular bulletins or reports.

COMBATING THE SAN JOSÉ SCALE IN 1905

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In March and April, 1905, we sprayed 6000 trees, to determine the scale-destroying value of various mixtures. Careful examinations and counts of the scales on the trees were made before and after spraying, and the trees were again examined in October.

A full account of this work will probably appear in the Annual Report. The results are here briefly summarized for the guidance of those who wish to spray their orchards this fall before the Report appears. The spray mixtures tried were the following :

Mixture No. 1

20 pounds Lime
14 pounds Sulphur
40 gallons Water

} Light sulphur flour added dry to the slaking lime. Boiled 45 minutes.

Mixture No. 2

Same as preceding, with 10 pounds salt added with sulphur.

Mixture No. 3

20 pounds Lime
10 pounds Sulphur
10 pounds Sodium Sulphide
40 gallons Water

} Best whitewash or finishing lime started slaking, and sulphur added. When at greatest heat sulphide was added with constant stirring.

Mixture No. 4

20 pounds Lime
14 pounds Sulphur
5 pounds Caustic Soda
40 gallons Water

} Best whitewash or finishing lime started slaking with hot water, and sulphur added. When at greatest heat caustic soda was added with constant stirring.

Mixture No. 5

20 pounds Lime
14 pounds Sulphur
10 pounds Sal Soda
40 gallons Water

} Best whitewash or finishing lime started slaking with hot water, and sulphur added. When at greatest heat sal soda was added with constant stirring.

Mixture No. 6

40 pounds Limoid
10 gallons Kerosene
30 gallons Water

} Kerosene absorbed by the limoid and stirred or churned violently to mix with the water.

Mixtures 1 and 2 require boiling ; mixtures 3, 4 and 5 are called "self-boiled," as no heat other than that evolved by the slaking lime is used in preparing them.

The methods of making and the outfit for applying these mixtures were described in Bulletin No. 146 and the Report for 1904, page 240.

CONCLUSIONS.

1. We are not able to kill all of the scales on infested trees because the spray does not cover them all. Nevertheless, in our tests the lime and sulphur mixtures killed between 91 and 95 per cent. of the scales which were alive at spraying time. The limoid and kerosene mixture killed about 88 per cent.

2. The presence or absence of salt in the lime and sulphur mixtures made no difference either in the adhesive qualities of the mixture or in its effect upon the scales. This confirms our tests made in 1903.

3. In point of effectiveness there is no great difference between the various lime and sulphur mixtures. No. 3 in our tests proved the most efficient, killing about 95 per cent. of the scales. Mixture No. 4 killed 93½, Mixtures 1 and 2, 92¼, and Mixture 5, 91½ per cent.

4. The limoid and kerosene mixture is somewhat easier to make and apply than any of the others, but the cost of the materials is from two to three times as great, making it prohibitive in large orchards, and in our comparative tests it did not kill as large a percentage of the scales as the other mixtures.

5. Reckoning lime at \$2.00 per barrel, sulphur at \$2.85 per 100 pounds, hay salt at 60 cents per 100 pounds, caustic soda (74 per cent.) in 25 pound pails at 6 cents per pound, sal soda at 2 cents per pound, sodium sulphide in 110 pound drums at 3½ cents per pound, limoid at \$2.50 per barrel of 150 pounds, and kerosene at 10 cents per gallon, *these being retail prices*, forty gallons, or a barrel, of the several spray mixtures costs :

Mixture No. 1	.	.	\$.54
" " 2	.	.	.60
" " 3	.	.	.78
" " 4	.	.	.84
" " 5	.	.	.74
" " 6	.	.	1.66

Sal soda, hay salt, kerosene and lime can be bought anywhere. Mortar lime may be used for preparing boiled mixtures, though it contains much sediment which clogs strainers and nozzles, but for "self-boiled" mixtures only whitewash or finishing lime should ever be used.

Sulphur and caustic soda can be obtained from any wholesale drug house. Sodium sulphide is sold by the Roessler & Hasslacher Chemical Co., 100 William Street, New York City, and limoid, a dry hydrated lime, is made and sold by the Charles Warner Co., Wilmington, Delaware. The Hartford Pulp Plaster Corporation of Hartford also sells limoid.

6. For spraying large orchards, where there is an effective cooking plant, which should be set up close to a water supply, Mixture No. 1, of lime and sulphur, is the cheapest and best thing to use. For spraying a few trees, or even an orchard of 200 or 300 trees, if there is no convenient outfit for boiling at hand, one of the "self-boiled" mixtures will be less costly. We recommend No. 3, but Nos. 4 and 5 are quite satisfactory. Convenience in obtaining materials is perhaps the chief consideration in deciding which of these "self-boiled" mixtures to use.

The San José scale continues to breed until about December 1st in Connecticut, and it seems reasonable that an application made before this date will destroy a larger percentage of scales than if applied later, when the insects have assumed a winter condition and are more protected. As the leaves are off the trees about November 1st, there is a month in which spraying can be done before the scales reach this condition. In December, 1903, plum trees were sprayed with lime and sulphur with excellent results.

There is this great advantage in spraying in late fall, that usually the other farm work is much less pressing than in the spring, when the time between the disappearance of snow and frost from the ground and the swelling of buds is quite short, and high winds and storms interrupt the work.