

Cost of Spraying

R. S. Duncan, B.S.A., Port Hope Ont.

Herewith is given a tabulated statement of the cost of spraying the demonstration orchards in Northumberland and Durham counties during 1911 and 1912. All calculations are based on the valuation of four men at one dollar fifty cents each a day and a team at one dollar fifty cents a day. Lime-sulphur is valu-

ed at twenty cents a gallon and arsenate of lead at thirteen cents a pound in 1911 and ten cents a pound in 1912.

The cost of spraying the apple orchard, including labor and material, varies, according to the figures given, from thirty-nine to fifty-five cents a tree.

SUMMARY OF SPRAYING RULES

From our experience along the north shore of Lake Ontario the following sprayings are recommended: First, just before or as the leaf buds are bursting, spray with lime-sulphur, commercial strength, one to ten. This controls San Jose Scale, oyster shell bark louse, and blister mite; second, just before the

blossoms burst or as pink begins to show in the leaves, use lime-sulphur, one to thirty-five commercial strength, and add two pounds arsenate of lead to forty gallons of mixture. This is to control bud moths, feeding caterpillars, case bearers, canker worms, and apple scab, third, immediately after the blossoms fall, and before the calyx cup closes, use lime-sulphur, commercial strength, one to forty, with two pounds arsenate of lead added to forty gallons of mixture. This controls codling worms, plum curculio, and apple scab.

In damp seasons it might be advisable to spray a fourth time two weeks later with the same mixture as given for the third spraying.

The Influence of Bees in Orchards

W. White, Brantford, Ont.

Every fruit grower realizes the importance of good methods of cultivation in the orchard. It is doubtful, however, whether he appreciates the fact that in spite of all his improved methods his yearly income would be reduced to a minimum were it not for the labors of the hive-bee. He is, indeed, greatly indebted to the beekeeping fraternity, almost entirely dependent upon them, in fact, for his yearly crops. Prof. J. W. Crow, dealt with this phase of fruit-growing in a deeply interesting address entitled "The Influence of Bees in the Orchard," delivered at the recent Agriculture Short Course at the Ontario Agricultural College, Guelph.

In his opening remarks he stated that at a certain point, the two lines of agriculture, fruit-growing and beekeeping, meet, forming a bond of mutual interdependence. In its search for nectar and pollen, the bee forms an essential agent in the fertilization of tree-fruit bloom and of nearly all bush fruits.

Fruit pollen, being heavy and more or less sticky, is not carried by the wind to any extent. Although a few wild native insects may assist in the pollinating process, fruit growers are dependent almost entirely upon the hive or honey-bee. In the case of the apple, wind fertilization is practically negligible. Under favorable circumstances, this latter agency may be responsible for from five to ten per cent. of the number of blooms fertilized. Prof Crow remarked that he knew of a number of cases in which barren orchards had been brought into bearing in consequence of the introduction of colonies of bees to the neighborhoods in which the orchards were situated. It was true that bees might possibly be responsible to some extent for the transmission of bacterial disease of bloom. The gummy exudate material, laden with germs, was fed upon by bees, and in this way the bacteria were carried away by the bees. This, however, should not be held to be

the fault of the bees. It was the duty of the fruit growers to cut out the diseased or blighted portions of the trees, and so destroy the sources of infection.

Apple scab was usually found on the smaller half of a deformed fruit, because that side was weaker and incapable of withstanding disease attacks. The malformation of the apple was due to imperfect fertilization. A perfectly, pollinated apple was better nourished, was larger, and proved more resistant to disease. Prof. Crow described an experiment undertaken by him. Selecting fifty clutches of blossom, he cut them down to one blossom apiece, thus leaving fifty single blossoms. From each of these single blossoms he cut out four of the five pistils. He selected three other batches of blossoms, thinning the individual clusters down to single blossoms in the same way; but one batch he treated by cutting out three of the five pistils, the next, by cutting out two pistils, and the last batch, by cutting out only one pistil. All the blossoms in the four batches were pollenized at the same time and by the same variety. In the case of the blossoms with only one pistil remaining, the fruit all dropped at an early stage. Not an apple arrived at maturity. In the lot containing two pistils to each bloom, only two apples developed. In the two remaining cases, nearly the whole of the fruit developed. These results proved the importance of thorough pollination. As a pollination agent, the honey bee was by far the most effective.

Asking the beekeepers present how many colonies of bees were required for an eight-acre orchard, Prof. Crow elicited the reply from Dr. Burton N. Gates, Ph.D., of the Massachusetts Agricultural College, Amherst, Mass., that at least one colony was considered to be necessary for the complete pollination of fifty trees. Mr. Harkness, of Ueno, Ont., considered this proportion insufficient.

COST OF SPRAYING

Orchard	Year	FIRST SPRAYING					SECOND SPRAYING					THIRD SPRAYING				
		Material	Applied	Cost	Material	Applied	Cost	Material	Applied	Cost	Material	Applied	Cost	Material	Applied	Cost
		Lime Sulphur of Lead	Ar- senate of Lead	Cost of spray	per tree	per tree	Lime Sulphur of Lead	Ar- senate of Lead	Cost of spray	per tree	per tree	Lime Sulphur of Lead	Ar- senate of Lead	Cost of spray	per tree	per tree
E. W. M. Council	1911	77 gals.	31 lbs.	\$15.40	7 gals.	\$8.95	17 1/2 gals.	46 lbs.	\$7.50	5 gals.	5 lbs.	21 gals.	49 lbs.	\$11.17	8 gals.	53.9c
Georgetown, 47 trees	1912	72 gals.	46 lbs.	14.40	6 1/2 gals.	9.00	25 1/2 gals.	39 lbs.	9.70	6 1/2 gals.	13.40	33 1/2 gals.	77 lbs.	14.35	11 gals.	52.0c
W. G. Stobbs	1911	67 gals.	39 lbs.	12.00	4 1/2 gals.	7.50	18 gals.	37 lbs.	7.83	5 gals.	11.5c	24 1/2 gals.	50 lbs.	11.40	7 1/2 gals.	19.9c
Port Hope, 145 trees	1912	82 gals.	30 lbs.	15.40	5 gals.	6.15	19 gals.	48 lbs.	8.61	4 1/2 gals.	11.4c	23 gals.	57 lbs.	10.30	7 1/2 gals.	16.7c
N. Nickoll	1911	40 gals.	8 lbs.	8.00	5 gals.	7.50	18 gals.	32 lbs.	7.76	8 gals.	13.0c	19 gals.	38 1/2 lbs.	8.81	6 1/2 gals.	41.5c
Welcome, 72 trees	1912	45 gals.	19 lbs.	9.50	5 1/2 gals.	3.75	12 1/2 gals.	26 lbs.	5.10	6 gals.	12.3c	11 gals.	31 lbs.	5.40	6 1/2 gals.	55.8c
J. Stanley	1911	60 gals.	27 lbs.	6.00	5 gals.	4.50	7 gals.	12 lbs.	5.03	3 1/2 gals.	10.6c	11 1/2 gals.	24 lbs.	5.42	6 1/2 gals.	45.4c
Howmanville, 71 trees	1912	61 gals.	28 lbs.	15.00	4 1/2 gals.	7.50	20 gals.	54 lbs.	9.50	5 gals.	11.6c	23 gals.	57 lbs.	10.30	6 gals.	42.6c
W. H. Gilson, New- enate, 136 trees	1912	750 gals.	154 lbs.	15.00	4 1/2 gals.	7.50	20 gals.	54 lbs.	9.50	5 gals.	11.6c	23 gals.	57 lbs.	10.30	6 gals.	39.0c

The cost of spraying the apple orchard, including labor and material, varies, according to the above figures, from thirty-nine cents to fifty-five cents a tree.