

THE CONTROL OF THE OYSTERSHELL SCALE WITH OIL SPRAYS

BY M. H. RUHMANN

For many years a dormant application of Lime Sulphur (1-9) has been recommended for the control of the Oystershell Scale; in the Eastern Provinces this appears to give satisfactory results. It has been realized for some years that under the semi-arid conditions of the interior of British Columbia the dormant application of Lime Sulphur is ineffective in the control of this scale. Repeated tests have been made with Lime Sulphur 1-7, 1-8, and 1-9, also with the addition of 1 lb. of lye to each 80 gallons of the last two strengths, and in no instance were satisfactory results obtained.

Since 1915 a summer spray of Lime Sulphur 1-30, or Nicotine Sulphate 1-1200, or a combination of the two, has been recommended in the interior, the latter giving the most satisfactory results in the hands of the growers; these sprays must be applied as the eggs are hatching and necessitates close observation of the grower to ascertain the correct time of application, the hatching period varying considerably from year to year; according to our records this may occur at any time from May 28 to June 21. The results show that although many growers are successful in controlling the Oystershell scale, the majority fail to interpret the correct time of application, and obtain unsatisfactory results. In the month of March, 1921, Mr. E. P. Venables suggested to the writer the use of an oil spray for the control of the Oystershell Scale during the dormant season. Owing to the possibility of injury to fruit trees by oil sprays, Mr. Venables offered to place some of his own trees at our disposal for the experiment.

A fuel oil emulsion was decided upon and an emulsion was prepared, consisting of the proportions of 10 gallons of Fuel oil, 10 lbs. of Whale oil soap and 100 gallons of water; this spray was applied to a tree which was heavily infested with the scale; owing to unavoidable circumstances, this spray was not applied until after the buds were breaking, and severe injury was anticipated.

The fuel oil spray was applied with a small hand-pump, with which little pressure was obtainable; samples of the scales were examined from time to time, and it was found that all eggs were covered with a film of oil within a week after application of the oil spray; it was also noted that no injury had resulted to the buds from the late application of the spray.

The destruction of the eggs progressed slowly, but by the first of June it was found that all eggs had been destroyed, and the tree, which had been severely stunted by the heavy infestation of the scale, was putting on a vigorous growth. The results of this experiment were so successful that it was decided to arrange for a commercial test in the spring

of 1922. Arrangements were made with the Horticultural Branch, and Mr. H. H. Evans, Assistant District Horticulturist at Vernon, undertook to make the applications on a commercial scale. It was at the same time decided to test a new commercial miscible oil ("Dormoil"), manufactured by the Hood River Spray Co., which had been giving good results in the control of the Leaf roller in Oregon.

Permission was obtained from the owners of two city orchards to use their trees for these experiments. Both orchards were composed of trees 20 years old or over, and had, in each case, not borne any marketable fruit for a number of years owing to the severity of the scale infestation. These orchards were divided into three plots for the experiment. Plot 1 receiving an application of 10 per cent. Dormoil, and Plot 2 receiving an application of 10 per cent. Fuel Oil, plus whale oil soap in the proportion of 10 lbs. to each 100 gallons of spray. Plot 3 was used as a check.

Result:

Plot 1, Dormoil 10%. Six days after application all eggs examined were found to have been destroyed by the spray; the eggs were completely broken down by the action of the oil; at no period during later examinations were normal eggs found. The Dormoil caused a slight check in the development of the buds, but no injury was apparent; examinations were continued until July 12, and it was evident that, where perfect contact had been obtained with the spray, 100 per cent. control had been obtained.

Plot 2 received an application of 10 per cent. fuel oil, plus 10 lbs. of Whale Oil soap to each 100 gallons of spray. Six days after application all eggs examined were distinctly covered with a film of oil, normal aeration being thereby prevented. Frequent examinations until the hatching period (June 5, 1922) showed a gradual increase in the number of eggs killed, the killed eggs turning brown and did not collapse, as in the case of the Dormoil spray. Bud development was normal with this spray. At hatching time, 87 per cent. of the eggs had been killed. A final examination on July 12 revealed the following facts: Under 50 scales examined, 316 dead larvae were found; all eggs remaining had shrivelled up or turned brown. A terminal twig 16 inches long was found to have 863 scales attached (adult). The number of larvae which had escaped from these and were attached to the twig was 27. From the above facts this material might be considered a good commercial spray.

Plot 3. Check. On June 21, examination was made of branches from trees on the check plot; these were found to be heavily coated with young scales. Fifty adult scales were examined and the following observations made: One apparently normal egg was still present; 94 live larvae and 38 dead larvae were still under the old scales examined. It is quite evident from these observations that there is a slight mortality

under normal conditions; of the 94 live larvae still under the old scales, a considerable number would undoubtedly have succeeded in making their escape.

Both these sprays have given excellent control, and over the period of the experiments no injury was apparent to the trees; whether uniformity of standard can be maintained in these oils, whether regular applications can be made without injury to trees, or whether variations in climatic conditions at the time of their application will have any bearing on possible injury to trees can only be ascertained by continued experiments over a number of years.

**NOTES ON SOME BRITISH COLUMBIA GRYLLOBLATTARIA
DERMAPTERA AND ORTHOPTERA
FOR THE YEAR 1925.**

By E. R. Buckell.

During 1925 a few interesting captures have been made in Orthoptera and closely allied orders.

Order **GRYLLOBLATTARIA**

Grylloblatta campodeiformis E. M. Walker. 1914.

Walker, E. M. Can. Ent. vol. 46 p. 93 (1914).

This interesting species was found to be fairly common under damp logs and rocks at an elevation of 7,300 feet in the Selkirk Mountains near Invermere.

It is at home in cold, damp locations, and quickly dies when exposed to heat. Specimens taken from under logs at Banff, Alta., and at Invermere, and placed on the palm of the hand in direct sunlight, immediately showed signs of distress and died within 25 seconds.

Locality records. Invermere, 1925 (E. R. Buckell).

Order **DERMAPTERA**

Anisolabis maritima (Gené) 1832.

Gene. Ann. Sci. di Regno Lombardo. Veneto, Padova, vol 2. p. 215 (1832).

A small colony of these earwigs was found on May 24th, 1925, at Snake Island, Departure Bay, near Nanaimo, by Prof. G. J. Spencer. This is the first time that this European species has been recorded from the Pacific coast of North America. It has become firmly established at a number of localities on the Atlantic coast of the United States.