THE SPITTLE BUG ON STRAWBERRIES

by

W. D. Edwards, K. W. Gray, and D. C. Mote

Spittle bugs have been noticeably injurious to strawberries during the past five years in the Willamette Valley. Counts made during the current season of the newly-hatched spittle bugs indicate that these pests will be equally if not more numerous on strawberries and considerable damage may be expected this year.

Life Habits

The spittle bugs, immature forms of the adult frog-hoppers, appear on strawberries shortly after new growth starts in the spring. Feeding is done by inserting the mouthparts into the tender succulent portions of the plants and removing the juices. A frothy material known commonly as "Snake Spit" or "Stink Spit" is produced by the insect. The function of this "spittle" is not definitely known, but apparently it serves as a protection and possibly assists in cooling the insects during warm weather.

The nymphs continue to feed and grow by successive molts within the "spittle" until the adult stage is reached, usually in May. The change to the adult "frog-hopper" takes place within the "spittle," the insect developing wings and waiting until the froth bubble breaks before leaving. During the 1934 season large numbers of adults were observed on strawberry plants about two weeks after the first adults began to appear, but the numbers decreased sharply about ten days to two weeks later. It appears that the "frog-hoppers" move to more succulent host plants at about this time, scattering out over wide areas.

Mating of the "frog-hoppers" was observed in 1934 before the population on strawberries decreased to any great extent, mating pairs being seen until late fall.

Data secured last season show that the first eggs were found on strawberry plants on July 31, and two females collected on the same day were found to have developed eggs. The peak number of eggs within collected females was found on November 16 with an average of 28.4 eggs per female, and collections as late as January 23 showed eggs were present though in smaller numbers per female.
Eggs on strawberries may be laid singly, but more often in groups on the under side of leaves, stems, and between the stems and crown of the plant. The egg mass is white but upon examination with a lense the eggs themselves are not much different from the young spittle bugs in color. Eggs remain on the plants over the winter, hatching in the spring.

**Injury**

The injury caused by the spittle bugs is largely that of devitalizing the plants. Berries upon which the pests have fed develop unevenly and are frequently hardened on one side. Growers have reported that this hardening persists even after canning. Reduction in yield of berries in check plots compared to treated plots has been as much as one-half to one ton per acre, according to experimental data.

**Control**

Control recommendations are the result of limited study, but are suggested as the best known measures for combating this pest. Materials have been applied with power duster and with hand operated dusters. To date, the results secured with the hand-machine have been superior, even though both methods require about 100 rounds of dust per acre. This is probably due to the fact that with the hand duster each plant gets individual attention and a much more thorough coverage of dust results. Hand dusters commonly used cost about $20.00. Of the various materials tried in control tests, hydrated lime and hydrated lime combined with nicotine sulfate are apparently the safest recommendations. A double application of hydrated lime, the first about two weeks after the spittle bugs first appear (this should be determined by close examination of the plants), and the second about ten days or two weeks later, has given from 60% to 80% control, based upon actual counts of the spittle bugs. It must be remembered in this connection, however, that even 80% control on plants infested commonly with from 100 to 200 bugs will leave from 20 to 40 insects still upon the plants, and this number is capable of causing considerable damage. The application of a nicotine dust, on the other hand, has shown a 25% more kill and an increased yield of over 1/2 ton per acre. The 2% nicotine dust may be purchased, or may be mixed as follows:

- 50% of hydrated lime
- 2 1/2 pints of Black Leaf-40

Place in a closed container (metal or wooden barrel) with about two dozen smooth, clean rocks, and roll over and over for about 5 minutes. Remove the rocks and apply dust as soon as possible or place in an airtight container.

**Caution**

Apply dusts only when the weather outlook is fair. High temperatures increase the effectiveness of nicotine dust. Make certain that the strawberry plants are thoroughly dusted. The spittle bugs are most commonly found on the underside of the leaves and on the tender developing fruit buds. It is important that the first application be made before much damage is done, which occurs as early as three weeks after the first bugs hatch. Two applications of dust are superior for control, due to a prolonged hatching period. A thorough coverage cannot be obtained with less than 100 pounds of dust per acre on the average strawberry patch. One man, using a hand hustler, cannot adequately cover more than two acres per day.