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The Green Apple-Aphis

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Geneva, N. Y.

1914

Symptoms of aphid attack. The presence of plant lice on trees is indicated by curled leaves and the occurrence of a sweetish liquid called "honey dew", which may be observed during the month of June upon the leaves and fruits. The leaves later become blackened and unsightly owing to a "black mold" which grows upon the honey dew. Ants are very fond of this liquid and are often attracted to the infested trees in considerable numbers.

Appearance and habits of the aphid. The green aphid is a small soft bodied, sucking insect. For a short time after its appearance in the spring the aphid is wingless and of a dark green color. In about two weeks winged forms develop and spread by flight through the orchard. A number of broods are produced during the summer, and females of the last brood deposit minute green eggs about the bases of the buds and in crevices in the bark. These eggs later become shiny black in color, in which condition they remain until hatching takes place in the spring.

As the buds begin to expand the eggs hatch and the young lice make their way in large numbers to the green ends of the buds. As opportunity is afforded, the insects work into the interior of the buds and seek the protection given by the hairy growth of the unfolding leaves. As the leaves unfold the lice gather on the under surfaces and also on the fruits causing

curling of the leaves and pimpling of the young apples. The extraction of the sap from the fruit stems causes a dwarfing of the young apples while the injury to the leaves is often a serious drain on the vitality of the trees.

Newly hatched lice are most susceptible to spraying because of their exposed positions at the tips of the buds. Close watch should be kept for them as the tips show green and while the buds are still compact. If they appear in goodly numbers, spray the trees thoroughly with $\frac{3}{4}$ of a pint of "Black Leaf 40" and 3 lbs. of soap to 100 gals. of water. It is important to spray early, for if the treatment is delayed the aphids are protected by the curled leaves, and they are then practically immune to spraying. The tobacco extracts may be used in combination with lime-sulphur solution or bordeaux mixture, omitting the soap. Some growers combat the apple aphid successfully with kerosene emulsion diluted with 8 parts of water, or whale-oil soap in the proportion of 1 lb. to 5 gals. of water. To obtain satisfactory results the spraying mixture should be applied in liberal quantities with high pressure, for only those insects are killed which are completely wetted with the spray.

**Preparation
of
sprays.**

Kerosene emulsion.—Dissolve $\frac{1}{2}$ lb. finely divided common soap or whale-oil soap in one gallon of boiling water, preferably rain water, and while it

is still boiling, remove it from the fire, and add two gallons of kerosene. Then agitate the mixture violently by forcing it through a spray pump, back into the vessel again until it becomes a creamy mass that will not separate. For use, dilute as directed.

Whale-oil-soap. Whale-oil soap may be purchased from the following manufacturers:—The Bowker Chemical Co., Boston, Mass.; James Good, Nos. 939-941 North Front St., Philadelphia, Pa.; Poole & Bailey, No. 357 Canal St., New York City; W. H. Owen, Catawba Island, Ohio.

Soaps often show considerable variation in their composition. For this reason the orchardists should watch the results of the applications and determine what amount may be safely employed for the destruction of the aphids. One pound of hard soap, such as Leggett's Anchor Brand, is commonly used to four gallons of water.

Nicotine preparations.—There are now on the market two nicotine preparations, guaranteed to contain 2.7 and 40 per ct. of nicotine respectively. These have proven very efficient sprays. The 2.7 per ct. brand should be diluted with 65 to 90 gallons of water and the 40 per ct. brand should be diluted with 1000 to 1200 gallons of water. Three lbs. of soap should be added to each 100 gals. of the diluted spray, except when the nicotine is used with the bordeaux mixture or the lime-sulphur wash.