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Experiment Station

J. T. Jardine

Director

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Control Measures for Aphids

by

Joseph Wilcox, Assistant Entomologist.

Description. "Plant lice" or aphids attack nearly all plants and in many cases cause considerable damage. These tiny creatures are often found in great numbers clustered on the growing tips or within curled leaves of the infested plant.

Method of Feeding Adapted to Control. Aphids are sucking insects and secure their food by sticking their sharp beaks into plant tissue and sucking the juices. They must, therefore, be combated with a contact spray. Poison sprays as lead arsenate or Paris Green are not effective against aphids and are only effective against caterpillars, beetles and other chewing insects which eat the leaves and thereby ingest the poison.

Spraying for aphids must be thoroughly done as only those insects actually hit by the spray will be killed. The best time to spray for aphids is as soon as they are observed because they breed very rapidly and in some cases soon curl and distort the leaves, so that it is impossible to hit them with the spray solution.

Nicotine Sulfate 40% or Black Leaf 40 is the standard spray for aphids. The standard formula is: Nicotine sulfate, 3/4 pint; soap, 5 pounds; and water to make 100 gallons of spray. In small quantities, use one teaspoonful of nicotine sulfate, one ounce of soap, and one gallon of water. Fish oil soap is preferred but common laundry soap can be used.

To prepare - the soap is dissolved by boiling in a small amount of water, then enough cold water is added to bring up to total volume, and just before applying the spray the nicotine is added and thoroughly mixed with the solution. Nicotine sulfate may be added to sprays containing lime-sulfur or lead arsenate if desired. The soap is left out in such combinations but the nicotine is still added just before spraying. Several applications of spray may be necessary at weekly intervals.

Three-In-One or All-In-One dusts are mixtures containing powdered lead arsenate, nicotine and sulfur. Thus we have

a material which under ordinary conditions, is easy to apply, controls sucking and chewing insects and some plant diseases, and is found on the market ready to apply. By making frequent applications of this material most pests are controlled, as it serves as a preventive rather than a cure.

Nicotine Dusts are also found on the market and contain various percentages of free nicotine. A dust containing 2% free nicotine is the best for all around purposes and will control most aphids and sucking insects. Applications are made at weekly intervals.

HOME MADE NICOTINE DUSTS

Preparation of Nicotine Dusts. Nicotine dust can readily be made in the home without much inconvenience. Hydrated lime is the standard carrier for nicotine dusts. For the 2% dust mentioned above, $2\frac{1}{2}$ pounds of nicotine sulfate or black leaf 40 are added to $47\frac{1}{2}$ pounds of hydrated lime. To mix large quantities place the lime in a keg (50 pounds can be mixed in a 50 gallon keg), add the nicotine sulfate, and then add $\frac{1}{2}$ pound of rocks or pebbles about the size of a hen's egg, for each pound of dust to be mixed. The keg should then be closed tightly, and rotated for 10 minutes either by rolling the keg over the ground or by mounting it on a frame. In mounting the keg on a frame, spindles are placed on the ends of the keg and a hinged door fixed in the sides. After mixing, the dust should either be used immediately or placed in air tight containers as the dust loses strength rapidly. To remove pebbles, pass the dust through a $\frac{3}{8}$ " mesh wire screen.

To Mix Small Quantities of Dust. Mix the nicotine thoroughly with the lime and then pass the mixture through a fine screen several times, making sure to break up all the lumps in this process. A small butter churn is handy for mixing small quantities of dust also. The proportion of nicotine to lime may be increased for such insects as cucumber beetles. However, 1 part of nicotine sulfate to 9 parts of lime is the strongest dust recommended for any use.

Three in One Mixtures. If the grower is also bothered with chewing insects, he can substitute 15 pounds of lead arsenate for 15 pounds of lime in 100 pounds of the above dust. If sulfur is desired in the dust, substitute 35 pounds for that amount of lime.

Applying Nicotine Dust. Dusts are best applied with one of the bellows or blower types of dusters. Sizes to suit all purposes will be found on the market. Early morning is the best time to apply dusts, as, usually at this time there is no breeze and the insects are less active. To get the best results the insects should be hit by the dust mixture.