

Making War on Insects

A Cheaper Poison than Paris Green—Biting and Sucking Insects

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The very high prices of Paris Green started us experimenting last year in an effort to find something cheaper. We found that considerable work had been done by the United States Department of Agriculture with calcium arsenate. They had this to say about it:

"The commercial article is manufactured in the form of a powder. It is very effective and quite safe to use and the particular advantage claimed for this insecticide is that it is cheaper than arsenate of lead. Calcium arsenate is manufactured by the Sherwin-Williams Paint Company of Montreal, and is put on the market by that firm under the trade name of 'Calpoiso.' If desired, this material can be manufactured at home at a comparatively low cost—the formula for making it is as follows:

Commercial sodium arsenate, fused, dry powdered (65 per cent. AS 2.5), 10 pounds; fresh stone lime, 6 pounds; water, 2 gallons.

Dissolve the sodium arsenate in 14 gallons of hot water. Place the stone lime in a deep wooden container and pour the remaining half gallon of water over it to start slaking. If this quantity of water is not sufficient to start slaking vigorously, add a little more. When slaking is well under way pour in the sodium arsenate solution and stir continuously until all slaking has ceased. If necessary, add a little water from time to time to prevent burning. The resulting product will be a thick paste. Any liquid which appears on top of this paste in settling should be drawn off and discarded. This material should be used at the rate of 1 lb. to 40 gallons of water. Dissolve the paste in a small quantity of water (preferably hot) and strain through a piece of coarse sacking or a fine mesh screen to remove any particle which might clog the sprayer.

In order to get good results it is necessary to use good, freshly burned lime with a high grade of calcium."

Miscellaneous Insecticide Investigations

"Calcium arsenate manufactured according to the above formula should contain approximately 18 per cent. of arsenic as AS 2.5. A comparison of the relative value of Paris Green and calcium arsenate shows that calcium arsenate manufactured according to the home-made formula contains about one-third of the arsenical content of Paris Green. On the basis of the wholesale prices, in Winnipeg, of the ingredients used in this formula, the material costs approximately 6 cents per pound. If calcium arsenate were used at the rate of 1 pound to 40 gallons of water the approximate cost of a 40 gallon barrel would be 25 cents. A very considerable saving could be effected by using this material, especially since Paris Green is so expensive.

Several tests of the home-made article were made by the writer at the Manitoba Agricultural College during the past summer. The results showed that it is a safe and effective poison to use on potato plants as a means of destroying potato beetles and other leaf-eating insects. I also sent samples to various parties in different sections of the province and asked them to report on the results secured, and, without exception, favorable reports were received. In view of the fact that Paris Green is very expensive at present, and occasionally gives unfavorable results by burning the foliage of plants, Calcium arsenate should be a valuable substitute for Paris Green.

Biting and Sucking Insects

The following suggestions may help to eliminate some of our worst pests. These are divided into two classes, biting and sucking—and the method of treatment for each is radically different. The first lot deals with mere biters.

Potato beetles.—Owing to the great reproductive powers of the potato beetle, prompt control measures are necessary. One female will multiply to 125,000 in one season in Manitoba.

Control.—Spray with arsenate of lead, 1 1/2 to 2 pounds (powder) to 40

gallons of water, or Paris Green, 1 pound to 40 gallons of water or use calcium arsenate as suggested in above paragraphs.

Flea Beetles.—These vary in size from a small black beetle one-eighth of an inch in length to the large beetle found on turnips. They are called flea beetles from their flea-like habit of jumping great distances. These insects feed upon the foliage of potatoes, spinach, turnips, beets, mangels and lettuce and often do considerable damage by eating holes in the leaves. Control.—Arsenate of lead, 2 to 3 pounds of powder to 40 gallons of water, or Paris Green, 1 pound to 40 gallons.

Curran Worms.—Early in June and again in July, small greenish caterpillars may be found on the foliage of currants and gooseberries. They often completely defoliate the bushes and thus lessen the yield of fruit and the vigor of the plant. Curran worms have a peculiar habit of feeding on the foliage in the centre of the bush and very often they are not noticed until they have done a great deal of damage. Control.—Spray the affected plants with arsenate of lead, 1 to 1 1/2 pounds to 40 gallons of water, to destroy the first brood. If a second brood appears, use fresh hellebore, 1 oz. to 1 gallon of water. It is not safe to use arsenical poisons when the fruit is nearly mature.

Cabbage Worms.—The leaves of cabbage, cauliflower and Brussels sprouts plants are frequently attacked by a green caterpillar, about 1 1/2 inches long when full grown. Control.—Spray infested plants with arsenate of lead, 1 to 1 1/2 pounds to 40 gallons of water, as soon as the worm appears. When the heads are nearly ready for use, spray with hellebore, 1 oz. to 1 gallon of water, or pyrethrum powder, 1 oz. to 1 gallon of water. Pyrethrum powder is sometimes applied as a dust, but, as a rule, will be found more effective if applied in solution. If a thorough application of arsenate of lead is made as soon as the worms appear very little trouble will be experienced later in the season.

Cankerworms.—Cankerworms did a great deal of damage during the summers of 1914 and 1915. Control.—As soon as the worms appear, spray the infested trees or shrubs with arsenate of lead, 1 1/2 to 2 pounds to 40 gallons of water, or Paris Green, 1 pound to 40 gallons. During the latter part of September and early in October the trees should be girdled with a band of tree tanglefoot or coarse sacking about 3 feet from the ground. If sacking is used it should be coated with tar. These materials are used to serve as a trap for the female moth which is wingless and hence has to crawl up the tree in order to lay her eggs on the limbs.

Sucking Insects

Aphis.—Aphis, or plant lice occasionally become very numerous and do great damage. During the summer of 1915 there was a great outbreak of these creatures in southern Manitoba. The aphis and the cankerworm are jointly responsible for the destruction of thousands of shade and ornamental trees in this province. They are small, pear-shaped, house-like creatures, generally green in color. Some, however, are black or brown and others are reddish in color. Aphis may be found in enormous numbers clustering on the under side of leaves and they often cause the leaves to curl up and, as it were, form a protective covering around them. There are several kinds of aphis and each kind generally has a different food plant. Maple, Elm, Cottonwood, Cherry, and Apple Trees, Currant and Rose Shrubs, Turnips, Cabbage, Lettuce, annual and perennial plants and some house plants are subject to the attack of these creatures. Control.—As previously stated, the aphis gets its food by sucking the juices of plants, and hence it cannot be killed by a food poison. This fact should be clearly understood. The most effective means of controlling the aphis is by the use of a contact poison, such as black leaf

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