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# POISONING THE COTTON BOLL WEEVIL

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Control of the cotton-boll weevil by dusting with calcium arsenate has been practiced by farmers for approximately 10 years. During this period the method has been tested throughout most of the districts in the Cotton Belt which suffer damage by the weevil, and has thus encountered a wide diversity of conditions as well as of seasonal variations, especially in infestation and climate. Dusting with calcium arsenate began as an entirely new operation and has undergone a steady process of development in methods, equipment, and technic. This process is still under way, but the method to-day shows great improvement and adaptation to a wider diversity of conditions than at first seemed possible. However, the same fundamental principles still apply, and continued experience merely emphasizes the fact that successful control can be expected only with an understanding of these principles.

## Do It Right or Not at All

As control of boll weevils with poison dust first began to be practiced in new localities and new problems in control were encountered, many opinions naturally arose as to the best plan of operation. For a time considerable confusion resulted. To correct this condition the cotton council of the southern agricultural workers, composed of representative scientific men from all sections of the Cotton Belt, made a long series of studies of control of the boll weevil. Experiments were conducted in many sections, and after careful analysis of the results the cotton council adopted one general recommendation which had, when followed, given the most universally successful control under a wide variety of conditions. This recommendation is the basis of practically all present-day control of the boll weevil by poisoning but is, of course, subject to variations to meet particular local conditions. As stated by the cotton council, it is as follows:

For the boll weevil, one presquare poisoning may be applied if it appears that there are numerous overwintered weevils present. This should be given just as squares begin to form. Then apply the regular series of three or more dust applications of calcium arsenate at four or five day intervals, beginning when an average of approximately one-tenth of the squares show weevil punctures. Dusting should be continued as needed to keep this infestation low until a full crop is set and matured beyond the probability of further weevil injury.

The following brief digest of conditions is intended to assist the farmer in deciding whether or not to poison, and in selecting the equipment most suitable for his special problem.

### Will It Pay to Poison?

It will pay to poison—

If the weevils are really injuring your crop seriously, and

If your land is sufficiently fertile to yield at least one-third of a bale per acre if injury by the weevil is eliminated, and

If your farming organization is such that you feel assured that the application of poison will be made at the right time and in the right manner, and

If you are willing to spend the full amount necessary to provide an adequate equipment of dusting machinery and an adequate supply of calcium arsenate.

### The Presquare Application

The presquare treatment should be given only on those fields where the overwintered weevils are unusually abundant in the early spring.

It should be made just when the cotton begins to square.

Either calcium-arsenate dust or a mixture of calcium arsenate and molasses may be used for this treatment.

If dust is used it should be applied at the rate of from 2 to 3 pounds per acre.

For applying the dust shakers, bags, and the like may be used, or any type of dusting machine recommended for later applications, provided the nozzles are lowered sufficiently for the dust to reach the small plants.

In applying the mixture of molasses and arsenate use 1 pound of calcium arsenate to 1 gallon of water and 1 gallon of molasses (table sirup preferred), thoroughly mixed together and applied to the plants not more than 48 hours after the mixing.

Apply this mixture at the rate of 1 gallon per acre by means of a homemade rag mop, taking care to reach all growing tips of the plant.

In all cases repeat the application if a heavy rain falls within 24 hours after treatment.

On fruiting cotton, only dust should be applied.

### How to Dust

Begin dusting when the weevils have punctured approximately 10 per cent of the squares.

Use only pure cotton-dusting calcium arsenate in the form of a dry powder.

Use from 4 to 6 pounds per acre for each application, except in the case of presquare dusting.

Use only dusting machinery especially constructed for cotton dusting.

If possible, dust only when the air is reasonably calm and when the cotton plants are moist.

Repeat applications at 5-day intervals, as may be found necessary to keep the weevils under control.

When the infestation has been reduced to less than 10 per cent, discontinue poisoning until the weevils again become injurious.

If weevils attack the young bolls late in the season, make such additional applications as are found necessary to protect those bolls.

When fall migration begins with a general dispersal of weevils, it is usually no longer profitable to continue poisoning for the protection of squares, but frequently it is very profitable to make one or more applications at this time if there is a crop of young bolls still subject to damage by the weevil.

If a heavy rain falls within 24 hours after poisoning, repeat the application immediately.

Do not expect to eradicate the weevils; poisoning merely controls them sufficiently to permit a full crop of cotton, and you can always find weevils in a successfully poisoned field.

Keep your cotton acreage low and do everything possible to increase your yield per acre; it costs just as much to poison cotton yielding one-quarter bale per acre as to poison bale-per-acre cotton.

If you are in doubt whether poisoning increases the yield, leave an occasional portion of a field untreated for comparison with the adjoining poisoned area. This will show how much you have increased your yield by poisoning.

### What Dusting Equipment to Use

For applying calcium-arsenate dust on fruiting cotton there are many types of machines adapted for different conditions. Each farmer should carefully study his particular dusting problem and select the machine most suited to his needs. The most important types of apparatus are as follows:

*Hand gun.*—The hand gun is the least expensive individual machine, but is recommended only when other types are not suitable. One hand gun will treat only about 8 acres of cotton in a season.

*Saddle gun.*—The saddle gun is operated from mule back by hand cranking, and will care for from 40 to 50 acres of infested cotton through the season. This machine has two nozzles, one extending down on each side of the mule.

*One-mule machine.*—The 1-mule machine is pulled by one mule between two rows of cotton, and will care for about 60 acres of infested cotton through the season.

*Traction cart duster.*—The wheel-traction cart duster is usually built with three nozzles and is pulled by two mules. This machine will care for approximately 100 acres of infested cotton through the season.

*Power cart duster.*—The power cart duster has a fan turning at high speed, operated by a gasoline motor, and permits dusting under more adverse atmospheric conditions than any other machine used on the ground. It is particularly suited for large areas or where the absence of dew causes conditions comparatively unfavorable for dusting. The different models vary considerably in capacity, but will usually care for from 200 to 300 acres of infested cotton through the season.

*Airplane dusters.*—For the last five years airplanes have been used in commercial cotton dusting. They are most useful on level land

and with large, open areas. The individual farmer rarely has enough cotton to justify ownership of a plane, but commercial organizations are now selling airplane-dusting service on a per-acre contract basis. To obtain such service several large farms or many small ones may provide the necessary acreage, and the cost is usually no higher than the cost to the farmer who does his own poisoning.

*Duster attachments for cultivators.*—Various types of dusting devices for attachment to cultivators are now being developed, and although these are in an experimental stage it is undoubtedly only a question of time until useful equipment of this sort will be available.

### Cost of Poisoning

The cost of poisoning varies widely with the individual problem, and only average figures can be given. On the basis of present prices (calcium arsenate now costs 8 cents per pound) the presquare application costs about 50 cents per acre, whether dust or molasses mixture is used, and the later dustings cost about 75 cents per acre per application.

Every farmer who contemplates poisoning the weevils on his cotton is urged to obtain all possible detailed information for his guidance. Free bulletins may be obtained from the United States Department of Agriculture, Washington, D. C. Those requiring special information may secure it by writing to the Delta Laboratory, at Tallulah, La., or to any of the various State experiment stations in the Cotton Belt.

Above all, remember to—

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