

### DUSTING COTTON WITH CALCIUM ARSENATE TO CONTROL BOLL WEEVIL

By W. B. MABEE, Entomologist in Charge Boll Weevil Field Station, Dunn, N. C.

Ever since the boll weevil in the United States in 1892 there has been a ceaseless effort to find some means to control this destructive pest. Up to the present time there has been no way discovered to eradicate the weevil, nor completely control it. However, it has been proved that will so reduce the numbers of weevils in the field that it is possible to produce a crop of cotton under favorable conditions.

Of all the poisons that have been tried in the South, Calcium Arsenate has proved the most effective under conditions.

part of the plantation each day. We find that the weevil damage is very much more severe on some of the places than on others. Some cuts will need several poisonings per season, other cuts fewer, and some none. The continuous poisoning throughout the season brings an excess of plant material, possibly because the Calcium Arsenate kills the enemy of the lice and the plant lice decreases the yield to some extent and also damages cotton glands. Therefore it is important to poison as little as possible to control the weevil. The number of poisonings for an individual cut cannot be determined until used a maximum of poisons on some cuts in cotton. The amount is summed up by the amount of a cut showing infestation resulting from the application of sufficient poison.

As a result of the work done by the government and the experiment stations in the various Southern States, cotton dusting has been done on a large acreage throughout the cotton belt with satisfactory results, where it was done right and carefully.

To the grower who is inexperienced in fighting the weevil there naturally arises several questions—If dusting is the proper method to use when and where should I begin, how do I use it and what machines should I use? Therefore, it is the purpose of this article to give you the experience and suggestions of the Government Agricultural Workers and the practical growers who have had experience along this line.

Why Dust Cotton

The principal reason for dusting cotton is that Calcium Arsenate applied in the dust form is the only form of weevil poisoning that has proven practical and stood test under field conditions for years. Showing always, when properly done, a net profit to the user.

Poison applied in the dust form can be much more thoroughly done, as the dust when thrown out from a properly constructed dusting machine under proper atmospheric conditions will settle slowly, covering every surface of the plant and poison every droplet of dew.

Dusting is much the most rapid and less costly method of thoroughly applying a poison. No mixing, no hauling of water to the fields, no unclogging of small spray nozzles, it is clean, quick and efficient.

Dusting is much more quickly done. This is an important factor in weevil control on account of the large acreage of cotton that must be poisoned. One man with a one mule machine can cover 15 acres in a night, while with the mopping method it would take three or more men to cover the same acreage. The dust covers the plant thoroughly while mopping with bucket and stick mow would only put a few drops on each plant.

"We use for the general poisoning a three-sport two-wheel machine of the two-wheel type. This machine covers two rows at a time. I believe it is unnecessary to set the spouts so as to put the poison right down in the cotton. A dust cloud made right over the cotton stalks, which will eventually settle all through the plants, seems to be better. For our new grounds, where we have stumps, we use the mule back duster. This carries two rows at a time and the operator will cover about twelve acres per night. All poisoning is done when the dew is on the ground, either at night or early in the morning.

In the 1922 tests on seven farms in North Carolina there was an average of 305 pounds of seed cotton per acre in favor of the dusted cotton. This gain was valued at \$29.48. The complete average cost amounted to \$5.40 per acre. Subtracting the cost of \$5.40 from the value of \$29.48 gives a net profit of \$24.08 per acre over and above expenses. In 1922 the Virginia Carolina Chemical Company had 237 tests throughout the South which averaged 295 pounds in favor of dusting.

"The above is a very general statement of the proposition, as you know, but possibly will cover the subject fairly well for your purpose. If I can serve you further in this matter or in any other way please write me. With best wishes for your success there I am,

"Yours sincerely,  
"J. W. FOX."

Following is a letter from J. W. Fox, general manager of the Delta and Pineland plantations of Mississippi, the largest cotton plantation in the world, consisting of 35,000 acres.

"Scott, Miss., May 21, 1923.  
"Mr. W. B. Mabee,  
"North Carolina Dept. of Agriculture,  
"Dunn, N. C.  
"Dear Mr. Mabee:—

You will notice that this plantation has been dusting cotton since 1917, a period of six years, and are satisfied with the results. Mr. Fox's letter in itself is sufficient evidence of the value of dusting in weevil control.

Why dust cotton? Because it is a practical proven method and there is no reason to experiment further with methods that HAVE FAILED.

"In 1917 the work of Mr. E. R. Coad, in charge of the Government Boll Weevil Laboratory, Tallulah, Louisiana, was called to our attention. That season Mr. Coad had four experiments on our plantation at Scott and the results of these experiments convinced me that if the Calcium Arsenate could be properly applied, that is if the proper machinery could be had, this method would be feasible. Since that time we have used 500 tons of Calcium Arsenate for boll weevil control here, and we are thoroughly committed to this method.

When To Begin Dusting

Dusting should be started when 10 per cent of the squares on the cotton plants are punctured. This should be an average on the whole field. Anyone can determine the percentage of infestation if they will go into the field and make a careful count. Count 100 squares, examining them as they are counted. Everyone that is found punctured keep in your hand or put in a pocket. When 100 have been counted see how many there are punctured. Thus 4 punctured squares in your hand would indicate 2 per cent, ten in the hand would indicate 10 per cent and time to begin dusting. These counts should be made in several sections of the field so that an average can be secured. Do not think that this means 10 per cent of the cotton crop is ruined before you begin. IT DOES NOT. Remember that cotton will shed about 60 per cent of its squares under normal conditions. If a cotton stalk has 20 squares and 2 of them are punctured that means 10 per cent infestation but would not indicate that 10 per cent of the crop was ruined. The 10 per cent infestation is merely an indication that there are a sufficient number of weevils in the field to profitably apply poison.

work on the cotton squares it moves about the field only slightly. They are enfeebled by their hibernation and settle on the first cotton they come to, therefore you will find patches or corners next to woods, etc., infested first.

With this in mind if a man has studied his fields and knows where these worst infested places are, it is feasible to take a hand dust gun and fight them in these restricted places, thus putting off the time when a general application is necessary for the field. In this way a man can, at some times, save poison and save cotton. The most important thing is that the grower should know his every field and have different treatments for different infestations. The number of poisonings for an individual cut cannot be determined until used a maximum of poisons on some cuts in cotton. The amount is summed up by the amount of a cut showing infestation resulting from the application of sufficient poison.

any season. In North Carolina in 1922 the average number of necessary complete applications was five for the season. Of course if a rain comes within 24 hours after an application it is necessary to do it over again; but even in rainy seasons, six or seven applications would be sufficient. This means five applications at five pounds per application, or 25 pounds of Calcium Arsenate per acre for the seasons treatment, or better have thirty pounds per acre in order to have enough to take care of emergencies or reapplying it after a rain.

When To Apply The Dust

The dusting operation must be done when the air is calm, and the cotton plants are thoroughly moist. This means that a majority of the dusting must be done at night. Of course on a still afternoon after a rain it could be done, and as a rule if a man's acreage is not too large and he has sufficient machinery he can work a while about sundown and a while early in the morning and get most of his dusting done by daylight. It is useless to try to dust on a breezy dry day.

Remember the principal fight comes when cotton is laid by and work has slackened up a little. The first dusting on the tests in North Carolina in 1922 began on July 18th. How Often Is It Necessary to Dust

An application should be made every four or five nights. Three applications can be made in succession, keeping track all the while of the infestation by making percentage counts. After three applications usually (not always) the percentage will be reduced so that you may be able to wait as long as two weeks before following up with one of two more applications to protect the bolls. Remember, every man will have different conditions which may necessitate a more or less number of applications, and by knowing his fields, he can save very often a considerable amount of poison and time.



work. They cost from \$15 to \$20. There are several makes of these machines that are very good. The Feeny made by the Feeny Manufacturing Co., of Muncie, Ind. The Doech made by the Doech Chemical Co., Louisville, Ky., and the Niagara, made by the Niagara Sprayer Chemical Co., of Middleport, New York.

The Fifteen Acre Grower

Two hand guns will take care of fifteen acres. A man should never undertake to dust more than twenty five acres with hand guns.

torily by the use of the saddle gun as illustrated in Figure III. These are so constructed that a man can ride a mule and dust two rows as he sides.



A SADDLE TYPE DUST GUN POPULAR ESPECIALLY IN STUMPY GROUND

This machine is particularly useful where land is stumpy or where the fields are so rough and uneven that a traction machine would be hard to operate. There are two machines of this type on the market that will do satisfactory work.

The Root Saddle Gun, made by the Root Manufacturing Co. of Cleveland, Ohio, which sells for \$65.00 including the saddle, and \$75.00 without the saddle, and the Feeny made by the Feeny Manufacturing Co., of Muncie, Ind., sells for \$55.00 without saddle.

This machine is drawn by two mules and straddles a row as it goes. They permit the man to ride getting him up out of the wet cotton. These



machines of which there are two good types on the market are well constructed and do fine work. They cost from \$250 to \$350.

The Niagra, made by the Niagra Sprayer Co., of Middleport, N. Y.

The Iron Age, made by Bateman and Companies, Inc., New York City.

A man who has one or more of these machines should have one or two hand guns to poison his heavily infested spots and to poison the turn row and fence corners that are inaccessible with the larger machines.

Some Don'ts

Some common mistakes are here listed in order that the growers beginning dusting for the first time



may profit by them.

1. Do not begin general dusting operation too early. Wait until 10 per cent of the squares are punctured before beginning the operation on the whole field. Poison patches as they reach the 10 per cent infestation stage and start the general operation when the average on the whole field reaches 10 per cent.

6. Usually about five applications per season are necessary.

7. Dust every fourth or fifth night.

"DO IT RIGHT OR NOT AT ALL"

Program For Women's Clubs Now Available

Studies in the history of North Carolina, a program of Women's clubs, by E. D. W. Connor, Kennan Professor of History and Government, has just been issued by the Women's Club section of the University Extension division.

The following subjects are presented: The Land and Its People; The Carolina Proprietary; Growth and Expansion; The Stranger Within Our Gates; How Our Ancestors Lived; Our First Family Quarrel; How We Set Up Homesteading for Ourselves; The Boys of '76; Shall We Join the Union? Education for Citizenship; Sectional Controversies; The Spirit of Humanity; Our Second Family Quarrel; Under the Old Flag Again; Rebuilding an Ancient Commonwealth.

Evading Taxes

Certain brokerage houses in the larger cities of the state are now circulating the state, offering to assist in converting taxable securities into those which are exempt from taxation, so as to enable the owner to evade the necessity for listing his stocks and bonds for taxation on May 1. In this connection it should be noted that Ch. 28, Public Laws, 1921, provides as follows: "Any person who, to evade the payment of taxes, surrenders or exchanges certificates of deposit in any bank in this state or elsewhere for non-taxpaying securities or property, or surrenders any taxable property for non-taxable property, and after the date of listing property has passed, takes said certificate or other taxable property back and gives up said non-taxpaying securities or property, or surrenders any fictitious note or other evidence of debt for deduction from his solvent credits, shall be guilty of misdemeanor, and upon conviction shall be fined not less than fifty nor more than two hundred dollars (one-half of which shall go to the informer), or imprisoned not less than one month nor more than six months, or both."



A POPULAR TYPE OF ONE MULE DUSTING MACHINE

The mule does all the work, as the fan is driven from the traction wheel. It takes two rows as it goes, making it only necessary to go up every other middle. These machines are adjustable to width of rows and height of cotton. The amount of poison per acre can also be regulated.

right, or not at all. When a man is willing to put in the study and the work it will net him a nice profit for every dollar he spends. There are failures with dusting, the same as there are failures in any line of business undertaking, and it is not expected that every man, no matter how careless he may be, will profit by it.

promptly when you find a 10 per cent infestation. KNOW YOUR FIELDS, know when infestation reaches 10 per cent and dust promptly.

3. Do not try to make one machine cover too many acres. Have an abundance of machinery rather than a shortage. Have enough machinery to dust your cotton in three nights leaving one night margin for breakdown or rain.

There are several different types and makes of dusting machines. The object of this article is not to say which is the best machine, but to describe only those makes which we know will do the work satisfactorily.

The Ten Acre Grower

For the small grower who has no more than ten acres in cotton a hand gun similar to the one shown in figure one will be sufficient to do his

It does seem to the writer that after a man who has invested in fertilizer, in seed and in labor to put in and take care of his crop, would be making a mistake not to spend \$5.00 or \$6.00 an acre to protect his investment and make a profit.

Re-arranging the farming operations to include a complete dusting program, the writer is well aware is a problem. Getting the tenants to use the poison, seeing that it is properly and carefully done at the right time, all has to be looked after and adjusted. However, it is the growers problem, every cotton grower must fit this program into his scheme, or suffer the consequences of the weevil. Meeting the weevil problem means extra work and extra money, but it is that or lose.

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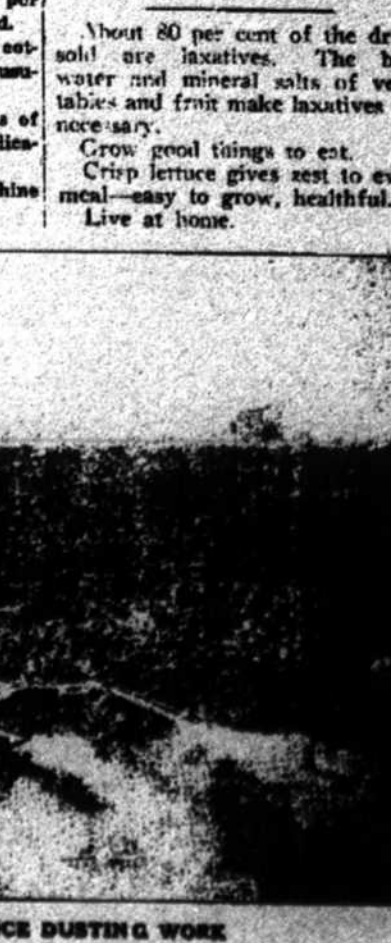
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Any business house in North Carolina that openly engages in the encouragement of the evasion of taxation is an enemy of the state, and should be blocked, if not by the criminal law at least by an awakened public opinion.—News Letter.

About 80 per cent of the drugs sold are laxatives. The bulk water and mineral salts of vegetables and fruit make laxatives unnecessary.

Crop good things to eat. Crip lettuce gives rest to every meal—easy to grow, healthful. Live at home.



ONE TYPE OF THREE ROW MACHINE THAT DOES NICE DUSTING WORK