CIRCULAR No. 33 SEPTEMBER, 1915

ALABAMA

Agricultural Experiment Station

OF THE

Alabama Polytechnic Institute

AUBURN

Boll Weevil Control by Cotton Stalk Destruction

BY

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Montgomery, Ala.
The Paragon Press.
1915

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BOLL WEEVIL CONTROL

by

COTTON STALK DESTRUCTION.

By W. E. Hinds, Entomologist.

The weakest point in the whole life of the boll weevil is its complete dependence upon green cotton for food. If we can control the occurrence of this food supply we can thereby control the boll weevil. The only time in the active life of the weevil at which it is possible to control the weevil's food supply without decreasing the production of cotton is during the few weeks in the fall after the crop has matured and been gathered, but before it becomes cold enough for the weevils to live without food. This they can do from the time killing frosts occur in the fall until from March to July of the following summer when they leave their winter shelter and seek green cotton again. No late-maturing cotton occurs where the weevils are abundant. In fact, under weevil conditions the whole tendency is toward the production of a very early-maturing crop. With the reduced acreage in cotton, it then happens that the picking season ends, cotton fields can be cleaned up and a winter-growing crop may be planted many weeks earlier than such things can usually be done before the weevils arrive. The longer the period between the removal of green cotton and the occurrence of killing frost the more complete will be the destruction of the weevils and consequently the less will be the weevil injury to the following crop of cotton. To be fully effective stalk destruction must include the destruction of squares, bolls and foliage with no chance of sprouts appearing later to maintain the surviving adults until frosts occur.

METHODS OF STALK DESTRUCTION.

The best method of stalk destruction from the standpoint of good farming, is to chop the cotton stalks thoroughly and then turn them under *deeply* burying them under *at least four inches of dirt.* If not buried as deep as this many adult weevils will make their way to the surface and escape to other fields or to winter shelter. This method saves all of the vegetable matter to help enrich and improve the soil, but requires more mule power and better plows than the average cotton farmer possesses. However, even the two-mule plow may be used quite satisfactorily where the cotton stalks are not above average size

and where the plowing up of cotton can be done *before the end of September.*

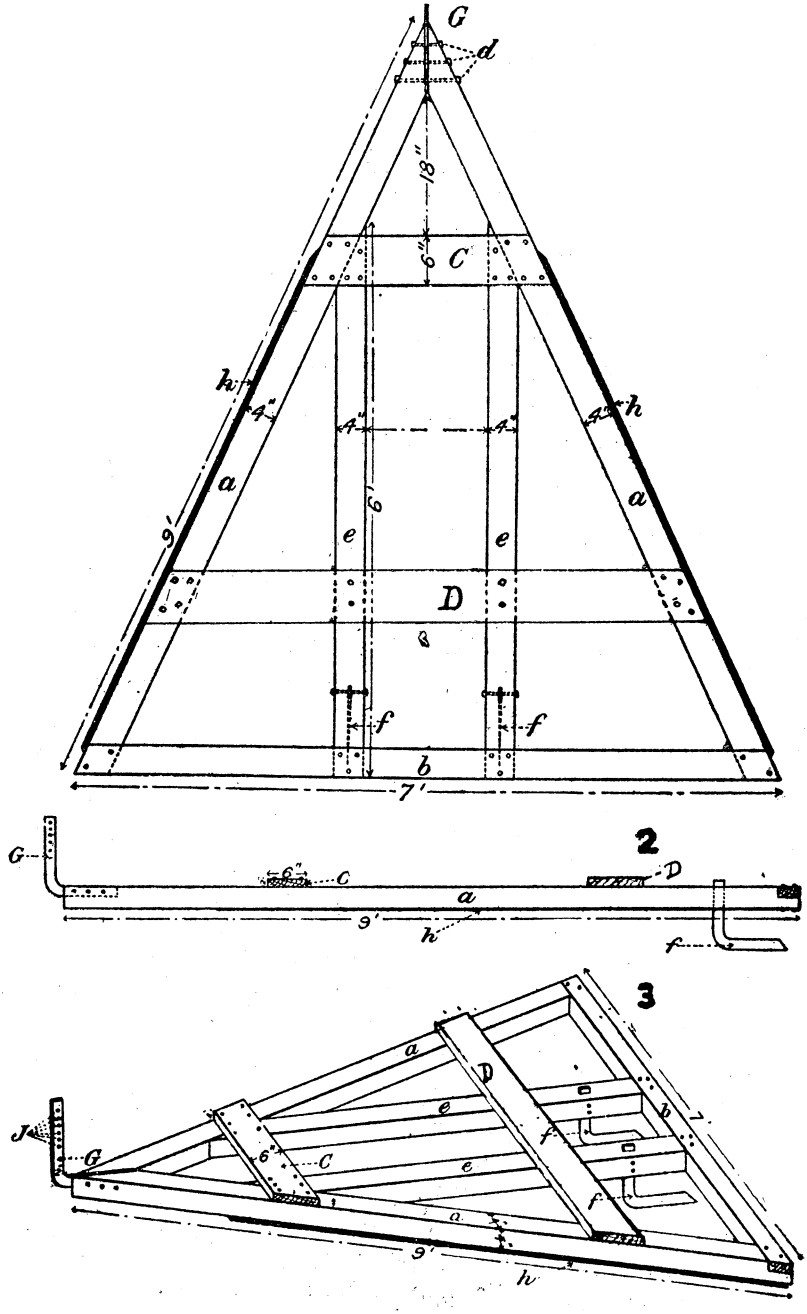
The second method consists in uprooting the stalks and piling them so that they may be burned quickly. The cheapest, quickest and best way to accomplish this is by means of the "V-shaped," or as it is better called, the "A-shaped" cotton stalk cutter. This implement can be home-made and its use shared by several neighbors. It cuts two rows at a time and it is possible to cut and windrow the stalks on from ten to fifteen acres per day. The expense involved may range from 25 to 50 cents per acre according to the size of the stalks, freedom from stumps, etc.

The following description of the construction and use of this implement is taken from Louisiana Crop Pest Commission Circular No. 30, by Prof. Wilmon Newell and Mr. M. S. Dougherty.

MATERIALS FOR MAKING STALK CUTTER.

An "A-Shaped" cotton stalk cutter may be made at home with a little help by a blacksmith. The size may vary somewhat according to the distance at which the cotton rows are planted. The spread at the rear corners should be at least thirty (30) inches greater than the distance at which the cotton rows are planted and the length of each side should be about one-third greater than the spread at the rear corners. Thus for 3 to 3½ ft. rows a spread at the rear corners of 6 ft. will be sufficient and the corresponding side length will be 8 ft. It is quite possible that a cutter might be so constructed as to be adjustable in width but if this is done care must be taken to preserve strength and rigidity. For a cutter to be used in 4½ to 5-foot rows the following list of materials will be needed:

"2 pieces lumber, 4 by 4 inches, 9 feet long.
2 pieces lumber, 4 by 4 inches, 5½ feet long.
1 piece lumber, 4 by 4 inches, 7 feet long.
1 piece lumber, 2 by 6 inches, 3 feet long.
1 piece lumber, 2 by 6 inches, 5 feet long.
1 piece of iron, ⅜ inch by 2 inches, 30 inches long.
2 pieces of iron, ⅜ inch by 1½ inches, 24 inches long.
12 bolts, ⅜-inch, 6½ inches long.
10 bolts, ⅜-inch, 4½ inches long.
1 bolt, ⅜-inch, 4 inches long.
1 bolt, ⅜-inch, 7 inches long.
2 bolts, ⅜-inch, 9 inches long.
45 bolts, ¼-inch, round heads, 4½ inches long.



A-SHAPED COTTON STALK CUTTER.

Fig. 1, surface view; fig. 2, side view; fig. 3, view in perspective.

45 large washers to fit the ¼-inch bolts (needed if the blades are to be made from crosscut saws, as indicated below).

2 steel blades, about 3/16 inch thick, 3 to 4 inches wide, and 5 to 6 feet long, sharpened on one edge (or, better, two old crosscut saws from which to make the blades.)

Only sound, well-seasoned cypress should be used. The cost for lumber is usually about $1.00. The bolts required cost about 80 cents, the iron for making the clevis and rudders about 50 cents, and the steel blades about $1 each. If old saws are readily obtainable, they may be used and the price of the blades saved. The total cost for materials will, therefore, range from $2.30 to $4.30, depending on the variable local prices of lumber and hardware, and whether new material must be purchased for the blades. If the farmer has no forge it may be necessary to add the charges of a blacksmith.

The two 9-foot pieces of cypress (aa) and the 7-foot piece (b) should be cut and bolted together. An opening should be chiseled in the top of the longer piece to receive the clevis attachment at G.

The clevis attachment is made by bending at right angles a piece of iron ⅜ by 2 by 30 inches. It is bent edgewise about 12 inches from one end. Three holes should be drilled 2 inches apart in the 12-inch arm to receive the 4, 7, and 9-inch bolts (fig. d) which fasten together the two 9-foot pieces of cypress (aa). Six ½-inch holes 1½ inches apart should be drilled in the upper portion of the 18-inch arm of the attachment clevis for use in hitching to the cutter and in regulating the depth at which the blades cut.

The rudders (ff) should be made of iron pieces ⅜ by 1½ by 24 inches, bent at right angles 8 inches from one end in the same manner as the clevis. The outer edge is beaten thin to cut through the ground without unnecessary friction. Six holes 1 inch apart should be drilled in the 16-inch arms of the rudders to permit them to be raised and lowered as the height of rows in the field varies.

The blades (hh) should be 5 or 6 feet long and wide enough to bolt firmly to the underside of the 4 by 4-inch pieces (aa) and still extend the cutting surface 1½ inches outside the wood. They should be of well-tempered steel. Old crosscut saws with the smooth edge filed to sufficient sharpness make excellent blades when securely bolted on.

When the side pieces (aa) and the base (b) are bolted together with ⅜-inch bolts, the clevis attachment should also be bolted in place. Additional bolts back of the clevis will add

to the rigidity of the cutter. The 3 and 5-foot pieces 2 by 6 cypress (C and D) should next be bolted to the side pieces (aa) and the 5½-foot rudder pieces (ee) bolted to C and D and mortised into the base (b), as indicated in figures 2 and 3. These are the rudder timbers and should contain openings about a foot in front of the base (b) of suitable size to receive the 16-inch rudder arms (ff). Two bolts through each rudder and rudder timber should hold the rudders in place. When in addition to these steps the blades (hh) have been securely bolted to the undersides of the side pieces (aa) the machine is completed. The blades should project 1½ inches and extend to the rear corners of the machine. If the blades are curved because made from crosscut saws, or from any other reason, they should be so set as not to project more than 1¼ inches to 1½ inches at the centers. In any case plenty of bolts should be used and absolute rigidity secured.

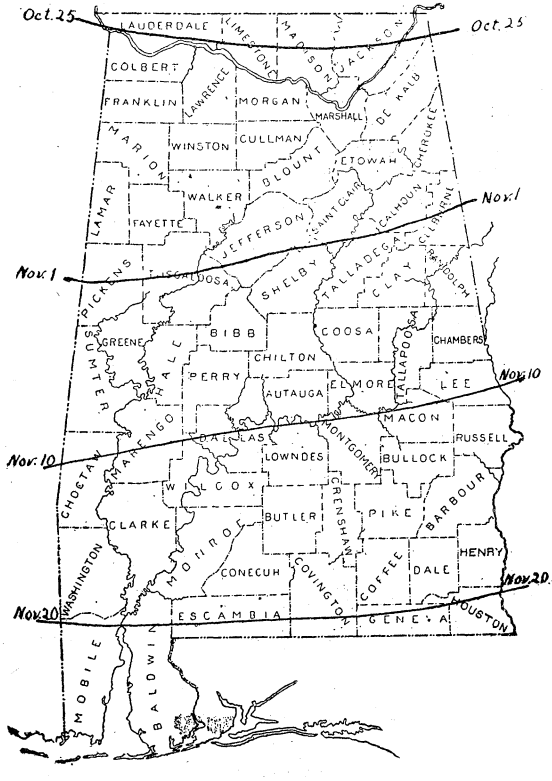
In using the cutter it is necessary to keep the blades very sharp by filing or other means. They should be so adjusted as to cut the cotton stalks just beneath the surface of the earth. Their depth is regulated by raising or lowering the chain by which the singletree is attached. If the machine runs too shallow the attachment should be raised to a higher notch in the attachment clevis (j. fig. 3). The rudders should be set deep enough to prevent skidding, but not deep enough to make the machine pull too heavily.

Where no fence surrounds the field two horses or mules should be hitched tandem to the stalk cutter in order that both may walk in the middle and pull steadily. If the field is fenced this arrangement will prevent cutting of the stalks at the ends of the rows and the two horses must be driven abreast. It is absolutely necessary that not a single green cotton stalk be left uncut in the field or at its edge if the weevils are to be starved. For this reason the field should be carefully gone over and every stalk that the machine has missed should be cut or pulled and placed upon the pile."

It is to be hoped that the practical difficulties presented by the tenant system may be overcome, so that every tenant will be led (or forced if need be) to consider that his season's work is not complete until he has added this step to the harvesting of the crop. This idea would be welcomed if there could be a general understanding by landowners and tenants of the fact that fields thus treated will produce better yields, as a rule. They would be better inducements to securing a good class of tenants, and such tenants having cleared their fields in the fall would be less likely to move.

CONCLUSION.

The question here presented is a vital one for the weevil-infested area. It demands not merely acquiescence, but action. The destruction of stalks by some effective method and as long as may be possible before the normal time for weevils to enter hibernation constitutes the most effective method now known of reducing the severity of the weevil attack upon the following crop. It therefore deserves general recognition and adoption as the last step in the treatment of each season's crop and essentially the first step also in the production of a crop with the minimum weevil injury during the following season.



Average date of first killing frost in Alabama.