

Kansas State Agricultural College,
EXPERIMENT STATION DEPARTMENT OF ENTOMOLOGY**Swat the Chinch Bugs as They Pass from Wheat to Corn.****Ripening of small grain will force the bugs to move.**

The great number of chinch bugs that passed through the winter successfully and made their way into fields of wheat, oats and rye this spring renders it almost certain that the brood of young bugs, which will develop in these fields, will assume dangerous proportions. At harvest time these bugs will be approaching maturity and the ripening of the wheat, oats and rye will deprive them of food and so force them to move in a body to other feeding grounds. Under the stress of hunger they will seek the nearest field that affords food, and the farmer that has a field of corn or other grain acceptable to the bugs adjacent to an infested wheat field may rest assured that this crop will be attacked at harvest time unless he makes a prompt and vigorous effort to keep out the pest. To explain the measures by which this may be accomplished is the object of this article.

How to attack.

The principle underlying these measures involves the construction of a barrier that the bugs cannot or will not cross, and also the devising of means whereby the moving bugs may be trapped and destroyed. The immediate object is, of course, to protect the threatened crop; but the more important end to be attained is the destruction of the bugs. This will prevent the production of the second brood of the season—the brood that will go into winter quarters and will emerge next spring to continue the work of injury to cereal crops. In general there are two types of barriers—the dust barrier, which is excellent when the weather is dry but worthless when it is rainy, and the coal-tar barrier, which is serviceable in either wet or dry weather and is therefore the measure that can be depended upon.

The dust barrier.

To construct a dust barrier proceed as follows: (1) Plow a strip six or eight feet wide between the bugs and the field to be protected. Finely pulverize this with harrow or disc and reduce the surface to dust by dragging brush over it. Then in this strip form a furrow next the side nearest the bugs by dragging lengthwise back and forth up on it a log or heavily loaded V-shaped trough. In the bottom of the furrow at intervals of from ten to twenty feet sink post holes a foot or eighteen inches deep. (2) Plow a deep lister furrow in place of a strip and reduce the sides and bottom of it to a fine dust by dragging heavy brush back and forth in it and then sink post holes as directed in the preceding plan. Any defective places must be dressed up with a hoe or rake. So long as the sides of these furrows are covered with fine dust the bugs cannot get out of them, and, in their efforts to cross the furrow, the insects failing to ascend the sides, move along the bottom, where they fall into the post holes and may be destroyed with kerosene, or if the sun be hot many will perish in the superheated dust. In their persistent efforts to scale the sides of the furrow they will, if numerous, finally remove the dust from the sides sufficiently to permit them to cross. In this event the dust must be renewed or a new barrier constructed nearer the protected field. This barrier is rendered utterly worthless by even a light rain. **Continued on page 2, column 1.**

the fact that dirt and litter blow into it, thus forming bridges for the bugs. By placing the tar line upon a ridge less difficulty, it is said, is experienced from this source. The coal-tar should be secured and the surface on which to place the line should be prepared some time in advance of the movement of the bugs, so that all may be in readiness for placing the tar as soon as the bugs begin their march. While the bugs are coming the line must be constantly watched throughout its length and renewed from time to time as necessity may require, which ordinarily will not be oftener than twice or three times a day. One man can guard from 80 to 100 rods after it is in operation, but it will require all his time to do so.

The trap strip.

Two measures may be added whereby these barriers may be supplemented and rendered more effective. Where it is possible, a narrow strip may be plowed up between the infested grain and the field to be protected and sown broadcast to millet, sorghum or corn some weeks previous to harvest time. This strip, by furnishing food, will arrest the bugs and hold them when they leave the wheat, while the barrier is being perfected between the strip and the uninfested field. When the bugs have collected in the strip they should be destroyed by mowing the strip and firing it as soon as the foliage is sufficiently dry, or by covering the strip with straw and firing it, or by plowing it under deeply and firming down the ground with a drag, thus destroying their food, together with vast numbers of the bugs, and forcing the others into the traps at the barrier.

Use kerosene.

Where the trap strip is not possible or for any reason the bugs get into the corn before the barrier can be constructed, the tar line may be placed within the corn, leaving two or more rows on which the bugs may collect. Experience shows that even in the absence of a barrier, the hungry bugs on entering a field attack only the first few outer rows and do not abandon them till their hunger is satisfied or the plants have been killed. This habit will make it an easy matter to maintain a barrier in the corn since by providing the bugs with food the necessity for their crossing the barrier will be removed. When they have collected in large numbers on these outer rows, the bugs (and the corn, too, if necessary) should be destroyed by thoroughly drenching the insects with kerosene emulsion or pure kerosene applied with a spray pump, or by piling dry straw between the rows and burning the whole outfit.

To prepare kerosene emulsion, take 2 gallons of kerosene, 1 gallon of water, and one-half pound of hard laundry soap. Dissolve the soap in boiling water, then remove the solution from the fire to a safe distance and add the kerosene while the water is still hot. Churn or agitate the mixture until a white creamy emulsion is formed. The best way to do this is to pump the mixture back into itself by means of the spray pump from which the spray nozzle has been detached. Use at the rate of 1 gallon of the emulsion to 12 or 15 gallons of water. The bugs must be thoroughly drenched. Diluted in this manner the emulsion, if properly made, will not kill the corn.

The coal-tar barrier.

The coal-tar barrier may be constructed in either of two ways. (1) Level off and firm down *hard and smooth* a strip free from weeds and grass about two feet wide by dragging over the surface a broad heavily-weighted plank or some similar object. To secure the best results the plank should be shod with zinc or some other metal that will slip readily on the surface. Rough and uneven places should be dressed off with hoe or shovel. Along on this smooth surface place a narrow line of coal-tar not less than three-fourths inch wide and then, as in the case of the dust barrier, sink post holes on the side next the bugs and as near the line as possible. It would be well to dig the holes first and place the tar line afterwards. Coal-tar is very offensive to the bugs and they refuse to cross it. In their efforts to find a crossing place they run along the line and crowd one another into the holes, where they may readily be destroyed with kerosene. (2) Instead of placing the tar on a level, throw up a back furrow and firm down *hard and smooth* both sides and top by dragging over it an inverted convex-bottomed trough. Place the tar line on top of the ridge thus formed and provide post holes as described above. In dry, windy weather some trouble is met in maintaining a tar-line barrier, owing to

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Approved:

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Importance of attack at this time.

The importance of intercepting and destroying the chinch bugs as they abandon the wheat fields can hardly be overestimated. This opportunity for a *direct attack upon them is the only one that will present itself until the bugs are again in winter quarters*, and failure to take advantage of it means not only injury to the present crop, but also the probability of an increased number of bugs to go into winter quarters this fall and thus carry the danger over to another year. To destroy the bugs at harvest time will not be an easy task. It will mean hard, persistent work for several days, or perhaps a week. To make a success of the attack, all other work must be neglected while the bugs keep coming, but every farmer can afford to do this when by so doing he can keep a horde of bugs out of his corn. He should begin his preparations at once, provide himself with one or more barrels of coal-tar and a good spray pump (of the knap-sack or barrel type)—an article that is essential to every farm equipment. He must keep an eye on the bugs and be ready to drop any work he may have on hand and meet them as soon as they begin to move from the ripening grain. It is understood that the measures proposed herein are not intended to apply to the bugs that made their way into the corn in May.

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