

METHODS OF CONTROL FOR THE EUROPEAN CORN BORER

By H. C. RATHER

With the European Corn Borer menacing Michigan's \$50,000,000 corn crop, farmers living within the area infested by the borer are bending every effort to check the progress of this pest and keep its numbers sufficiently reduced so corn can be grown with a minimum of loss.

Eradication of the borer is out of the question. However, the great clean-up campaign of the spring of 1927 demonstrated that Michigan farmers can hold the borer population to small enough numbers so



Shredding, Ensiling, or grinding corn stalks, since they make the stalks more useable as feed, are profitable ways to kill corn borers.

that they can continue corn growing without prohibitive borer damage. This fact has also been established by the experience of farmers in Hungary who have lived with the corn borer for years, and who grow corn in spite of it, by practicing clean-up measures similar to those employed in Michigan. It is also noted in Hungary that when clean-up measures become lax the borer gets out of hand and great losses in the corn crop results.

In order to suggest easier clean-up measures, which still are fully effective in controlling the borer, there is outlined herewith a series of

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practices for different conditions which exist in Michigan. Obviously, some conditions with which the farmers may be confronted are not just the same as those described here, but a selection of suitable methods from these various plans should be possible.

Do not confuse this circular with clean-up regulations issued by the Michigan State Department of Agriculture. The procedures here outlined are not Government regulations, but are suggested practices which will kill corn borers. If the work outlined is carefully and thoroughly done, the results will no doubt conform to Government Corn Borer Clean-Up Regulations.

Corn To Be Followed by Wheat, Rye or A Spring Grain Without Plowing. Field Free of Stones and Not Too Rough.

A. LOW CUTTER METHOD

1. Cut the corn with a corn binder having a low cutting attachment, so as to leave stubbles not over two inches long.
2. Cut off and destroy stubbles over two inches long and pick up any stalks or pithy weeds missed by the binder and destroy them.
3. The field is then ready for discing and seeding.
4. Finely shred, grind or ensile the stalks.

B. STUBBLE BEATER METHOD

1. Cut the corn with an ordinary corn binder to less than a twelve inch stubble.
2. Operate a stubble beater so as to destroy all stubble down to the ground.
3. Pick up and destroy any undestroyed stalks or stubble.
4. Finely shred, grind or ensile the stalks.

Corn Land to be Fall Plowed

1. Harvest the corn with an ordinary corn binder, cutting as low as possible.
2. Finely grind, shred or ensile the stalks.
3. Fall plow the stubble so it will be completely covered with dirt, using wire attachments as an aid to clean plowing.
4. Follow plowing with a roller or cultipacker.
5. Practice tillage operations which keep the stubble covered.
6. Before May 1st, pick up and burn any plant matter which may harbor living borers.

Corn Land to be Spring Plowed

1. Harvest the corn with an ordinary corn binder, cutting as low as possible.
2. Finely grind, shred or ensile the stalks.
3. Use a T-rail on the frozen ground to break off the stubble, as an aid to cleaner plowing.
4. Spring plow the stubble so it will be completely covered with dirt, using wire attachments as an aid to clean plowing.
5. Follow plowing with a roller or cultipacker.
6. Practice tillage operations which keep the stubble covered.
7. Before May 1st, pick up and burn any plant matter which may harbor living borers.

Where Corn Has Been Picked and Stalks Left Standing—or Where Corn Has Been Hogged Off

1. Cut off the stalks with an old mower; break them off with a T-rail, lift them with a bean puller or otherwise loosen the stalks so they may be raked into windrows.
2. Rake the windrows of corn refuse into piles, add dry straw if necessary and burn them.
3. Plow the field so as to cover the remaining debris.
4. Before May 1st, pick up and burn any plant matter which may harbor living borers. However, with the above procedure, practically no pick up should be necessary.

Low Cutting Attachments for Corn Binders

Corn stubble cut to less than two inches harbors very few borers and conforms to Michigan's Corn Borer Clean-up Regulations.* To secure this low cut stubble, several implement companies have devised low cutting attachments for corn binders.



Clean plowing is an effective means of checking the corn borer.

Undoubtedly, there are many conditions where the low cutting attachments will not do satisfactory work. Rough or stony fields should be handled in some other manner. In clean fields, not too rough, the low cutting attachments are very promising. Their advantage lies in their low cost, their operation as part of a regular job, and the fact that where they are successfully operated the clean-up job in that field, with the exception of the picking up and destroying of a very few missed or un-cut stalks, is completed.

The Stubble Beater

The stubble beater probably still has some place in corn borer clean-up work. However, most of the conditions which can be handled successfully with a stubble beater can probably be handled much more conveniently with a low-cut corn binder.

The stubble beater will not satisfactorily work in narrow rows, on

*A copy of these Regulations may be secured by writing to Mr. A. C. Carton, Bureau of Agricultural Industry, State Department of Agriculture, New State Building, Lansing, Michigan.

unattached stubble, on stubble over twelve inches in length, or on very rough or stony ground. It can be made to do good work on attached stubble less than twelve inches long in level, clean fields.

Its disadvantages are that high power and a power take-off are required, the high cost of operation, the danger of operation, and the implement's lack of value for any other purpose.

The T-Rail

The T-Rail is made from an 11 foot length of railroad iron which will take care of three three feet six inch rows. If a hitch is attached and the rail dragged over frozen ground it will shear stubble or stalks off next to the ground. In the case of stubble, this makes possible a cleaner plowing job. Stalks should be raked and burned prior to plowing. A perfectly clean raking, picking and burning job after a T-Rail makes plowing unnecessary, but plowing after the raking and burning, under most Michigan conditions, will be easier than trying to pick the field clean. Some farmers report greater success by dragging the T-Rail across the field, then turning and going back over the same strip, thus getting a clean break of all stalks or stubble.

The Plow

The plow must still be the farmer's chief weapon against the corn borer. An effective job of covering trash can be done by plowing deeply with a wide base plow. A full discussion of the plow and its use in corn borer control is given by Professor H. H. Musselman, in Extension Bulletin No. 55, which may be obtained from the Michigan State College.

Clean plowing of stubble is comparatively easy. However, attempts to plow under standing corn or stalks in a hogged-off field too often have resulted in a messy job, requiring hours of tedious hand picking to clean it up. Unless the surface is clean, borers which have been plowed under will come up again, crawl into the refuse and complete their life history to increase 100-fold during the summer.

For this reason, a method of control which kills the borers in the stalks by fire, shredding, grinding or ensiling is preferable to plowing under whole stalks containing the living borers. That is why spring raking and burning of standing stalks or hogged-off corn is to be preferred rather than plowing these whole stalks under, involving the necessity of picking the field to 100% cleanliness if real control is to be secured.

The Silage Cutter, Shredder, and Grinder

As a means of corn borer control, the silage cutter is one of the most desirable implements. Silage is one of the most desirable of farm feeds and the ensiling of corn kills all the borers put through the cutter into the silo. A farm having ten or more cows, or the equivalent of this number in other silage consuming live stock, will find a silo profitable besides being a natural and convenient way of killing corn borers.

Corn not put into the silo may be husked with a shredder, and if the farmer will insist on a close adjustment of this implement so the stalks are finely shredded, the operation will kill about 98% of the borers. The stalks and refuse around the place where shredding has been done should then be cleaned up and destroyed.

Shredding the stalks makes them more useable as feed, bedding, and fertilizer, and makes unnecessary the later burning of the corn stalks with the consequent destruction of fertility.

Feed grinders which finely cut the corn stalks are also effective in killing the corn borers contained in them.