

PLOWING FOR EUROPEAN CORN BORER CONTROL*

By H. H. MUSSELMAN

Clean plowing is essential for corn borer control. It is necessary to plow under all stalks, stubble, and trash, leaving a clean surface with no debris exposed after plowing and fitting which might furnish refuge for the borer. Ordinary plowing is not clean enough. Good work can be done, however, except in large standing stalks and long heavy stubble, with plows having a 14 inch width of share if proper adjustments are made and the right attachments are used. Wider plows are



Clean plowing is the most economical way of getting rid of stalks in the corn borer clean. up and leaves very little hand picking to be done in order to have a perfectly clean surface in which the borer can find no refuge.

necessary in heavy standing corn or heavy long stubble, especially on heavy land. As a rule, the wider the plow the more effective will be the work. Deeper plowing than usual will also probably be necessary. A single bottom plow will handle stalks and trash more effectively than the two or three bottom plow.

Where corn rows are well spaced and reasonably straight, a plow may be used to advantage which cuts one-half or one-third of the width of the corn row. By starting the first furrow close to the corn row, the row will be turned under in the next cut so that the stubble is in the bottom of the furrow. When two or three more furrows are cut, the furrow wall will be close to the next row, which may then be turned under in the same way as the first.

*For further information, see Circular Bulletin No. 70, The Present Status of the European Corn Borer, Published by Michigan Agricultural Experiment Station, East Lansing.

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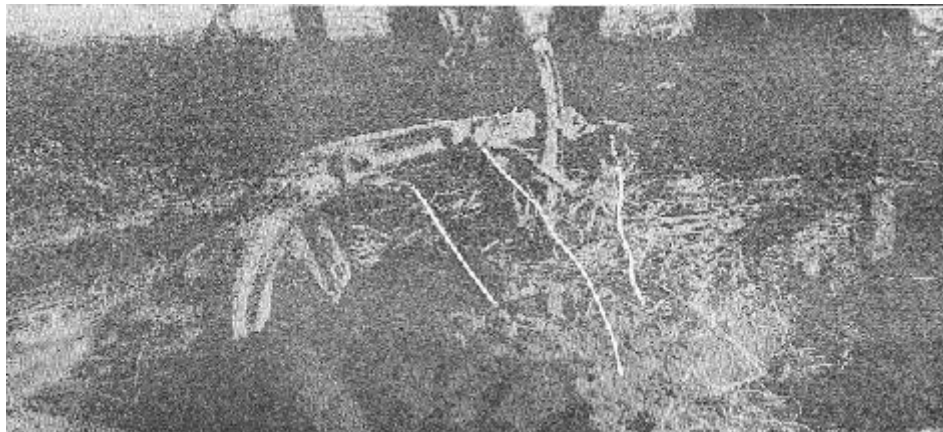
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The Plow Should Be In Adjustment

The general purpose type of moldboard is usually used, and it will turn under trash satisfactorily. A plow is designed to work best at a depth equal to one-half its rated width of cut. To obtain more cover for plowing under, the depth may be increased somewhat. Plowing at too great a depth will not permit turning of the furrow slice and will have a tendency to push it sidewise. To do good work, the plow should be properly adjusted. When the adjustment is correct, the walking plow should carry for some distance the width and depth for which it is set without its being necessary for the plowman to hold the handles.

Coulter and Jointer

The combination rolling coulter and jointer is effective in helping turn under stalks, except when they are heavy or when planted in hills. Rolling coulters cannot be furnished for all walking plows, but, where possible, should be used in the largest size available. The coulter



Walking Plow with No. 9 wires attached for holding trash.

should be set for a smooth furrow wall and deep enough to insure cutting. Clogging will result from too deep setting. With combination coulter and jointer, set the coulter farther forward than when used alone. coulters may be kept sharp with a grinder or coarse carborundum stone used as a file. The jointer should be set three-eighths to five-eighths of an inch to land and from directly over the point of the share to one and one-half inches back of the point. The depth should be one and one-half to two inches. It should turn soil enough to hold trash on the furrow slice.

Share

The share should be sharp and have sufficient vertical suction (point of share tipping downward) to pull the plow into the ground. This is especially important where the gauge wheel rolling over stubble tends to raise the point of the share out of the ground. The amount of vertical suction should be one-fourth to three-eighths of an inch. Horizontal suction (leaning of point of share toward the land) will make the plow run more steadily. Horizontal suction should be one-fourth of an inch. Shares are also provided with a one to one and one-fourth inch wing bearing at the outer corner of the share. If

the wing bearing is worn away, the plow will wing over and be difficult to hold. A worn heel on the landside should be adjusted or replaced since it assists in controlling depth. Chilled shares should be replaced with new as needed to secure suction and wing bearing. Steel shares may be sharpened by heating and drawing out by someone skilled in giving them the proper shape to secure suction and wing bearing.

Hitch Adjustment

A length of evener and line adjustment should be used which will permit each horse to pull straight ahead. For two horses, a 38 inch evener is about right with a 14 inch plow. Where three horses are used with one horse in the furrow, singletrees 27 to 28 inches long should be used. Where the gauge wheel is used on the plow, get the plow in adjustment without the wheel, set wheel, and raise vertical hitch one hole. The tugs should be at right angles to the hames with little or no pull on the hip straps or backhand. With harness adjusted, the vertical hitch in the plow controls the depth and the horizontal hitch controls the width of cut.



Wide base wheel plow equipped with wires for turning under stalks.

Trash Wire

A No. 9 wire, 8 to 10 feet long, is fastened to the jointer shank and the free end is allowed to drag under the furrow slice as it turns. This will be found effective in holding down stalks for complete coverage. Additional wires may be used to advantage in the same way by attaching the ends to the beam, clevis and evener. A few trials with placing the wires will show the best combination. Tension on the wires may be increased by increasing the length.

The Chain

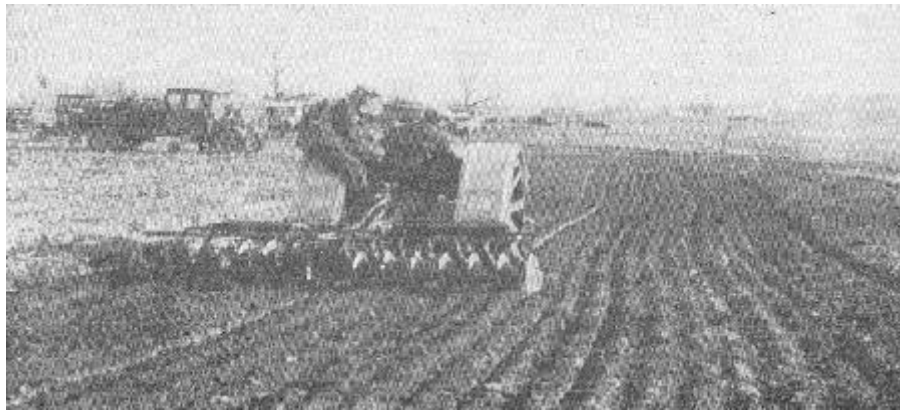
A one-half inch or five-eighths inch log chain having one end fastened to the plow beam and the other to the furrow end of the evener with a loop long enough to be covered slightly by the turning furrow slice, will be found useful. For heavier stalks or stubble, a knot tied in the chain or a short piece of wire or chain attached to it in the corner of the furrow will keep the chain tight and pull down stalks and stubble as the furrow slice turns over. The chain will break over stubble better than the wires, but will have more tendency to clog.

Preparation For Plowing

Standing stalks may be laid flat, preferably with a roller or cultipacker. Going once over in the direction of plowing seems to be all that is required. In case the last cultivation left the earth ridged in rows, cross working with a disc may be an advantage for the purpose of leveling the ground. For small stalks or where the large plow is used, this preliminary operation is not needed. If the narrow plow must be used, thorough double discing and cross discing may be required to make complete coverage with the plow possible.

Fitting

Where standing stalks or stubble are turned under, some means of compacting the soil following the plow should be used. A cultipacker or roller will compact the soil and press the stubble roots into the ground so that they are not easily brought to the surface in further operations. The cultipacker or roller may be followed with the disc and spike tooth harrow.



Stubble turned with fourteen inch base plow and followed with corrugated roller and disc.

If used, the disc harrow should not be set to cut too deep. The spike tooth harrow set with the teeth pointing slightly to the rear should be used instead of the spring tooth harrow, which has a tendency to uproot the stubble.

Sulky and Gang Plows

The above suggestions apply to the walking plow. Wheel plows usually carry the heel of the landside clear of the bottom of the furrow. Other adjustments such as depth and width are controlled differently and vary according to the type of plow. The use of weed rods and trash wires instead of the chain is recommended for trash covering with wheel plows, and it is apparent that single bottom plows are more effective than gang plows in covering stalks and stubble.

Final Clean Up

Occasional exposed stalks or stubble can be picked and thrown in the furrow as the plowing is done. A final pick up should be made, as occasional material will be brought to the surface in fitting in almost any case.