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Mechanical Pickers To the Rescue!

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ONE MAN with a tractor can plant and cultivate 125 acres of corn. The trouble is, he can't husk it.

And so the farmer who husks corn by hand well knows that after his corn crop is laid by, his heaviest work on the crop is still ahead. He's forced to put on extra help for several weeks to get his crop to the crib. Besides, if in adopting tractor farming he has disposed of most of his horses, both teams and men must be hired for the husking.

Using horses and a single-row cultivator, one man can grow 35 to 40 acres of corn. A good hand husker will sometimes harvest this acreage without additional help, but if there is much livestock to care for, extra harvesting labor may be required. With larger teams and a 2-row cultivator, one man can grow 60 acres or more of corn; about twice the amount he can husk by hand. General purpose tractors increase the amount which one man can produce to 125 acres or more.

Because of this, mechanical corn pickers have come into wide use, and they are undoubtedly here to stay. How to get the best use out of them is the problem.

Mechanical Picker Tests

We have been making extensive studies of mechanical harvesting here at the Iowa Station since 1931. This work has been done by the Agricultural Engineering Section of the Iowa Station in cooperation with the Bureau of Agricultural Chemistry and Engineering of the United States Department of Agriculture.

Out of our studies, these points seem to stand out:

1. Most corn hybrids are better adapted to mechanical harvesting than the open-pollinated varieties. Selection of a suitable hybrid has a good deal to do with the success of a mechanical picker.

2. The most successful use of mechanical pickers is early in the season. We have concluded that ordinarily one should plan to complete mechanical corn picking in October.

3. When conditions are just right, our tests show that a mechanical picker will leave no more corn in the field than will hand huskers.
But usually the losses will be considerably greater than with hand husking.

4. In our observation, when the corn is standing well, driving the picker at 3½ miles per hour tends to decrease the ear loss but to slightly increase the shelled corn loss as compared to operation at slower speeds.

5. Shelled corn losses with the mechanical pickers can be kept at a minimum by selecting a suitable hybrid corn and by close adjustment of snapping rollers.

Mechanical harvesting has become of particular interest on farms growing more than 40 or 50 acres of corn. In some areas in north-central Iowa where fields are large and level, or gently rolling, a large part of the crop in recent years has been machine-harvested. With these machines, labor for harvesting may be reduced to less than one-fourth that required for hand-harvesting.

Measure Losses

But users of machine harvesters found that if they didn't get busy at the job as early as possible the machines left a disappointing amount of the crop lying on the ground. Hand huskers generally leave but 2 to 4 percent of the crop in the field. But losses of 5 to 10 percent by machines are not unusual. And if stalks and ear shanks have been weakened or broken by storms or by extremely dry fall weather, losses may be 15 percent or more.

Losses increase as the season advances, and are likely to be excessive after the middle of November. For example, our tests showed under good conditions in 1937 the losses with a hybrid well adapted to machine harvesting were 2 percent of the yield on Oct. 28, 3.9 percent on Nov. 6 and 10.6 percent on Nov. 28. In tests last year under unfavorable conditions the losses were: Oct. 14, 7.3 percent; Oct. 20, 13.2 percent; Oct. 28, 11 percent; Nov. 6, 14.5 percent; and Nov. 15, 19 percent of the yield. These results show that it's well to get the corn out of the field during October, if you are using a machine.

Our tests showed that losses with Krug variety were fully twice those with the best-adapted hybrids early in the harvesting season. Shanks tend to increase shelled corn loss, and that limits the advantage to be gained from this characteristic.

"Faster" Equipment

Early studies showed that a great amount of time was taken in changing wagons at the picker. Since then wagon hitches have been improved on some of the pull-type machines so that the operator can change wagons quickly and without assistance. A telescoping wagon tongue was developed which enables the operator to couple a wagon to a mounted picker or to a tractor quickly, and without help. On the mounted picker the wagon hitch pin is attached to a rope with which the operator can uncouple a loaded wagon without leaving his seat, and without bringing the tractor to a full stop. Attention to some of these small details will add many bushels to the total husked in a day.

In our early studies tractors and wagons traveled on steel wheels. Ordinary farm wagons of about 35 bushels capacity were used. A portable elevator was used to store the corn in temporary cribs. With this equipment it required two men to haul and crib the corn harvested by a 2-row picker. With yields of 60 to 70 bushels an acre, the total harvesting labor, including all miscellaneous labor, was 2½ man-hours an acre.

Later an 8,000-bushel crib was built here at the Station experimental farm with inside truck scales and inside elevator. Tractors and wagons were mounted on pneumatic tires. Wagon boxes were changed to 70 bushels capacity. A light truck was used to pull wagons from the field to the crib. With this equipment one man hauls and cribs the corn from a 2-row picker with a half-mile haul and yields up to 80 bushels an acre.

Last year two men husked and cribbed 152 bushels of corn per
hour. This amount was from 2.17 acres yielding 70 bushels per acre. The total harvesting labor was 0.92 man-hour an acre.

Records were taken of one man working alone. Using a 2-row mounted picker, the operator coupled two wagons behind the picker when going to the field. After picking two loads, he again coupled the two wagons behind the picker to tow them to the crib. In corn yielding 64.5 bushels an acre, the rate of harvesting and cribbing was 1.10 acres an hour, 70.9 bushels an hour. Total harvesting labor was 0.91 man-hour per acre.

Accidents

Most operators of machine pickers can and do operate them safely, but it should be recognized that safe operation of power-driven machines requires care. The most important danger points are the snapping rollers and the husking rollers. The snapping rollers are built to take in cornstalks, and they cannot be mechanically guarded to prevent accidents in case hands or mittens are allowed to reach them. The only safe way is to keep away from the rollers while they are operating. Efforts to clear clogged rollers should not be made until the power is off.

A corn husker should have (and nearly all new machines do have) effective guards at all points where needed to prevent the operator’s clothing from coming in contact with shafting, gears or other moving parts. The operator’s clothing should be free from parts that might become tangled in the machinery. Overcoat tails and unbuttoned coats, dangling shoe-strings, sleeves unbuttoned at the wrist and gauntlet-type gloves have led to accidents.

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RIGHT: In early tests wagons of 35-bushel capacity were used. These traveled on steel wheels, but in later years rubber-tired wagons of 70-bushel capacity, as shown here, pulled by a small truck, have speeded operation.