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Use the rotary hoe for soil crusting

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Use the rotary hoe for soil crusting

Abstract
Have you considered using a rotary hoe this spring? Rotary hoes are versatile tillage tools that can be used to accomplish many tasks. The rotary hoe can decrease soil crusting and enhance crop emergence. In addition, it causes little soil compaction. With severe rain, the potential for soil crusting is high on fine-textured soil after it dries. Combating soil crusts quickly is one way to prevent a poor stand.

Keywords
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Have you considered using a rotary hoe this spring? Rotary hoes are versatile tillage tools that can be used to accomplish many tasks. The rotary hoe can decrease soil crusting and enhance crop emergence. In addition, it causes little soil compaction. With severe rain, the potential for soil crusting is high on fine-textured soil after it dries. Combating soil crusts quickly is one way to prevent a poor stand.

Advantages of rotary hoeing

The rotary hoe can be used to control weeds that emerge shortly after planting when rainfall has not been sufficient to activate preemergence herbicides. The rotary hoe causes very little disturbance of crop residue, thereby enhancing infiltration and preventing erosion. The price is right, too. Fuel costs for rotary hoeing are 0.20 gallons of diesel per acre. See ISU Extension publication PM 709, Fuel Required for Field Operations [1], for more information on fuel costs for rotary hoes.

Doing a good job

To do a good job rotary hoeing, begin by stirring the soil's surface to detect weeds just as they emerge. Weeds visible from the roadside are too large for good control by a rotary hoe. Do some scouting and digging in the soil surface layer, and look for weeds at the white root hair stage; it's probably too late for larger weeds. Sun and wind are great for drying and killing these exposed weed roots. Damp, moist soils lower the effectiveness of rotary hoeing.

Look at the crop before hoeing and assess the stage. The risks are greater for soybeans than for corn. In soybeans, don't knock off the cotyledons (the first two small leaves to appear). Corn is less troublesome to hoe, but stop and make certain the stand isn't damaged.

Keep the tractor speed in the 8-10-mph range. Run with the rows. Driving on top of seed (especially corn) after its planted makes it more difficult for it to emerge. Work at a shallow depth--just enough to flip the weeds out of the soil (or break the crust). In fields with high levels of surface residue cover, rotary hoe wheels should be self-cleaning to avoid dragging residue.

Residue

Maintaining sufficient crop residue is essential. Don't work through the whole process of harvest, planting preparation, and planting without leaving sufficient residue for early summer
Rotary hoes bury little or no crop residue, instead they gently flip soil and residue at the surface. Not all of them, however, handle residue well. Older models (more than 20 years old) usually don't handle heavy cornstalks or bunched-up soybean stubble well. Wheels on most newer hoes are spaced for self-cleaning with tines from adjacent wheels helping to dislodge stalks.

**Compaction**

Reduce the weight of the tractor. Use the smallest tractor that can do the job (hoes can be operated with low horsepower tractors). Also, consider removing fluid from tires, front wafer weights (if steering can be maintained with a rear-mounted hoe), and wheel weights to further reduce soil compaction. Rotary hoes have little or no impact on compaction.

**Potential for crusting**

Although a gentle rain would be welcome at seeding, an intense downpour could lead to soil crusting. When rains break down soil aggregates at the soil surface, raindrop impacts create a massive, structureless layer that, with rapid drying, cements into a hard layer. Soil crusts that form above seed may cause significant germination failure. Seedlings trapped under a crust grow until the seed runs out of stored energy.

**Water quality**

Herbicide use may be reduced if the hoe substitutes for chemical application. It buries little crop residue and doesn't compact or till deeply. Thus, impact on erosion and water quality issues is minimal.

So consider using your rotary hoe. It can maintain crop residue coverage, break up a crusted soil, and offer weed control while limiting compaction and saving fuel or an additional herbicide treatment.

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