3-27-2009

Tips for Managing Corn Residue in Continuous Corn

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Abstract
Many farmers planning for continuous corn this season are having spring tillage questions because wet conditions and late harvest in many parts of Iowa delayed tillage operations last fall. Farmers now want to know how to approach managing the corn residue, given the potential wet soil conditions and subsequent delay getting to tillage operations this spring.

Keywords
Agronomy, Agricultural and Biosystems Engineering

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences | Bioresource and Agricultural Engineering

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Tips for Managing Corn Residue in Continuous Corn

By Mahdi Al-Kaisi, Department of Agronomy and Mark Hanna, Department of Agriculture and Biosystems Engineering

Many farmers planning for continuous corn this season are having spring tillage questions because wet conditions and late harvest in many parts of Iowa delayed tillage operations last fall. Farmers now want to know how to approach managing the corn residue, given the potential wet soil conditions and subsequent delay getting to tillage operations this spring.

There are many good management options for farmers who are considering continuous corn. However, conventional tillage as a method to manage residue, especially in wet soils, is not one of them. Tilling soils with high moisture can result in:
• significant soil compaction,
• an unsuitable seed bed where large wet and un-shattered soil clods will form,
• side-wall compaction due to smearing of the soil causing less than ideal conditions for root development,
• and the potential of inducing K deficiency due to soil compaction.

To avoid these potential problems, which can have significant impact on crop performance and ultimately yield, alternative options can be considered in managing heavy residue in continuous corn. These management options depend on soil type and soil moisture conditions.

Loess soils
If soil stays somewhat wet in the top 2 – 3 inches, farmers should consider no-till planting with the planter only, particularly in western Iowa loess, but also generally in other well-drained or somewhat well-drained loess soils outside the Des Moines glacial-till soils lobe. It is always a good management option to have row cleaners on the planter and available for use in corn-after-corn. However, be prepared to raise row cleaners out of the way if wet residue wraps on them. .

Glacial-till soils and bottomland soils
If soil stays wet in the glacial-till soils and on bottomland soils in other areas with poor drainage and higher clay content, run the planter empty with row cleaners to move residue aside. This option removes the residue and exposes the soil surface without excessive tillage compaction and soil smearing. Letting the land dry for two to three days prior to planting will help speed up water evaporation and warm up the top 2 – 3 inches; this is sufficient depth to ensure corn seed germination. Research documents that the use of row cleaners to remove residue prior to planting in wet soil conditions is very effective in improving corn germination.

Many farmers may attempt to strip-till or disk wet soils this spring. However, this can be counter-productive as wet soil won't shatter well and will likely compact, particularly with large tractor/implement loads. The temptation to

'dry' the soil surface with a disk, or field cultivator (if cornstalks don't plug it) may result in compact soil clods in the surface planting zone. If conditions are wet at planting time, increasing the seeding rate by two to three thousand plants per acre may help compensate for any seed germination problems and associated stand loss.

Soil moisture content is very high in most of the state at this time, but there's still a chance that things may dry out (at least on the surface). We will need warm, sunny, windy conditions between now and late April to make that happen. Generally, tillage in wet soil conditions in any cropping rotation system is not the best choice. The disadvantages are much greater than using a few equipment modifications to manage residue.

Mahdi Al-Kaisi is an associate professor in agronomy with research and extension responsibilities in soil management and environmental soil science. Mark Hanna is an extension agricultural engineer in agricultural and biosystems engineering with responsibilities in field machinery.

This article was published originally on 3/27/2009 The information contained within the article may or may not be up to date depending on when you are accessing the information.