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Early Corn Harvest and Residue Management this Fall

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Abstract

This growing season has had many challenges that could affect potential yield, including drought, insect problems, plant diseases and others. Many farmers in some areas entertain the idea of cutting corn for silage or have already done so. Certainly, we can expect an early grain harvest across the state. These decisions will present challenges regarding residue and tillage management this fall, [as they did to a lesser extent last fall](#).

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Early Corn Harvest and Residue Management this Fall

By Mahdi Al-Kaisi, Department of Agronomy

This growing season has had many challenges that could affect potential yield, including drought, insect problems, plant diseases and others. Many farmers in some areas entertain the idea of cutting corn for silage or have already done so. Certainly, we can expect an early grain harvest across the state. These decisions will present challenges regarding residue and tillage management this fall, [as they did to a lesser extent last fall](#).

Corn residue can reduce soil erosion under high rain intensity, increase soil moisture storage and improve soil and environmental quality, particularly in dry conditions. Other short-term impacts of corn residue removal include:

- Increases the need for N, P and K and other nutrient applications to replace those removed in crop residue
- Reduces water infiltration and increases surface runoff with sediment and nutrient losses
- Reduces soil organic matter and microbial biomass carbon

Appropriate crop residue management minimizes any future negative effect of soil erosion, sediment and nutrient losses. Researchers have documented that significant removal of residue has negative impacts on several soil quality indicators, including soil structure, water infiltration, soil moisture holding capacity and soil bulk density. During dry conditions, removing residue while cutting for silage or baling can affect those parameters, especially at the soil surface where, under rain events, surface sealing can occur to create a crust layer (Figure 1).





Figure 1. (Top) No-till with complete residue removal vs. (bottom) no-till with no residue removal.

Soil surface sealing increases surface runoff and ultimately reduces subsoil moisture recharge or storage during rain events. Here are a few ideas for managing crop residue this fall:

1. Harvesting, shredding or cutting corn for silage needs to be done with care, especially on high slope areas where potential soil erosion can be significant when fields are exposed to high intensity rain. Removing residue or baling should be kept to a minimum (remove less than 30 percent) and no residue shredding should be done. Shredding residue after grain harvest will reduce its effectiveness in protecting the soil surface.
2. Generally, standing residue will be highly effective in trapping soil moisture and reducing water movement or surface flow over the field and increases soil water infiltration and subsoil moisture recharge for the following season. Keeping crop residue intact on the soil surface with roots anchored in the soil can help protect soil and reduce soil erosion.
3. Consider cover crops this fall. But soil moisture conditions are critical for establishing cover crops. The use of cover crops will be a good option on fields where corn was cut for silage or chopped, especially on high slope areas. Cover crops will help reduce soil erosion and increase soil water storage. Also, cover crops can help extract excess nitrogen in the soil profile after cutting corn for silage or grain harvest. This may be especially important in low-yield areas this season.
4. Avoid any unnecessary tillage this fall. Conventional tillage to incorporate residue, such as deep ripping, chisel plow, moldboard plow, etc., can have negative effects, especially after persistent drought conditions where soil structure is weakened.
5. The expected early harvest will leave soils exposed to weather conditions for a long period of time this year; therefore, leaving crop residue intact will provide protection from potential late season rain events. One management decision farmers should consider is the use of cover crops because there will be a good window of time to establish them this year.

(See [Legume Living Mulches in Corn and Soybean](#) or [Small Grain Cover Crops for Corn and Soybean](#))

In summary, residue plays a very important role in sustaining soil quality, which must be kept in mind when deciding how much corn residue to harvest and how much to leave on the field. Corn residue left on the field after harvest is a critical source of soil organic matter. It provides protection for the soil against water and wind erosion, and it contributes to the improvement of soil storage and water quality.

(See [How Much Crop Residue to Remove](#).) Tillage should be the last resort and minimum to prevent soil structure destruction and prevent soil surface sealing under heavy rain, which can lead to soil loss.

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