Avoid Tillage This Fall

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Abstract
As the harvest season is getting close, there are a few things we need to keep in mind this fall with regard to soil conservation concerns. Soil conditions are dry across the state. If they continue, it can be advantageous during harvest by reducing potential soil compaction. So, if the rationale for tillage is to reduce soil compaction, it is not valid. Therefore, pay attention to tillage intensity after harvest; tillage affects soil conditions and destroys soil structure, which can create significant problems. Tillage accelerates organic matter loss, which results in more problems of accelerating soil erosion and surface runoff. Those changes in soil condition with tillage during rain events after harvest can also reduce soil profile recharge due to increased surface run off.

Keywords
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Avoid Tillage This Fall

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As the harvest season is getting close, there are a few things we need to keep in mind this fall with regard to soil conservation concerns. Soil conditions are dry across the state. If they continue, it can be advantageous during harvest by reducing potential soil compaction. So, if the rationale for tillage is to reduce soil compaction, it is not valid. Therefore, pay attention to tillage intensity after harvest; tillage affects soil conditions and destroys soil structure, which can create significant problems. Tillage accelerates organic matter loss, which results in more problems of accelerating soil erosion and surface runoff. Those changes in soil condition with tillage during rain events after harvest can also reduce soil profile recharge due to increased surface runoff.

Leaving crop residue on the soil surface has many benefits not only in minimizing future negative effects of soil erosion and sediment and nutrient losses, but also works as an effective method of trapping soil moisture, which later easily penetrates into the soil and recharges the soil profile. Tillage of any kind damages the soil by reducing the residue cover and its effect in protecting the soil surface.

A common misconception is that shredding or incorporating residue with tillage will enhance soil organic matter or improve other physical and biological properties, which are essential to a well-functioning soil. However, research documents that crop residue can be most effective when left intact on the soil surface protecting soil quality, such as soil structure, water infiltration, soil moisture holding capacity, and soil bulk density to name few. During dry conditions, removing residue or incorporating it can affect those soil qualities, especially at the soil surface, causing surface sealing during rain events and subsequent soil crusting.

Soil management considerations for this fall

1. Avoid any unnecessary tillage this fall. Conventional tillage to incorporate residue, such as deep ripping, chisel plow and even vertical tillage, etc., can have negative effects, especially after persistent drought conditions when soil structure is weakened.
2. Managing residue - whether removing or shredding - 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. Shredding residue after grain harvest will reduce its effectiveness in protecting the soil surface.
3. Generally, standing residue is highly effective in trapping soil moisture and reducing water movement or surface flow over the field and also 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.
4. Consider planting cover crops this fall. However, 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, especially on high slope areas. Cover crops 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 can be especially important in low-yield areas this season.

5. If early harvest occurs, soils will be exposed to weather conditions for a longer period of time this year than normal; therefore, leaving crop residue intact will provide protection from potential late-season rain events. As mentioned in number 4, one management decision farmers should consider is the use of cover crops because if the weather holds, there will be a good window of time to establish them this year.

In summary, tillage can be very destructive to soil in terms of reduction of the residue cover in compromising soil quality. We must maintain our soil quality to sustain yield and reduce nutrient loss during the off season. 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 water storage and water quality. All this will depend on the intensity of tillage this fall.

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