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Managing Residue for a Good Stand

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Managing Residue for a Good Stand

Abstract

Managing corn residue, particularly with no-till system in highly productive and wet soils present a significant challenge to establish corn stands in such environment. One of the biggest advantages of this system is that it leaves significant amounts of crop residue on the soil surface, which protects the soil from water erosion and improves soil tilth. Conversely, these significant amounts of residue pose a challenge of their own: *Managing residue as a part of a no-till system.*

Keywords

Agronomy, Agricultural and Biosystems Engineering

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Managing Residue for a Good Stand

ICM News

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Managing corn residue, particularly with no-till system in highly productive and wet soils present a significant challenge to establish corn stands in such environment. One of the biggest advantages of this system is that it leaves significant amounts of crop residue on the soil surface, which protects the soil from water erosion and improves soil tilth.

Conversely, these significant amounts of residue pose a challenge of their own: *Managing residue as a part of a no-till system.*



Corn residue in soybeans

To ensure the success of no-till, farmers need to use a system approach in the management of residue. This involves the integration of planting, nutrient application and harvesting processes. While each of these components is important, this article will focus on two ways to manage crop residue in a no-till system: cutting residue after harvest and adjusting the combine to ensure uniform height, volume and distribution of residue during harvest.

Overcoming the challenges associated with managing crop residue during planting season starts at harvest time. The way residue is managed on the field after harvest is very critical to the success of providing a good soil seedbed environment for planting. Operating the cornhead as high as practical (e.g., 12 inches or more) will provide a better residue orientation for trapping snow and uniform distribution of it across the field.

Many farmers have gotten into the habit of chopping corn stalks after harvest. This can present a significant management problem as well as other potential production problems that are associated with low soil temperature early in the spring, potential soil diseases, and early germination problems just to name a few. Chopping residue also can reduce the effectiveness of it in protecting the soil surface from potential water erosion, especially during high intensity rainfall events, where residue will be washed away with the surface runoff. Chopped residue is no longer anchored into the soil and is more prone to plugging tillage implements or planters used in subsequent operations.

Other alternative in managing corn residue with minimum soil disturbance is the use of strip-tillage or residue cleaners/mangers attachment prior or during planting. The use of strip-tillage is an excellent choice in areas where wet soil conditions are dominant during early spring and during planting and relatively flat soil surface. The removal of residue with residue cleaners or strip-tilling 8 inches zone can improve soil temperature in the top 2 inches by as much as 2 degrees F. This task can be accomplished with very shallow soil disturbance or just residue removal with residue cleaners to speed warm-up the seedbed early in the spring by exposing the soil surface to direct solar radiation. One caution, however, if anhydrous will be involved with strip-tillage in the spring; the tilled zone must be 6-8 inches deep to prevent nitrogen losses and other potential effects on seed germination.

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

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