Equipment maintenance: time to check the combine

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Abstract
Establishing an even distribution of crop residue while harvesting is critical in stopping soil erosion this coming fall, winter, and spring, and well into 2003, until next year’s crop establishes a canopy. Any residue (straw, chaff, and even fine material) can reduce erosion by stopping rain-splash erosion, slowing and trapping runoff, and allowing for better water infiltration. But it has to be in place to do it.

Keywords
Agricultural and Biosystems Engineering, Agronomy

Disciplines
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Establishing an even distribution of crop residue while harvesting is critical in stopping soil erosion this coming fall, winter, and spring, and well into 2003, until next year's crop establishes a canopy. Any residue (straw, chaff, and even fine material) can reduce erosion by stopping rain-splash erosion, slowing and trapping runoff, and allowing for better water infiltration. But it has to be in place to do it.

Producers should plan to use all of this year's crop residue for erosion protection, and an even distribution of crop residue while harvesting is critical. Why? Other than right out of the combine, there is really no easy way to get residue distributed.

Larger heads on combines mean more concentration of material into the narrow area of the machine. Grain platforms up to 30 feet in width collect residue into a 5-foot swath. Getting that material spread back out can be difficult. And fine material can end up in a windrow. Concentrated residues are not only less effective in stopping erosion but also insulate the soil surface from the sun, reduce seed-to-soil contact, and make it tougher to plant in the spring, inhibiting crop growth next season. Furthermore, doing a good job of straw and chaff spreading this year can help minimize the amount of tillage needed next year. A goal is to have combine operators set up and run equipment so that straw and chaff spreaders or choppers operate properly and the combine distributes residue evenly.

Corn residue is usually heavier and most corn heads do a good job of chewing up the stalks and dropping them back in place. But the challenge is greater in soybean, where essentially the whole plant goes through the combine and residue becomes fragile.

Don't forget that fine material from any crop can drop in a "windrow" behind the combine because it resists being thrown (due to air drag). Consider redirecting or increasing airflow from the combine's chopper to spread lighter particles further. (Refer to the operator's manual or ask your implement dealer about getting the most even distribution possible from your machine.)

Combine operators should pay attention to the height of the crop stubble left in the field. Crop...
stubble protects the soil by limiting exposure to wind and water erosion and by trapping snow through fall, winter, and early spring. Soybean needs to be cut near the ground to avoid grain loss, but operating the corn head higher leaves stubble and fewer stalks are run through the machine.

This season, some combine operators will have special problems because of storms and winds, such as lodged corn or "goosenecked stalks," in some areas as stalks try to right themselves. It may make for slower and more frustrating harvest, as well as complicating residue distribution as more of the plant goes through the combine.

Some areas of the state have been very dry, and the crops range from poor to dead. If you are combining "through" these areas (confined to small parts of the field) try to leave as much stalk as possible because there won't be much residue anyway.

Dry weather (in some areas) also increases potential for fire hazards. Remember to clean your machine after every operation. Consider using a portable leaf blower. Chaff and husks are like kindling. Get them away from heat-generating parts of the combine and try to keep the machine as free from chaff and husks as possible. Carry a fire extinguisher in good operating condition and a cellular phone.

The consensus among soils experts is that effective conservation tillage practices should leave at least 30 percent crop residue after planting. Soil type, slope, and crop rotation greatly affect any decisions about timing, intensity, and type of tillage to achieve the level of residue needed to protect the soil until next year's crop. Due to fall or spring tillage, other field operations (knifing in nitrogen or manure, and residue turning and decomposition,) ending up with 30 percent crop residue after planting (especially after soybean harvest) requires very careful planning. Getting the combine set up for proper residue distribution is just the beginning, but is one of the most important tasks.

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