

# THE LEADING EDGE

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## A PUBLICATION DEDICATED TO MAXIMIZING YIELD POTENTIAL

### A Successful Planting Season Begins at Harvest

While most thoughts understandably are turning toward harvesting and reaping the rewards of a season's worth of hard work, it's also a good idea to think now about seeding. Growers who want good production levels next year know that now is the time to lay out the welcome mat for next spring's crop.

A successful planting season actually begins its life cycle at harvest. There are several issues that growers should keep in mind as they aim their combines into the fields. In particular, harvest is one of the best times to consider both the combine's effect on soil compaction, which is always a factor in spring planting success, and also residue management, a cycle that necessarily must begin in the fall.

#### Take precautions to limit compaction

As growers get ready to take their heaviest machines into the fields, they have good reason to be concerned about compacting the soil. Compacted soil has fewer pores and fewer natural water channels, which means that water tends to infiltrate the soil less. That often leads to greater surface water, increased runoff, more soil erosion, and a longer drying time in the spring. Once compacted, the soil can take 10 years to improve to its original condition.



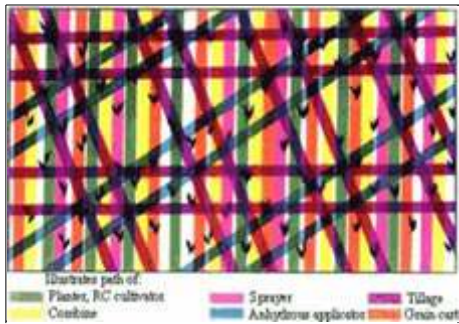
In the absence of heavy compaction fields like this can be ready to plant.

Limiting trips into wet fields helps. A very large portion of the United States has experienced very high rainfall this growing season and, more specifically, this fall. Soil is especially vulnerable to compaction when it is heavily saturated in the 3- to 6-inch depth range.

It also is wise for growers to be cautious about the trips through the fields with the heavy machines of the season—the combine, grain carts, and semi-trucks. Eighty percent of the soil compaction is created in the first pass, and up to 90 percent of the field may be tracked by equipment in one growing season (Figure 1). For this reason some growers have started Controlled Traffic Farming (CTF) to designate certain paths in the field to operate machinery. If equipment is confined to the same wheel tracks for sequential passes, as little as 16 percent of the ground could be trafficked

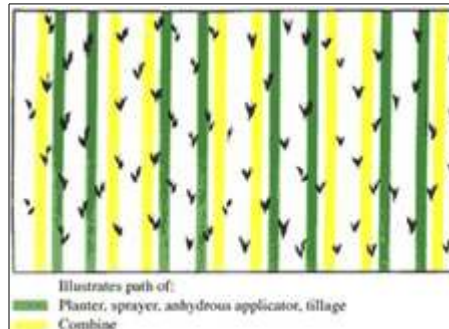
when running equipment 30 feet wide.

Regardless of the traffic patterns, watch axle loads and make sure the tires are properly inflated. Some producers are using tracks or duals for better floatation. The highest potential for compacting soil could come from the grain cart. When using a grain cart, a grower should try to use the same paths across the field and never cross it diagonally. Some experts even advise emptying the combine or the grain cart more frequently to limit weight.



**Figure 1. Field coverage by normal annual field operations.**

Source: Management Strategies to Minimize and Reduce Soil Compaction.



**Figure 2. Field coverage in a controlled traffic situation.**

Source: Management Strategies to Minimize and Reduce Soil Compaction.

*Graph source: Jones, A.J., R.A. Wiese, E.C. Dickey. 1999. Management strategies to minimize and reduce soil compaction. University of Nebraska, G89-896-A.*

Another option to limit compaction is to move toward reduced tillage practices. One of the many benefits of reduced tillage is that when more residue is left, the soil surface is less apt to seal or crust, a common problem when the soil dries after a pounding rainstorm. The residue helps absorb the rain and limits the sealing or crusting.

### Surface residue lessens compaction, improves soil

The benefits of leaving residue on the ground over winter are many besides limiting compaction. By rebuilding organic matter, the quality of the soil improves, as does soil tilth. Soil structure improves as well, for several related reasons. The residue makes the soil less prone to crust, which leads to better water infiltration. At the same time, the residue catches more snow, also improving water infiltration.

Wind erosion is virtually eliminated, water erosion is significantly reduced, and weed growth may be limited as well.



Properly managed residue can supply many benefits throughout the whole year.

### Too thick residue can cause problems

That's not to say, of course, that leaving the residue is a carefree decision. If the residue is too thick or not evenly spread, then that creates other

problems for producers in the spring. Poor seed germination and related problems such as uneven emergence and thin crop stands could result. Cold soil or slow-drying soil are both possible concerns as well.

It's also important to properly size the residue to keep your equipment from plugging in the spring. If the residue is properly sized, then it will reduce the workload of the residue manager wheels that create a residue-free zone in front of the cutting coulter or planting unit.

### **Residue management starts at harvest**

While vertical tillage is an option some producers may want to consider, it may be simpler to manage the residue from the beginning of harvest with the combine. Properly spreading out the residue with the combine saves both the time and expense of vertical tillage, but also limits trips back into the field that further compact the soil.

A chopper attached to your combine will size heavier, tougher residue, while a spreader attachment on your combine will help distribute the residue. However, it is critical that the spreader is capable of spreading the residue across the full width of your combine's header. The residue shouldn't be bunched in the center of the combine row as that would cause the problems associated with too thick residue.

### **Begin preparations in the fall to welcome your seeds in the spring**



If compaction and residue are managed year round it makes planting an easier success.

Careful thought should be put in to limit, whenever possible, the negative effect that heavy harvesting equipment has on soil compaction and residue management. The best way to alleviate compaction is to eliminate, or at least minimize, the compaction in the first place. By controlling traffic patterns, compaction can be lowered immediately.

Harvest is also the time that reduced tillage operators should be taking steps to ensure that their soil will be ready to welcome next spring's seeding operations. Evenly spreading and chopping residue with the combine gives everyone a head start in the spring because no additional residue management passes are needed. Now is the time to start thinking about spring planting.

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