



Soil Compaction: What Can You Do After the Fact?

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Minnesota has received its fair share of rain this year. Crops are being harvested in less than ideal soil conditions. The results are deep tracks across the low spots, or worse, the whole field. What management strategies should you be using to alleviate these tracks this spring? First, let's look at what causes compaction.

The number one defense against soil compaction is soil structure. It also determines the ability of a soil to hold water, nutrients, and air necessary for plant root activity. The wetter the soil, the heavier the equipment, or the more aggressive your tillage operations the more you can damage soil structure.

Heavy axle loads and wet soil conditions will increase the depth of compaction in the soil profile. Loads weighing less than 10 tons an axle usually keep compaction in the top 6-8 inches, which can be alleviated by tillage. As loads become greater than 10 tons an axle there is the potential to compact the soil down to two to three feet. The deeper the compaction the more persistent it becomes.

By and large, even the heaviest tractors weigh less than 10 tons an axle. However, full combines, slurry tankers, and grain carts can weigh between 20 and 40 tons an axle and whether equipped with tracks or tires, create deep compaction.

So how do you manage these ruts left by fall harvest? The first recommendation would be to wait as long as you can before getting into the field for tillage. Let the soil dry out as much as possible. For sandier soils, try going 6-8 inches deep and fill in the ruts. For heavier soils, stay as shallow as you can while filling in the ruts. Even with the best management, producers stated that they have observed yield losses in the rutted area for 3-5 years.

Instinct would lead you to believe that you should plow as deep as possible to shatter any smeared soil or compacted layers that were created. However, your soil's best natural defense against compaction is soil structure. The deeper you till and the more aggressive your operations, the more structure you will damage, leaving you susceptible to further compaction.

Future management strategies would be to wait a day or two longer before getting out into the fields to plant, maintain proper tire inflation rates, and decrease axle loads.

Radial tires for tractors can be inflated as low as 6-8 psi. Check with your dealer to establish the proper tire pressure for your tractor. Before using any equipment in the field make sure to check the tire pressure. Not only does this help reduce soil compaction, it also improves tractor efficiency.

Your soil is one of the most important factors when growing a healthy crop. Preventing soil compaction will increase water infiltration and storage capacity, timeliness of field operations, decrease the stress on plant roots, and decrease disease potential.

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