

AGRONOMIC Spotlight



Wet Spring Concerns

It is difficult to wait: the calendar is ticking and you have corn to plant. However, with wet soil conditions in many areas, doing tillage and planting before soils are fit can have many negative impacts now through harvest. In addition to increased risk of seedling diseases, compaction from tillage and traffic, sidewall compaction, and restricted root growth are some of the common problems caused by working and planting when soils are too wet.

Compaction from Tillage and Traffic

Wet soils in the spring are very susceptible to compaction.¹ Disking or field cultivating fields before they are fit can lead to a compaction layer just below the depth of tillage. The weight of tractors used in tillage or planting can also cause a compaction layer just a few centimeters below the soil surface. This type of compaction leads to shallow root systems since they cannot penetrate the compaction layer.

Sidewall Compaction

Sidewall compaction occurs when furrow sidewalls are smeared by the combination of double-disc openers and gauge wheels of the planter. This can cause poor seed to soil contact, which has several negative consequences including reduced germination and poor stands, and uneven emergence. When emergence is uneven, larger plants compete with smaller plants for light, water, and nutrients. The smaller plants are effectively weeds because they have little yield potential, resulting in lower overall yields at harvest.

Symptoms of Compaction

Above ground symptoms often include stunted plants, leaves with premature yellowing or death, or wilted or curled leaves. These symptoms are attributed to the root system not being able to access the moisture and nutrients, even if they are in ample supply. Below ground symptoms are smaller root systems that appear abnormal when they grow around the compaction layer to follow the path of least resistance (Figure 1). Compaction symptoms can be similar to those from other issues such as herbicide carryover, fertilizer deficiency, or insect damage. Look for patterns to help determine the actual cause of the symptoms.

Restriction of Roots

Root growth is reduced not only because of compaction but also because of low soil oxygen availability. Nutrient deficiencies such as potassium and nitrogen may occur due to slow root

growth and poor root exploration. Restricted root development can also increase lodging and have a negative impact on yield, especially if the latter half of the growing season is hot and dry.

Yield Impact

During years when adequate water and nutrients are available, compaction usually will not impact grain yield. When the crop is water or nutrient stressed, compaction can reduce yield by up to 50 percent.

Keep in mind the impact wet planting can have on corn development as you decide when to enter your fields for planting or scouting this spring.

Source:

¹K. Thelen. *Managing corn and soybean fields submerged by recent heavy rains.* Available online at <http://www.msu.edu>



Figure 1. Effect of compaction on corn root growth. This field had a compaction layer 7 to 10 centimeters below the surface that restricted root growth. The roots proliferated in the slot created by the starter fertilizer placement.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Technology Development by Monsanto and Design® is a registered trademark of Monsanto Technology LLC. ©2011 Monsanto Company BSM 050111