Agronomy Newsletter

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Corn Planting Depth

Variability - Why Does It Happen and What Can We Do About It?

Planting depth is the first and one of the most important things to prioritize on the road to maximizing yields. Variability in planting depth can happen even in the same field or change over time with the same planter. The most common problem with variability in planting depth is uneven emergence and poor root growth. Although this type of problem may not be very noticeable early in the season, the stress will carry through the entire growing season and ultimately impact yields in the fall.

Common causes of variable seed depth:

- Root balls from last year's crop can cause planter bounce especially at higher speeds.
  - » A planter moving at 4 mph will travel over 5 ½" feet in one second. If a row unit bounces for even a half second it will have traveled far enough to drop 5 corn kernels. These kernels may all be planted at a different depth because of that. At 6 mph that same planter may drop over 8 seeds in half a second causing even greater variability. **Solution** – Slow the planter down in cloddy ground or where large root balls are found.

Above is an example of how even a slight difference in planting depth can impact emergence.

- Compaction will vary across a field with soil type and traffic patterns.
  - » A planter with perfect placement in loose soil may be dropping seed much shallower in compacted ground. **Solution** – watch down pressure to make sure it can deal with tighter soils.

- A healthy soil will have 25% or more of air space.
  - » Some of this air space may settle over, and can often seem to bring seed closer to the surface and reduce seed depth. **Solution** – check press wheels to be sure they are firming a loose soil enough.

- A heavy rain can also wash soil in over top of the furrow and bury the seed deeper.
  - » This is sometimes seen in combination with aggressive row cleaner settings that have moved too much soil and formed a valley that the seed furrow is in. **Solution** – set row cleaners to remove only the residue and not move soil.

- Modern planters carry a lot of weight.
    - » A large central seed tank or full fertilizer tanks can add a significant weight and help to settle the planer deeper than intended. **Solution** – check the planting depth as the planter empties.

Why 2" is the Optimal Planting Depth?

- Soil stability: Moisture and temperature are more stable at 2", especially in the spring when temperatures can vary widely. Stability gives corn seedlings the best opportunity to absorb water and nutrients.

- Root development: Underground nodal roots have optimal space for growth. This creates a better anchoring system and leads to stronger stands. Shallow planting depths don't allow for proper nodal root development, causing floppy corn seedlings or rootless corn syndrome.

- Chemical layer: Herbicides, fertilizers, and other inputs are adequately diluted by rainwater before reaching the seed. If too shallow, seeds can absorb very thinly-diluted chemicals, become injured and possibly die.

It sounds simple, but one of the best management practices that can be done during planting is to stop and dig up seed behind the planter to check on the planting depth. Be sure to always check more than one row unit across the planter as each row unit may vary in performance. Spend some time digging as you are planting to get your planter fine-tuned to the field conditions you are in. Every field could be a little different.

For more agronomic insights or for assistance on checking planting depth contact your local NK Agronomist or NK Sales Representative.

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