As the days get longer people begin to think about planting. So now is a good time to review some important planting topics that directly affect profitability. Each year presents unique challenges and opportunities, which is why it’s so important to always be mindful of management decisions that can minimize your risk.

**Planting Conditions**

Certain environmental conditions influence how fast and uniformly corn germinates and emerges. The first step to a successful stand is planting when conditions are right.

1. **Sufficient soil moisture:** To trigger germination a corn seed must imbibe over 30% of its weight in water. If the area around the seed is too dry, or dries too quickly, germination will be delayed until enough moisture is available. Some factors affecting soil moisture in the seed zone are soil type, tillage practices, uneven seeding depth, and unusual weather conditions.

2. **Adequate soil temperature:** Corn will emerge slowly and unevenly at soil temperatures below 50°F. It takes approximately 100-125 GDDs from planting to emergence. If all requirements are met, emergence will often occur in seven days or less.

3. **Uneven soil temperature in the seed zone can lead to uneven emergence and a poor stand.** Factors causing this are soil type, soil drainage, residue coverage, and seeding depth. This will be most pronounced when soil temperature is right around 50°F.

4. **Optimum seed-to-soil contact.** For the seed to imbibe the required amount of water it must have good seed-to-soil contact. Poor contact is common when planting into residue, in soil that has a lot of clods or rocks, or when the seed is exposed to air due to sidewall compaction and the furrow not closing from planting into wet soils. In all of these situations there is a greater chance the seed will not be able to take in enough water to germinate, or could be weather dependent leading to uneven emergence.

5. **No soil compaction.** Anything restricting the coleoptile from breaking the surface, or the mesocotyl from elongating will restrict emergence. Crusting at the surface or sidewall compaction in the furrow can hinder emergence and cause leafing out underground or seedling death. Sidewall compaction can also limit root growth, limiting the young plant’s ability to take in vital nutrients and water.

**Management Practices to Improve Germination and Emergence**

Emerging corn plants face some risks that are out of corn growers’ control, but there are management practices that can minimize risk and improve the chances of successful emergence.

1. **Monitor the upcoming forecast.** **Planting immediately ahead of conditions that are predicted to be cool and wet can affect uniformity of emergence.** The period 24-36 hours after planting is when the seed imbibes water needed for germination. Imbibition of cold water will lower germination rates, and cool soil temperatures will delay emergence allowing more time for diseases to attack the seedling.

2. **Do not plant if conditions are too wet.** This could cause the sides of the seed furrow to smear and leave sidewall compaction inhibiting both emergence and root development. Wet conditions also could lead to soil compaction which can have long-lasting effects. The conditions of the soil and the forecast of the 48 hours following planting are the two most important factors you should consider before planting.
3. Choose a seeding depth that will provide uniform moisture so that seedlings emerge evenly. A popular planting depth is 2”, which is a great choice for many conditions. However, if you are planting into soil with inadequate or variable moisture at 2”, it may be good to move your seeding depth to 2.5”-3”. Surface crusting has more to do with the timing of the weather events, and less to do with seeding depth.

4. If planting into heavy residue, consider row-cleaning attachments for the planter to remove residue from the seedbed, and to expose the seedbed to sunlight to warm the soil. These attachments also help clear a seedbed that contains clods or rocks.

5. Try to avoid excessive tillage before planting, especially in cases where there is a chance of rainfall before the seed emerges. Excessive tillage could increase the chances of a surface crust forming.

6. Avoid using excessive down pressure on the closing wheels. This could lead to compaction around the seed, as well as smearing of the sidewall. Optimum down pressure will differ depending on soil moisture. If too little down pressure is used it could lead to some seeds being planted shallower than others.

7. Planter attachments that help press the kernels into the seed furrow can improve seed-to-soil contact and seeding depth uniformity, even in challenging conditions.

8. Now is also a great time to do a thorough evaluation of your planter to ensure everything is working properly and there aren’t parts that need to be replaced before planting begins. Extra attention to detail now can save you down time when the conditions are right to plant.

Seed Lubricants

With the increased use of seed applied insecticide and nematicide, the use of seed lubricants is becoming increasingly important. Each planter has different specifications for what, and how much, lubricant to use. Graphite is generally used on finger pickup planters, while talc is more often used with vacuum planters. These are especially important to ensure the best flowability when using heavy seed treatments like Poncho® 500/VOTIVO®. Refer to your planter manufacturer for application instructions and guidelines.

Conclusion

Maximizing the genetic potential of a hybrid starts at planting. Many factors affecting good germination and emergence are environmental, but there are things that are under our control that can be monitored to improve the chances of a successful start. Be mindful of how different conditions may change the practices you should use to ensure uniform germination and emergence of corn. And look at proactive steps you can take now to help ensure success.

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