
THE LEADING EDGE

www.yetterco.com · Yetter Manufacturing Inc · E-mail:info@yetterco.com

A PUBLICATION DEDICATED TO MAXIMIZING YIELD POTENTIAL

When Mother Nature is Against You

This spring's unusually wet weather has affected growing conditions throughout much of the United States, evident in the poor and uneven stands seen in many fields.

In some cases, crops initially emerged uniformly but later changed as varying conditions caused plants to grow unevenly in size and color. In other fields, the seedlings emerged unevenly from the beginning.



Clean planting conditions for uniform seed emergence

What makes these poor and uneven stands a concern is the effect on yield. When stands are uneven, the larger plants have the advantage in the race for light, moisture, and nutrients. As a result, the smaller plants suffer, adversely affecting yields. Some research indicates that yield losses for corn could be as much as 20 percent when emergence is uneven. And, if some plants lag enough behind—emerging two or more leaves later than the earliest seedlings—then these latecomers likely will be barren at the end of the year.

For soybeans, when gaps in a stand are two feet or less in diameter, the existing plants may fill the space by growing branches that develop additional pods and seed. However, gaps larger than two feet in diameter probably will result in a loss of yield.

There are many reasons behind a poor or uneven stand, but the most common reasons involve variable soil moisture and soil temperature in the seed furrow or uneven seed-to-soil contact.

There also are many contributing factors including compaction, shallow planting, dry topsoil, cool temperatures, anhydrous ammonia burn, herbicide interactions, and more.

When faced with difficult conditions that Mother Nature sometimes provides, it becomes even more critical for operators to use the correct tools and processes for the conditions, and to use tools that are properly maintained and adjusted. The basics such as planting the seed at the proper depth, providing needed nutrients, ensuring good seed-to-soil contact, and closing the seed trench properly are essential in these challenges.

Reduced Tillage Offers Protection from Water Erosion

Reduced tillage agricultural techniques that leave significant amounts of crop residue on the surface naturally offer some protection from wind and water erosion while improving water permeation and soil tilth. Strip tilling is a great option for producers to consider in areas where wet soil conditions are frequent during spring planting times.

A long-term commitment is required to properly manage residue using a systematic approach that starts at harvest and continues through planting season. If not properly adjusted to ensure proper seed placement, residue managers could leave soil even more susceptible to heavy rain carrying away the seeds, soil, fertilizer, and herbicides with it.

Clean planting conditions for uniform seed emergence The reverse is true as well: Properly managed surface residue improves water infiltration, significantly reduces soil erosion, improves water evaporation, and provides a better stand. Fewer passes through the field results in increased profits and matching yields.

Well-Fed Crops Stand Up to Mother Nature

Applying a fertilizer mix that is appropriate for the soil type and conditions either prior to or concurrent with planting will benefit crops throughout the growth cycle.

Consider clearing the way for seed and fertilizer with a residue manager or row cleaner. A clear path for the disc opener and fertilizer placement device of the seed. Many producers find a two-by-two placement—two inches below and two inches to the side of the seed—to be effective.

Using precision placement equipment such as injectors or knives means fertilizer is placed in prime position for roots to intercept nutrients as they hit critical growth stages. Healthy, tall young plants are better equipped to bounce back from adverse weather conditions.

Vertical Tilling, Rotary Hoeing Helps Dry Soil

Vertical tilling can be a practical way to dry out wet soils. Vertical tillage prepares the soil to warm more quickly in early spring, energizing the seedbed for maximum growth and yield potential. Fluffing and sizing the residue along with fracturing the soil speeds the drying process.



Vertical tillage sizes residue earlier to promote residue breakdown and soil warm up.

Using a rotary hoe before planting also can help dry and warm damp spring soils that would otherwise prevent no-till farmers from entering the field. Modern rotary hoe tines are designed for shallow action and gently flip soil without significantly disturbing residue. The lifting and redistributing is all that is needed to allow warm spring air to dry residue, warm soil, and advance the planting date.

Sealed Seed Trench Essential for Strong Stands

To ensure that the seed trench is sealed efficiently, producers may want to consider using a spike closing wheel. Whether the soil is in perfect condition or whether the soil remains damp, the trench must be closed properly for the seed to successfully germinate and to obtain strong plant stands.

A spike closing wheel improves the seed-to-soil contact by enabling effective trench closing even in wet conditions. A good spike closing wheel will firm the sides of the trench and gently lift and fracture soil over the top of the seed, encouraging quick and even emergence across the field. Spike closing wheels that are prone to compact soil as they close the trench should be avoided.

Downpours Create Soil Crusting

Even if the planting is done under ideal conditions, heavy rains after

planting commonly lead to soil crusting. This happens when pounding rain hits the soil, forming a thick surface layer. When the surface dries out rapidly, the surface hardens and forms a crust. This can lead to poor emergence, reduced oxygen supply to roots, and poor water infiltration. Seeds struggling to push through this crust will continue to grow under the crust only until they run out of stored energy. The warmer the weather, the faster the seeds will emerge and the sooner the crust should be dealt with.



Rotary hoeing aerates the soil aiding earlier planting in no-till.

Another option is to use a modern rotary hoe. A pass with a rotary hoe efficiently breaks up the soil around the seed and reenergizes emergence. A small percentage of the seedlings will be lost, but rotary hoeing will have little long-term effect on plant stand or yield. The seedling loss is minimal compared to the negative impact of replanting due to failed emergence throughout the majority of the field.

The effectiveness of rotary hoeing depends largely on the operator. When possible, drive in the same wheel tracks as your planter to reduce compaction.

In soybeans, extra care must be taken when hoeing. It's best to hoe soybeans in the afternoon when the emerging seedlings are limber and more flexible to prevent snapping off of the plants. Check frequently while hoeing to ensure this is not happening.

Use Proper Tools, Techniques to Surmount Mother Nature's Challenges

Sometimes Mother Nature throws a curve ball that simply can't be hit. When fields are completely submerged, nothing short of clear skies over time will help. But, in other challenging conditions, using the proper tools and techniques can help ensure a better stand and improved yields.

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Yetter Manufacturing Co., Inc.
109 S. McDonough
Colchester, Illinois 62326
Phone: 800-447-5777
FAX: 309-776-3222
www.yetterco.com
E-mail: info@yetterco.com



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