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THE FARMER'S FAVORITE

12 STEPS TO A PERFECT STAND

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PHOTOS: DARRELL SMITH

12 Steps To A Perfect Stand

"The requirements of creating an ideal seedbed to weatherproof your crop never change."

It's that time of year when your attention shifts to the next crop. Visions of picket-fence stands dance through your head – and you start planning how you're going to prime your fields for success. A perfect seedbed supports rapid, uniform emergence, which weatherproofs your crop – and your bottom line.

"Your goal is to create the best possible conditions into which to place the seed," says Ken Ferrie, Farm Journal Field Agronomist. The process begins at harvest and continues through planting, using technology and ground truthing its performance.

What makes a weatherproof seedbed? Ferrie shares these principles, which apply in no-till and vertical-, strip- and conventional horizontal-tillage conditions:

- uniform, adequate moisture
- free of residue
- warm enough temperature for seed to germinate
- good seed/soil contact, with no air pockets and firm soil above the seed so it does not dry out
- no in-furrow sidewall smearing.

To ensure the perfect stand, follow these 12 steps.

By Darrell Smith, *dsmith@farmjournal.com*

1. YOUR SEEDBED STARTS AT HARVEST

"No-till growers must think about wheel tracks during harvest and all the way through the growing season," Ferrie says. "Corn planted into a track with substantial soil compaction will be slow-growing and stunted. Even in a controlled-traffic system, no-till growers must be aware of tracks made by others, such as custom herbicide and fertilizer applicators."

Aerial imagery is an easy way to spot wheel tracks, particularly in a wet season.

Tracks often are less of an issue in longer-term no-till and strip-till fields because the soil is firmer, Ferrie notes. "But some years, when the weather works against you, you might have to make a pass when the soil is wet—if weeds are approaching the maximum stage for control, for example. Or you might have to harvest before corn falls down or drops its ears or soybeans shatter. Livestock producers might leave ruts if they're forced to harvest silage or apply manure while soil is wet."

Freezing and thawing may remove surface tracks. But deeper wheel tracks and ruts may require more effort. Spot tillage of rutted areas may be an option.

Freezing and thawing during the winter might fix surface compaction. "But you might need to remove surface tracks," Ferrie says. "For shallow tracks, one pass with a vertical-tillage tool might be sufficient, but ruts might require more. You might be able to do spot tillage in wet areas, rather than tilling the entire field."

Strip-tilling can handle shallow compaction, but not ruts, Ferrie says. In conventional systems, fall tillage removes wheel tracks; but conventionally tilled fields are more prone to track issues throughout the year.

2. MANAGE RESIDUE AT THE COMBINE

Uneven streaks of crop residue create strips of warm and cool soil in no-till conditions. The carbon penalty will be higher under the residue strips and lower in the bare areas. Both conditions cause uneven crop growth.

"Spreading residue evenly behind the combine is key," Ferrie explains. "It's becoming more of a challenge because today's soybean varieties grow taller, and 30' and 40' combine heads are more common."

Take sufficient time to set chaff spreaders and add-on power spreaders, Ferrie urges. You might also be able to use wind and cutting angle to improve residue distribution.

3. USE GOOD TILLAGE TECHNIQUE

Fall tillage ahead of corn should leave peaks and valleys of 3" or less after the field overwinters. "That makes it easier to apply herbicide without getting it too deep, resulting in streaky control," Ferrie explains. "If you don't have a level enough surface in the spring, you might find yourself pushing conditions and working wet soil to get ready for a herbicide application. Applying a fall burn-down herbicide can reduce that pressure."

With spring tillage, the biggest challenge is waiting for the soil to be dry enough to work, Ferrie says. "Eighty percent of the compaction I see comes from the first pass in the spring," he adds. "In conventional tillage, working soil wet puts in a horizontal layer that impedes root growth and water percolation. In vertical tillage, it puts in wheel tracks."

Merely following the calendar won't necessarily prevent compaction. "Be aware of changing soil conditions," Ferrie says. "Sometimes you can start tilling in dry conditions but finish up in wet conditions.

"Patience is a virtue in the spring, but waiting is hard when everyone else in the neighborhood is running," Ferrie continues. "Constantly monitor fields, and be ready to move quickly when soil conditions are right. In no-till and strip-till situations, pay particular attention to soil moisture content at the level where your seed will be planted."

4. DEAL WITH WET SPOTS

Few fields are made up of uniform soil. Many have zones of heavier or poorly drained soil that dry out more slowly. "In conventional horizontal tillage, we have 3" or 4" of uniform seedbed to work with," Ferrie says. "This allows us to plant wetter areas earlier. But in no-till or strip-till, we have to wait for wetter areas to dry out, especially if they make up a lot of the field."

You can speed the drying process by running row warmers in the spring. "They ready strips for planting and clean them of residue," Ferrie says. "Fertilizer can be added to this pass.

"In strip-till, row warmers fine-tune the strip, remove residue, firm up air pockets and make a smoother seedbed. This adds a pass and an expense that might not be needed in fields with good drainage and a patient operator. But row warmers are good tools to have in the shed when spring weather turns cool and wet."

5. WATCH YOUR PLANTING DEPTH

Depth control is essential for uniform emergence. "Planter setup, speed and soil conditions all influence how much downpressure is needed to keep the planter unit in the ground," Ferrie says.

"In no-till, soil type is one factor that determines how much downforce is required. Set your downpressure in your toughest soil conditions. Then check the seed furrow in other parts of the field to see if you are applying too much in those areas. Planters equipped with adjustable downpressure and monitors make it easier to deal with variable conditions, but physically check the planting depth in varying soil types to verify monitor readings. Keep your planter running on the drier surface while planting into the moist soil below."

To ensure the perfect stand, planter attachments must function properly, which means the planter must run level, says Ken Ferrie, Farm Journal Field Agronomist.

6. DON'T SMEAR SIDEWALLS

"Make a cross-cut through the seed furrow and look for a seam where the two sides of the furrow meet," Ferrie advises. "If there's a seam where the sidewalls come together, especially near the seed, or air pockets around the seed, you will have problems later."

When you find a seam, minimize downpressure on the planting unit and see if the seam disappears. "If it does, then downforce is causing the sidewall compaction," Ferrie says. "You must find the right amount of downpressure to get the right planting depth without causing sidewall smearing. This might require lowering your planting speed."

If you can't decrease downpressure without losing depth control, the soil is probably too wet to plant without causing yield loss. "If you experience this problem in horizontal tillage, you probably are planting too soon after the tillage pass," Ferrie says. "Waiting a half day might make a difference."

In no-till, a little tillage ahead of the disk opener often helps eliminate sidewall smearing. "This might involve a wavy coulter set a little above the seed depth," Ferrie says. "Another option is floating row cleaners with depth wheels and adjustable downpressure. This combination provides tillage ahead of the disk opener while removing residue."

In some years, in some fields, floating residue cleaners can provide all the tillage that's necessary. "However, when soil is firm, the residue cleaner might float out, and downpressure will be required to get it to do tillage," Ferrie says.

In moist conditions, coulters might bring wet soil to the surface, where it tends to stick to the planter's depth wheels. "Residue cleaners with downforce will not bring up wet soil," Ferrie says.

If you have no downpressure on your row cleaners, you might have to use a coulter with your floating row cleaners or lock the row cleaners down so they will stay in the ground. "But locked row cleaners tend to gouge high spots in the field and skim over low areas," Ferrie says.

"If you do tillage with row cleaners on your planter, you will need to apply more downpressure on the row unit," Ferrie adds.

7. KEEP RESIDUE OUT OF THE FURROW

"After you have figured out how to maintain depth and eliminate sidewall compaction, focus on residue," Ferrie says. "The trick is to keep the row cleaners moving residue but not soil.

"Raise and disengage the row cleaners, and examine the seedbed. Then lower the row cleaners; see how conditions change and how much residue remains in the furrow area.

"Even with floating row cleaners, you might need to use a stop pin to limit the amount of downward travel," Ferrie says. "Units with adjustable downforce might have to be set to carry some of the row cleaner weight."

In horizontal tillage, row cleaners function more as a surface skimmer to remove clods. Preventing clods from being folded into the furrow will help ensure uniform moisture conditions for the seed.

8. PLACE SEED INTO MOISTURE

"Never plant corn into dry soil, hoping for a rain," Ferrie says. "Either plant deeper to reach moist soil, or wait for rain to fall. Getting caught in dry planting conditions tends to occur if you're not ready when fields dry out or if you do horizontal tillage too far ahead of planting. No-till and strip-till have less tendency to run into dry planting conditions."

9. CLOSE THE FURROW

"One secret of not running out of water before germination is to firmly pack soil around the seed with your planter's closing wheels," Ferrie says. "Firmly packing soil, with no air pockets, keeps moisture from leaving the furrow so it is present to trigger germination over the next three days."

Closing wheels must be centered over the row and stay there. "Replace worn bushings prior to planting season," Ferrie says.

Spoked closing wheels make it easier to close the furrow and avoid smearing soil in moist conditions. "Be careful not to let the soil dry out," Ferrie says. "Some spoked wheels have more firming action, which helps prevent the soil from drying."

10. RUN CHAINS BEHIND CLOSING WHEELS

"Chains help level the soil and fill in openings or gaps in the seedbed," Ferrie says. "Protecting the furrow from drying out is more crucial in sand or sandy loam soils."

11. WHEN NEEDED, USE RESIDUE TO HOLD MOISTURE IN THE FURROW

"In sandy no-till soil we might need to prevent water from escaping," Ferrie says. "In these situations, leave some residue on top of the furrow. Cut through it with a sharp, slightly fluted or bubble coulter, and place the seed underneath. You must cut through the residue, rather than pinning it in the furrow. Wavy coulters are too blunt for most sands, pinning too much residue in the furrow."

If you use coulters to no-till soybeans, remove them when you plant corn into tilled soil. "Because there's no cutting board for the coulters to work against in tilled soil, they tend to pin residue in the furrow," Ferrie says.

12. ADJUST FROM FIELD TO FIELD

No planter attachment functions perfectly in all soil conditions. "Change attachments and settings as conditions change, from field to field and year to year," Ferrie says.

With today's weather, you can no longer rely on preventive treatments or react when a weather disaster is upon you. This eight-part series will help ready your corn and soybeans for dry, wet and average weather.