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PART 1 OF 4

## INTRODUCING THE SEEDBED FLOOR

### The Seedbed Floor Defined



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If the seedbed is the home you've built to foster your crop's early development, think of the seedbed floor as the foundation. It is the base on which that agronomic environment is formed. And just as the foundation is critical to any structure, optimizing the agronomic quality of the seedbed floor sets the stage for your crop to reach its full yield potential.

The seedbed floor is the narrow layer between worked and unworked soil. Commonly at the depth the seed is placed. When created with the right tillage tool that's properly adjusted, the seedbed floor is smooth, level and consistent across the full width of your tillage equipment. Variations across the implement can result in inconsistencies in temperature, moisture and soil structure — all factors that conspire against fast, uniform emergence.

**How to find the seedbed floor.** Perform a "kill stall" during normal operation and wipe away the top layer of loose soil to find the seedbed floor behind the tillage tool. Check for any inconsistencies in depths between the front and rear of the machine along with inconsistencies in the sections of the tillage tool.



**Firm, but not hard.** Because the seedbed floor is where your planter row unit rides, it needs to be firm to support the row unit and provide a smooth ride. But this firmness is important for other reasons, too.

First, providing a smooth seedbed floor where your planter row unit places each seed helps deliver the consistent seed spacing and depth necessary for fast, uniform germination and emergence. Keep in mind, the ideal floor is smooth, but not so firm that it inhibits root development or a good mix of moisture, air and nutrients.

Second, a flat and consistent floor allows for consistent seminal root development when the plant is young. Because the roots are the life blood of the plant and consistency of stand establishment from plant to plant is important for maximizing yield potential, the ability of a young root to take up moisture and nutrients to elongate without issue becomes critical.<sup>1</sup> Variability in the floor flatness and firmness can cause roots to grow sideways, instead of at a slight angle towards more moisture and nutrients which could delay plant development.

#### What the Seedbed Floor is Not

When defining the seedbed floor as a firm layer of soil between worked and unworked ground, thoughts instantly turn to compaction. But is the seedbed floor a compaction layer?

Properly created, the seedbed floor is a narrow layer where there is a change in soil structure or density, but not to the point of compaction. Creating a compaction layer requires 250 to 300 psi.<sup>2</sup> When correctly adjusted and operated under the right conditions — soil that is moist, but not wet — sweeps on a field cultivator will not exert sufficient psi to create a compaction layer.

**Moisture matters.** When facing the challenges of a late spring, it can be tempting to work fields under conditions that are less than perfect.

An ideal seedbed has moisture throughout its depth. But moist soil produces vastly different results than wet soil. To create a high-efficiency seedbed with a level and smooth seedbed floor, avoid working fields that are too wet.

## Building a High-efficiency System

Every seed must thrive to achieve a successful crop. Achieving maximum yield potential depends on seed-by-seed precision. When your tillage regimen and planter work in harmony, you create a high-efficiency system. The Case IH Tiger-Mate® 255 field cultivator and 2000 series Early Riser® planter complement each other — first creating a high-efficiency seedbed and then delivering the ultimate in seed placement accuracy.

Add in the latest technology — AFS Soil Command™ from Case IH — and you have the tools you need to measure and optimize the agronomic quality of your seedbed, right from the tractor cab.

Ultimately, this advanced technology delivers real-time feedback so you can make on-the-go adjustments that result in the ideal seedbed floor.

## The Payoff

A smooth, level seedbed floor puts your crop in the best position possible to achieve its maximum yield potential. Fast, uniform emergence from an optimal seedbed floor leads to row after row of photocopy plants at the same growth stage.

An uneven, inconsistent seedbed floor can cause planter row unit bounce, which leads to poor seed placement from a depth and spacing perspective. Both factors impact yield potential, with uniform depth being the greater yield determinant.<sup>3</sup>

University Extension research from across the Midwest shows fields that get off to a fast, uniform start yield better. In its analysis, Iowa State University researchers found that when factors such as seeding depth and crop residue distribution slowed germination and emergence for just 17 percent of corn plants, yields dropped by 4 percent to 8 percent — or 8 to 16 bushels per acre on 200-bushel-per acre corn.<sup>3</sup>



<sup>1</sup>Purdue University Department of Agronomy, Stand Establishment Variability in Corn. [https://www.agry.purdue.edu/ext/pubs/AGRY-91-01\\_v5.pdf](https://www.agry.purdue.edu/ext/pubs/AGRY-91-01_v5.pdf). Accessed June 1, 2018.

<sup>2</sup>Yield effect of uneven corn heights. Iowa State University Agronomy Extension website. Accessed March 31, 2016.

<sup>3</sup>Lauer J. Effect of Corn Spacing and Emergence Variation on Grain Yield. University of Wisconsin, 1575 Linden Drive – Agronomy, Madison, WI 53706