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Are You Planting on a Level Playing Field?

Ryan W. Bergman
Iowa State University, rbergman@iastate.edu

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Are You Planting on a Level Playing Field?

Abstract
Springtime on a farm is typically filled with the hustle and bustle of gearing up for planting season. This is the time of year when most farmers focus on de-winterizing the sprayer, changing oil in the tractors and checking the seed meters on the planter. If you use a field cultivator, it is also important to make sure it is properly adjusted to help provide a uniform seedbed for the upcoming planting season. Whether this is the first season or the thirtieth season for the field cultivator, there are a few items to check before making your way to the field this spring. While field cultivators are specifically discussed here, many of these concepts also apply to other spring tillage tools (vertical till equipment, etc.).

Disciplines
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Fore and aft leveling of the tool

There are several questions to consider before heading to the field. Is this the first season using the tillage tool with this tractor? Were new tires put on last fall? Has ballast been added or removed from the tractor since last season? Any of these modifications could affect the height of the tractor’s drawbar. Knowing the relationship of the tractor’s drawbar to the implement is essential to making sure all ground engaging sweeps are tilling at the same depth along the length of the machine. Improper pitch of the field cultivator can cause uneven loading of the front or rear sweeps when pulled through the soil (Figure 1). Inconsistent soil interaction between sweeps can decrease the cultivator’s ability to follow the contours of the ground.
With the field cultivator properly attached to the tractor, a relatively simple procedure can check the fore and aft pitch and the lateral roll of the implement.

1. With the tillage tractor attached, completely unfold the field cultivator and park it on a flat level surface (preferably concrete or a well-leveled gravel lot).
2. Using the hydraulic raise/lower function, lower the cultivator until the tips of the front rank of sweeps are approximately three inches from the ground.
3. Using a tape measure, record the distance from the tip of sweep to the surface of the ground on the front rank of sweeps.
4. Conduct this measurement every 10 inches or at every fold section of the cultivator. This helps check levelness across the width of the machine.
5. Repeat the measurement process for the back rank of sweeps.
6. If the values for the front and rear ranks are not within one inch of each other, adjust the connection linkages of the field cultivator using the manufacturer’s recommendation to adjust the fore/aft pitch of the machine. If you noticed height differences when measuring across the width of the machine (lateral roll), then adjust your wing/section linkages to level the machine across its width. Some variation will naturally exist within each shank/sweep, so concentrate on identifying large differences or trends in height differences across the machine.

**Implement tire pressure**

Correct implement tire pressure is essential to ensuring high job quality of the tillage tool. Due to the standard parabolic shape of a field cultivator, the forces of the ground-engaging sweeps are constantly pulling the tool deeper and deeper into the soil. The implement’s tires play a critical role in keeping the field cultivator operating at a consistent depth. Over- or under-inflation of the tires can cause the cultivator to run deeper or shallower.
This creates not only an uneven seedbed for the planter but gaps in the sweeps, potentially causing weed escapes. Operating at the proper inflation pressure also ensures the compaction caused by the machine is minimal. The implement’s road tires carry the weight of the frame while on the road and in the field, and may need to be set at a higher pressure than the tires on the wings of the tool.

A level soil surface and subsurface is important for establishing a uniform seedbed for the planter to ride on. Inconsistency in the tillage operation can lead to poor singulation, improper seeding depth and poor or uneven emergence. Taking extra time to check over the field cultivator in the spring can potentially lead to a decrease in fuel consumption, an increase in yield and an overall smooth spring planting season.

Authors’ note

Working on farm equipment often requires the operator to climb over or under tractors and implements to maintain and service them. Safety is critical for all farming operations, but especially for machine maintenance and preparation. Before working on any equipment, follow the proper safety procedures listed in your owner’s manual.

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Category: Equipment and Machinery

Tags: spring field operation field cultivator Equipment soil preparation tillage tire pressure

Authors:
Ryan Bergman is a Program Coordinator in Ag Technology at Iowa State University where he is part of a 20+ person research team focusing on precision agriculture, big data, telematics, data analytics, aerial imagery, and ag machinery automation. Ryan has received both his bachelor’s and mas...