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## Check equipment calibration before planting

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# Check equipment calibration before planting

## **Abstract**

Doing a good job of planting gets the crop up and to canopy faster. Because the canopy controls weeds and limits soil erosion, the sooner crops reach canopy, the better. Planting is the only chance you get to insert seed at the correct depth and spacing, and with good seed-to-soil contact. Thus, it can be one of the most important activities that a producer undertakes each year. Even if everything else is perfect (but it rarely is), if planting is poorly managed, you are throwing optimum yield levels out the window ... along with other benefits in protecting the soil surface associated with it. Planting success begins with proper equipment maintenance and calibration.

## **Keywords**

Agronomy, Agricultural and Biosystems Engineering

## **Disciplines**

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Bioresource and Agricultural Engineering

# INTEGRATED CROP MANAGEMENT

A photograph of a person in a field, possibly a farmer or researcher, with large, stylized text overlaid. The text reads 'INTEGRATED CROP MANAGEMENT'. The background shows a field with tall grasses and a person in the distance.

## **Check equipment calibration before planting**

Doing a good job of planting gets the crop up and to canopy faster. Because the canopy controls weeds and limits soil erosion, the sooner crops reach canopy, the better. Planting is the only chance you get to insert seed at the correct depth and spacing, and with good seed-to-soil contact. Thus, it can be one of the most important activities that a producer undertakes each year. Even if everything else is perfect (but it rarely is), if planting is poorly managed, you are throwing optimum yield levels out the window ... along with other benefits in protecting the soil surface associated with it. Planting success begins with proper equipment maintenance and calibration.

### **Planter calibration checklist**

First, check for seed depth or penetration. As soil conditions change with different locations, soil types, or the weather, it is important that operators check seed placement behind the planter for depth, spacing, and seed-to-soil contact.

Second, knowing the optimum population is critical in achieving potential yield and your money's worth out of any seed hybrid. A planter's population monitor in the cab is one way to monitor population, but get on the ground and do spot checks for uniform population and seed depth.

Third, inspect the seed opener and adjust as necessary. Although you may have correctly set the depth adjustment, depth wheels may not be firmly in contact with the soil surface and the planter unit may be riding up on the seed opener. Additional down-pressure or weight may be necessary in firm soil conditions for the seed opener to penetrate to desired planting depth.

Finally, look at cover disc and pack wheel tension. Seed-to-soil contact is usually controlled by coverage and compaction of press wheels and covering discs. Many planters have an adjustable down-pressure spring to vary the amount of surface pressure and coverage for supplying adequate soil contact. Spring pressure may need to be increased in drier surface soil for adequate soil contact and to help bring moisture up to the seed. Pressure should be decreased after surface soil moisture has been recharged by rainfall to avoid overcompacting soil around the seed.

## **Cultivation**

Cultivation is a tillage operation and can contribute to soil compaction and disruption of the soil's structure. It also buries 5 to 10 percent of remaining crop residue and may add to soil erosion problems. The primary reason to choose cultivation is to control emerged weeds, but

cultivation also can break up a sealed crust, providing increased oxygen transfer to roots.

After the crop is up, monitor weed pressure, and only go in the field to cultivate when necessary. If weeds or crusting is not a concern, you should probably leave the cultivator in the shed.

For weed management in soybean, especially narrow-row soybean, a rotary hoe can be an effective tool. Rotary hoeing must be done just after weeds germinate, while they are still in the white-root stage. Avoid cultivation just after soybean emergence where both cotyledons might be detached.

When using the cultivator, adjust the operating depth, sweep pitch, and measure how closely the soil-engaging tools operate to each row. When the crop is small, use shields and keep the tractor's speed just slow enough to avoid covering or injuring the crop. Focus on scraping small weeds up and out of the soil without disturbing the soil too deeply or without turning residues under. As the crop grows, research suggests that the best results in weed control and ultimately crop yield are obtained from faster cultivation speeds.

## **Postemerge spraying**

Calibrate spray equipment before going to the field. When combined with other conservation practices, spraying may reduce crop production costs, surface runoff, soil erosion, and nutrient movement to nearby surface waters compared with cultivation. Below are some tips to get more uniform applications from your sprayer.

- Check condition of hoses, filters, clamps, pump, tank, valves, nozzles--everything the spray passes through is a checkpoint for potential problems, such as leaks, clogs, cracks, and poor seals.
- Check your sprayer's calibration. Several surveys of farm equipment have revealed significant calibration errors. It is recommended that you check for nozzle wear; nozzles with flow greater than 10 percent of a new nozzle should be replaced. Pick-up a copy of PM 1428a, Protecting our water quality with sprayer calibration, from your local Iowa State University Extension office and review calibration procedures.

Many of the decisions made over the next 6 weeks will determine what kind of year you'll have in terms of yield, profitability, and soil erosion. The best managers know that when it comes to equipment calibration, the motto should be, "Trust, but verify."



*Planter seed-opener, depth wheels, and closing system should be adjusted to ensure proper seed depth and adequate seed-soil contact without overly compacting soil.*

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