

## Planting Equipment for No-till

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Planters or drills have to cut and handle the residue, penetrate the soil to desired seeding depth, and establish proper seed-to-soil contact. Keeping these three items in mind, a producer can evaluate the strengths or weaknesses of any piece of planting equipment and make any adjustments or changes necessary to make no-till planting successful. Fortunately, most currently available planters and drills can be used for no-till with few, if any, modifications.

In the early days of no-till, producers had trouble using their conventional planting equipment without tillage to cut the residue and loosen the soil. Runners or small-diameter disk seed-furrow openers couldn't cut the residue. The lightweight planters and drills couldn't penetrate untilled soil. Seed-to-soil contact was often lacking. To reduce problems, producers put coulters in front of the planting units or on toolbars in front of drills. While calling coulters a no-till attachment, they were overcoming the shortcomings by reverting back to tillage.

Planters and drills are now being built stronger and heavier with larger-diameter disk seed-furrow openers, making no-till easy. Check the double-disk seed-furrow openers on your planter now, before the planting season, for wear and proper adjustment. The individual disks can be adjusted inward as they wear by removing spacer washers from behind them. This keeps the two blades of the seed-furrow opener working together as one cutting edge.

If the two blades are mounted side-by-side, like on John Deere, Kinze, and White planters, they should have about two inches of blade contact on the leading edge. On staggered disk seed-furrow openers, like on Case-IH and Deutz Allis planters, the rear disk should be tucked in behind the leading disk, just touching. Adjust the disks or replace them to maintain the proper configuration. When properly adjusted, these seed-furrow openers can easily cut residue and penetrate the soil without coulters or row cleaners.

On well drained or highly erodible soils, the residue left over the row will absorb raindrop impact. This will reduce erosion and crusting in the row, and will be a mulch to reduce drying of the seed zone. On poorly drained soils, "spider wheel" row cleaners could be used to move the residue off the row to aid in soil drying. Unlike disk row cleaners, the spider wheels can be set to move only residue. If the soil is moved, any previously applied herbicides could be moved out of the row or the crop may be planted deeper into cooler soil. A furrow could also be formed which may wash out or crust over. In addition, if the soil is wet under the residue, soil disturbed by row cleaners or coulters will stick to the planter's depth gauge wheels and other components.

Getting the seed down through the residue and into the soil is the second important step of the planting process. The seed must be placed into moist soil, at a depth suitable for proper rooting and growth. To ensure penetration to desired seeding depth, downpressure springs may be needed to transfer weight from the planter toolbar to the individual row units. There must be sufficient weight on the units to keep the depth gauge wheels in firm contact with the ground to control planting depth. If the gauge wheels are loose, tighten the downpressure springs or add heavy-duty springs. In addition, there needs to be enough total weight on the toolbar to keep the planter drive wheels in firm contact with the ground to prevent slipping and to help keep the planter on the row.

Having enough weight becomes more of a problem with drills simply because of the number of rows per unit width. For instance, a six-row planter on 30-inch row spacing may require more than 3,000 pounds of weight just for cutting the residue and penetrating the soil (six rows times 500 pounds per row). Whereas, a drill of the same width on 7.5-inch row spacing has 24 openers and may require more than 12,000 pounds.

Sufficient weight must remain on the press wheels to ensure firming of the seed into the soil. Wet soil is easily compacted and care must be taken not to over pack the soil, making it difficult for seedling roots to penetrate the soil. In dry soil conditions, extra closing force may be needed. The key is to evaluate seed-to-soil contact, not the top of the seed-vee. As long as the contact is there, something as simple as a harrow that acts to close the top of the vee and pull light residue cover back over the vee may be all that is needed. This is a common practice on drills that use a narrow press wheel.

Now is the time to check on how well your planter will perform in no-till. Take it to the field as soon as the weather and field conditions allow, without any seed in it. Level the planter in the field, making sure that the toolbar is at the proper height and leveled front-to-rear, perhaps even slightly "tail" down. This allows for the full range of movement of the parallel links on the row units, helps keep the planter on the row, and aids in seed-to-soil contact. In addition, make sure that the planter carrying wheels are exactly centered between the rows and that they are carrying some weight. This is especially important if there are any ridges in the field from cultivation last year.

Once the planter is leveled, try blind planting. Check the planter's performance by evaluating the three functions of seeding equipment. By checking residue cutting and handling, soil penetration, and seed-to-soil contact, one can make the adjustments or modifications necessary to solve any problems encountered. There is plenty of time to make adjustments or buy attachments, if needed, before planting time is here. Before purchasing any attachments, evaluate what problems you may have and how does that attachment function to solve that problem.

With appropriate weight, downpressure, and adjustments, most current planters and drills will perform well in no-till conditions. A little time spent now will help avoid headaches and delays later during the planting season.

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