

What Should My No-till Planter Look Like

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There are many considerations in selecting a no-till planter. The first step is to correctly match each soil-engaging part with the soil and crop residue conditions found on your own farm.

Actual performance of your no-till planter depends on the type of soil, moisture content, residue and how all of these conditions interact with your machine.

However, residues can hairpin round soil-engaging components such as chisel shanks, supporting struts and frame members. Hairpinning is reduced by cutting residues ahead of each soil-engaging tool.

Residues which catch on the no-till planter can also be reduced by staggering components which are adjacent to one another, using smooth-sided wheels, eliminating protrusions and eliminating bottlenecks in between components.



While rocks will slow down your no-till planting speed, rolling coulters and disc openers will roll over obstructions with only momentary loss of depth control. Make sure you protect rigid shank-type openers with trips or shear pins.

The following is a list of seven no-till operations and the equipment used for them.

1. SOIL RESIDUE CUTTING

- Rolling coulters cut through soil and residue. Coulters may not be required on machines that have openers, such as a staggered double-disc opener, designed for cutting and opening seed slots (e.g. International 800 and 900 series, White).
- Smooth coulters usually cut through soil and residues well and are easily sharpened.
- Rippled coulters are self-sharpening and tolerate sticky soils.
- Narrow fluted coulters and bubble coulters loosen soil in the immediate row area, but do not work well in sticky soil.
- Wide-fluted coulters accomplish strip tillage in friable soils but they throw too much soil out of the row at speeds above 6 kilometres per hour.
- The best compromise for effective residue cutting and soil penetration is to use a smooth coulters of approximately 450 mm diameter and a thickness of not less than 4.5 mm.

Options for soil and residue cutting include smooth coulters, notched coulters, coulters with depth bands, offset (bubble, rippled or fluted) coulters, straw straightener, powered blade or coulters, strip rotary tiler and dual secondary residue discs.

2. ROW PREPARATION

These devices are used to prepare the row area or to deeply loosen soil ahead of the seeding unit.

Row clearing devices remove dry soil along with the residues, which brings the no-till planter into contact with moist underlying soil.

Options include sweep row cleaner, two-disc row cleaner, horizontal disc row cleaner, wide-fluted coulters, ripper chisel, subsoil ripper, packer roller, rolling basket, rotary cultivator, spring tines and S-tines.

3. ACCURATE DEPTH CONTROL

This ensures even plant emergence. For no-till drills, rear press wheels are often used to provide depth control because of space limitations. With this system, the opener and press wheel are either mounted on a trailing arm arrangement or on parallel linkage as used on planters.

Depth control systems (such as side gauge wheels or depth bands on the front leading coulters) which allow both press-wheel pressure and depth to be changed independently are preferred. Components for depth control are rear press wheels, side gauge wheels, skid plate on each

opener, front wheels and rear press wheels in tandem, frame lifting/gauge wheels, depth bands on front leading coulter and disc opener.

4. SOIL OPENING

Many no-till planters and drills use either regular (Mason, John Deere, Kinze) or staggered double-disc openers (International, White) to open furrows. Components for opening the soil for seed placement include double disc with or without shoe, staggered double disc with or without shoe, runner, hoe, single disc, coulter, chisel, wide sweep, triple disc and powered blade or coulter.

5. SEED FIRING

A seed-firming wheel is sometimes used to press seed into the bottom of the seed furrow. These devices can have semi-pneumatic rubber wheels, ranging from 25 mm x 150 mm (1 by 6 in.) to 25 mm x 250 mm (1 by 10 in.), or solid-plate wheels as narrow as 6 mm (¼ in.).

6. SEED COVERING

These covering devices must have loose moist soil available to place on top of the seed or must loosen soil and move it over the seed. Equipment for seed covering includes single covering disc, double covering discs, paddles, knives, loop or trailing drag chains and spring tines.

7. SEED SLOT CLOSURE

Almost all seeders use press wheels to close and/or compact the seed slot. Seed slot closure devices include wide semi-pneumatic or steel wheels, single rib wheels, double rib wheels, narrow semi-pneumatic or steel wheels (V-shaped or rounded), dual angled semi-pneumatic or steel wheels, split steel wheels and dual wide flat wheels.

No-till planter options such as chemical and fertiliser attachments may require additional weight for soil penetration and a stronger planting machine frame. Unfortunately, these options can reduce clearance between planting components and may reduce machine tolerance to heavy residues.

CHECK THESE PERFORMANCE CONDITIONS FOR NO-TILL PLANTERS

When you select your particular line-up of no-till planter accessories, keep these planting performance conditions in mind:

1. Heavy, wet, poorly drained soils tend to be adhesive and have seed furrows that are glazed and difficult to close over the seed.
2. Heavy, dry soils tend to be difficult to penetrate with planter openers, produce clods if disturbed by tillage tools and make the closing of seed furrows over the seed also very difficult.
3. Crusting soils are susceptible to excessive compaction over the seed row, which may reduce plant emergence.
4. Friable, medium-textured, well-drained soils may be planted over wide ranges of moisture content with satisfactory results.

5. Naturally consolidating soils are difficult to penetrate at low moisture contents and when wet, are susceptible to excessive compaction by gauge wheels and press wheels.
6. Soils with consolidated subsoil layers can only be planted when topsoil and subsoil properties are amenable to disturbance.

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