

## (Seeding) Mistakes Were Made

by Matt Hagny

In general, none of us (as adults) particularly enjoy discovering that we've made a mistake.<sup>1</sup> But sometimes we're quite grateful after the initial 'Oh, duh' moment has passed. Especially if we can benefit by correcting it for the future (although tuition is sometimes pricey). To make the learning curve more affordable, here's a chance to learn from *other people's* mistakes (all of these examples are long-term no-till):

- During a recent spring planting season, I was out checking a field while the farmer—let's call him Darren—was running a spankin' new split-row (15-inch) planter for seeding soybeans into corn stalks. In this case, he was well aware of the problem, perhaps partly due to the down-force monitoring, and had alerted me: He wasn't anywhere close to having enough frame weight available to maintain consistent planting depth. This was certainly an 'oh, duh' moment for myself—if Deere planter toolbars often didn't have enough frame weight to hold the row units in the ground on 30-inch spacing (in KS, long-term no-till), how would there ever be enough weight to hold twice that many openers in the ground? Nor do the CCS split-row planters afford much space for weights where you need them. My conclusion is that the split-row planters need to stay in the mellow, glaciated soils of the northern Corn Belt, unless you're willing to do some significant engineering to carry a lot more weight (and still be able to remove it when it gets gooeey wet). Note on larger planters: *All* sections of the frame need to have enough ballast—either dead weight, or by hydraulic transfer from another frame section that has weight to spare.

- That same spring, I was trouble-shooting some winter wheat that was growing poorly, and quite ragged across the fields, and somewhat streaked. This was a tip-off, that it was manmade. The farmer, 'Jeremy,' hadn't done anything wrong with his pop-up fertilizer or anything of that nature, nor were pests a problem. What had occurred was a lot of winter-kill and winter injury (weak plants). I first suspected seedling disease—damping off, or crown rot pathogens—and these may have been involved, but secondary. The main problem was seeds being placed much too shallowly, and often with residue tucked in around them. Jeremy had his JD 1890 air drill tricked out with good aftermarket firming wheels, appropriately chosen spoked closing wheels, as well as narrow gauge wheels. His only downfall was

<sup>1</sup> Indeed, our subconscious goes to great lengths to filter & edit our sensory information to align it with what we already hold as a viewpoint. Conscious thought skews it further, by downplaying (or forgetting) contradictory information. We are all experts of self-deception. See generally Daniel Kahneman, *Thinking Fast & Slow*, (2011); Robert Trivers, *The Folly of Fools* (2011).



This planter hydraulically transfers weight from the center section to the wings. But if the CCS tank gets nearly empty, it may not have enough frame weight to run max down-force on the row units. Be aware: Many folding planters have no mechanism to transfer weight to the wings.



If you run fertilizer openers on your planter, these will 'rob' weight from the toolbar that would otherwise be available to apply more down-pressure to the row units. Rule of thumb: Set fertilizer openers to run shallowly (this is agronomically acceptable in no-till), and with light spring pressure. Much better to compromise on depth of the fertilizer band versus depth of the seeds.

lack of pressure on the openers to cut the furrow to a consistent depth! All this expensive equipment, top-notch seed and fertilizers, were for naught due to a lack of frame weight on the drill. (On the southern Great Plains, it often takes 8,000 – 10,000 lbs of additional ballast on a 30- or 36-ft drill, especially if it's on 7.5-inch spacing. Of course this is highly dependent on soil type, stubble type, years of no-till, moisture, etc. Some soils can be mellowed by adding gypsum or lime as a calcium source, where appropriate.)

Actually, Jeremy's mistake is often made by many no-till farmers—and by John Deere employees! They will have the depth on their 50/60/90-series openers set as deep as it will go, and have the hydraulic down-pressure cranked way up into the red, yet the openers barely penetrate the soil surface—due to lifting the frame. (The same thing happens with Case's SDX drill—although the frame is a lot heavier, the oversize blade takes more pressure to penetrate.) A similar mistake occurs when sufficient frame weight is available, but the operator is skittish about bumping the hydraulic pressure into the orange or red (applying more torque to the rockshaft), perhaps due to worrisome but largely unwarranted comments in the Operator's Manual as to "premature bearing failure," etc. Furthermore, the Operator's Manual has long been in error in teaching that the rockshaft should be level on top, when in fact it should often be sloped down in back—sometimes as much as 15 degrees (without lifting the frame). Ideally, you look at the compression of the big coil spring to see what you've achieved for down-pressure: In tough conditions, you want to compress it 2+ inches on average (don't let the drill roll or settle back when you stop to check this—instead, gradually creep to a stop, then set the park brake).

•In another case, 'Lanny' was having no end of trouble in muddy conditions with his 1590 drill's gauge wheels being pushed off the rim (from mud packing between the gauge wheel and the blade) and seed boots clogging with mud in the terrace channels. I asked how much down-pressure he was running. Answer: Hadn't changed it in years. I knew it was near maximum. Why didn't he think to decrease it? —It's adjustable for a reason. But again, I shall not judge, since this lesson had been ingrained in me 20 years ago, and by constantly trouble-shooting planters & drills in the years since.

•In an earlier experience with a different JD planter, 'Darren' (who we met in the first example) was having fits with cloggin' up his planter units with mud. To the point that he and his hired man had raised the row cleaners all the way up, and had taken all the spring tension off the low-disturbance side-band fertilizer openers (the type with a gauge wheel) which were 5 inches away besides. They were going nuts. Finally, Darren told the hired man to call me direct (Darren was super-busy running another rig many miles distant). After a number of questions revealed all this, I asked how much pressure was on the row units. Answer: Maximum. . . (my mouth agape) . . . Judge not too hastily! We've all been known to have our brains in the 'OFF' position when in the heat of battle. But I would really have thought Darren was sufficiently educated that mud clogging would trigger the thought of excess down-pressure, but I guess not. Actually, this same scenario has played out many times with various no-tillers I deal with (including Jeremy). I guess that's what's called 'lack of perspective'—i.e., being too close to the problem to be able to see the forest for the trees.



On mellow soils, such as in the Dakotas, most producers don't need extra frame weight on their 1890s—especially if they're on 10-inch spacing like this drill.



Another drill running in the very mellow soils of the eastern Dakotas. No weight on wings except the markers. It is sufficient, since down-pressure requirements are not extreme. Note that the wing isn't lifting (compare to horizon & center section of drill).



On the JD 50/60/90-series NT drills, in tough soil conditions such as the southern half of USA, hydraulic down-pressure often needs to be set well into the red. But extra frame weight is required!

• ‘Monty’ often hosts field days and speaks at meetings, where he emphasizes his difficulty in getting his planter to penetrate his soils under long-term no-till—to the point where he’s added fertilizer tanks to the frame and keeps them full of water, etc. Yet Monty forgot one thing: Transferring the weight to the row unit. You see, his down-force springs were set to the lightest position (some of them are mighty confusing, I will admit—as to whether the lever / handle should be all the way forward, or all the way back, to get max pressure). Again, all of his ballasting efforts were for naught, due to one faulty assumption.

• In another example of failing to transfer weight, ‘Lanny’ & his son were only using one rank of his JD 1590 to seed soybeans on 15-inch rows, and had the drill loaded to the hilt with additional weight besides. Yet, when I stopped by to have a look, 75% of the seeds were in the dust (it was an exceptionally dry spring, and had been cover-cropped), because the furrow being cut was often only 0.75 to 1-inch deep (but occasionally was 2 inches in softer areas), yet there was good moisture available consistently at 2- to 2.5-inch depth. No one had bothered to check to see if most of the seeds were getting there or not! (Last time they checked, several fields back, they thought it was okay – which it was, but with very different seedbed conditions, plus the soil was drying every day from heat and strong wind.) Since Lanny’s son was running the drill yet in that field, I caught up to him and cranked up the hydraulic down-pressure. Twice. (Double the original setting.) Then, after we were able to maintain a consistent depth, I set the gauge wheel depth mechanism a full notch deeper, and we were able to hold that depth also. Now, the majority of seeds were in good moisture. And, indeed, it did make quite a difference in stands—averaging 35,000 plants/acre before adjustment (about half the field)—versus 70,000 afterwards. (It didn’t rain for awhile.)

• ‘Lanny’ had generally obtained excellent stands with his corn planter (except for a couple times when he had low-vigor seed lots). Perhaps partly because I helped him set it up & adjust it 13 years prior, and he did a good job with maintenance of the blades, seed tube guards, Keetons + Mojos, etc. But when he bought a new 12-row planter, I wasn’t able to get there before or even during its first corn-planting season. Inspecting seed placement later, during routine scouting, I was first shocked to see how shallow some of the furrows were, and that a significant percentage of seeds had bounced under pieces of sidewall that were lifting before or during the moment the seeds were coming to rest in the furrow (the planter had Thompson wheels on it, so no firming action from those to hide this—all the seed-firming action was from the Keetons + Mojos). Surely Lanny knew better, I thought?

I continued scouting, observing in other fields of Lanny’s that the furrow was cut plenty deep, and definitely no sidewall lifting—if anything, they appeared much too smeared and compressed, especially the area below what was being chopped by the Thompson wheels (which didn’t have enough spring pressure being applied for such hard sidewalls). I thought, *‘Maybe they decreased the down-force on the row units on these later fields?’* But then I found still other fields that were too shallow again, and there were so many germinating seeds in dry soil (and such tremendous differences in growth stage of the developing seedlings), that I was mighty perplexed—my thoughts: *‘It looks like they started here, realized sometime after this field they didn’t have enough down-pressure and took care of that. But then later they decreased it again—and with conditions getting drier day by day?’*



While JD makes provision for carrying extra suitcase weights on the drill frame, they are in a silly location. The rockshaft torque raises the rear of the drill, not the front. (More weight on the front just causes the caster wheels to bog down in mud.) Weight carried on the back of the frame, or, better yet, over the rear transport wheels, would be 5X more useful



Wheel weights being used for ballast: The positioning is excellent (over the \*rear\* transport wheels)



Except on the mellowest of soils, the rockshaft should be torqued to be sloping down in back by a few degrees (up to 15 degrees in severe conditions). It takes a lot of frame weight to accomplish this if both ranks of openers are being used.

This seemed implausible, which is usually when I ‘dig in’ even more to try to find any alternative explanations that might exist. I had excavated 3 adjacent rows already in this field, trying to get a decent estimate of just how bad the stand was going to be (it would be a replant candidate, I was thinking—even though I tend to be very conservative on replanting recs). So, I excavated more rows adjacent to what I’d already inspected, moving away from the edge of the 12-row swath. Bingo! The next row was deeper, much more consistent for depth, and again with sidewalls that seemed a bit too compressed. I quickly crawled over to the next one in—same thing! Huh, so they must have had too little frame weight on the outer (3-row) wings of the planter. And, sure enough, this was the case—the fertilizer tanks resided on the center section, and nothing was on the wings at all for weight (not even marker arms). I quizzed the client: Nope, no hydraulic system to slave the weight from the center section to the wings: He chose not to buy that option. (Sigh.) A very expensive planter upgrade was actually a downgrade in performance, due to that one choice.

**Summary:** All of these were easily preventable. These bloopers were made by intelligent people who are skilled, seasoned managers—all of whom had been 100% continuous no-till for 10 years or more. I’ve made some of these mistakes myself, both in my past no-till farming experiences, and in custom no-till seeding. It’s pretty easy to get distracted by the logistics of moving seed (and fertilizer) around, keeping all the high-tech systems running, etc. But Priority #1 of this process is seed placement (along with seed metering, i.e., proper rate per acre, and some semblance of spacing). Fertilizer and auto-steer and data-recording are all optional. But you never get a chance to reposition the seeds after you’re done.

To avoid these mistakes, a good preventive measure every year—long before the first seeds are planted—would be to review [Exapta’s DVD: No-till Seeding Explained](#). Or at least review the 10-Step card, if you already have the DVD memorized. (For more detail, you might want to [read or re-read past issues of these newsletters](#).) Down-pressure and frame weight should be the *first* thing you think of, not the last—if you need to build brackets for carrying additional weight, or hydraulically move it from one section to the next, you need to do that well before heading to the field. Get this done in the off-season. Your other upgrades, repairs, and adjustments won’t do much good if you cannot apply the appropriate down-pressure onto the seed openers. ’Nuff said!

Best regards,



Sunflower stalks are usually a mellow seedbed and require less down-pressure and frame weight, especially in the Dakotas and other regions with younger soils, higher soil OM, and so forth.



We sometimes get confused on which direction is max pressure on the lever handle.



Carrying all the weight on the center section poses problems. Here, we can see that the center rows are furrowing deeper (more row cleaner action) due to the weight. This is where active down-force systems become valuable, such as Precision Planting’s AirForce.

