

No-Tilling In The MUD!!

By Dwayne Beck

Even In The Dry prairies of South Dakota where farmers normally rotate wheat and fallow, mud is a nemesis each spring just as it often is throughout the Midwest.

If we don't have moisture in the soil by the time we seed our row crops, we don't have a crop. Our goal is to catch a much snow as possible and fill that soil with moisture prior to seeding time.

The other reason we plant in the mud is we don't have a long enough growing season to wait for soils to drain.

We also grow high-yielding wheat which sometimes gets taller than we like. But when we harvest it, we use a stripper header to maximize the height and get the maximum amount of snow catch. We no-till corn into that high residue in the spring.

We aim to have fields at full moisture capacity when planting with our rotational systems. Sometimes we end up with fields at saturation and still need to be able to no-till.

To complicate things, we farm Pierre shale soils, which are 80 percent clay.

Dealing With Mud. There are different strategies we can use with we soils. The first thing we can do is prevent the problem with intense rotations or cover crops. We can do these things under irrigation because we can fill the soil profile after we've seeded.

A cover crop will suck some moisture out in the spring and give better trafficability.

We seed black medic into wheat. By the time we come back to seed, it will have turned that wheat a different color, letting soils warm up faster and dry out.

We can deal with the moisture problem, meaning we need proper seeding equipment and must be able to get through the field by having our equipment on live weight and on tall tires or tracks.

We can avoid the problem. If you're afraid of no-tilling in the mud because you can't get through it, plant when the ground's frozen. It sounds unbelievable, but for planting our spring wheat in 1995, we began the 9th of December and got done the Friday before Christmas. Just avoid the problem.

Engineering Solutions. Wet soils are an engineering problem, not an agronomic problem. If you can get those seeds into wet soil, it's going to grow fine.

Currently, when you plant your seed and it's followed by rain, you think that's wonderful. All we do here is reversed in order. If we can get the seed in the ground without hurting anything, we've got it made.

Problems to Avoid. Soil compaction, mudding up equipment, improper seeding and getting the big tractor stuck are concerns when no-tilling in mud.

Use controlled traffic, tall tires or tracks and place as much of the load on live wheels as possible when trying to minimize compaction.

At Dakota Lakes Research Farm, we are designing a concept seeder where we will have all of our load on the wheels that have power. On the front of a double box John Deere 750 no-till planter, we put about 60 percent of the drill's front weight right back on the tractor.

Use tall, narrow tires and line up everything - sprayers, grain carts and combines to control your traffic.

Mudding of Equipment. Make sure depth wheels are tight, don't use coulter and use minimum down pressure. Depth wheels can't be worn out because they are your scrapers and they hold soil down as the disk is trying to exit the ground.

When used in mud, coulters throw up mud and start disturbing everything and cause problems. We run residue managers so they are not contacting the ground. We don't use row markers because they throw mud that you hit the next time you come back through the field and we always seem to get a line of weeds. We run dye markers. In a controlled traffic system, markers aren't necessary most of the time.

Changing Seeding Conditions. When seeding, the concept is the same whether the soil is wet or dry. Loose material is needed over the seed and conditions must be firm and moist. The concept is the same even if you are a conventional tiller.

Some farmers question whether sidewall compaction is caused by the V closing wheel, the depth control wheel, the seed opener or some of each.

Openers made for conventional tillage in wet conditions with low down pressure will cause little smearing. But they don't move soil far enough to give massive compaction.

Compaction occurs when there is a lot of pressure on the depth wheel. Putting a lot of pressure on depth wheels will cause packing, which limits root growth out of the trench. But if the opener was causing the problem, the only place root growth is limited is where soil is moved the farthest - not down at the bottom.

Sidewall compaction occurs with the packing wheel or the V closing wheel when trying to close the trench. The standard V closing wheel is designed to pack underneath the seed and to the side.

In a tilled system, the ground under the seed may be loose. To get moisture to move back up to the seed, you need to pack underneath that seed.

That's what closing wheels were designed to do in conventional till. Since the soil has already been dried out, you can't overpack it. Then that little bubble of loose seed is pushed up on top.

Options For No-Till. If V closing wheels and packing wheels are used in wet soils and you try to close the trench with them, you get severe compaction on both sides of the seed and lock roots in there. Therefore, either you won't close the seed trench or you'll end up ribboning with conventional cast iron or rubber V wheels in wet, high-clay soils.

No-tillers must add some type of seed lock. A harrow is fine if you have loose material, but it won't do anything in wet soils. A spoke wheel can chop up the edge of the seed row and place some loose material over the top of the seed.

Car chains can be pulled behind the no-till planter in a low residue system. But more positive action is needed in high residue.

Remove Rubber. When it gets real muddy, I've found it's best to remove the rubber and use a choppy, poly type wheel with a standard hub on the inside. Minimize down pressure when it's wet, find a seed lock mechanism that doesn't plug and use an improved closing system of some sort.

Other Tillage Systems Are Limited. Strip till has limited potential and farmers who use rotational tillage aren't being efficient in their operations. The problem with strip till is you are busy combining in the fall. What is Plan B if it's too wet in the fall or you acquire more land or if South Africa has a great corn crop and Brazil doesn't have a soybean crop? Ridge till is a nice system, but the cultivation required limits the number of acres farmed.

Go Ahead, Plant In Mud. Planting in mud, if done properly, doesn't hurt yields. I had land in 1995 that yielded 130 bushels per acre that was planted in mud on land I rented for \$20 per acre. The stuff I waited to plant until it had dried out, yielded 90 bushels per acre. Residue managers are a good idea for no-till corn, but we are also working to integrate them in soybean or wheat in certain rotations. Fertilizer placement becomes important and nutrients should be placed with the no-till corn planter. It's uncertain whether the response of strip till is due to tillage and how much is due to fertilizer placement.

Stay Away From Coulter. Trying to correct sidewall compaction with a coulter is like equipping your tractor with an air conditioner that doesn't work and then putting bags of ice in front of the heat exchange coils so the unit works better.

What the coulter is trying to do is create loose soil that the V closing wheel is designed to work with. But if the problem is the V wheel, just change it. It probably makes more sense, is probably a lot cheaper and won't throw mud at you.