

More Weak Links

by Matt Hagny

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Gillen was the cover story of the March '04 issue.



When we last reported on David Gillen of south-central S. Dakota, he'd been experiencing some 'bumps in the road' due to drought in the early 2000s, but overall his 15 years' experience with no-till had been favorable. Unfortunately, the last 5 years have also been rough, and in diverse ways—including super-soggy '08 when about half his corn and soybeans couldn't be planted (they kept getting the tractor stuck trying), most of which was wheat stubble on his poorer soils (high clay). Even where he had thick, knee-high brassica cover crops the fall of '07 it was too wet. Meanwhile, the neighbors who did fall tillage got everything planted in good shape. All of which had Gillen at his wit's end by late '08, to the point where all options were on the table, including doing some sort of fall vertical tillage.

Not that any single year rattles David too much: "You can't make radical changes based on just one year." But things hadn't been going well for some time: "I'm not happy with our yields. Corn was 20 bu/a better in the first 10 years of no-till compared to the last 10 years. Soybean yields have fallen off even worse [as a percentage], although much of that is environmental [more droughts in 2000s versus 1990s]. But I'm very happy with our wheat—we went from 42 bu/a in the first decade to 60 in the second decade."

Difficulties in the monsoon springs are understandable to Gillen:

"Our infiltration is so good in the long-term no-till that water simply doesn't run off. But on a wet year, the soil can't hold it all. That's where we have problems." His countermeasures have been to aggressively use cover crops in wheat stubble being carried for corn, with the most successful being a brassica + spring lentil mix drilled shallow in August (even though his brassicas include both winter canola and forage radish, all of it winter-kills). Still, it wasn't enough.

Gillen explains, "The cover-crop thing we've only been doing right the last couple years. I can't say they're the answer, or that they're not the answer. I think they are, but I haven't enough experience to say for sure. I haven't found the right cover crop or management practice yet." He elaborates that maybe what is needed is for part of the cover-crop mix to overwinter, although he dislikes vetch ("Volunteer vetch is a problem") and he's had no luck at all with getting stands of either red clover or sweetclover to survive. (*Editors: This is quite puzzling.*) In moderately wet springs, Gillen is certain that the fall brassica cover is a huge help—but it's not quite enough for spring weather like '08. "Planting corn into where we had good growth on the brassicas, we don't move any residue with the row cleaners. The wheat stubble is partly decomposed and cuts very easily."

Other unknowns: "One thing we've learned is that the brassicas do an excellent job of scavenging all the N that's out there. But we don't know how much we get back in the following corn crop, or how soon." Many

times Gillen's brassicas grow well with zero fertilizer applied, but not always: "Do we fertilize the brassicas following an excellent wheat crop? Sometimes the brassicas are yellow and slow growing."

For battling soggy spring weather, other strategies David has adopted include fewer corn acres in wheat stubble, and going to surface-applied fertilizer instead of putting it all down with the planter: "The planter gets too heavy." He's also seriously considering adding an alfalfa hay enterprise to dry the subsoil and add diversity to his rotation.

As Gillen delves into the details, his analysis reveals that it's primarily one soil type that's giving him fits: "It's high-clay soil, and high-OM [now averaging 3.7% to a 6-inch depth in his long-term no-till], and very hard to manage. It dries out quickly in summer, and stays wet too long in the spring." To add to the conundrum, Gillen is convinced his corn and soybeans are getting *more* susceptible to drought (his long-term no-till crops yield less than first-year no-till on newly acquired land). (*Editors: An indication of nutrient deficits.*) "I'm disappointed in the yields of long-term no-till, wet or dry."

And he's struggling with yellow corn in the spring. He's now running zinc in his liquid pop-up on all his corn, and he's beginning to comprehend the need for supplying sulfate early in the crop's life. He looks forward to solving these riddles: "On a positive note, if we had better soils and better climatic conditions, we wouldn't need to figure this stuff out. We could just stay ignorant." 🌿