



Recent observations: tillage, cover crops, Palmers, etc

by Matt Hagny

Being out on the highways and fields across central and north-central KS in the past couple weeks evokes both joy and sadness at the condition of fields. First, the tilled fields eroded horribly where recent rains were heavy—typically washing rills and gullies to the depth of tillage. Not to mention the sheet erosion where everything moved down-slope. WTF, people! This is ridiculous. (If you're 100% no-till with abundant mulch cover, then this doesn't apply to you—but maybe you need to send this to your tillage friends & neighbors, or go have a talk with them.)



Horrendous erosion from tilled field in central KS. This is irresponsible—we have the know-how to prevent this with no-till, which if done halfway right is more profitable, not less.

While we're on the subject of tillage, I've heard some flakey reasons for doing tillage in recent months. For instance, the heavy sickle-cut wheat stubble a year ago caused stand issues in his second-year wheat, so the farmer tilled this year's very meager first-year wheat stubble. —Hmm, didn't make sense to me either. The tillage actually will probably make his wheat stand worse this fall, since he's

running 750 drills that don't work well in tilled seedbeds. (And the answer to his previous problem was going to Shelbournes; which hopefully he will do in the future to avoid the issue.)

Another was from an otherwise very dedicated long-term no-tiller, on a field of bottomland going to alfalfa that was too rough from when a flood went thru and carved some rills/gullies, and piled up the residue in places. The 'easy' button was to do tillage, even tho that eliminated much of the benefit of its 20-yr NT history. After talking with him awhile, I mentioned there were other ways—such as burning the residue piles (I'd rather resort to burning than tilling), and using a scraper to smooth out the gullies. I realize that alfalfa fields need to be extra smooth, but there are items such as rotary harrows (not rolling harrows) that can do this without disturbing the soil at depth. To his credit, the farmer agreed that maybe he didn't think enough about all the options before doing field-wide tillage.

I don't consider field-wide tillage to be an option, unless you're acquiring new land that has terrible roughness that can't be fixed any other way.



Soil scoured away to the depth of tillage. Meanwhile, the wheat stubble on the terrace above washed rather little in comparison—and even it should've been planted to a cover crop such as pearl millet to get the erosion closer to zero. Plus, the added mulch suppresses a lot of weeds and 'drought-proofs' the following corn or milo cash crop.

While we're on it, I was saddened to be in a field of 10-yr no-till that had terrible sheet erosion. It was corn this year (2018) into last year's corn & milo stalks. But the 2018 stalks were meager due to drought, hardly anything remained of the 2017 corn stalks, and nothing at all remained of the 2016 crop, whatever it was. No-till with no mulch is a disaster—in warm climates, it's the worst of all systems economically. (The 2018 corn in this field was an abject failure in the drought, whereas this farmer's other fields had abundant mulch and the corn looks fantastic—he had just taken over the field with no mulch). No-till isn't enough; you need abundant mulch cover.



This field has been no-till for ~10 yrs. Where's the mulch cover? It's washing. And this was a long way from being the worst in this field for barrenness.



Not that far from the second pic above was this field, of Shelbourne-harvested wheat stubble with this robust cover crop of pearl millet growing afterwards. There won't be any erosion here, not this year or next (it'll be NT corn or milo next yr).

Palmers aren't cover crops

Which brings me to cover-cropping after wheat, which is a good practice in central KS. I'm pleased that a few more farmers are finally implementing pearl millet for this purpose, after I've been loudly extolling its merits for several years now. But I'm saddened to see so many who are doing low-residue covers or double-crops, often choked with Palmers, or those who aren't doing anything at all (idle stubble—which isn't good for carrying over to corn or milo the following year in central KS, although it's just fine in western KS).



Just a bit farther up the road in north-central KS, we find double-crop Xtend beans, which were sprayed twice with full-rate of dicamba post-emerge and yet the Palmers survived and made seed. Had he done a paraquat burndown after wheat harvest, along with some post-emerge dicamba, it would've looked far better in this regard. Still, double-crop soybeans isn't a great practice on upland such as this, because all that valuable wheat stubble goes thru the combine when harvesting the beans. And where dc beans are so marginal anyway, a much better practice is cc pearl millet.

For instance, double-crop soybeans is a practice that generally shouldn't be used except on flat bottomland fields or where it's very level and there are no runoff concerns. Harvesting the dc beans results in running all the wheat stubble thru the combine, and it's much too valuable to degrade in this way.

Another case is planting a broadleaf-heavy cc mix, and having it grow up to Palmers. *You must control Palmers in your cover crops and double-crops, even if this means killing everything and starting over.* This is another reason to prefer pearl millet, sudan, or other grasses for summer cover-crops, where you have a few herbicide options. Palmers will be our undoing if we don't get robotic weed-killing machines soon. We're just about out of herbicide options for Palmers, and there aren't any new MOAs (modes of action) coming to market anytime soon.



Farther south in central KS, we find this long-term no-tiller's cover crops choked with Palmers that've produced massive amounts of seed. It will cost at least \$50 - 100/a of extra herbicide in the next year or two to get this under control, and that's if it can be done at all. Worse, next year's corn crop will be especially vulnerable to drought here, and erosion will be a concern. The farmer missed a fabulous opportunity to grow pearl millet to build soil OM, boost the yields of subsequent crops, and suppress weeds instead of letting them run rampant.

Which brings me to the current madness of people going back to tillage to control Palmers. In every case this is done, it is making the matter worse—not better—in the following summer crop. Because you've planted all the Palmer seeds that were on the surface, many of which would've rotted or been eaten by insects or other critters. As I see it, the only thing these farmers are accomplishing is avoiding one or more paraquat applications (in the wheat stubble, or preplant in the spring).

But doing tillage is shooting yourself in the foot, by planting weed seeds, by burying mulch that you'll want the next time it gets slightly dry, and long-term by degrading the soil. Far more profitable is to grow additional mulch cover with pearl millet or sudan, and let it do part of your control of weeds with shading and competition. You'll also be more drought-proof in the following crop, and will have improved the soil by capturing carbon and having more months of living roots. If Palmers show up in your pearl millet, they can be sprayed out without hurting the millet too much.



Same farmer, different field. Cover-crop is still more Palmers than anything, and no high-carbon species (grasses).



Just a few miles down the road from the Palmer mess, another long-term no-tiller has this beautiful mix of pearl millet and sudan on all his wheat-stubble acres. This field was sprayed postemerge to control Palmers, which worked remarkably well. Their other cc millet + sudan fields were not sprayed due to being very clean (keeping the seed bank super-low on Palmers has its benefits).



Planting corn into wheat / pearl millet + sudan mulch. Several no-tillers across central KS have been doing this on large acreages for up to 5 yrs now. It always gets planted, albeit a little later than some other seedbeds--which is usually just fine, as our late May corn quite often outyields what gets planted 4 - 6 wks earlier anyway.

Indeed, I'm flat amazed at how well some of the corn in 20 – 25-yr well-managed NT fields came thru the drought—it's making 105 - 120 bu/a on thin upland, while the nearby tilled corn is zero (most of it died while tasseling).

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Got questions?

Matt Hagny has 25 years of experience working closely with no-till farmers to improve all aspects of their agronomic practices. Matt co-hosts a workshop each winter, Agronomy Essentials, and is available for hire as an independent agronomic consultant.