



Strip-Tillage Has More Positives Than You Previously Thought!



Fall strip-tillage (2010) in South Dakota after 170 bu/ac corn harvest – Courtesy Precision Ag Solutions, Aberdeen, SD

In a world that we take for granted throughout the seasons of corn and soybeans for the Central Corn Belt where crop aftermath (some call it trash, some call it residue, some call it stuff, and others cuss it) the conservation-minded person demands it is like 1970-80's actor Rodney Dangerfield's stick, "I just can't get any respect!" Sizing residue, knocking it down so it doesn't cause excessive wear on the tractor tires, chopping the corn stalks and crowns out, baling it off, burning it even; all of these become an adverse set of treatments to the corn stalks, leaves, shucks and cobs left after the combine did its job. The residue seems to not get any respect.

First off, why do we call it "trash"? Is this leftover material really with no intrinsic value, biologically value, chemical (fertilizer-wise), thermally helpful, protection from wind and water erosion, to be Greenhouse gases capture points, as a wildlife protection zone, or as a sink for complex carbon molecules including CO₂? The concept of trash is pure waste in most folk's minds. I struggle as do many other agronomists and conservationists, when corn residues for instance, a carbon based source biodegradable product that is worth 18-20lbs of nitrogen/ton of corn residue, or 30lbs potassium/ton, 4lbs phosphorus/ton and 3lbs of sulfur/ton. With a field that yielded 150bu/acre corn, 5 tons of residues are left after that combine passed over and through; there is 90lbs of N potential for the following season, 20lb of P, 150 lbs K and 15lbs of S. Why is it not "good stuff"?

So let's calculate if for 2 years in a row as a grower we purchase the N-P-K etc from a fertilizer dealer the amount that is lost due to erosion, oxidation, biologic burn (the amount to feed microbes), and soil storage. These will be rough figures just for nitrogen; 20 lbs N/ton residue x \$0.17/lb for N = \$3.40/ton x 5T/ac residue = \$17.00/ac of nitrogen is available via the left over residue that degrades, and breaks down for later. To put it into the 2 years of corn on corn, then we have \$34/acre of nitrogen afforded the grower. Am I close? In another look, 400 acres of corn on corn, that is a savings or nitrogen credit of \$13,600 worth of N over the two year period. That is usually a sizeable check to write to the local fertilizer dealer. In my limited thinking with a budget in mind, wow that makes a bunch of sense to me. Add up the other nutrient components and we have a sizeable payback to the grower. That is a primary positive step from strip-tillage for the grower.

With a strip-tillage system for row crop farmers, the residues are moved in between the tilled zone strips, contained with some soil splash if you will, and left to over winter protecting the soil surface from wind drying

and wind erosion effects. It also acts as a sponge to absorb snow and rain allowing it to slowly seep into the soil and replenish the soil profile from the crop's extraction of 2010. Runoff is greatly reduced, almost to zero in many fields. This can be a conservationists dream to conserve, protect, replenish, naturally feed biologic life in the soil – doing all the right things for the soil to be sustainable and productive. As a conservationist now for 37 years it does not get much better than this.

The positives: 1) residues from the 2010 corn crop are worth dollars in fertility, 2) needed protection from wind and water erosion potential, 3) improvements to soil quality by feeding the microbes, microarthropods, earthworms, 4) stabilizing soil aggregates with soil organic matter [SOM] and rehabilitation for Mycorrhizal fungi that exude a complex carbohydrate glue-like product called glomalin which helps soil particles stick together, 5) enrich the soil with organic solids-SOM, and 6) provide more locations for nitrates, phosphates, sulfates, potassium ions and micronutrients to adhere in the soil complex and become available to the next crop root interface. I could go on here, but you get the soil improvement picture.

Strip-tillage is at the top of the best conservation tillage practices known around the world. It is long lasting, has given growers opportunities to reduce costs, protect, it can improve yield potential, and save soil condition all in the same pass. If your mind is still reeling with questions get a hold of us at Orthman Manufacturing. I am available via mpetersen@orthman.com and invite you to dialogue this issue. Think about it!

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