

'08 Winter Conference Recap

by the Editors

The number of seasoned no-tillers goes up every year in Kansas and the surrounding region, so the quality of the interactions continues to improve at this event. Sharp minds and diverse experiences add to the dynamic.

Keynote speaker Dwayne Beck focused our minds: “Researchers are now studying whether taking the corn stalks away for ethanol will cause loss of soil organic matter or other soil degradation. It’s a stupid question. The soil is *already* degraded. The question we should be asking is how to reverse some of that degradation.” —The answer, of course, is no-till with high biomass production and retaining that biomass to feed the soil.

Scientist Jerry Hatfield of ARS presented evidence that 40% of the carbon in a no-till corn crop comes from soil emissions of carbon dioxide (rather than the ambient atmosphere)—and since water-use efficiency can be improved by elevated CO₂ in the crop’s canopy, the ability to manipulate the timing of carbon fluxes creates yet another reason for permanent no-tillage systems. Kris Nichols, an ARS soil ecologist, vividly showed the effects of soil aggregation, created in large part by mycorrhizal fungi, and discussed ‘engineering’ of soil biology with crop selection—including the mysterious beneficial effects of cover-crop cocktails.

Dan Forgey, cropping manager for Cronin Farms of Gettysburg, SD, discussed their *twelve* crop rotations on 8,900 acres of farmland—and they’re adding more cash crops and cover crops all the time. Rick Bieber, who’s been in continuous no-till for 25 years, and farms about 50 miles northwest of Forgey, described cropping practices with similar diversity (and excellent financial success). Some 750 miles to the south, Alan Mindemann of Apache, OK, explained his no-till successes with extremely high cropping intensity and diversity. The principles are the same everywhere!

Greatly reduced N & P fertilizer use in long-term no-till was mentioned by several speakers including Gabe Brown of Bismarck, ND. In comparing Gabe’s to Kansas or Oklahoma cropland, several points are worth noting. First, soils in the Dakotas haven’t been cropped as long (the settlers arrived later), haven’t eroded as much, and haven’t been tilled as intensively. Also, soils in cooler climates naturally have higher organic matter. Many of the soils in the Dakotas are geologically much younger and less weathered, and therefore again have higher natural fertility. Also, ecosystems that are N-limited for many



Photo by Jana Lindley.

The '08 conference had over 1,200 in attendance.

years favor the population build-up of free-living (and associative) N-fixing microbes (although there may be substantial yield hits to get to this point unless legumes are grown frequently). Plus, Gabe Brown has had lots of alfalfa in his rotation for many years, which supplies a great deal of N to his other crops. Finally, his cropping regimes often include other legumes, and much of his grain and biomass production is returned to the land as manure, so exports of nutrients are held to a minimum. Brown has assembled a wonderful system, but one must be careful how one applies those lessons elsewhere.

From the other side of the globe, hailing from the state of Victoria in Australia, Robert (‘Ruwy’) Ruwoldt also mentioned rather meager P and N usage in his 20-year-old no-till system (grain cropping only; no livestock). Australian soils are incredibly ancient and highly weathered, so his results were a bit of a head-scratcher. But Ruwoldt’s crops are so healthily grown, and residue retention *truly* at a maximum, that soil ecologists rave about the biological properties of his soils. So while it is generally true that long-term no-till is more efficient in terms of production from N and P inputs, one must be very cautious on *when* to cut usage—if you back off the N too soon (before the system reaches its new N-cycling equilibrium), it will reduce profitability and impair the system’s development.

Dozens of other great speakers kindly shared their experiences in detail, and we can’t begin to do justice to conveying their ideas in this brief recap. You’ll just have to attend future events, and keep reading these pages! 🌱