



January 21, 2005

DO YOU C WHAT I C?

This week I attended the Regional No-Till on the Plains Conference and trade show held at the Bicentennial Center in Salina, KS. Dwayne Beck from the Dakota Lakes Research Farm near Pierre, SD, provided a keynote speech and talked about carbon. Carbon chemistry is the basis of life as we know it. The search for life on other planets begins with a search for water and carbon containing compounds. Carbon is the chemical element taken up in largest quantities by plants. Until the issue of global warming was raised, almost no attention was paid to understanding the factors that impact carbon cycling in agriculture.

Scientists attempting to quantify the impact that rising atmospheric carbon dioxide partial

pressures might have on plant growth, accumulated a wealth of information. These data suggest that plants have higher water use efficiencies when grown under elevated carbon dioxide levels. This result was expected. The phenomenon is attributed to the fact that these plants do not have to open their stomata as widely to attain the carbon dioxide they need. Consequently, less water vapor "leaks" out. Plants in these conditions are also better able to attain adequate carbon under water stress conditions when stomatal closure occurs for substantial periods of time during the day.

Most practicing farmers probably think this has nothing to do with their operations today, but it does. We are just now beginning to understand how to manipulate carbon cycling through crop rotation, no-till farming and residue management, nitrogen application methods, etc. Beck feels it is possible or probable that carbon cycling effects are partially responsible for the fact that soils with high organic matter content, normally produce higher yields than those with less organic matter. Similarly, fields that have recently been converted from perennial crops or from sod into crop production might produce superior yields for the same reason. Almost every seasoned no-till farmer has had instances where a crop yielded much better than expected based on the water saving aspects of no-till alone. Something else had made a contribution.

Beck feels that no-till and crop rotations are not ends but rather the best means or tools we have available to manage the carbon cycle in our cropping systems. Carbon cycling is largely out of our control in tilled systems since much of the carbon dioxide cycling (loss from the soil and plant residue) occurs within days of tillage events. Very few people, scientists included, think of carbon as an essential plant nutrient to be managed as such. Cycling nutrients is nothing new, but almost everyone forgot about the most important nutrient, carbon. Maybe that was because little could be done about it in tilled systems, but times have changed.

At the Salina Conference, there was an update of research on carbon sequestration in agricultural soils and a presentation on how to participate in the carbon sequestration pilot project of the Chicago Climate Exchange. The Iowa Farm Bureau, in cooperation with the Kansas Carbon Coalition, is offering an opportunity for Kansas farmers to enroll in the 4-year pilot project for ag-based carbon credits. Information was made available on how, when and where to sign up.



Producer organizations in Nebraska have one more issue to keep track of and that issue is carbon research and pilot carbon credit projects.

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