

“MANAGING THE CARBON CYCLE”

One reaction to the National Forum held in Queanbeyan 22-23 November 2006

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This Forum was a sequel to the Conference on carbon held in Armidale NSW in November 2005 which was attended by three members of Healthy Soils Australia: Gerry Gillespie, Rob Gourlay and Dr Brian Tunstall. The Armidale conference was eye opener for many, as more and more people are beginning to realize the importance of carbon in the total scheme of things, particularly in relation to agriculture, climate and water. The focus at Armidale was to make the underlying science open and transparent. A copy of Brian Tunstall's paper is at <http://www.healthysouils.com.au/html/news.html> and http://www.eric.com.au/html/papers_soilmap.html.

For the Queanbeyan conference the focus shifted to what we can do to “manage” (yes, literally “manage”, not just influence) this incredibly important natural process or more accurately, set of interacting processes.

Both conferences were organised by Dr Christine Jones who believes passionately that agriculture, and particularly the management of our agricultural soils (and here “manage” is appropriate) has enormous potential to reduce atmospheric CO₂ as a counter to global warming. As added benefits, healthy soil also collects, stores and purifies water and increases the quality, productivity, profitability, resilience and sustainability of agriculture in this country and globally.

Linking global warming, water management and the future of agriculture in this way is novel and does not fit established disciplinary and administrative silos. Not surprisingly, there were virtually no institutional contributors, either as speakers or participants. The result was a refreshing absence of vested interests, political grandstanding and point scoring. Over half the participants were farmers of the thoughtful, innovative variety. The rest were acting as concerned individuals, not delegates, representatives or sales people. There was a strong underlying conviction that the current institutional leadership is taking us in the wrong direction and a quiet confidence that by working at the grass roots (literally) we can demonstrate a better way. Christine Jones has a special interest in grass and savanna woodlands and the importance of pasture and cropping regimes was frequently stressed.

However the absence of a discussion on the role of forests and shelterbelts (for cropping, grazing and carbon sequestration) was an unfortunate omission. In her own defence Christine could argue that trees as carbon sinks are already well recognised and that it is the power of the grasslands both as sinks and builders of soil carbon that needs to be more widely understood.

The Forum was chaired with great good humour by Professor Stuart Hill and livened up with delightful bush poetry by Gordon Edmond. It handled the sometimes highly technical stuff without too much jargon. It is a rare event that can balance a discussion of very big issues, technical complexity with the warmth and camaraderie I experienced at this forum.

For those who could not attend, the material presented will be available on the web (www.amazingcarbon.com).

The opening presentation by Andrew Jeeves, CEO Earthlink Australia Pty Ltd, (a new farmer education entity in WA) was excellent in the quality of his graphics and the clear way he

demonstrated the complex interrelationship between plants, soils and atmosphere. Christine Jones' presentation focused on the capacity of healthy soils to catch and store water (she calls degraded and compacted soils "drainments") and Robert Sutton, the Austrade National Manager dealing agribusiness gave an excellent overview of the present state of carbon trading around the globe. Arguably Robert is well and truly part of the "establishment" but as Australia is not yet a signatory under Kyoto and locked out of the international trading regime he is in learning mode and not yet selling, protecting or grabbing, etc at least in the carbon area. This will all change, of course, when the Government takes a stand. The behind the scenes institutional bids for territory and funding will be particularly fierce and ugly in this crucial new domain.

The only politician, Tony Windsor, the independent Federal member for New England, had no prepared speech and gave us some useful insights into the Federal Government's changed position on two issues. First, climate change (the drought and water shortages had convinced people that the government was not doing enough) and second, nuclear energy. According to Tony this was masterful wedge politics. The lead times are so long that the Howard government would not have to actually do anything, and it has the benefit of distracting people from issues that the government needs to (but doesn't want to) address such as water and climate change. The fact that it splits the Labor party down the middle and prevents the Greens from finding common ground with Labor is a bonus.

Tony missed the important point that Howard started the nuclear debate following a visit to the US where the possibility of using Australia as a politically and geologically stable store for the world's used uranium. Using Australia as a nuclear waste repository was one of Ziggy's terms of reference. While I wait to see how he addressed this, I wonder what the real agenda is. Is the nuclear debate a softening up for nuclear dumping in Australia? If so, political stability might be in for a rocky time.

There was a very interesting presentation from Michael and Louisa Kiely. They had recently purchased a property and were participants in the Armidale Carbon Conference. That conference opened their eyes to what can be done at the grass roots farming level. They changed their management practices, undertook a study tour in the US and founded "The Carbon Coalition Against Global Warming" (www.carboncoalition.com.au) which believes that one of the most effective strategies for locking up carbon in our atmosphere is to be found in fostering deep-rooted plant species on land used for agriculture. The coalition comprises farmers interested in aggregating the measured improvements of stable soil carbon to provide tradable quantities. It is looking for new participants.

The forum did not deal with the complexities involved in actually measuring carbon levels in soils nor the issue of differentiating between short-term (ephemeral) carbon and the longer term stable forms (humic and fulvic acids, humates and glomalins). Christine Jones had the interesting suggestion that water-holding capacity could provide a simple measure of the level of organic matter in soil. She argued that water-holding capacity correlates well with the levels of organic material in a soil sample. A standardised method of measuring changes in overall levels of organic activity would provide a useful tool that would obviate the need to test for a whole range of individual carbon types. While research work on the stability and measurement of different carbon forms in soils are still needed, water-holding capacity could potentially serve as a useful indicator for practical purposes.

A colleague, Brian Tunstall has pointed out in relation to using water holding capacity to evaluate changes in organic matter (OM) that the CSIRO infrared measurements are cheaper

and easier to obtain than water potential - water content relations. Also, they are more direct and they stratify the OM into different fractions as needed.

He also pointed out that the effect of OM on the relationship also depends on other factors hence, while water holding capacity can be an indicator, it will not provide a reliable estimate for actually measuring sequestered carbon. However, a measure that Brian has developed himself involves measuring the heat given off when a sample of dry soil is hydrated. This heat is in direct proportion to the amount of OM present. He calls this process Soil heat of hydration (HoH) measurement. The Soil HoH identifies the binding of water to soil. At present there is no information available to determine precisely the relationship between the Soil HoH and traditional measures of soil water holding as obtained with tensiometers and pressure plates. The relationships need not be good as the Soil HoH relates to tightly bound water when most of the available soil water is not tightly bound. Soil texture is the prime determinant of readily available water.

The presentation from Dr Matthew Nott, a surgeon and founder of “Clean Energy for Eternity” received a mixed response. He had a “road to Damascus” experience while reading Tim Flannery’s book *The Weather Makers* on Tathra beach early in 2006. He responded to his calling with incredible energy. Being a keen surfer and life saver he saw a way that all surf life saving clubs in Australia become energy (ie carbon) neutral. He also launched a number of highly successful local campaign initiatives to increase public awareness about global warming.

While some participants were impressed by the energy, commitment and success of Dr Nott, others felt that his hard hitting, media savvy approach represented the very style that they were working against. A few people were privately upset by his forceful approach. I could not help thinking of the outstanding work of a Swedish medical man, Karl-Heinrich Robert, who founded the Natural Step. The Natural Step is based on a consensus model, based on sound science, that provides a way for companies to (re-) design their products so that they work with natural processes, rather than destroying nature. “Clean Energy for Eternity” could learn from him.

Christine had organised for the press to attend and there was much media interest during the early stages, but when the footage was brought back to the studio it was canned. Censorship by the status quo is alive and well. Incidentally the culprit this time was Channel 7.

Despite this set back, the Forum was very successful. We sat around tables rather than in rows and there was much mixing and discussion. Hopefully some real change was being nurtured. I learned lots, and enjoyed it. Congratulations to the organizers. I hope they are also pleased with the result.

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