

# SOIL CRUMBS...

from the Catchment Knowledge Exchange

Welcome to the third newsletter from the Catchment Knowledge Exchange!

SOIL CRUMBS is a short, bimonthly newsletter – featuring useful soils-related information and upcoming events, and material from the CKE website: [www.catchmentknowledgeexchange.net.au](http://www.catchmentknowledgeexchange.net.au)

Please distribute SOIL CRUMBS to others with an interest in soils.

## EVENTS...

Griffith University's Centre for Forestry and Horticultural Research is hosting ISFS2007, the International Symposium on Forest Soils and Ecosystem Health, titled *Linking Local Management to Global Challenges*, from 19–23 August 2007 at Noosa on Queensland's Sunshine Coast. For more information, click [www.griffith.edu.au/conference/isfs2007/](http://www.griffith.edu.au/conference/isfs2007/)

## SOILS NEWS...

### Soils-related articles from recent editions of *Agriculture Today*

(*Agriculture Today* is the NSW Department of Primary Industries' newspaper covering research, advisory and management issues in agriculture and natural resources. Find it at [www.dpi.nsw.gov.au/aboutus/news/agriculture-today](http://www.dpi.nsw.gov.au/aboutus/news/agriculture-today))

1. *Soils offer new hope as carbon sink* (June 2007)

[www.dpi.nsw.gov.au/aboutus/news/agriculture-today/june-2007/soils-offer-new-hope](http://www.dpi.nsw.gov.au/aboutus/news/agriculture-today/june-2007/soils-offer-new-hope)

"The huge potential of agricultural soils to reduce greenhouse gases and increase production at the same time has been reinforced by new research findings at NSW Department of Primary Industries' (DPI) Wollongbar Agricultural Institute. Trials of *agrichar* – a product hailed as a saviour of Australia's carbon-depleted soils and the environment – have doubled and, in one case, tripled crop growth when applied at the rate of 10 tonnes per hectare. ..."

2. *Environmental Agriculture* column from Rebecca Lines-Kelly (May 2007)<sup>1</sup>

"Our droughts and changing climate are concentrating everyone's minds on water. At the Grafton Landcare Farming Forum I attended last month, the session on water featured was very interesting.

Forester Jerry Vanclay from Southern Cross University outlined the important role that forests in tropical areas play in 'creating' local rainfall through transpiration of moisture, but also acknowledged the need for local research into the impacts of forests on stream flows and rainfall patterns.

Werris Creek landholder Craig Carter explained how natural sequence farming has helped hold water in his soil, and Inverell farm manager Glenn Morris outlined the role of humus in storing water in soil.

Glenn showed photos to illustrate how hard, low carbon soils literally shed water into drainage lines, so that all the water quickly leaves the area, leaving the soil just as dry as before the rain. Afterwards, Jerry Vanclay commented that the presentations made him visualise the soil as sponge, which for the past century we have been squeezing dry – land clearing, grazing practices, mechanisation and urbanisation all result in water draining quickly from the landscape, when we really need to store it in the soil for slow release. This suggests we need to find ways to recondition and rehydrate the soil sponge.

Techniques include improving humus levels, restoring forests and the local water vapour cycle and repairing our watercourses, so that we slow down the flow of water in the landscape.

Jerry mentioned the work of Indian Rajendra Singh, who has won awards for his work in bringing rivers back to life in drought stricken Rajasthan by constructing traditional 'johads' or infiltration ponds. These water storages have gradually replenished groundwater and streams, and revitalised agriculture and forests in local areas. This local water storage approach is quite different to our system of storing water in huge dams for delivery to irrigation and urban areas.

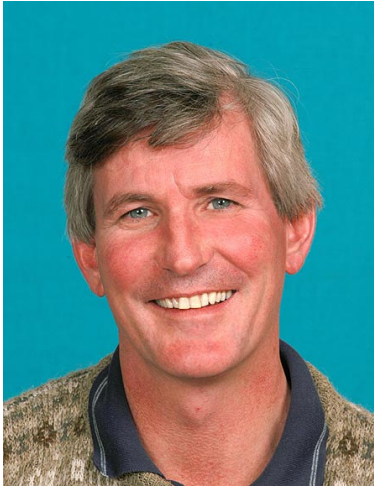
I left the Landcare Farming Forum with plenty of new ideas to think about, as did most of the 200 people who attended. The changing climate is forcing change on us at an unprecedented rate, and it is inspiring to see how quickly landholders and scientists are responding with innovative land management.

- Presentations from the Landcare Farming Forum can be found on the Northern Rivers CMA website, [www.northern.cma.nsw.gov.au/landcareforum.htm](http://www.northern.cma.nsw.gov.au/landcareforum.htm)
- If you'd like to know more about India's rainwater harvesting movement click [www.rainwaterharvesting.org/index.htm](http://www.rainwaterharvesting.org/index.htm)

<sup>1</sup> Reprinted with permission from the June 2007 issue of *Agriculture Today*, produced by NSW DPI.



## PROFILES...



In this issue we're featuring Dr Philip Polglase, a forest ecologist and soil scientist with Ensis<sup>2</sup>. Phil completed his University of Melbourne Ph.D. in 1989, focusing on aspects of nutrient cycling and soil fertility in mountain ash forests. He did post-doctoral studies at the Departments of Soil Science and Forestry at the University of Florida and then with CSIRO Atmospheric Research in Melbourne, where he began his interest in modelling terrestrial carbon cycles. In 1992 he moved to Canberra to work with CSIRO Forestry and Forest Products on a range of projects including research on soil carbon.

Recent work – funded by the Australian Greenhouse Office and in collaboration with Dr Keryn Paul – examined the role of afforestation on soil carbon dynamics. This work showed that when trees are established on agricultural land, there is usually a small, initial decrease in the amount of soil carbon,

followed by a gradual increase with time. Phil and Keryn developed a modelling framework that explained this pattern of change: under grasses and crops, most of the carbon captured by photosynthesis is turned over rapidly in roots and enters the soil carbon cycle. Under trees, however, most of the captured carbon goes to building long-lived coarse roots and the supporting stem wood. The carbon is therefore removed from the soil carbon cycle – at least temporarily. Over time, residues are cast off which, due to their chemical nature, tend to build soil carbon – more so than the easily decomposed residues of grasses.

More recently Phil has led a major research program – *Commercial Environmental Forestry* – developing spatial tools to quantify the combined environmental and commercial benefits of new forests established in agricultural landscapes. A key requirement is to have good spatial maps of soil depth and texture. According to Phil: “People focus on a lot on the benefits that new forests provide for biodiversity, water quality improvement, carbon storage, wood products and so on. The fact is, the ability of trees to deliver these goods and services depends on how well they grow and, in rainfall-limited Australia, soils play a key role in determining water availability. Our models of tree growth are extremely sensitive to soil properties so getting good information is absolutely critical.”

When not being a dirt doctor Phil is preoccupied with watching his two teenage children do all those things that he did at their age but wishes they didn't. He enjoys the bush, the beach, and suffers watching Carlton get flogged every week!

<sup>2</sup>Ensis is a joint venture between CSIRO Forestry and Forest Products, and New Zealand's SCION. Read about Ensis at [www.ensis.tv.com/](http://www.ensis.tv.com/)

## GET INVOLVED...

... with the Catchment Knowledge Exchange. Click on the link, [www.catchmentknowledgeexchange.net.au](http://www.catchmentknowledgeexchange.net.au), to see the many features designed to get users involved in soil health-related activities and conversations, including the **SoilWiki** a feature that allows users to collaboratively create and edit soils-related articles... current material includes discussion about soil health; soil management including resilience; the role of soil management in water retention, biodiversity and dryland salinity; and soil policy. We intend on improving navigation around Wiki material, but in the meantime we encourage you to get in and have a go!

Importantly, the site also “features” the Knowledge Broker, Shawn Butters, who is available to answer soil-related questions. Shawn, or one of his broker team, can be contacted on 0437 988 137 or by e-mail on [knowledgebroker@catchmentknowledgeexchange.net.au](mailto:knowledgebroker@catchmentknowledgeexchange.net.au).

## CONTACT US...

CKE Soil Knowledge Broker Service  
phone 0437 988 137

web: [www.catchmentknowledgeexchange.net.au](http://www.catchmentknowledgeexchange.net.au)  
e-mail: [knowledgebroker@catchmentknowledgeexchange.net.au](mailto:knowledgebroker@catchmentknowledgeexchange.net.au)

None of the material presented here necessarily represents the views of the National Action Plan for Salinity and Water Quality (NAP) nor the Victorian Catchment Management Council (VCMC).  
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