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'Managing the Carbon Cycle'

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<http://www.amazingcarbon.com/>

PAPER SUMMARIES

Ray O'Grady **Importance of Soil Carbon**

This paper reviews the historic loss of 50-60% of soil carbon, and its effects on crop yields, the physical, chemical and biological aspects of soil health and the health and wellbeing of the farming family. Farming practices that influence soil carbon dynamics and the methods and principles of increasing the carbon sink in the soil are discussed.

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Ray O'Grady and Rod Rush **The Terra Preta phenomenon**

The greatest legacy the Amazonians left to the World was not the famed 'City of Gold' but the Terra Preta. These man-made 'Indian black earths' in the Amazon Basin cover an area the size of France. They hold a secret to carbon sequestration that could reduce carbon dioxide emissions and global warming. We require only 10% of our productive, degraded lands to absorb the estimated 6.1 gigatons of carbon dioxide emissions to make a carbon negative world possible in our life-time. The question must then be asked 'Do we need nuclear power to reduce Global Warming?'

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Andre Leu **Organics and Soil Carbon:**

Increasing soil carbon, crop productivity and farm profitability

This paper explains how atmospheric carbon is introduced into the soil and how it stored in stable forms. It identifies the farming techniques that are responsible for the decline in soil carbon and gives alternative practices that do not damage carbon. Increasing soil carbon can reduce the 25% of Australia's greenhouse gases created by agriculture and assist in ameliorating climate change. Increasing soil carbon will ensure good production outcomes and farm profitability. Soil carbon, particularly the stable forms such as humus and glomalin, increases farm profitability by increasing yields, soil fertility, soil moisture retention, aeration, nitrogen fixation, mineral availability, disease suppression, soil tilth and general structure. It is the basis of healthy soil.

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Rod Rush **Understanding mycorrhizal fungi**

Mycorrhizal fungi form symbiotic associations with the roots of many plant species. Mycorrhizae supply their hosts with mineral nutrients (notably phosphorus) in exchange for energy compounds. However, there are many land management practices that can severely deplete and sometimes extinguish mycorrhizal populations. This paper focuses on a discussion of these management practices and their consequences for ecosystem health and farm productivity.

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Tony Scherer **Back to Basics:**

Returning to a biologically based farming system

How we moved away from the importance of soil structure, humus and water holding capacity to an NPK mentality Should we treat agriculture as a biological or industrial system? Do consumers know what they are eating? Effect of government policy on alternative agriculture. Effect of agricultural research on alternative agriculture. How do we retrieve a sane and sensible farming system?

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Andrew Helps **Climate change and dryland farming**

Soil carbon levels – overview of the National and Regional inventories such that they are. Does the farming sector have any understanding of albedo-related feedback mechanisms and the impact of these mechanisms on farm scale – and on regional and national productivity? Is big still beautiful? Was it ever really beautiful? Is there a role for a small intensive dryland model?

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Michael and Louisa Kiely **Carbon Credits from Soil**

The Carbon Coalition Against Global Warming was launched to promote carbon in agricultural soils as a natural carbon sink for the purpose of trading on the global emission credits market. Global Warming presents farmers and graziers with an opportunity to sell carbon credits worth thousands of dollars per hectare. Soil carbon levels can be increased by replacing soil management practices such as stubble burning, ploughing and inappropriate grazing with minimum tillage, regenerative grazing and revegetation with perennial grasses. Base-lining is essential for registration in possible future trading programs. Landholders need to take action now to be ready for the anticipated first day of trading.

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Bob Mackley **Sacred cows with zebra stripes**

Agricultural practice and the shape of farming communities have changed enormously over the last four decades. There have been obvious benefits in gross production but whether we are accounting for the full cost is in considerable doubt. Whenever the environmental cost of farming is brought up in discussion there is usually a heavy silence and people trying to find the door marked EXIT. The enthusiastic adoption of herbicide, pesticide and fungicide products may be masking a greater danger to sustainable agriculture than the current generation of ‘pests’. Resistance (selection pressure) has become the new fear phrase in farming circles with the common response being to apply more, stronger, earlier or differing mode of action chemical. This more-on farming method has caused many farmers to look elsewhere for answers and the soil may hold many of them.

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John and Val Hanley **Organic grain and fodder production**

We farm 2000 acres in Central Victoria. We grow BFA certified grains for milling and fodder (oats, oaten hay and pasture hay), as well as silage for organic dairy farmers. This presentation will cover our experiences within the organics industry; human health issues; weed control in broadacre farming, especially grass ‘problems’; green manures; the use of aerators and rollers; crop rotations; livestock management; weevil control in silos. No matter what you are growing, you are a microbe farmer. Microbes are what make your living for you. For everything you do, always ask ‘is this going to be beneficial for microbial life on my farm?’

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David Marsh **A different decision-making process can produce profits, increase carbon sequestration in soils and regenerate landscapes**

With different grazing management, there is huge potential for carbon sequestration in soil. The effect of higher soil carbon levels on landscape function and possible solutions to other land degradation issues are discussed. Drought performance of a farm where decisions are made using the Holistic Management model are examined.

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Colin Seis **Carbon farming through Pasture Cropping**

Concerns about declining profitability, poor soil structure, dryland salinity, soil acidification and increasing numbers of herbicide resistant weeds have prompted over 1000 farmers throughout eastern, southern and Western Australia to trial Pasture Cropping. The year-round groundcover results in reduced wind and water erosion, improved tilth, reduced weed numbers, increased nutrient availability and increased levels of soil organic carbon. The soil health benefits from plant root exudates derived from a mix of shallow rooted crops and deep-rooted perennial pasture are numerous. In an era when dryland salinity, soil acidification and loss of soil carbon are having increasing impacts on the productivity and profitability of farming enterprises, Pasture Cropping may provide one option for addressing these issues.

Liz Clay **Positioning soil in the carbon market – a Victorian perspective**

There is now a scientific and political consensus on the reality of climate change. It is happening and it has serious implications - for our ecosystems, our health, our economy and our future. This paper reviews the risks and opportunities associated with positioning soil carbon in the emissions trading market.

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Andrew Helps **Carbon, energy and water: making the case for high carbon fertiliser**

Can Australian farmers remain profitable under their current dry land model? Will selling grain for export continue to be the best use of farm production? Manufactured fertiliser is hooked to the price of oil and gas. It takes .65 of a tonne of natural gas to make a tonne of urea, a tonne of natural gas to make a tonne of ammonia and the equivalent of a tonne of gas and up to 20,000 litres of water to make a tonne of phosphorus. It is reasonable to expect that farm gate prices for diesel could well rise to the \$1.50-\$1.60 region after excise claw back in the next 18 months. At this level most farmers will want to explore alternative fuel options - what are these options?

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**See other links on this website for information on the
Kingaroy (QLD), National (Canberra) and Katanning (WA) events
'Managing the Carbon Cycle'**

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