A 'black magic' CO2 fix

December 9 2008

The cover of the December-January issue of ECOS magazine. Image: CSIRO

Biochar, similar to charcoal used by pre-Columbian Amazonian cultures to boost crop yields, could help the fight against climate change by securely locking carbon away in soils for thousands of years, according to the December-January issue of ECOS magazine.

Biochar is made by heating woody waste at high temperatures without oxygen, a process that also produces biogas and usable ‘bio-oil’, renewable energy sources. The stable black carbon-rich solid left after these are captured can remain in soil for up to 5000 years.

Used in agriculture, it could increase crop production and reduce

emissions of greenhouse gases such as carbon dioxide and nitrous oxide from fertilisers. Biochar appears to be especially effective as a soil additive for rehabilitating contaminated soils and boosting crop yields on marginal land.

Prominent climate change figure, Professor Tim Flannery, has publicly advocated biochar's potential, stating it; "…provides a unique, powerful solution, for it allows us to address food security, the fuel crisis and the climate problem, and all in an immensely practical manner."

Australia's food future

ECOS investigates how we can make more sustainable choices about what we eat, and how smart policy can accommodate food security priorities for future rural prosperity.

Is an organic banana produced in northern NSW and trucked down the east coast a better option nutritionally and environmentally than one produced by conventional means in the Philippines and shipped to an Australian market?

Scientists are analysing our food products in terms of carbon consumption and environmental impacts across their entire life cycles, from paddock to plate. The energy (and thus emissions) used to supply food is now often expressed as food miles (fuel consumed in the production, transport and processing of food). Another source of greenhouse gas emissions are nitrogen-based fertilisers used to increase crop productivity on depleted soils.

"The food system is a major component of export income, our largest manufacturing sector, a huge employer, the largest water user and the second largest cause of greenhouse gas emissions," says sustainability consultant, Andrew Campbell.

“Most Australians think of their water use in terms of showers, toilets, gardens and swimming pools, but by far the largest component of household water use is through the food we consume.

“We need to grow much more food over coming decades, from probably less land and with less available water than we have now, with much higher costs for energy, water and nutrients, in a much more difficult climate, especially in southern Australia.”

The power of a green economy

ECOS looks at the impact of the recent financial crisis on climate change action. In the past, a prevailing assumption that green investment comes at a cost to the economy meant that momentum for action on the environment was lost when global economic recessions hit in 1973 and 1992.

But, as Australia's key advisor on emissions trading, Professor Ross Garnaut, has pointed out, climate change will be around long after the worst impacts of the current financial crisis.

Today, some leaders – including USA President-elect Barack Obama – are seeing the opportunities that long-term investment in environmentally-aligned initiatives provide to revive the economy and job growth, and tackle climate change.

The UK's Sir Nicholas Stern has said: “There are more incentives to invest in energy efficiency during a recession and when oil prices are high. Spending on renewable and other low-carbon industries could help stimulate the economy.”

Page 17 of this issue discusses how CSIRO also sees investment in a green collar workforce as a major growth opportunity, and the key to a

‘triple bottom line’ in Australia.

Provided by CSIRO