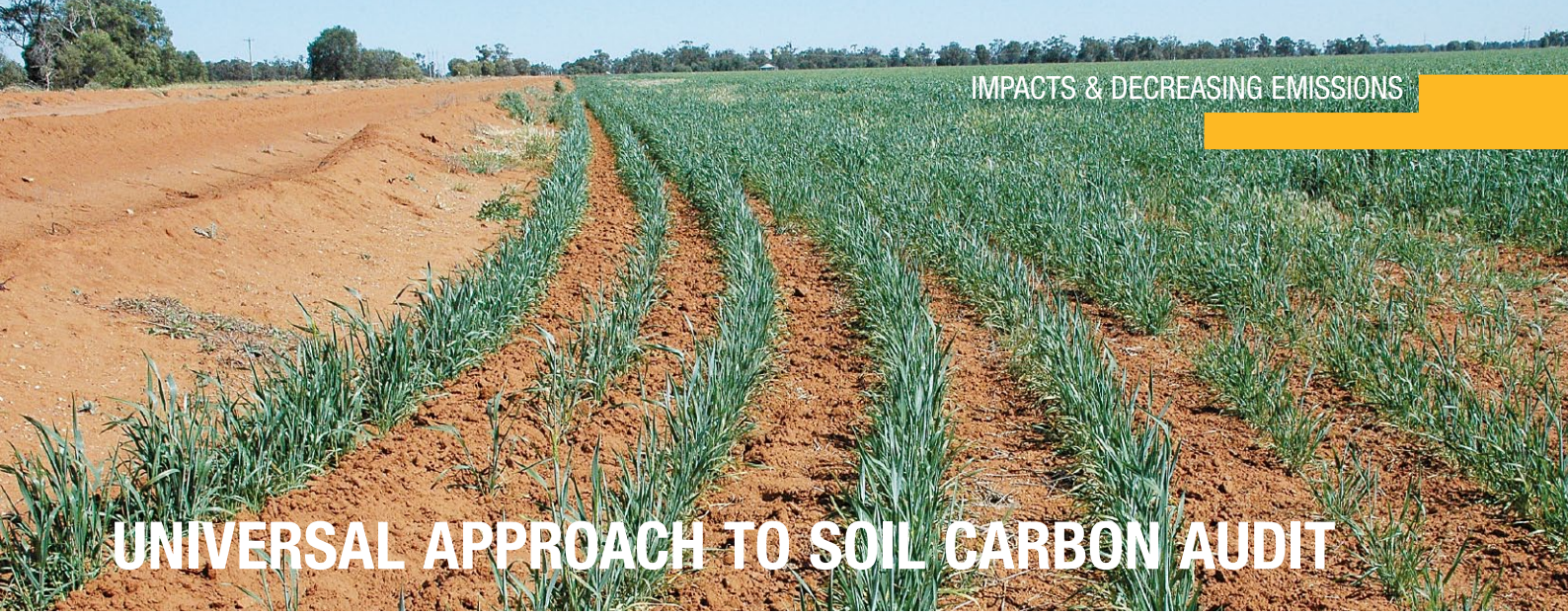

UNIVERSAL APPROACH TO SOIL CARBON AUDIT

Using standard methodologies for analysis will provide a better understanding of how much carbon is stored in Australia's production soils

By Jeff Baldock

STORING MORE CARBON in the soil is not only beneficial for soil biology, water and nutrient storage, and plant growth. It could also be good for the environment, by reducing greenhouse gases. However, to date, surveys on soil carbon have not used consistent methodologies for sample collection and analysis. Therefore, accurate assessment of the relative influence of soil type and management practices on the storage of carbon in Australian agricultural soils has been difficult.

The GRDC has provided $2.1 million towards a national three-year Soil Carbon Research Program (SCaRP) through a partnership with the Australian Government Department of Agriculture, Fisheries and Forestry, CSIRO, universities and state governments.

More than $20 million in funding, including in-kind contributions, has been provided for the program, which incorporates seven projects across Australia and brings together researchers from CSIRO, state government agencies and universities.

A comprehensive soil collection and analysis plan is at the heart of this project.

Samples are being gathered across Australia (Figure 1). Soil sampling locations are being based on soil type and the major production systems in a variety of agricultural regions. Additionally, archived samples from previous studies will be used in conjunction with those being collected to examine the impact of agricultural management practices on soil organic carbon over time.

All samples will be collected and analysed using consistent methodologies. The program will identify how much carbon is stored in agricultural soils under different management systems and build on previous studies that have shown that practices such as conservation farming can help conserve soil carbon.

All results will be collated in a national database on soil carbon and be used to aid the testing and development of the National Carbon Accounting System.

To date, 150 soil profiles from Western Australia and South Australia have been collected and analysed, and samples are being collected from all other states. In all, about 16,000 soil samples from various agricultural regions will be collected and analysed.

This regional-scale information will be used to help farmer groups, planners and policy makers establish the best uses for land in the face of climate change.

The contribution of perennial pastures to soil carbon will also be defined, and testing and development of rapid, cost-effective methodologies for measuring soil carbon and its composition will be developed.

The next phase of this research will be to identify how much carbon could be stored in each soil by management combination and how this might be achieved. □

Researchers across Australia are, for the first time, using the same methodologies to gather and analyse soils to assess the relative influences of soil type and management practices on the storage of carbon.

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Figure 1 Proposed locations for soil collection in the Soil Carbon Research Program