

# Land Management Activities for Increasing Soil Carbon



## Information Sheet

The Central West Catchment Management Authority (CMA) project, "Land Management Activities for Increasing Soil Carbon", will engage landholders across the Central West CMA area to undertake, over time, specific land management activities to increase soil carbon on designated areas of their properties. Land management activities known to increase soil carbon on landholders' designated areas will be spatially mapped. Soil carbon levels will be benchmarked. Over time, any improvements in soil carbon levels can be linked to land management practices.

The knowledge learnt from this project could contribute to a platform for any future activities towards the development of a carbon trading scheme involving soil carbon.

To increase soil carbon farmers need to apply the following principles with their land management activities: -

- Increase ground cover
- Reduce the disturbance and compaction of soils
- Balance the soil nutrients for optimum plant growth
- Increase the perenniality of pastures and / or increase the rooting depth of plants
- Increase the biodiversity of species in crops, pastures and nature reserves

The intent of the project is to identify and document land management activities, measure soil carbon levels and over time link improvements in soil carbon levels with specific land management activities. The funding is available to encourage farmers to continue engaging in land management activities that increase soil carbon levels.

Examples of improved land management activities that increase soil carbon include:



**Cropping Management:** pasture cropping, cover cropping, no tillage, zero tillage, & control traffic practices which increase the amount of organic carbon in the soil.

**Grazing Management:** time control & rotational grazing practices which increase the amount of organic carbon in the soil.

## *What sort of assistance is available?*

The Central West CMA is looking for up to 50 farmers and graziers (16 - 20 from each of the Tablelands, Slopes and Plains) who are willing to follow land management activities recognised to contribute to increasing soil carbon levels on a designated area of their property. One-off CMA funding of up to \$3,000 will be available for eligible landholders. The \$3,000 correlates to areas of land to be managed as follows:

- Tablelands \$30/ha (recommended project area is equal to or greater than 100ha).
- Slopes \$20/ha (recommended project area is equal to or greater than 150ha).
- Plains \$10/ha (recommended project area is equal to or greater than 300ha).

This takes into account higher soil carbon sequestration rates that occur in wetter, cooler 'climates.

*Note: Amounts are GST exclusive. Amounts, funded activities and project standards are subject to change without notice.*

## *How do you apply?*

Expressions of interest (EOI) will be open from Monday 2<sup>nd</sup> November 2009 and will close on the 19<sup>th</sup> March 2010. A current farm plan is required.

To be eligible for incentive funding your project must address the project standards listed in this information sheet. To apply please complete an EOI form, answer all the questions, and return it to the Dubbo office of the Central West CMA PO Box 2105 Dubbo 2830.

Please note that any landholders with any prior unfinished Central West CMA projects are ineligible to apply for funding.

Once you have completed and returned this EOI form, a CMA officer will contact you to discuss your project and organise a site visit.

## *Project Standards*

**Project implementation time** - Landholders must be willing to keep a record of their land management activities on the designated area of land over the next 10 years.

**Soil Testing Requirement** - Landholders agree to carry out a free Soilwatch kit test of the project area at the commencement of the project. Soil carbon will be tested again in 5 and 10 years. The soil tests will establish the current soil carbon level and then measure any increases/improvements in soil carbon.

## *How are projects assessed?*

Project EOIs will be assessed against specific criteria by a panel of three experts and assigned rating based the answers provided by the landholder. EOIs received will be assessed at 4 week intervals after 2nd November until 16 - 20 landholders from each of the Tablelands, Slopes and Plains areas have been selected. The assessment methodology considers the 5 land management principles to determine whether farm soil carbon levels are likely to increase through the land management activities proposed by the landholder in the EOI. These are:

### **1. Maximise Groundcover and biomass production (max score 20)**

This can be achieved by not burning or overgrazing stubble and pastures. Burning releases greenhouse gases, causes erosion, loss of soil moisture, loss of nitrogen and depletes soil carbon. A cool burn just before sowing is tolerable to allow passage of seed drill. Burning a long time before sowing allows CO<sub>2</sub> to escape, soil drying, erosion and kills soil biota. Maximising groundcover and biomass production also requires the optimisation of agronomy by:

- controlling weeds and diseases with appropriate rotations and sprayings; and
- managing soil nutrients by the use of fertilisers and rotations.
- Maximising soil water storage for plant growth (Water Use Efficiency)

Time controlled grazing to retain groundcover also prevents erosion maintains soil structure and retains moisture. This reduces the emission of CO<sub>2</sub>.

## **2. Increase Plant Rooting Depth (with perennials or healthier crops) (max score 20)**

Perennials can be expected to produce more carbon because there is:

- green photosynthetic material ready to grow when rains come at any time, especially in summer; and,
- more carbon stored deeper in the soil because perennials are deeper rooting.

Deep rooted perennials are most effective in increasing carbon deeper in the soil. Deep soil carbon is also increased (but to a lesser extent) by increasing the rooting depth of annual crops and pastures in healthy soils. This can be done by addressing surface and subsoil constraints.

## **3. Increase Biodiversity by increasing the number of species (max score 20)**

In pastures and in cropping rotations, diversity in the soil leads to a more complex food chain. As soil microbial communities become more diverse and complex, they become more stable and create a 'suppressive' environment for pests & weeds. By having a wider range of species, the suite of plants present can respond better to rains throughout the year and therefore capable of producing more biomass to build soil carbon, and more food for animals to graze.

## **4. Reduced soil disturbance and compaction (max score 20)**

Reduce cultivation (ploughing) and compaction to a minimum when cropping or sowing pastures. Sow crops into stubble or dormant pasture to avoid disturbing the soil and releasing CO<sub>2</sub>. This is essential to increase soil carbon. Reduce compaction by adopting control traffic when cropping and using time control grazing techniques to retain a protective cover of pastures. This helps keep soil in good condition for plant growth and maximum biomass production.

## **5. Balanced soil nutrition (max score 10)**

To build soil carbon, it is essential to have balanced soil nutrition to maximise plant growth and encourage healthy biological activity. To do this, farmers and graziers should regularly test soil and monitor crop / pasture production to identify soil nutrient deficiencies. Land management actions to address such imbalances include the application of fertilisers (both macro and micro nutrients), establishing legumes to build soil nitrogen, the addition of lime to address acidity issues or the application of ameliorants like gypsum /lime to address surface sodic soils.

## **6. Reduce of Greenhouse Gas Emissions (max score 10)**

An additional score of up to 10 points will be given for farmers who use renewable energy sources and other innovative ways of reducing their greenhouse gas emissions or increasing the storage of carbon on their farms.

### ***Property to be inspection before payments are made***

If, based on your EOI assessment, you are eligible for funding, a Central West CMA field officer will arrange to visit your property to discuss your project in detail. The officer will check that the project standards have been met, and that the answers you provided in your EOI are being implemented, or can be implemented, on your property.

The officer will accurately map and record your current and/or proposed land management activities to increase soil carbon and establish the standard monitoring site. They will send you a copy of the management agreement for you to review after the field visit. Should you wish to proceed, all you need to do is sign and return the management agreement before the funding offer expiry date.

The Central West CMA reserves the right to refuse funding for projects or project components which provide insufficient environmental benefit for their cost. Assessment of the environmental benefit is at the discretion of the Central West CMA.



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For more information on this project contact: John Lawrie, Catchment Coordinator  
30 Warne St Wellington NSW 2820, Phone: 02 68407804

*Or talk to our friendly staff at your local Central West CMA office listed below.  
Your local Central West CMA office*

### Central West CMA Offices

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