

**SUBMISSION IN RESPONSE TO ISSUES PAPER
GARNAUT CLIMATE CHANGE REVIEW:
LAND USE – AGRICULTURE AND FORESTRY**

from

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This submission relates only to the issue of mitigation options for agriculture and forestry.

Dr Christine Jones has found that one of the most effective strategies for locking up the carbon in the atmosphere is to foster the widespread use of deep-rooted perennial pasture and crop plant species on agricultural land. The root systems in these plant species contain significant biomass, a natural carbon sink which could be used to create carbon credits.

The more active plant roots there are, the more carbon is stored in the soil rather than the air. So the responsibility of all farmers is to return as much carbon as possible to the soil and as little as possible to the air. Farmers should be rewarded for these activities either in the form of carbon credits or some other form of incentive.

Dr Jones points out that an acre of pasture can sequester more carbon than an acre of forest. The promotion of strategies to increase soil carbon levels is a cost-effective way to address climate change as the vast areas of grasslands already exist and there is potential to increase soil carbon levels in all rural areas.

There are many side-benefits for the farmer in increasing soil carbon including improved soil health, soil fertility and moisture retention and reduced erosion and salinity due to the requirement of 100% ground cover. The outcome of these changes is better financial returns from the farm and increases in farm values.

Over 50% of the organic carbon that was once in the topsoil has been lost to the atmosphere over the last 150 years due to failure to take care of it. Agricultural soils have the potential to store up to 5 times more organic carbon in their surface layers than they currently hold, providing we change the way we manage the land.

It can be safely argued that soil degradation has been caused by “modern” farming techniques typified by widespread chemical fertilizer and herbicide use, excessive ploughing by increasingly large and heavy machinery which is destructive of soil structure, stubble burning, a move towards cropping without associated grazing by animals etc. Those farming methods which use techniques that increase carbon content (humus, organic matter) in soils include organic, biodynamic, biological and sustainable farming and farmers should be assisted both financially and practically to convert to these systems.

Pasture cropping as described by Dr Jones eliminates the need for ploughing. The crop seed is direct drilled into closely cropped pasture retaining all the benefits of 100% ground cover and avoiding all the problems of bare ploughed land such as erosion, compaction and loss of soil carbon.

Baseline measurement and quantifying increases in soil carbon is readily achieved via soil testing. Payment for increases in soil carbon and therefore sequestration of carbon is most readily made via carbon credits and soil farming could become the most profitable aspect of a farm's operations.

“Carbon sequestration in soil is the most potent mechanism available for reducing greenhouse gases and mitigating climate change” Dr Christine Jones (www.carboncoalition.com.au)