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Tree plantations still valid as carbon sinks

In a recent article in the international science journal, *Nature*, Frank Keppler and colleagues reported for the first time that plants can directly emit methane.

This finding is highly significant as methane is an important greenhouse gas and was thought to come only from anaerobic (oxygen limited) conditions such as from bogs, wetlands, landfills, rice paddies, and from livestock, termites, and from vegetation fires.

Subsequent speculative media reports have been fuelled by an opinion piece by David Lowe in the same issue of *Nature* that states 'we now have the spectre that new forests might increase greenhouse warming through methane emissions rather than decrease it by sequestering CO₂'.

Ensis scientists have tested this assumption, using methodology provided in Keppler's *Nature* article, by comparing estimates of methane emissions for radiata pine forests in Australia with the amounts of carbon stored to determine the overall effect.

Ensis calculated that the average amount of methane emitted would off-set about 5% of the amount of carbon dioxide stored by trees in terms of its effect in contributing to global warming.

Ensis scientist Dr Phil Polglase believes the key question with regards to afforestation lies in determining the amount of change when planting new forests on agricultural land. Dr Polglase adds "Several issues need to be addressed, for example soils take up and oxidise methane. Also, Keppler suggests that all plants emit methane, so it may even be possible for some agricultural land practices to emit more methane than forests for any given land area."

Based on all the available evidence so far, the use of new forests as carbon sinks remains valid. Methane emissions by trees might have a small negating impact, but the effect could be much less or even positive, depending on the net emissions of methane from trees and soil relative to the preceding agricultural land.

The article by Keppler has created enormous interest internationally and is sure to lead to much more work in this area. It has important implications for understanding the role of terrestrial vegetation in contributing to the global methane budget.

For further information a more complete analysis can be found at www.ensisjv.com

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