



Review: Area of organic soils

Review prepared for Ministry of Agriculture and Forestry
Of Landcare Research contract report of May 2011 entitled
Area of organic soils

Review by Louis Schipper
August 2011

Author: L Schipper

March 2012

New Zealand Greenhouse Gas Inventory

Approval for change to emission factor, parameter or methodology

Reviewer	Louis Schipper
Date of review	9 th August 2011

Inventory sector ¹	Agriculture
Name of EF, variable or category	Degree to which organic soils were cultivated in 1990
Current value of emission factor, variable or methodology Tier	One-fifth of the area of organic soils is assumed to be under agriculture pasture, and it is presently assumed the pasture is cultivated once every 20 years. Current activity data is assumed to be 10,109 hectares/year.
Suggested value of emission factor, variable or methodology Tier	19% of organic and mineral peat soil is assumed to be cultivated. Currently it is assumed that cultivation happens once every 20 years. Therefore area of cultivated organic and mineral soils is 8,019 hectares/year.
Use from year (start year)	Area of organic soil is constant over time. Rate of cultivation or modification needs to be reviewed periodically for change if any.
Recommend that a change to the new value or methodology is approved	Yes/no (comments) Further work to improve the estimates of area actually cultivated, and rates of cultivation currently and through time are planned.

Please comment on whether the supporting review or report sufficiently covers the following topics and provides adequate justification for a change.

	Yes/no	Comment
Is the need for a change well documented?	Y	Based on apparently limited information
Is the proposed change scientifically defensible?	N	This report uses a MAF report by Kelliher et al (2002) to estimate extent of cultivation. This estimate that is based on the suggestion that pasture renewal occurs every 20 years and is inadequate in my opinion but better data was probably not available. I am not sure if this is solely based on pasture renewal and does not count fodder/forage

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		cropping. I have heard anecdotal comments that pasture renewal has increased with time with presumably more cultivation and site preparation, how much and whether this has shifted to no-till is unknown. It is good to see a further study is underway.
Has any documentation been peer-reviewed or published?	Y	Internally peer-reviewed by Trevor Webb at Landcare Research
Is the proposed methodology, EF or variable consistent with IPCC GPG?	Yes	IPCC 1996 (page 4.91) provides guidance only on the emissions factors not the activity data.
Is any new EF, variable or methodology comparable with any other countries?	No	Not applicable in this instance, as different countries and regions will have different soils.
Is the level of uncertainty reported?	N	But large degree of uncertainty is acknowledged
Is there a comparison with IPCC default emission factors, variables or Tier 1 methodology	No	No applicable in this instance, the guidelines only provide a little

New Zealand Greenhouse Gas Inventory

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Reviewer	Louis Schipper
Date of review	9 th August 2011

Inventory sector ²	Agriculture
Name of EF, variable or category	Area of organic soils including mineral soil with peaty layers in 1990
Current value of emission factor, variable or methodology Tier	202,181 hectares are under agriculture pasture.
Suggested value of emission factor, variable or methodology Tier	849,941ha
Use from year (start year)	Area of organic soil is constant over time.
Recommend that a change to the new value or methodology is approved	Yes/no (comments)

Please comment on whether the supporting review or report sufficiently covers the following topics and provides adequate justification for a change.

	Yes/no	Comment
Is the need for a change well documented?	Yes	The authors clearly indicate how they have derived the improved area of organic soils and rational for including mineral soil with a peaty layer. Note that while they label the area as 1990 and 2008, these values are actually improving estimates of the area of organic soils rather than partitioning any observed changes into real soil change and improved mapping and so in my opinion should not be used to estimate change in soil carbon between 1990 and 2008.
Is the proposed change scientifically defensible?	Yes	Seems to be well documented all all the steps are not fully shown.
Has any documentation been peer-reviewed or published?	Yes	At the beginning of the report it states that Trevor Webb from Landcare Research has reviewed the report.
Is the proposed methodology, EF or variable consistent with IPCC GPG?	Yes	IPCC 1996 (page 4.91) provides guidance only on the emissions factors not the activity data.
Is any new EF, variable or methodology comparable	No	Not applicable in this instance, as different countries and regions will have

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with any other countries?		different soils.
Is the level of uncertainty reported?	No	
Is there a comparison with IPCC default emission factors, variables or Tier 1 methodology	No	No, this is specifically about national activity data for New Zealand soils.