Carbon Credits (Carbon Farming Initiative) (Reducing Greenhouse Gas Emissions by Feeding Dietary Additives to Milking Cows) Methodology Determination 2013

Carbon Credits (Carbon Farming Initiative) Act 2011

I, Yvette D'Ath, Parliamentary Secretary for Climate Change, Innovation and Industry, make this Methodology Determination under subsection 106(1) of the *Carbon Credits (Carbon Farming Initiative) Act 2011*.

Dated 29 July 2013

YVETTE D'ATH

Parliamentary Secretary for Climate Change, Innovation and Industry

Contents

Part 1 Preliminary

1.1 Name of Determination

This Determination is the *Carbon Credits (Carbon Farming Initiative) (Reducing Greenhouse Gas Emissions by Feeding Dietary Additives to Milking Cows) Methodology Determination 2013*.

1.2 Commencement

This Determination commences on the day after it is registered on the Federal Register of Legislative Instruments.

1.3 Definitions

In this Determination:

Act means the *Carbon Credits (Carbon Farming Initiative) Act 2011*.

Australasian Soil and Plant Analysis Council means the Australasian Soil and Plant Analysis Council Inc. (ABN 82 792 475 282).

Australian Feed Composition Tables 1987 means the Australian Feed Composition Tables published by the Australian Feeds Information Centre (AFIC) in 1987 as part of the National Collection (1970-1987) and edited by H. T. Ostrowski-Meissner (AFIC Publication No. 7/87 AFIC-CSIRO).

Australian Fodder Industry Association laboratory method means a laboratory method published by the Australian Fodder Industry Association Limited (ABN 12 131 678 727).

baseline year means one of the 3 years in the baseline which is determined in accordance with section 4.5.

carbon dioxide equivalent (CO_2-e) means the carbon dioxide equivalent of a greenhouse gas.

crude protein means the total nitrogen in a feed type or eligible additive, and includes true protein and non-protein nitrogen.

dairy farm means a farm that produces milk from animals of the species *Bos Taurus*.

Department means the department that administers the Act.

diet means the amount (in kilograms of dry matter) and composition of feed types consumed by the milking herd in a season.

Dietary Fats Calculator means the tool developed by the Department to calculate the carbon dioxide equivalent net abatement amount in accordance with this Determination, and which is available via the Department's website.

dry matter (DM) means the total weight of a feed type or eligible additive minus the weight of its water content.

dry matter digestibility (DMD) means the percentage of dry matter in a feed type or eligible additive digestible by milking cows.

dry matter intake (DMI) means the weight, excluding water content, of a feed type or eligible additive consumed per milking cow per day.

eligible additive has the meaning provided in section 2.3.

eligible dairy farm has the meaning provided in section 2.4.

enteric fermentation means the process in ruminant animals by which gases, including methane, are produced as a by-product of microbial fermentation associated with the digestion of feed.

fat means plant-derived lipids in the diet or from an eligible additive.

feed type means one of the component elements of a diet specified in the Dietary Fats Calculator.

milking cow means a lactating cow of the species *Bos Taurus* used for commercial milk production.

milking herd means a herd of milking cows.

National Association of Testing Authorities means the National Association of Testing Authorities, Australia (ABN 59 004 379 748).

National Inventory Report means the report of the national inventory of greenhouse gas emissions published annually by the department that administers the *National Greenhouse and Energy Reporting Act 2007*.

project year means a year for which the carbon dioxide equivalent net abatement amount is calculated using the Dietary Fats Calculator.

Regulations means the *Carbon Credits (Carbon Farming Initiative) Regulations 2011*.

season means a 3 month period, grouped by calendar month in the following way: Spring (September, October and November); Summer (December, January and February); Autumn (March, April and May); and Winter (June, July and August).

Note Other words and expressions used in this Determination have the meaning given by the Act. These terms include:

agricultural emissions avoidance project

baseline

eligible offsets project

emission

greenhouse gas

offsets report

project

project area

project proponent; and

reporting period.

1.4 Kind of project to which this Determination applies

Note See paragraph 106(1)(a) of the Act and regulation 3.28 of the Regulations.

This Determination applies to agricultural emissions avoidance projects that reduce emissions by feeding fats or oils, or both, to dairy cattle that are pasture grazed for at least 9 months each year.

Part 2 Requirements for declaration as an eligible offsets project

Note See paragraphs 27(4)(c) and 106(1)(b) of the Act.

2.1 Eligible offsets projects

To be declared an eligible offsets project, a project to which this Determination applies must meet the requirements in this Part.

Note In addition, a project must meet the requirements in section 27 of the Act and in the Regulations, including a requirement that the project may not be an excluded offsets project (see regulations 3.36 and 3.37).

2.2 Location

The project area must be located within Australia, excluding external territories.

2.3 Eligible additives

For the purposes of this Determination, an ***eligible additive*** is one of the following:

(a) canola meal;

(b) cold-pressed canola meal;

(c) brewers grain;

(d) hominy meal; or

(e) dried distillers grain.

2.4 Eligible dairy farms

For the purposes of this Determination, an ***eligible dairy farm*** is a dairy farm on which milking cows are pasture grazed for at least 9 months each year.

2.5 Project mechanism

The project must aim to avoid emissions by feeding eligible additives to at least one milking herd on an eligible dairy farm in a project year.

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Part 3 Requirements for operation of eligible offsets projects

Note See paragraphs 27(4)(c), 35(2)(a) and 106(1)(b) of the Act and regulation 3.26 of the Regulations.

3.1 Operation of eligible offsets projects

An eligible offsets project must be operated in accordance with this Part.

3.2 Start of first project year

(1) Subject to subsection (2), the first project year commences on the first day of a season after the declaration date.

(2) If the declaration date is the first day of a season, the first project year may commence on that day.

(3) In this section:

declaration date, for a project, means the date on which the declaration of the project as an eligible offsets project under section 27 of the Act takes effect.

3.3 Start of second and subsequent project years

The second and each subsequent project year must start on the first day of a season beginning after the last day of the preceding project year.

3.4 Feeding eligible additives to the milking herd

In each project year eligible additives must be fed to each milking herd on an eligible dairy farm.

3.5 Dietary fat limit

The concentration of fat in the diet of the milking herd must not exceed 70 grams of fat per kilogram of dry matter intake in any season.

Part 4 The carbon dioxide equivalent net abatement amount

Division 4.1 The carbon dioxide equivalent net abatement amount

4.1 The carbon dioxide equivalent net abatement amount

Note See paragraph 106(1)(c) of the Act.

For an eligible offsets project to which this Determination applies, the carbon dioxide equivalent net abatement amount for the project is the carbon dioxide equivalent of the amount of greenhouse gas emissions avoided as a consequence of the project, calculated using the Dietary Fats Calculator in accordance with this Part.

4.2 Carbon dioxide equivalent net abatement amount if dietary fat limit exceeded

For each milking herd, if the dietary fat limit mentioned in section 3.5 is exceeded in any season of a project year, the carbon dioxide equivalent net abatement amount for that milking herd in that project year is zero.

Division 4.2 Calculations

Subdivision 4.2.1 Preliminary

4.3 Calculation of the carbon dioxide equivalent net abatement amount

(1) The carbon dioxide equivalent net abatement amount for each milking herd for each project year must be calculated using the Dietary Fats Calculator by entering into the Dietary Fats Calculator:

(a) the inputs for the baseline determined in accordance with this Part; and

(b) the inputs for the project year determined in accordance with this Part.

(2) Where data from the National Inventory Report is required to carry out calculations in this Part for a baseline year or project year, the relevant data is:

(a) if the data is available in a National Inventory Report for the baseline or project year—the data published in the National Inventory Report that relates to that baseline year or the project year; or

Note Data published in a National Inventory Report relates to the period 2 years before the year of publication. For example, the *National Inventory Report 2010* was published on 1 April 2012 and contains data relating to 2010.

(b) if the data is not available in a National Inventory Report for the baseline or project year—the data published in the most recent National Inventory Report.

Note The use of the most recent National Inventory Report in this circumstance will mean that the data that is used will not be data that relates specifically to that baseline or project year. For example, if the third baseline year corresponds to the 2013 calendar year, then data for the third baseline year will not be available until the *National Inventory Report 2013* is published in 2015. In this case, paragraph (b) permits the use of the data reported in the most recent National Inventory Report being the *National Inventory Report 2011* published on 1 April 2013—until the next National Inventory Report is published.

4.4 Greenhouse gases accounted for

The Determination takes into account methane emissions from enteric fermentation.

4.5 The baseline

(1) For the purposes of paragraph 106(4)(f) of the Act, the baseline for the project must be calculated by entering each input for the ***baseline years*** mentioned in subsection (2) into the Dietary Fats Calculator.

Selecting baseline years

(2) For the purposes of subsection (1), the baseline years are 3 consecutive years:

(a) starting on the first day of a season;

(b) ending before the start of the first project year; and

(c) not starting earlier than 7 years before the start of the first project year.

Minimum baseline data

(3) There must be sufficient data available in relation to each of the baseline years to populate the Dietary Fats Calculator with seasonal data relating to:

(a) average number of milking cows in the milking herd (N_j);

(b) average milk production (MP_j); and

(c) intake of feed type other than pasture ($DMI_{f,j}$).

Note If the minimum baseline data for 3 consecutive years before the start of the first project year is not available, it will have to be collected before the project can start.

Division 4.3 Using the Dietary Fats Calculator

Subdivision 4.3.1 Calculating milking herd information inputs

4.6 Average number in the milking herd

The average number of milking cows in the milking herd in each season must be determined using the following formula:

$N_j = \frac{\sum_o MC_{j,o}}{k_j}$	**Equation 1**

Where:

N_j = average number of milking cows in the milking herd in season *j*.

o = o^{th} occasion on which the milking cows were counted in season *j*.

$MC_{j,o}$ = number of milking cows counted during season *j* on occasion *o*.

k_j = number of occasions *o* on which the milking cows were counted in season *j*.

Note See section 5.3 for the requirements relating to monitoring the number of milking cows in the milking herd.

4.7 Average milking cow liveweight

(1) The average milking cow liveweight in each season must be determined using the following formula if data is available for milking cow liveweight in:

(a) the season immediately preceding the baseline;

(b) each season of the baseline; and

(c) the season immediately preceding the project year.

Note The season immediately preceding the project year may be the last season of the baseline.

$LW_j = \frac{\sum_i MCLW_{i,j}}{N_j}$	**Equation 2**

Where:

LW_j = average liveweight of a milking cow during season *j*, in kilograms per head ($kg.head^{-1}$).

i = i^{th} milking cow in the milking herd.

$MCLW_{i,j}$ = liveweight of each milking cow *i* during season *j*, in kilograms (kg).

N_j = average number of milking cows in the milking herd in season *j* calculated in accordance with Equation 1.

(2) If the data mentioned in subsection (1) is not available, the average milking cow liveweight in each season must be determined using the standard reference liveweight specified in the National Inventory Report for the milking cow against its geographic location.

(3) Whichever of the methods specified in subsections (1) and (2) is used, that method must continue to be applied in subsequent baseline years and in the project years.

4.8 Average daily liveweight gain

(1) If data is available for the milking cow liveweight in each of the baseline years, the average liveweight gain in each season must be determined using the following formula:

$LWG_j = \frac{LW_j - LW_{j-1}}{91.25}$	**Equation 3**

Where:

LWG_j = average liveweight gain of a milking cow during season *j*, in kilograms per head per day ($kg.head^{-1}.day^{-1}$).

LW_j = average liveweight of a milking cow during season *j* calculated in accordance with Equation 2.

LW_{j-1} = average liveweight of a milking cow during the season preceding season *j* calculated in accordance with Equation 2.

91.25 = constant average number of days in a season.

(2) If the data mentioned in subsection (1) is not available, the average liveweight gain in each season must be determined using the standard reference liveweight gain specified in the National Inventory Report for the milking herd against its geographic location.

(3) Whichever of the methods specified in subsections (1) and (2) is used, that method must continue to be applied in subsequent baseline years and in the project years.

4.9 Average milk production

The average milk production of a milking cow for each season must be determined using the following formula:

$MP_j = \frac{\sum_d M_{d,j}}{91.25 \times N_j}$	**Equation 4**

Where:

MP_j = average milk production of a milking cow during season *j,* in litres per head per day ($L.head^{-1}.day^{-1}$).

d = d^{th} day of season *j*.

$M_{d,j}$ = daily volume of milk produced by the eligible dairy farm on day *d* during season *j,* in litres (L).

91.25 = constant average number of days in a season.

N_j = average number of milking cows in the milking herd in season *j*.

Subdivision 4.3.2 Calculating diet information inputs

4.10 Intake of feed types other than pasture and eligible additives

The average daily dry matter intake of each feed type other than pasture and eligible additives by a milking cow for each season must be determined using the following formula:

$DMI_{f,j} = \frac{0.98F_{f,j}}{91.25 \times N_j}$	**Equation 5**

Where:

$DMI_{f,j}$ = average daily dry matter intake of feed type *f* (by a milking cow) during season *j,* in kilograms per head per day ($kg\ DM.head^{-1}.day^{-1}$).

0.98 = constant to account for wastage of 2% of $F_{f,j}$.

$F_{f,j}$ = mass of feed type *f* fed to milking cows before wastage during season *j,* in kilograms of dry matter (kg DM).

91.25 = constant average number of days in a season.

N_j = average number of milking cows in the milking herd in season *j*.

4.11 Dry matter digestibility, crude protein and fat

(1) The inputs for the dry matter digestibility, crude protein and fat for each feed type other than eligible additives entered into the Dietary Fats Calculator must be obtained in accordance with this section.

(2) If the manufacturer of the feed type uses Australian Fodder Industry Association laboratory methods to determine the inputs mentioned in subsection (1), the inputs mentioned in subsection (1) must be obtained from the manufacturer of the feed type.

(3) If the manufacturer of the feed type does not use Australian Fodder Industry Association laboratory methods to determine the inputs mentioned in subsection (1), the inputs mentioned in subsection (1) must be obtained from:

(a) an analysis of bulk feed samples of the feed type undertaken in accordance with Australian Soil and Plant Analysis Council sampling protocols by a laboratory accredited in respect of the analysis by the National Association of Testing Authorities;

(b) the seasonal feed quality data tables in the Dietary Fats Calculator; or

(c) the Australian Feed Composition Tables 1987.

4.12 Mass of eligible additives

The mass of each eligible additive for each season must be determined using the following formula:

$ME_{e,j} = 0.98E_{e,j}$	**Equation 6**

Where:

$ME_{e,j}$ = mass of eligible additive *e* fed to the milking herd during season *j*, in kilograms (kg).

0.98 = constant to account for wastage of 2% of $E_{e,j}$.

$E_{e,j}$ = mass of eligible additive *e* fed to the milking herd during season *j* before wastage, in kilograms (kg).

4.13 Fat, metabolisable energy and crude protein

(1) The inputs for fat, metabolisable energy, and crude protein of eligible additives entered into the Dietary Fats Calculator must be obtained in accordance with this section.

(2) If the manufacturer of the eligible additive uses Australian Fodder Industry Association laboratory methods to determine the inputs mentioned in subsection (1), the inputs must be obtained from the manufacturer of the eligible additive.

(3) If the manufacturer of the eligible additive does not use Australian Fodder Industry Association laboratory methods to determine the inputs mentioned in subsection (1), the inputs must be obtained from:

(a) an analysis of bulk feed samples of the eligible additive undertaken in accordance with Australian Soil and Plant Analysis Council sampling protocols by a laboratory accredited in respect of the analysis by the National Association of Testing Authorities; or

(b) the Australian Feed Composition Tables 1987.

4.14 Intake of pasture

(1) The average daily dry matter intake of pasture by a milking cow for each season must be determined in accordance with this section.

(2) For each season, the intake of pasture must be determined only when the inputs mentioned in sections 4.6 to 4.13 have been entered into the Dietary Fats Calculator.

(3) For each season, estimate the average daily dry matter intake of pasture of a milking cow in the milking herd using the following formula:

$\mathrm{DMI}_{\mathrm{pasture\ ,j}} = \mathrm{PrDMI}_{\mathrm{j}} - \left(\sum_{\mathrm{f}} \mathrm{DMI}_{\mathrm{f,j}}\right)$	**Equation 7**

Where:

$\mathrm{DMI}_{\mathrm{pasture,j}}$ = estimated daily dry matter intake of pasture of a milking cow during season *j,* in kilograms per head per day (kg DM.head^{-1}.day^{-1}).

$\mathrm{PrDMI}_{\mathrm{j}}$ = average daily dry matter intake of a milking cow during season *j,* in kilograms per head per day (kg DM.head^{-1}.day^{-1}) predicted by the Dietary Fats Calculator.

f = f^{th} feed type.

$\mathrm{DMI}_{\mathrm{f,j}}$ = average daily dry matter intake of a milking cow of feed type *f* during season *j,* in kilograms per head per day (kg DM.head^{-1}.day^{-1}), calculated in accordance with Equation 5.

(4) For each season, enter the estimated average daily dry matter intake of pasture, calculated in accordance with Equation 7, into the 'Pastures' field in the Dietary Fats Calculator.

(5) If, after completing the step in subsection (4), the actual seasonal daily intake calculated by the Dietary Fats Calculator is the same as the predicted seasonal daily intake ($PrDMI_j$), then the value obtained in subsection (3) is the DMI of pasture for that season ($DMI_{pasture,j}$).

(6) If the actual seasonal daily intake generated by the Dietary Fats Calculator is not the same as the predicted seasonal daily intake ($PrDMI_j$), then the DMI of pasture for that season ($DMI_{pasture,j}$) must be adjusted until the actual seasonal daily intake generated by the Dietary Fats Calculator is the same to one decimal place as the predicted seasonal daily intake ($PrDMI_j$).

(7) If subsection (6) applies, the DMI of pasture for that season ($DMI_{pasture,j}$) is the adjusted value mentioned in that provision.

Part 5 Monitoring, measuring, record-keeping and reporting requirements

Note See subsection 106(3) of the Act.

Division 5.1 General

5.1 General

For the purposes of subsection 106(3) of the Act, a project proponent of an eligible offsets project to which this Determination applies must comply with the monitoring, measurement, record-keeping and reporting requirements of this Part.

Division 5.2 Monitoring and measuring

5.2 General

The project proponent must monitor the project and record the information as specified in this Division.

5.3 Monitoring number in the milking herd

For the purposes of section 4.6:

(a) the number of milking cows in the milking herd must be tracked by supplying each milking cow with:

(i) an animal identification tag; or

(ii) another unique identifier; and

(b) the milking cows in the milking herd must be counted at least once per month in each year of the baseline and each project year.

5.4 Quality assurance and quality control

(1) Each measuring or monitoring instrument used to collect data used in Part 4 must be inspected, maintained and calibrated in accordance with:

(a) the product literature that accompanies the instrument; or

(b) the applicable standard.

(2) In this section, ***standard*** means:

(a) an Australian Standard published by Standards Australia Limited and denoted by the letters "AS" and identifying numbers or letters;

(b) an Australian/New Zealand Standard jointly published by Standards Australia Limited and Standards New Zealand and denoted by the letters "AS/NZS" and identifying numbers or letters;

(c) an ISO Standard published by the International Organization for Standardization and denoted by the letters "ISO" and identifying numbers or letters; or

(d) any other equivalent document.

Division 5.3 Record-keeping requirements

5.5 Seasonal records that must be kept

(1) For each season of each baseline year and each project year, records must be kept of the following:

(a) the number of milking cows measured (MC_j);

(b) the liveweight of each milking cow;

(c) the daily volume of milk produced by the eligible dairy farm ($M_{j,d}$);

(d) the mass of each feed type fed to the milking herd ($F_{f,j}$); and

(e) the mass of each eligible additive fed to the milking herd ($E_{e,j}$).

(2) The requirements in paragraphs (1)(d) and (1)(e) may be met by keeping:

(a) invoices from the supplier of the feed type or eligible additive; or

(b) records detailing the production of any feed type not purchased.

5.6 Additional diet records that must be kept

(1) Records must be kept evidencing the dry matter digestibility, crude protein content and fat content inputs mentioned in subsection 4.11(1).

(2) For the purposes of subsection (1), records may include:

(a) for subsection 4.11(2), product information from the manufacturer of the feed type;

(b) for paragraph 4.11(3)(a), a copy of the analysis of bulk feed samples of the feed type; or

(c) for paragraphs 4.11(3)(b) and 4.11(3)(c), references to:

(i) the seasonal feed quality data tables in the Dietary Fats Calculator; or

(ii) the Australian Feed Composition Tables 1987.

5.7 Additional eligible additive records that must be kept

(1) Records must be kept evidencing the fat, metabolisable energy, mass and crude protein inputs mentioned in subsection 4.13(1).

(2) For the purposes of subsection (1), records may include:

(a) for subsection 4.13(2), product information from the manufacturer of the eligible additive;

(b) for paragraph 4.13(3)(a), a copy of the analysis of bulk feed samples of the eligible additive; or

(c) for paragraph 4.13(3)(b), references to the applicable parts of the Australian Feed Composition Tables 1987.

5.8 Data retention and quality

All data recorded or otherwise used under this Part must be:

(a) stored in its raw form; and

(b) stored and managed in accordance with a data contingency plan that is designed to operate if the data is lost.

Division 5.4 Offsets report requirements

Note See paragraph 6.2(j) of the Regulations.

5.9 Report requirements

An offsets report must be submitted for each reporting period.

5.10 Information that must be included in the first offsets report

(1) The following information must be included in the first offsets report:

(a) the start date and end date of each of the baseline years;

(b) all inputs and outputs from the Dietary Fats Calculator for each of the baseline years; and

(c) the information mentioned in section 5.11.

(2) The requirement in paragraph (1)(b) may be met by including a printout or soft copy of the completed Dietary Fats Calculator for each milking herd for each of the baseline years.

5.11 Information that must be included in each offsets report

(1) The following information must be included in each offsets report:

(a) the start date and end date of each project year to which the offsets report applies;

(b) all inputs and outputs from the Dietary Fats Calculator for each project year in the reporting period; and

(c) the carbon dioxide equivalent net abatement amount measured in tonnes of carbon dioxide equivalent (t CO_2-e), calculated using the Dietary Fats Calculator.

(2) The requirement in paragraph (1)(b) may be met by including a printout or soft copy of the completed Dietary Fats Calculator for each milking herd for each project year in the reporting period.

Note

1. All legislative instruments and compilations are registered on the Federal Register of Legislative Instruments kept under the *Legislative Instruments Act 2003*. See http://www.frli.gov.au.