Carbon Credits (Carbon Farming Initiative—Reducing Greenhouse Gas Emissions from Fertiliser in Irrigated Cotton) Methodology Determination 2015

I, Greg Hunt, Minister for the Environment, make the following determination.

Dated 21 April 2015

Greg Hunt

Greg Hunt

Minister for the Environment

Contents

Part 1—Preliminary

1 Name

This determination is the *Carbon Credits (Carbon Farming Initiative—Reducing Greenhouse Gas Emissions from Fertiliser in Irrigated Cotton) Methodology Determination 2015*.

2 Commencement

This determination commences on the day after it is registered.

3 Authority

This determination is made under subsection 106(1) of the *Carbon Credits (Carbon Farming Initiative) Act 2011*.

4 Duration

This determination remains in force for the period that:

(a) begins when this determination commences; and

(b) ends on the day before this instrument would otherwise be repealed under subsection 50(1) of the *Legislative Instruments Act 2003*.

5 Definitions

In this determination:

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

baseline emissions has the meaning given by subsection 17(1).

baseline emissions intensity has the meaning given by subsection 17(2).

cotton area, in relation to given year and project area:

(a) means the area of land within the project area that is the aggregate of the fields that were fully planted with cotton and irrigated; and

(b) for a year in the crediting period—does not include any area of land on which the residue remaining in the field after the harvest of cotton is burnt.

Note: The cotton area is a subset of the project area and is expected to change on an annual basis due to a range of factors, including water availability and rotational cropping. The cotton area does not include parts of the project area on which cotton was not planted in a given year. The cotton area must include all fields that were fully planted with cotton and irrigated. This does not mean that partly planted fields must be excluded from the cotton area: the project area can be re-stratified to ensure that all parts of the project area on which cotton was planted and irrigated are included in the cotton area. The cotton area does not need to have a single boundary.

cotton gin means a facility for separating lint, cottonseed and trash.

Cotton Research and Development Corporation means the statutory authority of that name, established under section 8 of the *Primary Industries Research and Development Act 1989*.

emissions intensity reference period is the period determined in accordance with section 11.

field means a defined area of land with a single boundary within a project area on which cotton could be grown during the emissions intensity reference period, or the crediting period, or both.

green manure means a legume that is planted, but not harvested, on a given field in order to improve the soil for a subsequent cotton crop.

historical management action means a management practice undertaken with respect to a project area during the emissions intensity reference period that could impact on nitrogen fertiliser use efficiency.

Note: Management practices that could impact on nitrogen fertiliser use efficiency are described in subsection 10(4). Subsection 10(4) is not intended to be an exhaustive list.

Irrigated Cotton Calculator means the calculator that is published from time to time on the Department's website with a statement that:

(a) it is the Irrigated Cotton Calculator for this determination; and

(b) if it differs from the version that was on the website at the time of commencement of this determination—the differences consist only of one or more of the following:

(i) updates to inputs and variables used by the calculator which are consistent with:

(A) the National Inventory Report; or

(B) the carbon dioxide equivalence and applicable methods under subsection 10(3) of the *National Greenhouse and Energy Reporting Act 2007*;

(ii) updates which are of a minor nature;

(iii) updates which are necessary or incidental to updates referred to in subparagraph (i) or (ii).

irrigation status, in relation to a field, means whether water was applied to the whole area of the field at least once.

lint means unprocessed cotton; the fibrous material of a cotton boll.

lint yield has the meaning given by subsection 26(2).

National Inventory Report means the most recently published document of that name that is prepared by the Department in fulfilment of obligations that Australia has under the Climate Change Convention.

new management action means a management practice that is undertaken during the crediting period and that:

(a) is undertaken with respect to a cotton area; and

(b) differs from historical management actions.

Note 1: A new management action may include an enhancement, improvement or variation to an historical management action.

Note 2: The requirements for new management actions are set out in section 10.

nitrogen fertiliser use efficiency means the ratio of lint yield to nitrogen, applied via synthetic fertiliser.

project emissions has the meaning given by subsection 19(1).

seed cotton means unprocessed harvested cotton consisting of lint, cottonseed and trash.

stratification means the division of a project area into one or more fields.

synthetic fertiliser means a product, including urea, applied to soil to enhance soil fertility and which has a manufacturer's label that guarantees minimum nitrogen content that is:

(a) for solid fertilisers—greater than or equal to 0.5%; or

(b) for liquid fertiliser and solid fertiliser applied in solution—greater than or equal to 0.1%.

Note: Synthetic fertilisers may include products with an organic base that are supplemented, where necessary to meet the applicable minimum nitrogen contents, with inorganic nitrogenous compounds.

t CO_2-e means tonnes of carbon dioxide equivalent.

trash means the parts of harvested cotton that are not lint or cottonseed, including material such as leaves, bracts and stems.

yield, with reference to cotton lint, means the amount (mass) produced.

Part 2—Irrigated cotton projects

6 Irrigated cotton projects

(1) For paragraph 106(1)(a) of the Act, this determination applies to an emissions avoidance offsets project which aims to avoid emissions from the cultivation of irrigated cotton by increasing the nitrogen fertiliser use efficiency of that process.

(2) A project covered by subsection (1) is an ***irrigated cotton project***.

Part 3—Project requirements

Division 1—Eligible projects

7 Operation of this Part

For paragraph 106(1)(b) of the Act, this Part sets out requirements that must be met for an irrigated cotton project on one or more project areas specified in the application to be an eligible offsets project.

Division 2—Application for declaration

8 Emissions intensity reference period maps

For each project area, the project proponent must provide the Regulator with a map:

(a) specifying the boundaries of the project area; and

(b) for each year in the emissions intensity reference period in which there was a cotton area in that area—showing stratification in accordance with section 13;

at the time of the application:

(c) under section 22 of the Act; and

(d) under regulations or legislative rules made for the purpose of section 29 of the Act, if relevant.

Note: Paragraph 8(d) is relevant for applications to vary the project area made under regulations or legislative rules made for the purposes of section 29 of the Act (variation of a declaration of eligible offsets project in relation to the project area or project areas).

Division 3—Management action

9 Management actions

(1) For each year in the crediting period in which there is a cotton area, at least one new management action must be undertaken either before or during the year which aims to increase the nitrogen fertiliser use efficiency of the cotton area in respect of that year.

Note: See definition of ***new management action***. For example, a project would meet this requirement if:

(a) in the emissions intensity reference period, synthetic fertiliser was spread on the surface of the soil in the cotton area; and

(b) in each year in the crediting period, synthetic fertiliser was placed at depth in the soil in the cotton area.

(2) For each project area, a project proponent must provide the Regulator, at the time of application under section 22 of the Act and at the time of any application to vary the project to add further project areas, with the following:

(a) a description of the historical management actions undertaken during the emissions intensity reference period;

(b) a description of each proposed new management action to be undertaken during the crediting period;

(c) an explanation of how the proposed new management actions are consistent with the requirements in section 10.

10 New management actions

(1) New management actions must not be inconsistent with the relevant myBMP (Best Management Practice) standard for the action, as published from time to time by the Cotton Research and Development Corporation.

Note: The Cotton Research and Development Corporation's Best Management Practice standards are available at: www.mybmp.com.au.

(2) At least one new management action undertaken for the purposes of subsection 9(1) must be demonstrated to have the potential to increase the nitrogen fertiliser use efficiency of the cotton area.

(3) Nitrogen fertiliser use efficiency may be increased only by:
  (a) increasing the lint yield of the cotton area without a proportional increase in the rate of nitrogen applied via synthetic fertiliser; or
  (b) decreasing the rate of nitrogen applied via synthetic fertiliser to the cotton area without a proportional decrease in the lint yield.

(4) Actions which may achieve the outcomes specified in subsection (3) include, but are not limited to, the following:
  (a) modifying the synthetic fertiliser application rate;
  (b) modifying the synthetic fertiliser application timing;
  (c) modifying the synthetic fertiliser application method;

Note: For the purposes of paragraph (c), application method refers to how the synthetic fertiliser is applied; for example, via spreading or placement at depth in the soil.

  (d) applying a different type of synthetic fertiliser which:
    (i) increases the nitrogen available to the plant; or
    (ii) reduces nitrogen losses from the soil; or
    (iii) does both subparagraph (i) and (ii);
  (e) a combination of the modifications specified in paragraphs (a)–(d).

Division 4—Emissions intensity reference period

11 Determining the emissions intensity reference period

(1) A project area in an irrigated cotton project must have an emissions intensity reference period consistent with the requirements in this Part.

(2) The emissions intensity reference period is the 6 year period starting from the day 6 years before the first day of the crediting period.

(3) The emissions intensity reference period must include a minimum of 3 years in which the project area included a cotton area.

(4) In order for a year to count for the purposes of subsection (3), the information required under Divisions 3 and 4 of Part 5 must be available for that year, and the lint yield for that year must not be zero.

(5) If information required under Divisions 3 and 4 of Part 5 is available for a year during the emissions intensity reference period in which the project area included a cotton area, and the lint yield for that year is not zero, that year must be included in the calculation of baseline emissions intensity in accordance with subsection 17(2).

(6) If the requirements in subsection (3) and subsection (4) are not met in the period mentioned in subsection (2), the emissions intensity reference period may be extended up to a maximum of 3 times, by moving the start date to a year earlier until the requirements are satisfied.

Note: Under this subsection, the emissions intensity reference period may need to be extended to 7, 8 or 9 years for the project to have 3 years of relevant cotton data and thus be an eligible offsets project.

Division 5—Project area requirements

12 Project area

Restriction on project area

(1) A project area must consist only of one or more fields on the whole of which cotton could have been grown since the beginning of the emissions intensity reference period.

Restriction on varying project area

(2) Subsection (3) applies if the project proponent applies to vary a declaration under section 27 of the Act in relation to the project area.

(3) The declaration as proposed to be varied must not include a project area that overlaps, but is not identical with, a project area identified in the declaration being varied.

Note: Project areas may be added to a project, but existing project areas cannot be divided, or increased or reduced in size.

13 Stratification

(1) The project proponent must produce a map which stratifies a project area into fields, and shows the cotton area, for each year in:

(a) the emissions intensity reference period; and

(b) the crediting period.

Note: The maps produced are required to be provided to the Regulator under sections 8 and 22.

(2) Each field identified in a map produced for the purposes of subsection (1) must be issued a unique identifier.

(3) For the avoidance of doubt, a map produced for the purposes of subsection (1) does not need to align with calendar or financial years.

Note: For the purposes of administrative simplicity, project proponents are encouraged to align the 12 month period covered by their annual map with the relevant cotton growing season rather than a calendar or financial year.

14 Mapping format and precision

(1) A map produced for the purposes of subsection 13(1) must be in a digital Geographic Information System format.

(2) The boundary of a field identified in accordance with section 13 must have a horizontal accuracy either:

(a) of 10 metres at 95% threshold; or

(b) as specified by the *Australian Map and Spatial Data Horizontal Accuracy Standard* published from time to time by the Intergovernmental Committee on Surveying and Mapping.

Note 1: While any Geographic Information System format which meets the requirements in subsection (2) is acceptable for the purposes of subsection (1), project proponents are encouraged to use the Carbon Farming Initiative Mapping Tool, available on the Department's website.

Note 2: The Standard mentioned in paragraph (b) is available at: www.icsm.gov.au.

Part 4—Net abatement amount

Division 1—The net abatement amount

15 Method for calculating the net abatement amount

(1) For paragraph 106(1)(c) of the Act, this Part specifies the method for working out the carbon dioxide equivalent net abatement amount for a reporting period for an irrigated cotton project that is an eligible offsets project.

(2) For each project area and for each year in the reporting period, calculate the annual project area abatement amount, in t CO_2-e, in accordance with the following formula:

$$\text{annual project area abatement amount} = \text{baseline emissions} - \text{project emissions}$$

Note: The terms ***baseline emissions*** and ***project emissions*** are defined, for each project area and each year of the reporting period, in Division 2 and Division 3 respectively.

(3) For the reporting period, the ***carbon dioxide equivalent net abatement amount*** is the sum of all annual project area abatement amounts greater than zero.

Note: Annual project area abatement amounts that are less than zero must be reported, but are not deducted from the carbon dioxide equivalent net abatement amount. This treatment of negative annual project area abatement amounts is possible from a greenhouse gas accounting perspective because of the variance discount applied to the baseline, which reduces positive annual project area abatement amounts (see Division 2).

16 Gases accounted for in abatement calculations

(1) The following table provides an overview of the greenhouse gases and emissions sources that are relevant to working out the carbon dioxide equivalent net abatement amount for an irrigated cotton project.

Greenhouse gases and emissions sources

Item	Relevant emissions calculation	Emissions source	Greenhouse gas
1	Baseline emissions Project emissions	Synthetic fertiliser application other than urea	Nitrous oxide (N_2O)
2	Baseline emissions Project emissions	Synthetic fertiliser application (urea)	Carbon dioxide (CO_2)
3	Baseline emissions Project emissions	Green manure residue	Nitrous oxide (N_2O)

(2) For a year, green manure residue is only relevant to working out the carbon dioxide equivalent net abatement amount for an irrigated cotton project if:

(a) the green manure crop is planted on an area of land that is a part of the cotton area in the year; and

(b) the green manure crop is planted prior to the cotton planting in the year; and

(c) there are no other crops planted between the green manure crop and the cotton planting in the year.

(3) For a year, synthetic fertiliser is only relevant to working out the carbon dioxide equivalent net abatement amount if the synthetic fertiliser is applied:

(a) after the harvest of the crop previous to the cotton planting; and

Note: The crop previous to the cotton planting could be a cotton crop, or a crop grown in rotation with cotton.

(b) before the harvest of the cotton area in the year.

Division 2—The baseline emissions

Note: Calculations described in this Division are performed using the Irrigated Cotton Calculator.

17 The baseline emissions

(1) For each year in the reporting period and for each project area, the ***baseline emissions*** is the product of:

(a) the baseline emissions intensity; and

(b) the lint yield in that year in the reporting period;

minus the variance discount, as specified in section 18.

(2) In this section, the ***baseline emissions intensity***, in t CO_2-e per tonne of lint yield, of the project area is the amount calculated by:

(a) for each year in the emissions intensity reference period in which information required under Divisions 3 and 4 of Part 5 is available and the lint yield is not zero:

Note: Subsection 11(5) requires the calculations in subsection 17(2) to be performed for each year in which information required under Divisions 3 and 4 of Part 5 is available and the lint yield is not zero.

(i) determining emissions, in t CO_2-e, from each of the emissions sources specified in section 16:

(A) for synthetic fertiliser—by using methods consistent with those used in the National Inventory Report; and

(B) for green manure when it is relevant to working out the carbon dioxide equivalent net abatement amount—by multiplying the emissions intensity of green manure residue, in t CO_2-e per hectare, calculated using methods consistent with those used in the National Inventory Report and assuming a yield of 2 tonnes of dry matter per hectare, by the number of hectares of green manure in the year; and

(ii) summing the amounts calculated in accordance with subparagraph (i); and

(iii) dividing the amount calculated in accordance with subparagraph (ii) by the lint yield of that year, in tonnes; and

(b) averaging the values obtained in accordance with subparagraph (2)(a)(iii).

18 The variance discount

The ***variance discount*** is 6.5% of the product of the amounts referred to in paragraph 17(1)(a) and paragraph 17(1)(b).

Note: A variance discount of 6.5% is applied to the baseline to ensure that the carbon dioxide equivalent net abatement amount excludes emissions reductions that may have occurred due to natural variation (see also subsection 15(3)). Accordingly, for a year in the reporting period, baseline emissions are 0.935 multiplied by the product of the baseline emissions intensity and the lint yield in that year.

Division 3—The project emissions

Note: Calculations described in this Division are performed using the Irrigated Cotton Calculator.

19 The project emissions

(1) For a project area, for each year in the reporting period, the ***project emissions*** is the sum of:

(a) the emissions from synthetic fertiliser, in t CO_2-e, as determined using methods consistent with those used in the National Inventory Report; and

(b) the emissions from green manure in t CO_2-e, in each year in which it is relevant to working out the carbon dioxide equivalent net abatement amount.

(2) The parameter specified in paragraph (1)(b) must be calculated by multiplying the emissions intensity of green manure residue, in t CO_2-e per hectare, by the number of hectares of green manure in the year.

(3) The emissions intensity of green manure residue specified in subsection (2) must be calculated using methods consistent with those used in the National Inventory Report and assuming a yield of 2 tonnes of dry matter per hectare.

Division 4—Use of Irrigated Cotton Calculator

20 Requirement to use Irrigated Cotton Calculator

(1) When performing calculations for the purposes of this Part:

(a) the calculations must be performed using the Irrigated Cotton Calculator for each project area and for each year in the reporting period; and

(b) the calculations must be performed by entering the inputs required by the Irrigated Cotton Calculator and specified in subsection (2); and

(c) if a calculation includes a factor or parameter that is defined or calculated by reference to another instrument or writing, the factor or parameter to be used for a reporting period is the factor or parameter referred to in, or calculated by reference to, the instrument or writing as in force at the end of the reporting period.

Note: Paragraph (c) includes the global warming potentials for methane and nitrous oxide prescribed by the *National Greenhouse and Energy Reporting Regulations 2008*.

(2) For calculating the baseline and project emissions in the emissions intensity reference period and the crediting period, the information specified in the following table must be entered into the Irrigated Cotton Calculator in the specified units (if any):

Inputs required by the Irrigated Cotton Calculator

Item	Input	Unit
1	Region of the project area	
2	Mass or volume of synthetic fertiliser applied for each type of synthetic fertiliser applied	If mass—kilograms or tonnes If volume—litres
3	Nitrogen concentration for each type of synthetic fertiliser applied	%
4	Cotton area	Hectares
5	Green manure area	Hectares
6	Lint yield	Tonnes

(3) Where relevant, the inputs mentioned in subsection (2) must be determined in accordance with the requirements of Divisions 3 and 4 of Part 5.

Part 5—Reporting, record-keeping and monitoring requirements

Division 1—Operation of this Part

21 Application

For subsection 106(3) of the Act, the project proponent of an irrigated cotton project that is an eligible offsets project must comply with the reporting, record-keeping, data collection and monitoring requirements in this Part.

Division 2—Offsets report requirements

22 Information in each offsets report

(1) The first offsets report must include all inputs and outputs from the Irrigated Cotton Calculator that relate to each year included in the calculation of baseline emissions intensity in the emissions intensity reference period.

(2) The following information must be included in each offsets report (including the first offsets report):
  (a) the annual map for each year in the reporting period, stratified in accordance with section 13;
  (b) the new management action undertaken in each year of the reporting period;
  (c) all inputs and outputs from the Irrigated Cotton Calculator for each year in the reporting period.

Note: Other reporting requirements are prescribed in the legislative rules.

Division 3—Record-keeping requirements

23 Records that must be created and kept

Note: Other record-keeping requirements are prescribed in the legislative rules.

The project proponent must retain records of:
  (a) the version of the standard that was relied on for the purposes of subsection 10(1); and
  (b) for each type of synthetic fertiliser applied:
    (i) the product name and the mass supplied; and
      Note: For example, an invoice.
    (ii) the nitrogen content.
      Note: For example, a product datasheet.

Division 4—Data and monitoring requirements

Note: In addition to the parameters specified in this Division, proponents must make a record of information necessary to meet the record-keeping requirements in the legislative rules. See in particular the eligibility parameters, listed in Part 3 of this determination.

24 Monitoring requirement

For each year in the crediting period, the parameters determined under this Division must be monitored.

25 Cotton area

For each year in the emissions intensity reference period and the crediting period, the following parameters must be determined in relation to each field in the cotton area:

(a) the area, in hectares;

Note: Project proponents are encouraged to determine the cotton area using the maps produced in accordance with section 8 and paragraph 22(2)(a).

(b) planting density, in kilograms of cotton seed planted per hectare;

Note: The planting density is the total kilograms of seed planted per hectare. Where a cotton crop was planted in several events on the same area, due to, for example, unsatisfactory germination rates in the first planting, project proponents are encouraged to keep records of each planting event to assist in explaining unusual planting densities.

(c) irrigation status.

26 Lint yield

(1) For each year in the emissions intensity reference period and in the crediting period, the lint yield must be determined for each field.

(2) For the purposes of subsection (1), the lint yield is taken to be the tonnes of lint produced by the cotton gin from the seed cotton received from the field.

27 Synthetic fertiliser

For each year in the emissions intensity reference period and in the crediting period, the total amount of nitrogen, in kilograms, applied via a synthetic fertiliser to the cotton area must, for each type of synthetic fertiliser applied, be determined through the following parameters:

(a) the mass of the synthetic fertiliser applied, in kilograms;

(b) the nitrogen content of the synthetic fertiliser, in percent nitrogen of total mass.

28 Green manure

(1) The area, in hectares, of green manure planted and for which the residue is relevant to working out the carbon dioxide equivalent net abatement amount for an irrigated cotton project, must be determined.

Note: See subsection 16(2) to determine whether an area of planted green manure is relevant to working out the carbon dioxide equivalent net abatement amount for the purposes of subsection 28(1).

(2) The project proponent must identify:

(a) the unique identifier of each field, or part of each field, in the cotton area which forms part of the area identified in accordance with subsection (1); and

(b) the planting density, in kilograms of green manure seed planted per hectare, of each field, or part of each field, identified in accordance with paragraph (a).

Division 5—Reporting under section 77A of the Act

29 No division of project area

For subsection 77A(2) of the Act, an overall project may only be divided into parts that consist of one or more whole project areas.