Holbrook Landcare Network

carbon farming and your business

On-farm Greenhouse Gas Emissions Case Study Series

#07 Mixed farming enterprise, Jindera NSW

Net on-farm greenhouse gas (GHG) emissions

665.60 t CO_2-e

(see Table 1 overleaf)

Emission reduction options:

Tree plantings

Improve fertiliser efficiency

Review nitrous fertiliser usage and application methodology to reduce nitrogen loss to the atmosphere

PROPERTY SUMMARY

This is a 880 ha property, in the Jindera area of southern New South Wales with an annual rainfall of 650mm. The property has an enterprise mix of cropping, hay, beef cattle and sheep

STOCK

- 2,000 self-replacing, winter lambing Merino ewes.
- Cattle is an opportunistic trading operation.

PASTURES

Largely based on phalaris and sub-clover with some annual ryegrass, although Wallaby grass and Red grass dominate in the treed areas.

CROPS

Approximately 400 ha of a mix of wheat and canola.

FERTILISER APPLICATION

Pastures have annual application of 100 kg/ha of single superphosphate and crops get 100 kg/ha mono-ammonium phosphate (MAP) with up to 150 kg/ha of urea in winter.

FODDER PRODUCTION

100-150 tonnes of hay is produced annually.

TREE PLANTINGS

There is 40 ha of revegetation, with 20 ha (~ 2%) planted since 1990.

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TABLE 1. ANNUAL ON-FARM EMISSION SUMMARY

Emissions	Current emissions (t CO_2-e)
CO_2 - Carbon dioxide emissions from diesel & electricity usage	75.22
CH_4 - Enteric methane from livestock	631.68
CH_4 - Methane from livestock manure	0.15
CH_4 - Methane emitted from cropping	17.12
N_2O - Nitrous oxide from livestock dung & urine	56.20
N_2O - Nitrous oxide from fertiliser; mainly urea	81.70
N_2O - Nitrous oxide emitted from cropping	285.32
Indirect N_2O - atmospheric deposition, leaching & volatilisation	75.31
Tree plantings (after 1990)	- 553.61
Carbon stored in wool	- 3.49
Net on-farm GHG emission	**665.60**

EMISSION REDUCTION OPTIONS

Tree plantings

Increase the area of tree plantings by an additional 10 ha, to a total of 30 ha (3.4% of the property). The tree plantings may offset the total GHG emissions by a total of 67.9% and decrease the net on-farm emissions to 388.8 t CO_2-e.

ADDITIONAL OPTIONS

Improve fertiliser efficiency

The landholder could review their nitrous fertiliser usage and application methodology to ensure it is being used efficiently. Research into nitrogen inhibitors indicate they slow the conversion of ammonium to nitrate, therefore, reducing nitrogen loss to the atmosphere. Although costly at this stage, the use of inhibitors could mean fertiliser is used more effectively for production in the future.

The GHG emissions have been calculated by inputting the figures provided by the landholder into the Greenhouse Accounting Framework (GAF) calculators from www.greenhouse.unimelb.edu.au/Tools.htm.These figures and options only take into account actual on-farm emissions, and do not take into account any off-farm GHG emissions.

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