#06 Beef enterprise, Tumbarumba NSW

Net on-farm greenhouse gas (GHG) emissions

707.74 t CO$_2$-e

(see Table 1 overleaf)

Emission reduction options:

Tree plantings
Improve pasture quality

The landholder's long term plan is to increase pasture quality and increase stocking rate, which could decrease overall GHG emissions

PROPERTY SUMMARY

This is a 240 ha property, in the Tumbarumba area of southern New South Wales with an annual rainfall of 900mm. The main enterprise of this property is beef cattle.

STOCK

200 self-replacing, spring calving Angus cattle.

PASTURES

One third of the property is based on phalaris and sub-clover, one hill paddock is native grasses and the balance is ryegrass/sub-clover/soft brome.

SUPPLEMENTARY FEEDING

Hay is produced on-farm (80 tonne) and is only used for cattle nutrition reasons (generally in winter as required).

TREE PLANTINGS

Currently 1 ha (~ 0.50%) of the property has been revegetated.

TABLE 1. ANNUAL ON-FARM EMISSION SUMMARY

Emissions	Current emissions (t CO_2-e)
CO_2 - Carbon dioxide emissions from diesel & electricity usage	13.00
CH_4 - Enteric methane from livestock	699.64
CH_4 - Methane from livestock manure	0.11
N_2O - Nitrous oxide from livestock dung & urine	56.24
N_2O - Nitrous oxide from fertiliser; mainly urea	0
N_2O - atmospheric deposition, leaching & volatilisation of nitrous oxide	76.63
Tree plantings (after 1990)	- 37.88
Total on-farm GHG emission	**707.74 t CO_2-e**

MODELLED EMISSION REDUCTION OPTIONS

Tree plantings
Increase tree plantings to 10 ha (4.16% of the property) to offset GHG emissions by 50%, which reduces the net on-farm GHG emissions to 366.83 t CO_2-e.

Improve pasture quality
There is an opportunity for this landholder to reduce total GHG emissions by upgrading pasture quality on the property through improving nutrient management. The pasture quality of a high soil fertility system was modelled using the GAF calculator, indicating a decrease in emissions to 669 t CO_2-e (6% decrease).

ADDITIONAL OPTIONS

Dietary supplement
Supplementing the beef herd's diet with an additive that inhibits micro-organism activity in the rumen could reduce methane emissions and lead to better feed utilisation in cattle. Research into feed additives has indicated that using natural compounds such as tannins, fats and oils can reduce methane emissions by 15 - 20% when used as a dietary supplement[1].

References
1. DAFWA. (2013). Carbon farming factsheet - reducing methane emissions from beef cattle using feed additives. *Department of Agriculture and Food, Western Australia*. Retrieved from www.agric.wa.gov.au/climate-change/carbon-farming-factsheet-reducing-methane-emissions-beef-cattle-using-feed-addtives

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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