SELLING THE "UNSELLABLE": CONVINCING PRODUCERS TO REDUCE GREENHOUSE GAS EMISSIONS WITH FARM-SPECIFIC MANAGEMENT OPTIONS

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ABSTRACT

Industry-wide general messages about reducing greenhouse gas emissions have typically led to farmer disengagement. The 'Tas Farming Futures' project is supporting producers across all agricultural industries in Tasmania to reduce their emissions through providing information and management options in the context of their own farm. The project is part of the wider Carbon Farming Futures Extension and Outreach program funded by the Australian Government. Highlighting the strong link between reducing greenhouse gas emissions intensity (measured as tonnes of carbon dioxide equivalent per unit of product, hectare or dry sheep equivalent) and improving resource use efficiency, productivity and profitability is beginning to sway producer's opinions from indifference to interested and engaged. A farm Emissions Reduction Planning approach was developed to suit individual farmer's specific circumstances.

INTRODUCTION

Over three years (2012/13 to 2015/16) the 'Tas Farming Futures' extension officers are working with producers from across all agricultural industries in Tasmania to reduce greenhouse gas (GHG) emissions and/or participate in the Emissions Reduction Fund (ERF). The project is part of the wider Carbon Farming Futures Extension and Outreach program funded by the Australian Government.

With the purpose of understanding farmer knowledge and attitudes to carbon farming a baseline survey of 29 farmers was completed at the beginning of the project. Whilst farmers had good knowledge of where their on-farm emissions were coming from, they rated themselves lower for knowledge on the extent of their emissions and how to reduce them. To increase knowledge and understanding as well as provide management options that will support practice change, a farm Emissions Reduction Planning approach (ERP) was developed.

EMISSION REDUCTION PLANS (ERPS)

The ERP approach was developed in response to the need for specific farm-relevant management options to reduce emissions. The format of the ERP was designed in a way that it can be included in existing decision-making tools such as property management plans (PMPs) or be delivered as a stand-alone report. Corresponding guidelines provide consultants and farm advisors the opportunity to use the ERP approach beyond the life of this project.

THE ERP PROCESS

The basis of the ERP process is calculating producer's emissions using the appropriate GHG calculator for the farm enterprise(s). Producers at this initial step can sometimes be sceptical of the usefulness of the emissions estimate but once they recognise the relevance in context of their own farm they find it helpful. The purpose of the estimate is to provide a basis for discussion about GHGs and efficiency and for comparison within the relevant industry as well as to determine the farm's emission sources. Details of farm production and management practices are generally consistent with the individual farm's emission profile, for example low weaning rates in sheep will result in higher levels of emissions produced per kilogram of meat.

Business and production goals determine recommendations within the ERP.

FARMER ENGAGEMENT

Whilst there is some interest in calculating emissions for personal information or reducing emissions specifically, in general, interest is generated through understanding the link between reducing emissions and improving farm productivity. Once general industry-wide information is distilled into farm-specific tangible actions producers become engaged and interested in the project and what they can do to reduce their farm business' emissions.

The link between emissions intensity and productivity

Increased productivity will almost always reduce emissions intensity - measured as tonnes of carbon dioxide equivalent (CO_2e) per unit of product, hectare or dry sheep equivalent (DSE). For example, improving pasture productivity can reduce emissions intensity through shorter finishing times. Emissions intensity provides a useful method of benchmarking against other businesses with similar enterprises. Being able to monitor and compare their farm emissions with industry averages is an incentive for producers to get involved with the project.

One of the first ERPs we developed was for a mixed merino/cropping farm. The farm's emissions profile indicated that 72% of their emissions was methane from livestock. After

discussion with the extension officer it was determined that concentrating on improving the low weaning rates of 85% offered the best choice for improvement. The producer is now working on improving flock genetics for improved reproductive efficiency and reduced emissions intensity for meat production. At the end of the project emissions will be recalculated to compare to the baseline GHG calculation.

Showcasing producers who are working to reduce their emissions

Through articles and case studies the stories of innovative and well-respected producers are influencing other producers to become engaged with the 'Tas Farming Futures' project. Case studies of producers have been developed including five from the Coal River Products Association (CRPA) from the Coal Valley in Southern Tasmania. Case studies are produced as engagement tools and to showcase the important management practices each farmer uses. Each case study farmer went through the ERP process, however their information was presented as a case study rather than a farm report. This means the information can be disseminated to a larger audience and targeted to particular enterprises or topics.

The case studies have been a successful engagement tool due to the respect each farmer holds within their respective industries. The diversity of industries represented by the case studies also creates a large platform for other producers from around the state to relate to.

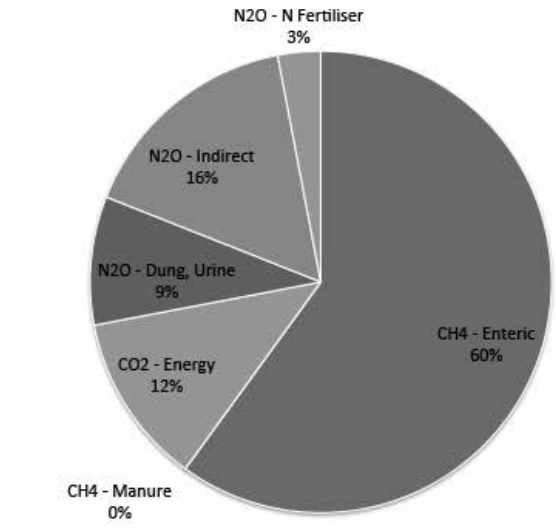

Figure 1 - GHG emissions profile from case study farm 'Cranston'. Total farm emissions were 278t CO2e/year. The higher proportion of enteric methane compared to other GHGs prompted the producer to look at animal management and more specifically animal nutrition.

Figure 2 - Field day focussed on feed management at case study farm 'Cranston'. The full case study is available online at: www.rmcg.com.au

Data requirements for GHG calculators

For crop producers who are deterred by the data requirements of the GHG calculators we are able to engage with them through other tools such as our Nitrogen Use Efficiency (NUE) calculator. The NUE calculator uses a 'partial nutrient balance' also known as a 'removal to use ratio' approach. It calculates NUE% based on the ratio of nitrogen applied in fertiliser and nitrogen removed with produce. The data requirements are relatively simple with producers only needing to provide nitrogen fertiliser types and rates, and crop yield.

In several cases we have found that producers are using too much nitrogen fertiliser and therefore nitrous oxide emissions are expected to be higher. Producers can see the relevance of reducing their nitrogen fertiliser inputs due to cost savings. Often this calculation entices the producer to complete a GHG calculation so they can investigate where else in their business they can improve efficiency.

NUE% was calculated for 49 potato crops for Simplot Australia Limited for the 2013/14 season. The results ranged from 57% to >100%. This wide range of results demonstrates the diversity of management practices implemented on each of the farms. In many cases the company field officer was able to pin point the practice that required attention (e.g. timing of fertiliser application, soil structure or crop rotation).

POLITICS

The political nature of emissions reduction and climate change can cause scepticism for some producers. A producer who was initially not willing to undertake a GHG calculation, felt that we were collecting the data as a means to blame agriculture for Australia's emissions. However, after attending a workshop and once the purpose of our project was explained and the link between emissions intensity and productivity was defined the farmer was convinced of the practical purpose of the calculation. This cements the need for distilling general industry-wide information as when it is in this form it can easily be misinterpreted.

Figure 2 - Field day focussed on feed management at case study farm 'Cranston'. The full case study is available online at: www.rmcg.com.au

CONCLUSION

The flexibility of the ERP process that considers the individual producers' business structure, goals and needs allows extension officers greater influence when engaging with producers. Each producer will have his or her own opinions when it comes to emissions reduction. By tailoring advice to suit their farm, assumptions from general industry-wide information can be managed.

The link between emissions and productivity is strong enough that producers can see the relevance of reducing emissions in the context of their own farm. Existing industry tools (including GHG calculators and calculations of emissions intensity) and tools developed by the 'Tas Farming Futures' team (e.g. NUE calculator and the ERP process) has enabled the project team, to deliver specific and targeted farm information. These tools create a legacy and can be applied by others beyond the life of the project.

REFERENCES

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ACKNOWLEDGEMENTS

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