

## **Natural capital accounting: Adding a new perspective to farm profit.**

### **Summary of 11 farm level case studies in Eastern Australia**

#### **Background:**

New ways of thinking are changing how we can better understand and measure farm profit.

With some 80% of the investment in a farm tied up in the land base, it makes good sense that we incorporate the measurement of the condition of this important business asset into our thinking on Profit.

Natural capital accounting can do this.

Natural capital (or environmental) accounting helps us assesses the natural capital that is present on a farm to complement existing financial measures of profit. Doing this will allow the manager to clearly see any relationship between farming practice, environmental impact, farm business performance and to track changes in natural capital over time, in the same way we do for other forms of farm capital.

Incorporating natural capital measures to complement existing financial measures can give a broader view to assessing end of year farm profit and returns.

This means that decisions around investing in improving the condition of natural assets can now be based on measurable on-farm results and trends over time.

This article summarises a recently completed AWI funded study which applied a natural capital accounting and environmental profit and loss approach for 11 case study farms. This information was used by the business owners to give a new perspective of farm profit.

#### **Understanding Natural Capital Accounting: What gets measured.**

Natural capital accounting is a new knowledge field for farm business management. Traditionally, assessing farm business performance has been orientated to financial metrics alone. This project demonstrated that it is possible and practical to now include natural capital measures.

To prepare a farm level natural capital report the 11 growers in the AWI study contributed farm management information, had a farm assessment undertaken by a trained ecologist and farm data was collected from satellite using a commercial program.

A detailed report was prepared for each farm which assessed the natural capital base. This covered Ecosystem Services across 12 criteria, assessed Ecosystem Type, Use and Capacity, estimated Carbon Storage and undertook a detailed Environmental Profit and Loss statement covering 31 key criteria. Groundcover assessments using a commercial satellite monitoring program allowed for historical measurements to be made for up to 17 years.

Having clear information on the change in condition of the major business asset (Land) across a broad range of criteria, coupled with financial performance, gave a broader view of farm profit.

Overtime we hope benchmarks of natural capital will start to emerge in the same way that industry financial benchmarks are available.

**Results from the 11 case study farms:**

The 11 case study farms were located across eastern Australia. Five were in NSW, three in Victoria and three in Tasmania.

They were selected to cover a diverse range of climates, production systems and landscapes and were considered as industry leaders in wool production.

Natural capital accounts and environmental reports were prepared for each grower.

The case studies found that in many instances, as an outcome of their normal management practices, businesses may be conserving or regenerating the endangered grassy woodlands. Between them, the case study farms were conserving more than 30,000ha of healthy grassy woodlands and native pastures, protecting their soil and keeping water ways healthy.

Some key metrics from the case studies were as follows. *It is important to note that a negative number indicates a removal of CO<sub>2</sub> from the atmosphere.*

<b>Summary Criteria:</b>	<b>Ranges</b>	<b>Averages</b>
Long term Groundcover ranges	Most above 80%	
Emissions for the farm (tCO <sub>2</sub> e/year)	715 to 9067	2517
Emissions for the farm (tCO <sub>2</sub> e/year/ha)	0.21 to 5.55	1.43
Estimated C sequestration for the farm (tCO <sub>2</sub> e/year) <sup>3</sup>	-11 925 to 1136	-4055
Estimated C sequestration for the farm (tCO <sub>2</sub> e/year/ha) <sup>3</sup>	-3.44 to 1.01	-1.36
<b>Net position for emissions for the farm (tCO<sub>2</sub>e/year)<sup>3</sup></b>	<b>-9649 to 6007</b>	<b>-1539</b>
Net position for emissions for the farm (tCO <sub>2</sub> e/year/ha) <sup>3</sup>	-2.72 to 3.68	0.06
Green House Gas emissions for wool (kg CO <sub>2</sub> e / kg greasy wool)	21.3 to 67.8	29.9

Notes:

1. *Ground cover estimates from satellite technology*
2. *Greenhouse Gas emissions and sequestration calculated using industry models.*
3. *Note a negative number indicates a removal of CO<sub>2</sub> from the atmosphere.*

The levels of long-term groundcover in the study were high and rarely dropped below 80% Analysis showed they were also consistently higher than local farms.

The rates of CO<sub>2</sub> emissions and sequestration varied greatly depending on the farming system used and the type, extent, and condition of vegetation. It is interesting to note that on average the 11 farms captured and stored a net 1539 tCO<sub>2</sub>e/year (shown as negative emissions). On average, effectively these farms were capturing and storing more CO<sub>2</sub> than they were emitting. This was not the case for all farms.

The greenhouse gas emissions for wool (kg CO<sub>2</sub>e / kg greasy wool) varied substantially and averaged 29.9 (kg CO<sub>2</sub>e / kg greasy wool). Overtime, benchmark levels for the above can be prepared.

**A surprising outcome:**

Kering developed the Environmental Profit and Loss (EP &L) methodology to help their business understand their environmental impacts and to reduce them. In the past, EP &L has been calculated for an industry, using general/generic information.

This study prepared inputs to the Kering EP &L methodology using actual farm data to estimate the environmental impact of each farm's operations on the environment, across the 31 criteria.

Interestingly all farms in the study all had lower impacts on the environment than had been previously published by Kering using their generalised industry EP &L methodology. This was particularly the case for greenhouse gas emissions (per kg of clean wool) and impact on ecosystem services.

It is possible that the generalised industry findings prepared in the Kering EP &L study may not be applicable for all segments of the wool industry. These case studies, while small in sample number, suggest that the generalised Kering EP &L findings could overestimate the impact of wool growing on the environment, particularly for growers who have restoration of the environment as part of their management goals.

This is an area that needs more work to ensure that the environmental impact of wool industry is accurately calculated and represented.

**Practical uses for natural capital accounting:**

There are many potential benefits from including natural capital accounting as part of normal farm business management.

The farm decision makers can now be provided with measurements of the condition of their major asset, the land. They are now able to assess a change in environmental condition over time across a range of assessable criteria.

In the short term, natural capital accounting can be used by interested woolgrowers to communicate the outputs of their management to industry. There is a growing industry segment which is seeking to source wool from growers producing in an environmentally conscious manner. Natural capital accounting can clearly document and demonstrate the impact of management decisions on the farm's natural capital base. Additionally, the information contained in the Environmental Profit and Loss statement presents this information in the language which is familiar to industry.

In short, it can create direct feedback to industry, in language they understand. This may be a business opportunity for the grower.

In the longer term, there is potential for this information to be highly valued for management purposes.

Changes in natural capital may become part of the farm businesses end of year reporting for progressive managers. A change in natural capital could be valued and treated in the same way as other forms of farm capital, such as Land, Plant, Machinery and Stock for internal reporting purposes.

**Conclusion:**

Natural capital accounting has an important role to play in future farm management.

Measuring changes in natural capital over time can provide complimentary information to the range of existing measures of farm financial performance measures currently in use, to give a broadened view of farm profit. This may be of interest to farm owners, financial institutions and brand and consumers who value sustainability conscious production.

Over time, it may also give information on the capacity to maintain future farm production levels, risk and profit in the farm business.

If the condition of the farms natural capital base is measured, it can be more effectively managed.

These case studies have shown that in many instances these farms, as an outcome of their normal management practices, may be conserving or regenerating the endangered grassy woodlands and at the same time running commercial wool growing operations.

Natural capital accounting may provide new business opportunities for those growers who wish to pursue them, through differentiated marketing to sustainability conscious brands and consumers and to a range of organisations who are seeking to invest into biodiversity and natural capital.

Further information is available by contacting Mark Gardner, [mark.gardner@vbs.net.au](mailto:mark.gardner@vbs.net.au).

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