Taylors Run Summary Report: Expanded measures of Farm Profit with Natural Capital Accounting:

Description: This case study from wool-growing property Taylors Run, in the Northern Tablelands of NSW, shows how Natural Capital Accounting can be used to expand the perspective of Farm Profit

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Natural Capital Accounting

Natural capital refers to the natural resources on a farm, including soil, water, diversity of life, vegetation and living things above and below ground.

Natural Capital Accounting considers the different ways in which woolgrowers support their farm's natural ecosystem and how the farms natural capital contributes to the financial performance of the business. It is a new area of farm business management.

The below case study details the natural capital accounting undertaken on the wool-growing property Taylors Run located in the Northern Tablelands of NSW. Through the natural capital accounting process, farm management practices that affect the condition of the farms natural capital have been identified, measured, and discussed.

This process can be used to expand the traditional view of Farm Profit to incorporate changes in natural capital.

The purpose of the Natural Capital Accounting Project

New ways of thinking are changing our view on Farm Profit.

Natural Capital Accounting helps us measure the environmental impacts of farming. It can sit alongside the farms yearly financial analysis to gain an expanded view of profit. It helps us see the relationship between farming practice, ecological health, and financial return and can give management a broader understanding of farm profit.

Natural Capital metrics complement existing farm financial performance measures and gives additional information.

Taking this approach means that decisions about investing in improving the condition of natural assets can be based on measurable on-farm results and trends over time, financial a*nd* ecological. It also makes the benefits of a farm's natural capital evident and gives an indication of future farm productivity.

Woolgrower Case Study - Taylors Run

The Taylors' management approach

The Taylor family operate "Taylors Run", a 647ha family owned and operated property in Kentucky, in the Northern Tablelands of NSW, producing superfine Merino since 1839.

It is currently managed by Michael Taylor and his family.

Over two farms, they produce wool of 16 microns, grown by 3500 un-mulesed sheep. The wool produced on Taylors Run is sought after by some of the finest Italian fashion houses in the world. The Taylor family produce fibre in an ethical and environmentally sustainable manner in accordance with the latest industry standards. This is seen in their production practices; rotational grazing, promoting healthy soils and pastures, modern stock-handling facilities for safe animal welfare and planting over 500,000 trees.

The wool clip has fluctuated between 12,600 and 17,800 kg largely in response to seasons and fluctuating numbers of sheep over this period.

Since the late 1970s, the Taylors have invested consistently in tree planting on 'Taylors Run'. With time, this has developed into a radiata pine softwood enterprise based on harvesting about 1.5 ha each year.

Natural Capital Accounting and Profit

The following methodology was undertaken to develop the Natural Capital Accounting report at Taylors Run.

Defining Ecosystem type

The foundation of Natural Capital Accounting comes from the 'Ecosystem Asset Account'. This is information about the different ecosystem types that exist on Taylors Run. It is prepared in line with published information and uses a State in Transition Model to classify the ecosystem type. This considers factors including inputs, use and history.

The System of Environmental-Economic Accounting (SEEA) is used to prepare this Account to ensure internationally published methodology standards.

While operating as a successful commercial wool growing operation, Taylors Run has 44% of its landscape in State 3B, a moderately diverse and mainly native grassland with few trees. Some 43% of the landscape is in a Modified State, consisting of various states of exotic tree cover. These plantings exist in varying densities.

Over the last 13 years, ground cover remained above 80% and peaked at 98%.

A high level of ground cover is an important component of an effective water cycle, carbon cycle, mineral cycle, resilience, weed control and in providing conditions for native plant recruitment. It is a key natural capital metric.

Ecosystem services

Ecosystem Services are the direct and indirect contributions that come from an ecosystem. They are measured across 12 criteria that fall under three main classifications:

1. Provisioning services: Forage for Livestock (10-year average), Forage for Bees and Timber provision
2. Regulating services: Soil protection and nutrient retention, Water Quality, Carbon Storage, Microclimate Regulation and Pollination/pest control services
3. Habitat services: such as Animal and Vegetation biodiversity protection and cultural services (such as spiritual and aesthetic values) and climate change adaption potential.

The Ecosystem Services provided by Taylors Run are rated as Moderate across many criteria, with the Regulating Criteria scoring High. Forage for bees scored low.

These services are produced from the diverse and highly functional grassy woodlands that occupy a large percentage of Taylors Run.

The environment is a highly functional and diverse ecosystem that produces a range of ecosystem services as well as being a sound basis for the commercial wool growing business through the production of quality and diverse forage.

Over time, new markets for ecosystem services may develop. If so, Taylors Run will be well placed to benefit from these.

Ecosystem capacity

This is the measure that shows exactly how the assessed Ecosystem Type impacts the performance of the farming business. The grasses, forbs and other forage produced on Taylors Run are considered as inputs into the grazing operation. The quality of this input indicates the quality and persistence of pastures, the level of groundcover and the proportion of palatable, perennial, and persistent species. It is assessed on a scale using established industry criteria; Very Good, Good, Fair, Poor and Very Poor.

94% of Taylors Run can be classified as being in Very Good condition for livestock grazing, with 6% classified as being in Good condition. This gives a strong base for the wool production business and is an important metric that can be monitored over time.

Carbon storage

Although these figures can't be used to trade carbon or used in a formal carbon sequestration project, the storage of carbon at Taylors Run has been estimated using industry models and can be used for farm management purposes.

These calculations include conservative estimates of carbon stored on the farm. Carbon sequestration estimates include the above and below ground biomass of the trees as well as coarse woody debris. It does not include any sequestration associated with soil or pasture.

Carbon emission estimates include on-farm emissions (fossil fuel use, fertiliser application, livestock emissions, leaching and runoff), electricity use, and pre-farm emissions where relevant (production and transport of fossil fuels, production and transport of purchased inputs including livestock, fodder, grain and amendments).

Using these conservative figures, while the farm activities emitted on average 960 tCO_2e/year, it was estimated that the farm activities also captured 1,172 tCO_2e/year.
On average, Taylors Run captures and stores around 212 tCO_2e/year (Net).

In effect, Taylors Run captures and stores more carbon than it emits.

Farms with high storage of carbon are usually in better ecological condition than those without - meaning they will likely have better ground cover, higher tree cover, more biodiversity and greater resilience. Taylors Run's net carbon storage is high and provides an excellent metric for tracking the impact of different farming practices and interventions over time.

It may also give a guide to future productivity.

Environmental Profit and Loss summary

An Environmental Profit & Loss (EP & L) analysis is another component of the Natural Capital Accounting assessment. It is a way of assessing the impact that a business has on the environment. This approach has been developed by Kering, an internationally recognised leading retail group, to help their business understand their environmental impacts.

EP & L is a novel approach for individual farm businesses to take. The EP&L measures the resources consumed across the supply chain, such as water and land, as well as the outputs such as water pollution, air pollution and waste. In the past, EP & L has been calculated for industry, using general/generic information.

The Kering methodology with input information specific to Taylors Run has been used to assess the impact of wool production on the environment at Taylors Run.

Some findings in the key EP&L metrics are:

- Taylors Run produces negligible air pollution, water pollution or waste.
- Concerning greenhouse gas emissions, EP&L analysis suggests Taylors Run generates approximately 28.7g of greenhouse gases per kg of Greasy Wool which is about 58% of the amount estimated by Kering for greenhouse gas emissions from the Kering regenerated landscapes classification contained in their EP &L and 31% of emissions from their conventional landscape classification contained in their EP &L.
- A conservative estimate of the natural capital value affected by Taylors Run's operation suggests that it has impacted the ecosystem services by up to 33-46%, and this is not permanent. This is less than the estimates contained in the Kering Environmental Profit and Loss, which indicates land use

impacts are at 80% from their conventional classification.

What does this mean:

The analysis done on Taylors Run has shown that natural capital metrics can be easily calculated. Less Grower's time is required for natural capital analysis than is needed for traditional Farm Financial Benchmarking activities. An on-farm assessment by a trained ecologist is required, with additional desktop analysis and reporting time needed. Over time and with increasing demand, this could become a commercially viable service.

Natural capital metrics can be used for farm management purposes to complement existing farm production and financial metrics, to enhance the overall view of Farm Profit. This information can be used by growers in their wool marketing. Sustainability conscious brands wanting to source wool with known environmental characteristics are a growing segment in the industry and are keenly interested in these metrics.

Measuring a farm's natural capital will give the farm owners an indication as to the possibilities of developing new income streams for their business. It can support with evidence farm-based marketing initiatives based around regenerative production and allow them to assess the potential for environmental payments.

This report shows there are practical natural capital measures that growers can use to complement their existing farm financial measures to broaden their understanding of farm performance and to better inform their management decisions.

The Taylors are now able to obtain metrics of the impact of their substantial tree planting and overall management on the natural capital of the farm. These are metrics that can be monitored over time. Natural capital accounting will enable them to provide evidence of their beneficial impact of management on the farms' natural capital, which will further support their direct selling of wool.

If Natural Capital can be better measured through practical measures such as outlined, it can be better managed.

This work is in its early stages. Over time the impacts of management decisions on the natural capital of the farm can be tracked in a similar way to farm production and financial performance. Doing this will give a more informed view of overall profit. The relationship of the farms natural capital to farm profit is one area that will emerge with more years of measurement. Some measures of natural capital may give a guide to future financial performance, risk, and resilience.

Natural Capital Accounting is a new way in which growers can start to use to measure and monitor the impact of their decisions on the current and future productivity of their farm business.

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