Trees on farms project

Lifting farm gate profit through high-value modular agroforestry

An overview of the direct and indirect economic benefits of Agroforestry

Agroforestry is the deliberate incorporation of woody perennial vegetation into agricultural enterprises. Agroforestry often involves planting commercial forestry species for harvest, but also includes planting stream-side buffers, shelter belts of native species or even species that produce high-value products for harvest, such as energy, fruits, nuts, oils and honey. The benefits of agroforestry to the farming enterprise include diversification, increasing overall productivity and improving the sustainability and resilience of farm systems.

Introduction

Trees integrated into agricultural systems have many benefits to other parts of the farming enterprise that are rarely accounted for in farm balance sheets. This project aims to increase farm enterprise profitability, through:

- Quantifying and integrating the direct and indirect economic benefits of trees to the farming system
- Understanding farmer motivations and barriers to adoption of trees on farms
- Promoting adoption of profitable trees in configurations that will increase farm profitability

How profitable is agroforestry?

Agroforestry is often perceived to be unprofitable or associated with high opportunity costs which is believed to be a significant barrier to adoption. In reality there is a paucity of financial analyses examining the profitability of agroforestry systems in Australia.

Existing case studies in a range of farming systems across southern Australia (livestock, cropping, dairy) challenge this perception:

- Internal rates of return of agroforestry systems are typically around 8%
- Enterprises with agroforestry were more profitable than agriculture only or forestry only enterprises
- Benefit:cost ratios were highly variable, but generally greater than one, ranging from 1.3-17.4
- All analyses were very sensitive to the input assumptions

Optimising value

- Select land with lower opportunity costs
- Choose species with low market uncertainty
- Minimising harvest and logistics costs can increase profitability
- Integrate the value of co-benefits into decision making, e.g. shelter, carbon
- Develop systems that generate returns earlier
- Improve market access and transparency

Seeing the wood for the trees

Agroforestry can be profitable, especially when carefully planned and considered, however:

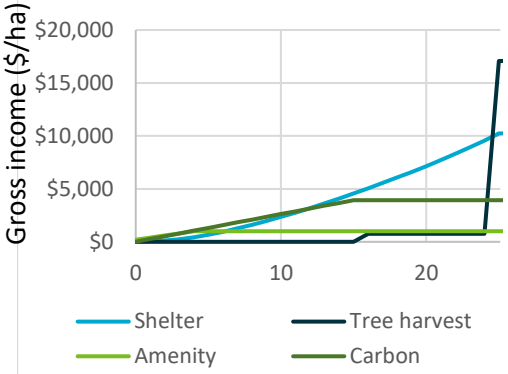
- There is a lack of reported case studies where NPV is negative or the agroforestry enterprise is not profitable
- Very few studies included analyses of the co-benefits or disbenefits.
- Markets lack diversity and transparency

Taking account of the co-benefits: Towards "why wouldn't you plant trees?", rather than "why would you plant trees?"

Explicit recognition of co-benefits is important for understanding the full value.

- Shade and shelter for stock
  - Improved survival and protection from extreme climate conditions, e.g. heat waves, hot and cold winds.
- Shelter for crop and pasture production
  - Reduced evapotranspiration and wind damage
- Carbon can be traded in appropriate carbon markets for cash
- Co-products such as biomass thinnings/prunings, oils, and honey can generate extra income
  - Much of this potential has not yet been fully realised.
- Specialty timbers can be profitable. However, these typically have longer rotation lengths (and discount times), greater market uncertainty and may require deeper market research and more proactive management by farmers.
- Agroforestry increases biodiversity and sustainability through helping to manage water flows through the landscape and reduce wind and water erosion
  - The degree to which these outcomes can be achieved will be a function of the motivations driving the development of the agroforestry systems.
- Agroforestry improves amenity and land values. The scale of this value add is a function of the size and enterprise but can vary between 4 and 15%.

Modelled returns from a *P. radiata* shelter belt over 25 years at Cressy, Tasmania



Quantifying the multiple values from a shelter belt (including wood, carbon, amenity and shelter) at Cressy over a 25 year rotation. The gross returns were calculated to be $32,200 as follows:

- Tree harvest (age 25): $17,000
- Shelter benefits: $10,200
- Carbon: $4000
- Amenity/land value: $1000

After accounting for the establishment cost of around $6000/ha, the internal rate of return was 12%.

Want to find out more?

We welcome comments, questions or suggestions!

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