

Managing carbon in the farming landscape

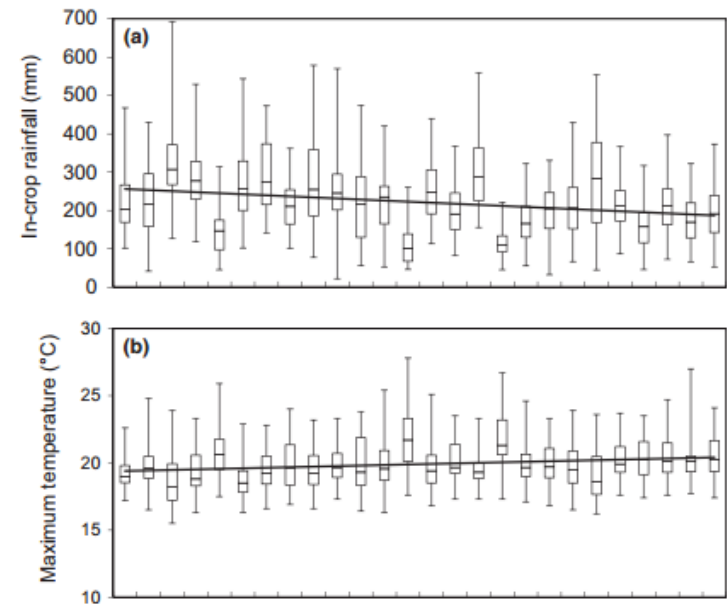
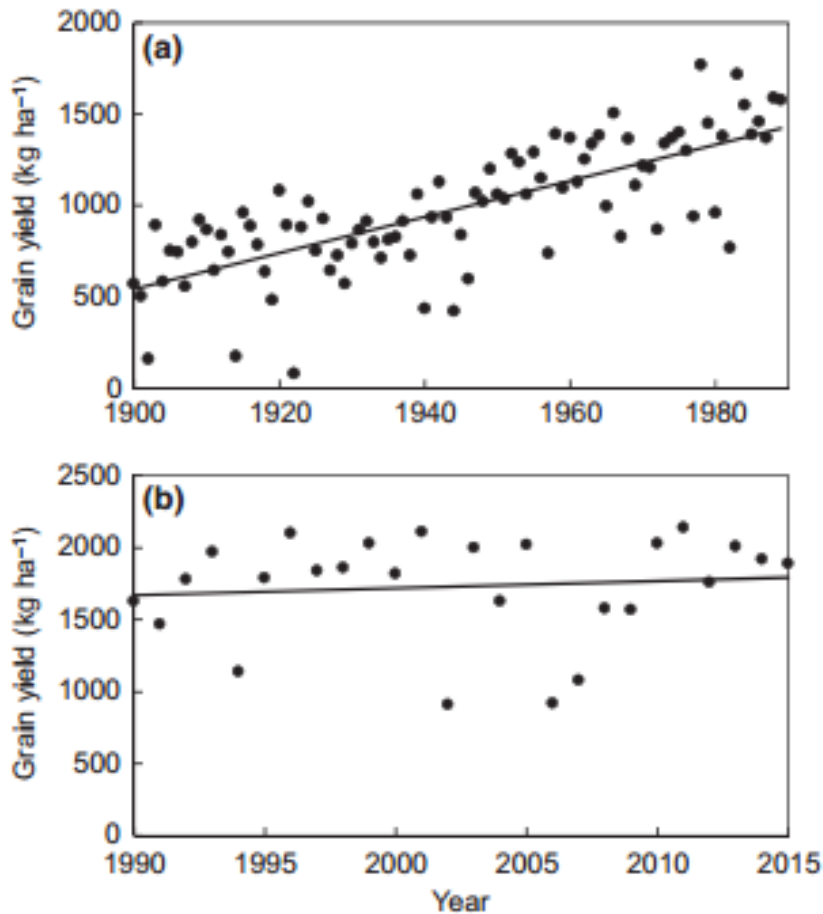
Carbon on farms: Promise or Reality?

Richard Eckard

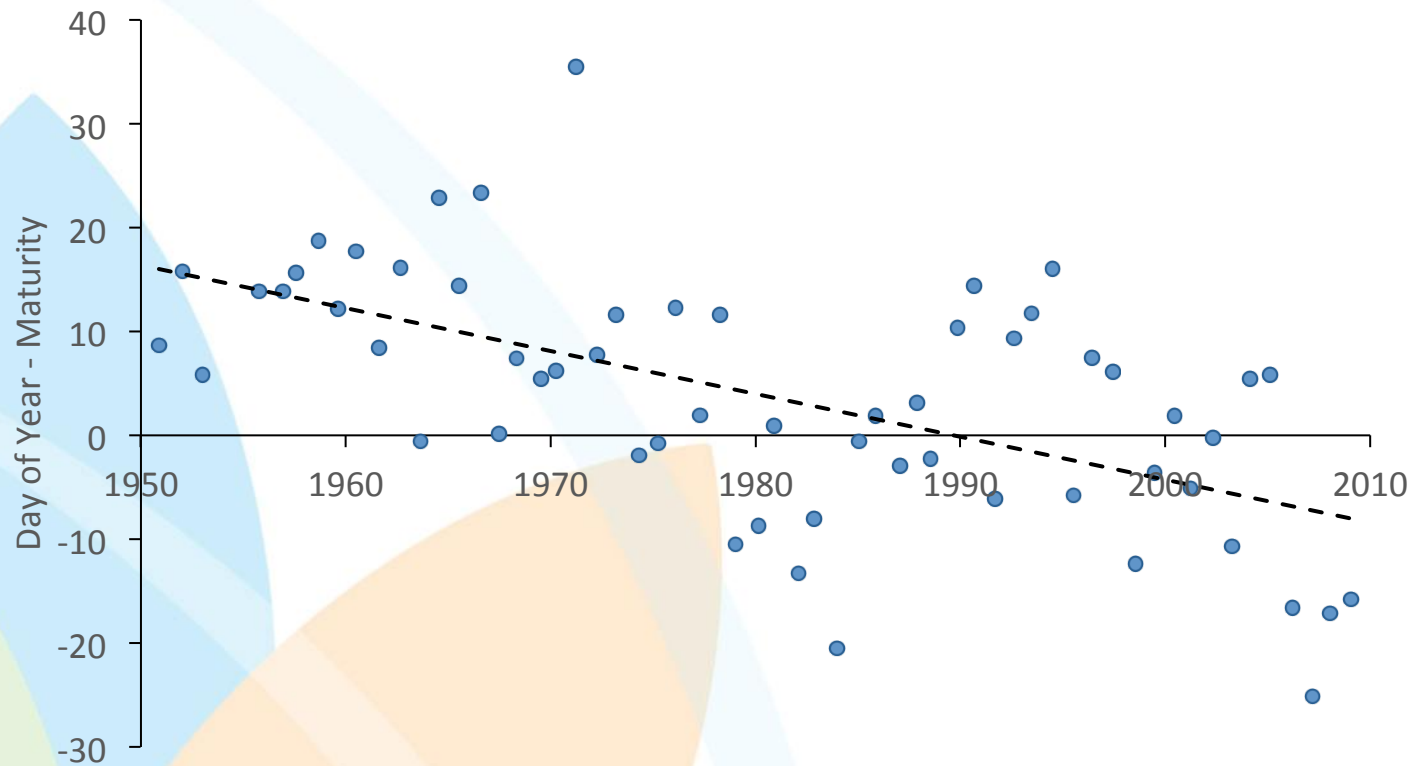


Why carbon farming - Wheat

Wheat yields have stalled in Australia since 1990, with productivity gains only keeping pace with climate change



Why carbon farming - Grapes



- Maturation date has advanced by 8 days per decade.
- The Tasmanian Vineyard area has grown by 540% over the last 20 years.

Why carbon farming - Cotton

Cotton industry in Southern NSW and Vic

Since 2001

- Cotton acreages increased by 420%
- Cotton production increased by 700%

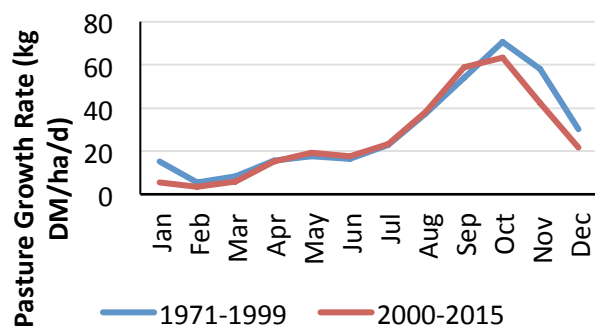


- Cotton now in Victoria
- Combination of technology and climate change

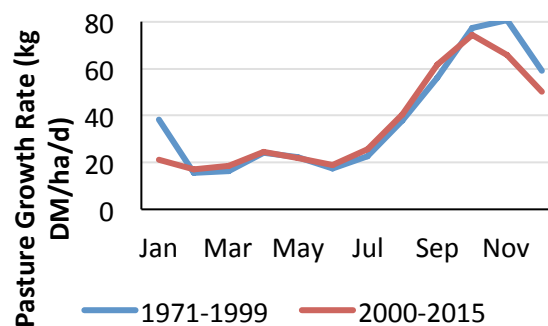


Why carbon farming – Pasture growth past 15 years

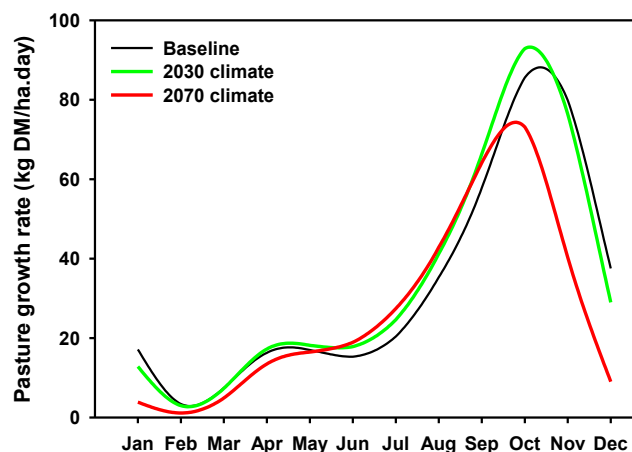
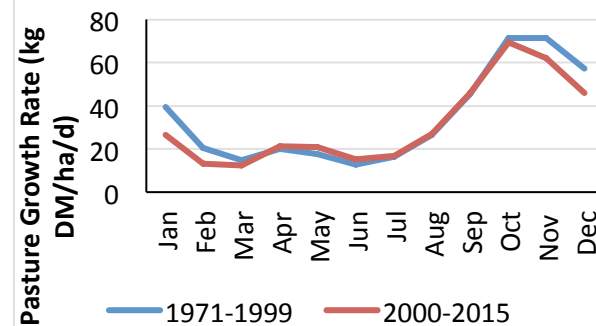
Terang



Ellinbank



Elliott



The last 15 years look more like the 2030/2050 predicted in 2009



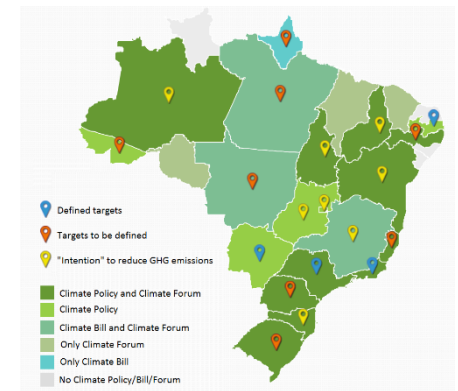
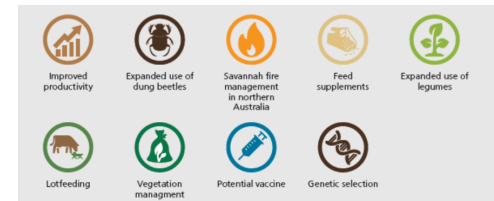
What is Carbon Farming?

- Carbon Farming
 - Management principles that minimise GHG, maximise carbon sequestration in the landscape, while improving the productivity and resilience of agricultural systems
- Carbon Smart Agriculture
 - Management that aims to maximise the efficiency of carbon capture into either product or sequestration

Why Carbon Farming?

Who else is doing it?

- Meat and Livestock Australia
 - Australian beef can be carbon neutral by 2030 (CN30)
 - given the right industry, R&D and policy settings
 - Richard Norton, CEO
- Mato Grosso do Sul (MS), Brazil
 - “MS carbon neutral” initiative
 - Including livestock
- New Zealand
 - Biological Emissions Reference Group (BERG)
 - Proposed Zero Carbon Bill



MLA - CN30 target



Improved productivity



Expanded use of dung beetles



Savannah fire management in northern Australia



Feed supplements



Expanded use of legumes



Lotfeeding



Vegetation management



Potential vaccine



Genetic selection



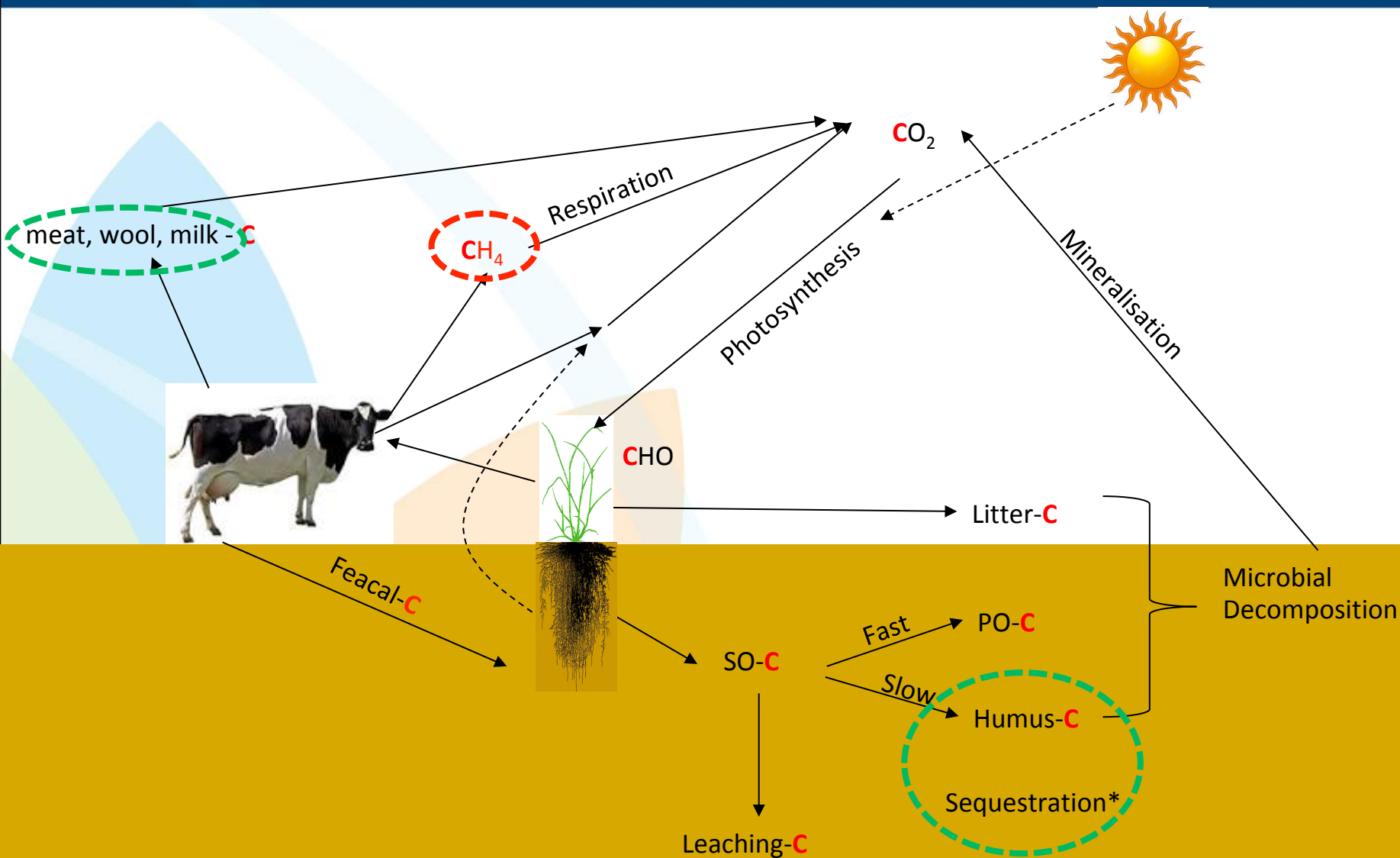
Investment to unleash further opportunities for producers but many opportunities already exist.



Why Carbon Farming?

- Common efficiency metrics
 - Nitrogen use efficiency
 - Water use efficiency
 - Energy use efficiency
- Why not “Carbon Use Efficiency”?
 - Atmospheric C (CO_2) ->
 - Plant - CHO and protein (43-48%)
 - Plant C ->
 - Animal - proteins, carbohydrates, lipids, and nucleic acids (23%)
 - Soil - soil organic carbon
 - Energy efficiency

The Carbon Cycle in livestock



~Half of all products/compounds in farming is carbon



The reality of carbon farming

- Results of over 30 farm case studies of carbon farming
 - <http://www.piccc.org.au/WFSAM>
- Carbon income range
 - \$0 to \$15/ha
- Profitability income range
 - \$39/ha - wool
 - \$250/ha - prime lamb
 - \$111/ha - beef
 - \$115/ha - dairy
- Offset income ratio
 - 7 and 24% of profitability income
- Long term sustainability and profitability will be the main driver
 - Carbon income will be the bonus

Carbon Neutral Livestock Production

- Talaheni – John and Judy Ive

- Low stocked wool

- Lower methane

- Significant land restoration

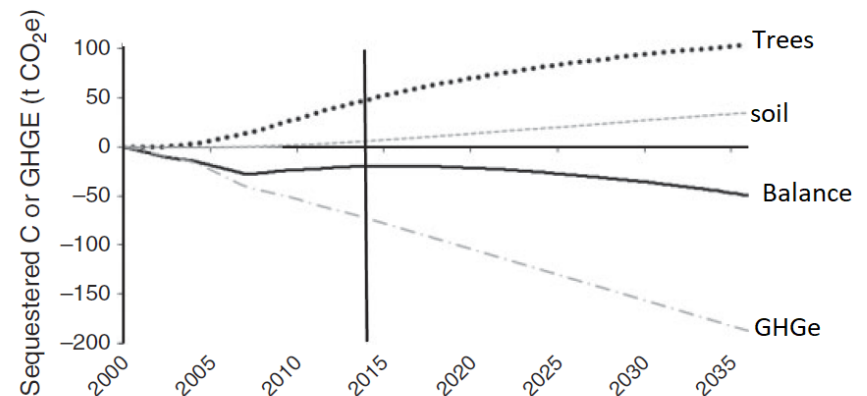
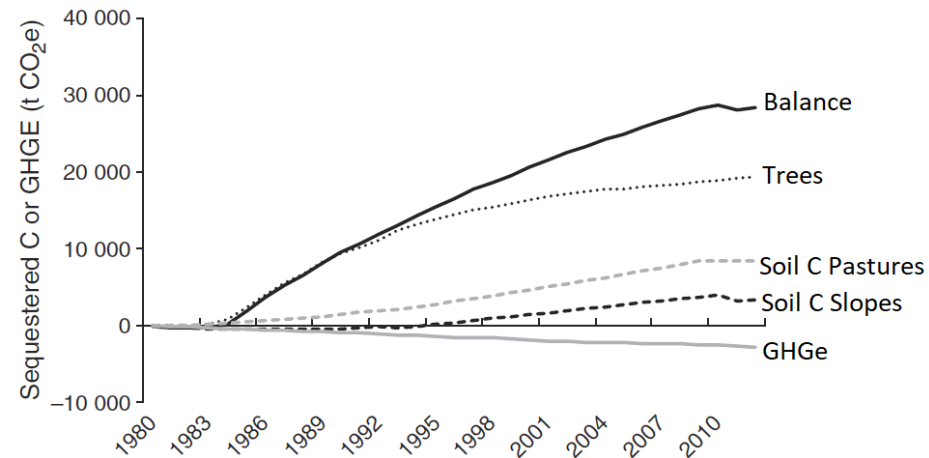
- Tree planting, natural regeneration, erosion control

- Jigsaw Farms – Mark Wooton and Eve Cantor

- High stocked beef and sheep

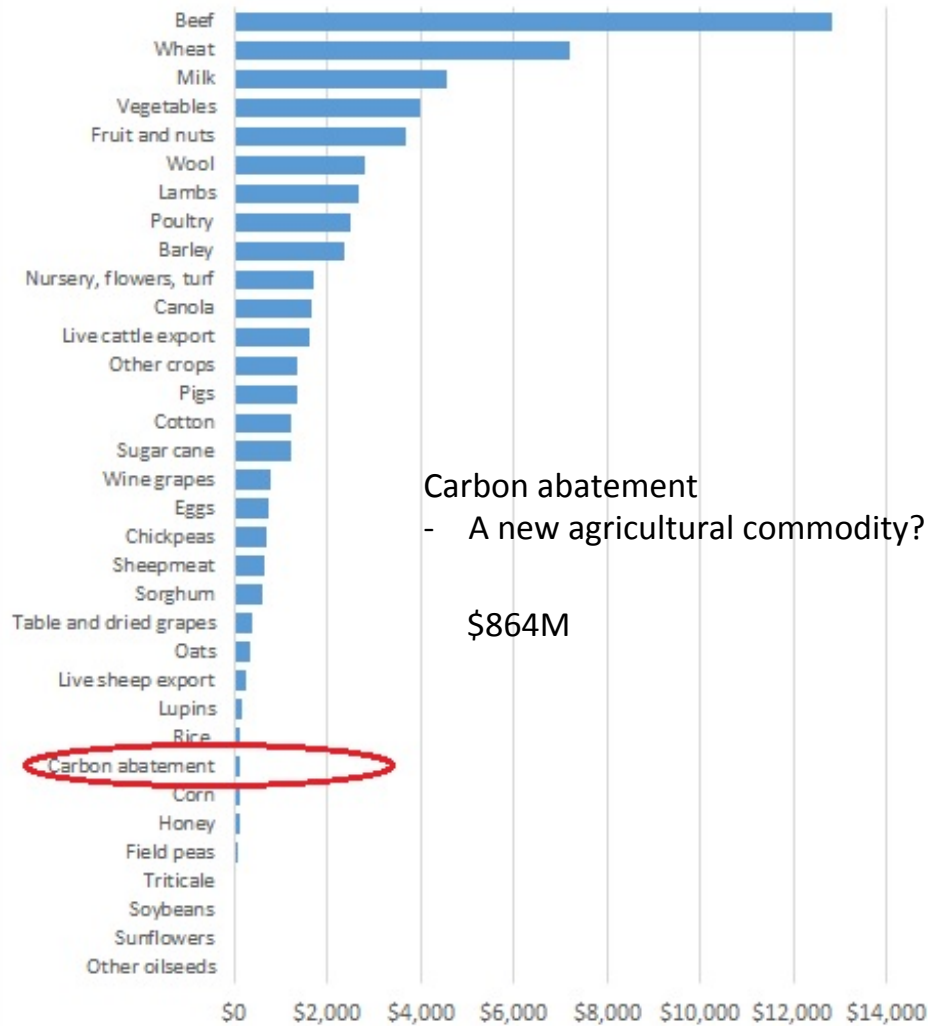
- Significant tree planting

- Salinity control
- Carbon offset planting
- Biodiversity



Potential additional farm income

Gross value of farm production, 2015/16
(forecast)

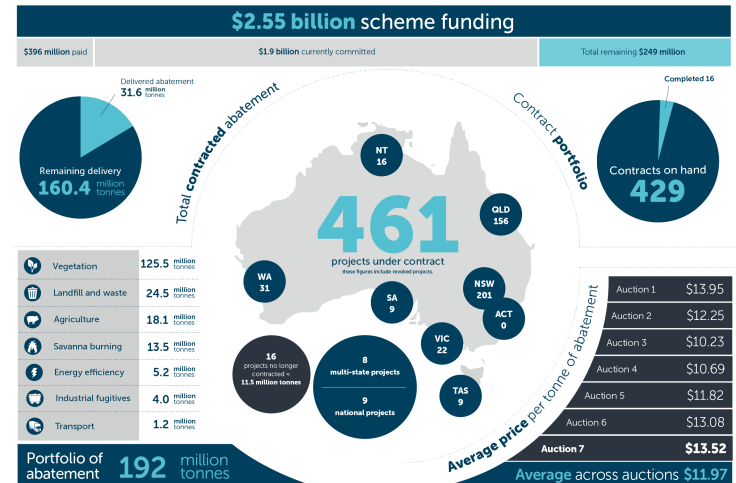


Carbon abatement
- A new agricultural commodity?

\$864M

Emissions Reduction Fund contract portfolio

Released 15 June 2018



Summary

- We are facing a carbon constrained future
- Carbon farming is something we should all be doing
 - More sustainable and resilient farm systems
- Carbon neutral is possible, But
 - Makes heavy use of offsets for now
 - Longer term – need a zero methane ruminant!