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Funding from the WA Carbon Farming & Land Restoration Program

Ambitious carbon reduction targets mean an increase in demand for carbon credits (ACCUs)

- National targets (120 countries with net zero goals); Australia 43% by 2030
- Agricultural industries (NFF 2050, red meat 2030, dairy 30% by 2030 etc)
- Industry (“net-zero transitions”, 2050 targets etc)
- Potential for trade barriers, shareholder action, regulation



Major offsetting approaches using the land

- **Reduce** emissions: retain existing C stocks in forests (avoided deforestation), peatlands, manage agriculture (methane, N₂O); savanna burning
- **Increase** carbon stocks: sequester C in soils and/or biomass by changing land management (Afforestation, Reforestation, Revegetation, Cropland and Grassland Mgt)
- **Displace** fossil fuel emissions:
 - Bioenergy – ag & forestry residues, purpose grown crops
 - Timber products



Potential co-benefits from carbon projects

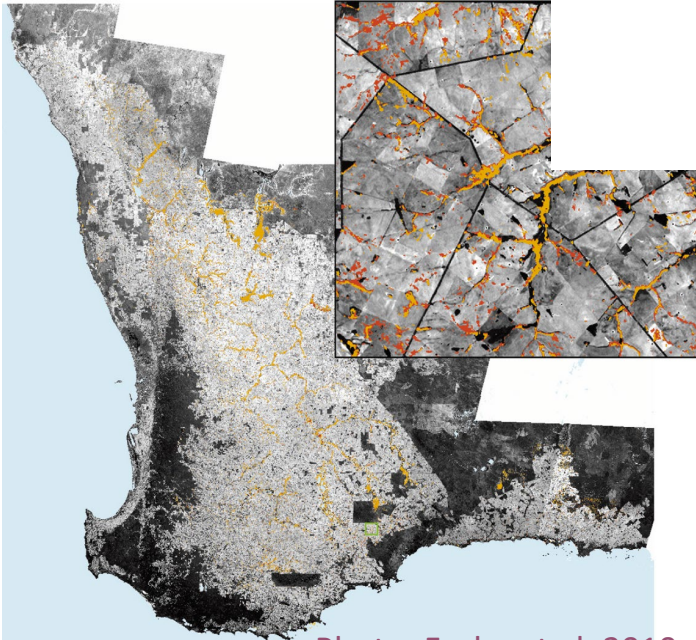


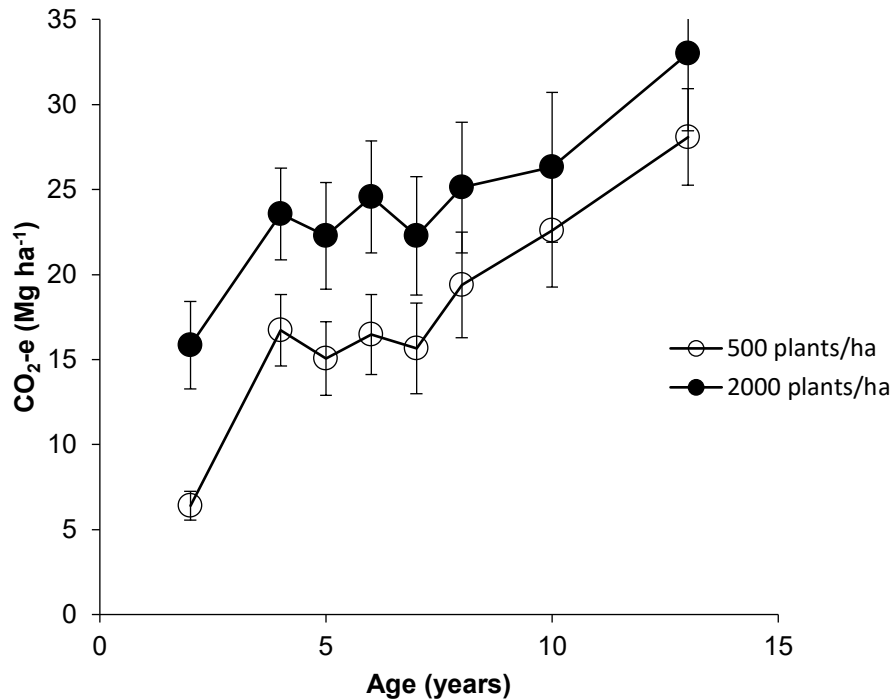
Photo: Furby et al. 2010. *J. Environ. Quality* **39**: 16-25.

- Treating salinized land
- Fixing water resource catchments
- Improving farm profitability
- Restoring biodiversity

Avoiding negative consequences or tradeoffs

- Competition for water (e.g. water flow, recharge to aquifers)
- Food security - displacement of food production, use of food as a biofuel
- Flexibility in land-use
- Leakage – existing activity displaced and occurs elsewhere





0.7-2.1 t CO₂-e/ha/yr

Walden *et al.* (2017) *Ecol. Eng.* **106**: 253-62

Liu *et al.* (2017) *Remote Sens.* **9**: 545;

doi:10.3390/rs9060545

What this project will do

- Improve estimates of carbon sequestration by grazed and ungrazed saltbush stands – **existing stands**
- Work out how to sequester carbon more efficiently – through planting density, genetics, site management – **new plantings**



Recent carbon-related projects at Murdoch University



Reforestation – sequestration and bioenergy

Native forests – fire, ecological thinning

Grazing shrubs (saltbush, Tagasaste)

Mangroves and blue carbon

Rangelands

Soil carbon

- Variation with landuse

- Variation with soil type and rainfall

- Clay additions

- Wind erosion losses





National
Landcare
Program



wheatbelt
natural resource
management



Thankyou!

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