

Future Farm Industries CRC

Profitable Perennials™ for Australian Landscapes

A photograph of a riverbank with a large tree branch overhanging the water, which is reflected in the calm surface.

P5 Biodiversity, Water, Land & Climate

Key program contributions

- Improved conservation of biodiversity in agricultural ecosystems
- Water quantity and quality maintained in water supply catchments
- Robust accounting of ecosystem services that support NRM decisions and market based instruments

All achieved with increased agricultural production

Key strategies

Develop perennial vegetation technologies and systems that:

- Provide new and enhanced habitat while increasing production values
- Conserve biodiversity by better managing water and salt (Biorisk)
- Protect biodiversity by minimising the risk of genetic pollution of native species, and introduction of weedy species
- Maximise ecosystem services for the full range of community goals
- Maintain water supply while protecting water quality (CAT Plus).

How?

In collaboration with landholders, existing catchment groups, agencies and CRC partners, the program will:

- Ensure prospective farming systems are evaluated for their catchment scale impacts
- Build biodiversity and water benefits into planting designs of other FFI CRC programs
- Develop tools that identify best solutions in risky environments and underpin market based instruments
- Provide landholders, NRM groups, and agencies with information and training to predict outcomes and take better decisions
- Promote adoption of biodiversity and water resources conservation

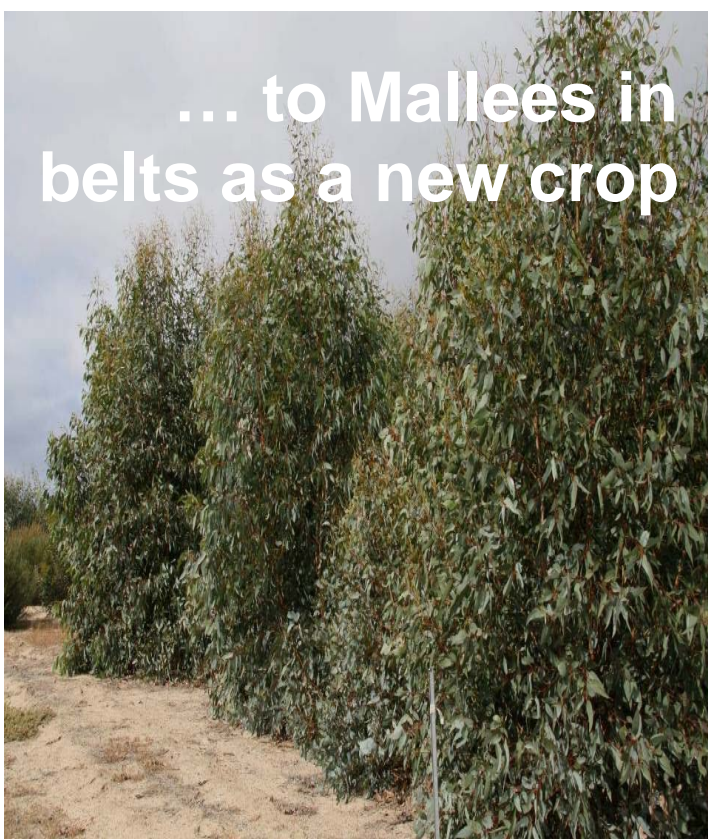
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From this ...

... to Mallees in belts as a new crop

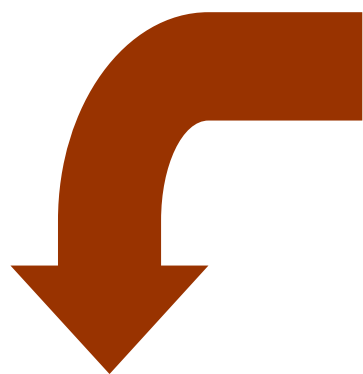


- Increased habitat
- Downstream assets protected (Biorisk)
- Decreased weed risk
- Increased biomass \$
- Decreased waterlogging
- Decreased erosion
- Managed nutrients
- Increased carbon stored
- Improved local climate
- Decreased sedimentation

(all positive or neutral to biodiversity)

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Land Use

cereals, perennials, irrigation, urban, etc

Landscape

soils, slope, connection, position, etc

Climate and surface water

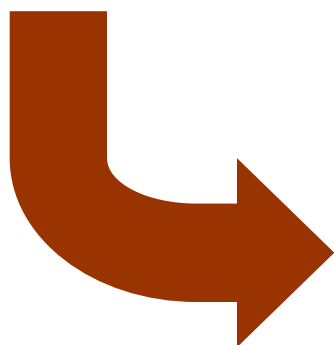
rainfall, runoff, etc

Hydrogeology

regolith, groundwater, salinity, etc

CATplus

- Integrates and tests complex landscape models
- Generates perennial scenarios for decisions

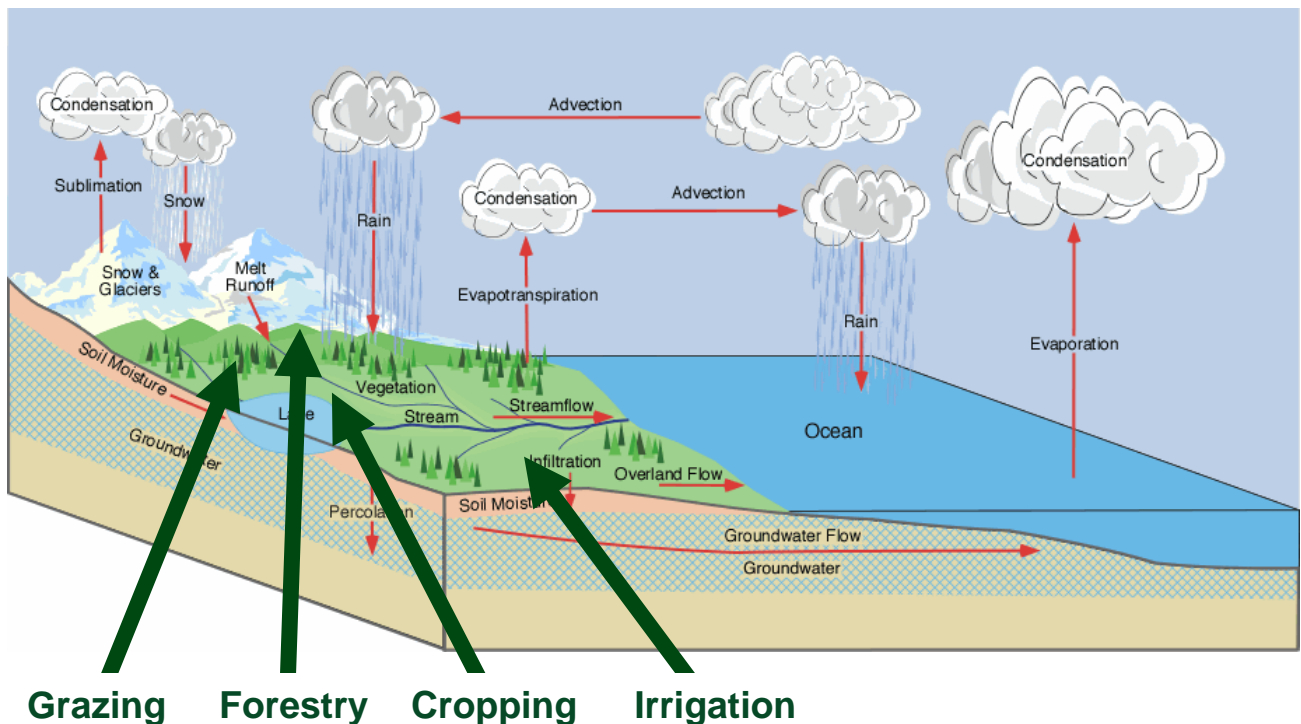


Water supply maintained

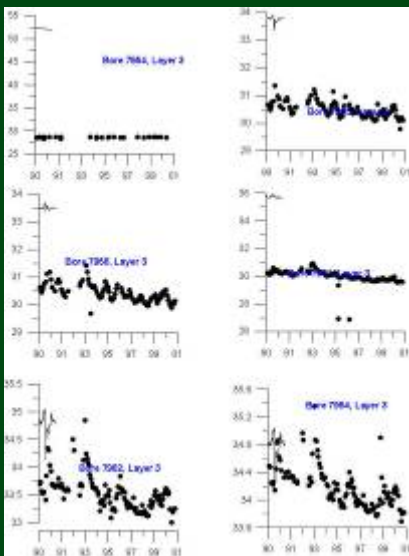
Biomass \$\$ maximised

Assets protected

CAT models multiple landuses in landscapes



Time-series traces



To give impact on:

- Stream flow
- Groundwater
- Salt
- Nutrients

Time OVER Space

Salinity area



Contribution through CRC

- Delivers social and environmental aspects of triple bottom line
- Develops full capacity of perennial vegetation to manage agri-ecosystem processes
- Meets CRC “duty of care” and contributes to national standards for preventing weed introductions and managing water supply
- Provides decision tools for increasing government economic efficiency in achieving environmental targets
- Develops these tools into products for commercialisation, with accredited training for their use
- Builds stronger agricultural industry credentials in international trade
- Addresses key failings of current, global frameworks for ecosystem services

Key Scientists

Dr Ken Wallace	Time Committed: 0.5	Organisation: DEC WA
Skills and expertise: Ken's research and development interests encompass native plants for integrated biodiversity conservation and production benefits. He has sought improved means for combining research, planning and policy into effective decisions for operational management. He has had direct responsibility for management of nature reserves and other Crown lands including work to combat salinity, and the developing and managing of innovative farmland re-vegetation to protect conservation lands.		
Refereed Journal: 3	Conference papers: 5	Industry publications: 4
Dr David Freudenberger	Time Committed: 0.3	Organisation: CSIRO
Skills and expertise: David's current research includes developing and testing management guidelines to conserve biodiversity and reduce dryland salinity in south eastern Australia. He also has a range of projects examining the biodiversity benefits of re-vegetation and remnant woodland protection. This work is in partnership with organisations such as Greening Australia, Catchment Management Boards and various Landcare and farming groups.		
Refereed Journal: 49	Conference papers: 21	
Dr Glen Walker	Time Committed: 0.2	Organisation: CSIRO
Skills and expertise: Glen's research interests included measurement of groundwater recharge and discharge in semi-arid areas, integrated catchment modelling to assess salinity management options, management of saline areas and the development of groundwater flows systems approaches for salinity management. He has recently lead activity to developing models on the impacts of changed land use on flow and salinity of streams emanating from upland areas, especially the Murray-Darling Basin, including water resource catchments.		
Refereed Journal: 68	Conference papers: 79	
Dr Craig Beverly	Time Committed: 0.65	Organisation: VIC DPI
Skills and expertise: Skills and expertise: Craig has extensive experience in the formulation, development and application of numerical models to simulate natural resource systems. He is currently working closely with economist and ecologists in a project to assess the impact of landscape intervention strategies on biodiversity, soil/water/plant interactions, water quality and quantity at a range of scales.		
Refereed Journal: 15	Conference papers: 28	Industry publications:

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Dr Margaret Byrne	Time Committed: 0.3	Organisation: DEC WA
<p>Skills and expertise: Margaret has a focus on genetic research in plant conservation and recovery, and in the utilisation of native flora in agroforestry and revegetation. She has expertise in population genetics, provenance variation, conservation genetics, phylogenetics and evolutionary patterns in Australian plants, using molecular markers for the nuclear and chloroplast genomes. She uses genetic information to investigate and manage population structure and ecosystem function to maintain evolutionary function in biodiversity, particularly in agricultural landscapes. She also has experience in genetic and QTL mapping in eucalypts.</p>		
Refereed Journal: 54	Conference papers: 11	Industry publications:

Resource Summary

Program	Biodiversity, Water, Land and Climate	Notes
Cash resources	\$0.98m – FFI CRC investors \$2.76m – CRC Program	
Inkind FTE	8 FTE per annum	
Inkind \$ resources	\$6.1m	10.4% of total
Total Resources	\$9.8m	8.7% of total
Key Industry Investors	MLA \$0.525m DEC WA \$0.42m	