An Australian Government Initiative

Joint Venture Agroforestry Program

Rural Industries Research & Development Corporation

Forest & Wood Products Research & Development Corporation

Land & Water Australia

# The Joint Venture Agroforestry Program

## *A partnership between*

- Rural Industries Research & Development Corporation
- Land and Water Australia
- Forest and Wood Products Research & Development Corporation







RIRDC

Innovation for rural Australia

# Who we are

The Joint Venture Agroforestry Program (JVAP) provides and manages funds for research on agroforestry and farm forestry, and facilitates delivery of that R&D to industries, communities and government. Agroforestry or farm forestry is the incorporation of trees into farming systems, for commercial and natural resource management benefits.

Established in 1993, JVAP is a partnership between three Australian government agencies: Rural Industries Research and Development Corporation (RIRDC), Land & Water Australia, and the Forest and Wood Products Research and Development Corporation (FWPRDC).

Additional funding has been provided for some activities by the Natural Heritage Trust; the Department of Agriculture, Fisheries and Forestry; the Murray-Darling Basin Commission; the Grains R&D Corporation, and the Department of Environment and Heritage Australian Greenhouse Office. The JVAP also jointly funds some collaborative projects with CSIRO, the CRC for Plant-Based Management of Dryland Salinity, Greening Australia, and Meat and Livestock Australia. RIRDC is the managing agent for JVAP.

*JVAP's objective is to build the knowledge to underpin profitable, sustainable and resilient agroforestry within Australian farming systems and landscapes*



# Our R&D portfolio

Trees and other woody perennials can provide six main product streams and services:

- wood and fibre
- oils and chemical derivatives
- energy
- environmental services and carbon sequestration
- food and fodder.

The range of products and services have different relevance for different regions.

Over its twelve year history, JVAP has funded a wide range of research to address these product streams and services, including:

- tree breeding and development of commercial species in low to medium rainfall areas
- screening for new potential products from native species, eucalyptus oils, and wood waste
- assessing the contribution of farm forestry to sustainable agricultural systems
- development of design principles for multipurpose agroforestry to meet commercial and environmental objectives, including biodiversity and salinity
- analysing policy and institutional impediments to adoption of farm forestry and agroforestry
- evaluating new investment arrangements such as markets for ecosystem services.

To guide its research, JVAP sets out its priorities in a Five Year R&D Plan, based on consultation with a range of stakeholders. The current Plan spans 2004-2009. An integral part of the Plan is recognition of the dual roles of agroforestry and farm forestry – development of an industry, and integration of trees within farms and catchments to bring improved natural resource management.

The Plan has three R&D investment objectives:

1. *Identification and development of new or existing agroforestry products and services* – including to identify value-adding opportunities for products, to promote profitable agroforestry industries

2. *Developing product-market linkages* – analyse markets for product suitability, value and regional development options

# JVAP delivers results

3. *Integration and optimisation of commercial, environmental and social factors*:
   a. Design – develop and improve agroforestry designs to optimise social, economic and environmental factors at the paddock, farm and regional-landscape scale
   b. Environmental services – demonstrate mechanisms for valuation and trading of environmental services provided by agroforestry
   c. Policy and institutional – investigate new policy and institutional arrangements that stimulate agroforestry investment

**Who for?**
The R&D outcomes are intended to feed into farm management practices and policy development by government. Through the research projects, JVAP works closely with grower groups and regional bodies. JVAP research results are used by farm forestry advisors, researchers, universities and in training and participatory learning courses such as Master TreeGrowers. Research results also guide government policy.

The Five Year R&D Plan seeks to encourage collaboration on, and coordination of, agroforestry R&D between farmer organisations, wood and other forest product processing industries, the JVAP, R&D Corporations and various research agencies, government departments determining policy, community organisations, and others involved in the uptake of agroforestry research.

The goal is to build a knowledge base that underpins investment in agroforestry products and systems so that they move beyond demonstration phase to realising sufficient scale to be profitable industries. This includes both traditional tree crop industries, and new ventures which plant woody perennials to achieve commercial, social and environmental benefits. As part of all this, agroforestry can deliver services and products relevant to natural resource management needs.

## JVAP Delivers results

Over the past twelve years, JVAP has provided approximately $23 million towards farm forestry and agroforestry R&D, with a similar leverage from industry and research partners.

JVAP's research has been undertaken in all States and territories of Australia and represents most agricultural zones with more than 600 mm rainfall per year (sometimes as low as 250 mm).

Research has spanned a wide range of topics, including tree improvement, biodiversity assessment, testing and evaluation of plantation-grown wood, new products from native species, and evaluating the role of trees in lowering water tables to reduce the effects of dryland salinity. *Some key achievements are shown in Box 1*.

Importantly, the Program has also provided the Natural Resource Management sector with confidence in the role of farm forestry and significantly influenced and informed the scope for plantings for a range of benefits. This is reflected in major demand in regional NRM plans, and the adaptation of technology to meet innovative needs. Continuing research by JVAP will aim to improve the cost-effectiveness of tree planting and identify commercial options for agroforestry systems.

Some current projects are:

- FloraSearch - Selection and development of multi-purpose perennial species for large-scale development in the wheat-sheep belt of southern Australia
- Enrich - Multi-purpose healthy grazing systems using perennial shrubs
- Productivity of mallee agroforestry systems with various competition management regimes
- Sideroxylonal: a valuable extract from oil-mallee crops in Western Australia
- Natural durability of *Eucalyptus* trees from farm forestry and low rainfall areas
- Evaluation of product value and sawing and drying efficiencies for low rainfall hardwood thinnings
- Wood quality analysis from high value, mixed species, agroforestry systems
- Further development and field testing of the efficient lightweight biomass chipper
- Developing appropriate designs to increase biodiversity in commercial eucalypt plantations
- Hydrological impacts and productivity interactions of integrated oil- mallee farming systems
- Australian Master TreeGrower: Enhancing farmer participation in farm forestry practice, research and development
- Farm forestry toolbox - regional benefits through research and technology transfer
- We are currently developing a project on improved survival and growth of commercial species for use in direct seeding guided by a recent review of current knowledge on direct seeding



# What we offer

## For farmers, industry and

- New ideas for farming systems
- Design of better tree management systems on-farm and in-catchment
- Analysis of wood quality and product options
- Market and economic evaluations
- Facilitating partnerships to solve on-ground issues

## For government

- Integration of industry and NRM driven R&D
- Design of profitable, sustainable industries to assist rural communities
- Expert management of research
- Commitment to encouraging collaboration between industry, regional NRM groups and R&D providers

## For the researcher

- Work on real world problems
- Clear statements about our priorities
- Expert help in planning your research
- Publishing to enhance your reputation













# What we do

Research priorities are shown in the Five Year R&D Plan, which is based on a survey and consultation with farm foresters, researchers, government and other R&D agencies. Annual review of JVAP's research direction is guided by the JVAP R&D Advisory Committee, and RIRDC manages the R&D portfolio on behalf of JVAP. Regular evaluation of JVAP's R&D impact is undertaken using benefit/cost analysis, and survey of stakeholder needs.

Projects are contracted and/or commissioned where opportunities and needs are identified.

To facilitate the adoption of innovations by rural industries, RIRDC will manage R&D outputs and outcomes through:

- communication (dissemination and promotion of research outputs, targeted to key influencers and intermediaries),
- knowledge management (analysing user needs, synthesis of research outcomes, and ensuring the knowledge base is accessible), and
- adoption – adoption will depend on uptake of the advice given by agroforestry extension advisors and intermediaries. Direct facilitation of adoption by landholders is not a role of JVAP. However some aspects of adoption will be engaged via regional and policy links and field-based courses such as the Master TreeGrowers program.




JVAP research has produced more than 140 research reports and agroforestry guidelines, which are available in hard copy and via the RIRDC web site. In addition, summaries are available in the Short Report and Research Update series.

**Box 1. The Joint Venture Agroforestry Program – key R&D achievements**

- Early investment in blue gum (Eucalyptus globulus) research by JVAP contributed to industry uptake – there has been a significant expansion in blue gum plantations in Australia; managed investment scheme companies raised over $750 million in 2004-2005, mostly for blue gum establishment.
- Oil Mallee – A JVAP scoping study and subsequent R&D funds, led to substantial investment by Western Power in building the pilot Integrated Wood Processing plant at Narrogin in the Western Australian wheatbelt. The pilot plant will test integrated production of energy, eucalyptus oil and activated carbon using biomass from purpose-grown mallees – of which more than 10,000 ha have been established in the wheatbelt in configurations that also help to halt the rise of highly saline groundwater. A successful plant of this type will generate regional power supply and new sources of revenue and employment for the region.
- JVAP contributed to early carbon accounting research –international markets plus the establishment of a carbon market in 2004 in New South Wales have resulted in contracts for significant plantations for carbon sequestration.
- Early work on markets for ecosystem services contributed to establishment of pilot markets for environmental services in Victoria and New South Wales, and a national Market Based Instruments research program.
- The catchment characterisation framework developed within JVAP has been adopted by Murray-Darling Basin Commission for prioritising saline catchments.
- The National Windbreaks Program has provided a predictive capability for farmers to determine the impacts of windbreaks on crop, pasture and animal productivity. It was by far the most comprehensive study of windbreaks undertaken in the world.
- Phase farming and alley belts - Design of new options for managing groundwater in saline catchments while underpinning an expansion of commercial farm forestry. Currently over 10,000 hectares of mallees are planted in Western Australia in alley belt systems integrated with existing agriculture.
- Design principles for agroforestry – JVAP has produced four agroforestry design guidelines to assist landholders and extension workers with the principles for agroforestry design, including use of trees for shelter, biodiversity and the placement of trees in the landscape to manage groundwater. These guidelines are used by the Master TreeGrowers program and other advisory networks, and as a text in agroforestry courses at universities and other educational institutions.
- The Master TreeGrower Program, funded by JVAP for eight years, has held 63 courses across all states, involving 1240 participants and over 30 participant organisations. The program uses participatory learning to work with landholders to identify farm problems and incorporate farm forestry to solve them. It trains leading farmers who can act as regional knowledge brokers for new entrants to farm forestry.
- Fodder investment – early scoping projects funded by JVAP have now been expanded through a collaborative project with funds contributed by Meat and Livestock Australia, Australian Wool Innovation, the Cooperative Research Centre for Plant-based Management of Dryland Salinity and JVAP to explore the use of shrubs for innovative and profitable grazing enterprises.
- The FloraSearch project has evaluated 140 Australian native woody perennial species from southeastern Australia for product potential and suitability for commercial development in low to medium rainfall zones. A shortlist of target species is now under more detailed evaluation.
- Trees, Water and Salt – Salinity of soil and water and waterlogging are severe problems for Australia. JVAP research has been significant in understanding the relationships between planting designs and locations of trees, hydrology and salinity. This work resulted in guidelines for land managers to plant trees located where they will address salinity and hydrological problems but will also contribute most to farm income.

# How to contact us

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## The JVAP Partners

Each of the three research and development corporations provides funds for research projects and manages the R&D portfolio to address identified research priorities and Corporation goals.

**RIRDC**
RIRDC's vision is for a more profitable, dynamic and sustainable rural sector and to achieve this we invest in new industries, established industries and national rural issues.

**Land & Water Australia**
Land & Water Australia invests in knowledge, partnerships, innovation and adoption to underpin sustainable natural resource management. Projects aim to improve the long term productive capacity, sustainable use, management and conservation of Australia's land, water and vegetation resources.

**FWPRDC**
Forest and Wood Products Research and Development Corporation invests in effective research and development to support the development and maintenance of an internationally competitive, sustainable and environmentally responsible Australian forest and wood products industry.

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