



NSW DEPARTMENT OF  
PRIMARY INDUSTRIES

PRIMARY INDUSTRIES SCIENCE AND RESEARCH

# Production Research

The Production Research branch of the Science and Research Division uses improved technologies to underpin profitable and sustainable horticulture, animal production, viticulture and aquaculture industries.

## Horticulture

Key research themes and capabilities of the horticulture research program are:

- **Evaluation and screening of new rootstocks and varieties of citrus** to identify clones with superior performance and which extend the market season. This has also contributed to projects in Asia and South-East Asia funded by the Australian Centre for International Agricultural Research (ACIAR).
- **Evaluation and screening of imported citrus seed and budwood** to support the introduction of superior and disease-free material to the Australian industry. This is a component of the industry-driven Australian Citrus Improvement Program.
- **Improved postharvest and production chain systems** for fruit and vegetables. The research underpins effective market access through quality assurance systems that deliver consistently high quality and safe produce. An important component is the development of molecular-based diagnostic tools for disease incidence.
- **Improved management systems** for tropical and temperate perennial crops, including citrus, macadamias and stone fruit. This research includes nutrition and nutrient delivery systems and crop management systems to regulate and optimise flowering and cropping.
- **Production and chemistry** of essential oils.
- **Improved varieties of ornamental native plants** for commercial production, particularly NSW Christmas bush and flannel flowers.

## Key research collaborations

Research collaborations are primarily through Horticulture Australia Ltd funding programs; Plant Health Australia; Australian Quarantine Inspection Service; ACIAR; AusAID; and the Rural Industries R&D Corporation. Riverlink and the National Horticulture Research Network provide strategic leadership and

facilitate collaboration with CSIRO, universities and state-based primary industry agencies to improve research, development and extension delivery to horticultural industries. Memoranda of Understanding are in place with the Universities of Newcastle and Sydney.

## Animal Production

Key research themes and capabilities of the Animal Production research program are:

- **FutureDairy**, a new systems approach to dairy farming that will bring productivity and social outcomes through strategic intensive land use, supplementary feed strategies, and innovative farming technologies. This is combined with a strong extension program.
- **Development of stock feed technologies** to improve the science-based understanding of the digestibility and quality of feed grains and silage. An important component of this research is the national TopFodder program, which involves research and extension on fodder conservation.
- **CT scanning technologies** to assess the body composition of live animals and carcasses. The technology has been applied to characterising pig genotypes, to validate predictive abattoir tests for belly composition and to assess pulmonary disease status.
- **Improved nutritional and environmental management** to enhance productivity and welfare of ruminant livestock.

## Key research collaborations

Major R&D projects have been funded through Dairy Australia, Beef Cooperative Research Centre (CRC), Meat and Livestock Australia, Australian Pork Ltd and ACIAR, with key collaborative linkages with the Universities of Sydney and New England. NSW DPI is also involved in the National Dairy Alliance (a forum of R&D investors and providers and dairy industry representatives) to set priorities for dairy R&D investment.

## Viticulture

The Production Research Branch's viticulture research program is delivered through the National Wine and Grape Industry Centre (NWGIC) at Wagga Wagga, an alliance between NSW DPI, Charles Sturt University and the NSW Wine Industry Association.

Research themes include:

- **Whole-of-vineyard management and production strategies** to promote a sustainable system. Focus is on optimal growing conditions, nutrition and irrigation management strategies.
- **Grapevine enviro-physiology** – to develop a better understanding of environmental interactions between the vine and fruit physiology and development. Emphasis is on environmental stresses, vine reserve dynamics and source-sink relationships and their effects on vine performance, fruit development and physiological disorders.
- **Vine health and the environment**, which explores disease management by understanding the complexities between the vine and its physical and biological environment. Emphasis is on vine microflora, vineyard biodiversity and the relationships between climatic factors and disease incidence.

### Key Research Collaborations

R&D programs are funded primarily through the Grape and Wine Research and Development Corporation through the Winegrowing Futures program. Formal collaborative arrangements are in place with the partners in the NWGIC; Charles Sturt University and NSW Wine Industry Association.

## Aquaculture

This program area develops improved aquaculture technologies for existing and new aquaculture industries. Research themes include:

- **Hatchery and breeding technologies for oysters and molluscs.** A selective breeding program for Sydney rock oysters is designed to improve growth and disease resistance. Other research aims to remove remaining technical constraints to commercial hatchery production.
- **Technologies and systems for finfish breeding and farming.** Research on silver perch aims to reduce winter disease mortalities, expand culture into new water bodies such as farm dams, and develop breeding programs for superior stocks of fish. Research for other marine fish aquaculture aims to reduce hatchery and feed costs for snapper, mullet and yellowtail kingfish. Australian bass are also bred for restocking programs.

- **Fish feeds and feeding.** Research on replacement of fishmeal in fish diets with Australian agricultural ingredients, nutritional requirements and feeding strategies.

A research centre has been established in collaboration with Murray Irrigation Limited to develop technology for using saline groundwater for aquaculture. This research supports potential industries for farming marine and estuarine species in inland NSW.

### Key research collaborations

Major R&D programs are funded through the Fisheries R&D Corporation; ACIAR; Aquafin CRC; Seafood CRC, Cotton Catchment Communities CRC; Australian Department of Agriculture, Fisheries and Forestry; and the National Aquaculture Council. Formal industry collaborations are in place with Murray Irrigation Ltd and the Select Oyster Company. University linkages include the Queensland University of Technology.

### Key contact

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