SOUTH AUSTRALIAN RESEARCH & DEVELOPMENT INSTITUTE

PIRSA

21

SARDI - 21 years

PREMIUM FOOD AND WINE FROM OUR CLEAN ENVIRONMENT

SOUTH AUSTRALIA

Government of South Australia

Primary Industries and Regions SA

SARDI

SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE

A word from the Minister for Agriculture, Food and Fisheries

Celebrating 21 years of achievement

At the heart of SARDI's 21 years of achievement has been the ongoing commitment to provide the science and technologies which will carry the State's food production into the competitive markets of tomorrow.

SARDI, as the South Australian Government's research institute within Primary Industries and Regions SA (PIRSA), is an integral part of the State Government's Premium Food and Wine from our Clean Environment strategic priority.

The Institute's innovative and robust scientific solution drive the priority and give South Australia a significant product and market edge.

By identifying and meeting future challenges and using imagination and innovation to break new ground. SARDI plays a vital part in the development of South Australia's premium food and wine products which contribute significantly to the vibrancy of our economy.

As market demand for our products grow, we need to be more efficient and competitive; a framework within which only industry leaders will excel.

And SARDI is leading these leaders. In all areas from low rainfall cropping through to aquaculture development, the Institute is not just providing the tools business needs to get on top, but anticipating those required to stay there.

In areas such as wild fisheries, horticulture, cropping and livestock – which are already strong and vital components of the State's economy – SARDI continues to work on improvements large and small which will maintain South Australia as one of the world's most efficient and successful food producers.

SARDI's contribution to the State's economic growth and wellbeing also is reflected in its business performance, with the Institute's turnover tripling to $60 million over the past two decades.

Gail Gago
Minister for Agriculture, Food and Fisheries
Government of South Australia

Private enterprise itself has not only supported, but fed that growth with investment now adding up to more than two thirds of the Institute's annual funding.

That investment is the big tick which affirms SARDI as the premier scientific partner in primary industries and food research and as an Institute which reaches beyond simple discovery and truly focuses on delivering real benefits to our stakeholders.

I congratulate SARDI on providing 21 years of applied scientific innovation to our agricultural, fishing, food and wine industries.

Foreword

Demand continues to grow for South Australia's premium food and wine, with our agricultural and food sectors forming the backbone of our State's economy.

This is achieved through considered delivery of food and wine that meet consumers' need for novelty, pleasure and enhanced health and wellness; as well as being produced from healthy and safe production systems.

The growth of our food industry and primary production is underpinned by high quality applied research and development delivered by SARDI, the research institute within PIRSA.

SARDI's innovations include new products, new technologies, new farm practices and new ways of using and protecting our natural resources; all of which are key elements of the South Australian Government's strategic priority of Premium Food and Wine from our Clean Environment.

SARDI's contribution is evident at every step of the food chain – from ensuring the health of our wild fisheries, to creating new cereal varieties, developing resilient farming systems and underpinning the safety of our food. In fact, whether it is bread, wine or fish, chances are that at some time over the past 21 years SARDI has played a part in its development.

By adopting the innovative solutions provided by science, South Australian primary industry sectors continue to develop and flourish – despite having to deal with adverse conditions such as heat waves, frost, pests and disease, drought and water quality issues. Integral to this early adoption of SARDI's science are the close ties with farming communities through PIRSA-SARDI Research Centres.

SARDI staff and the science they promote are well known across South Australia – from Minnipa on Eyre Peninsula to Clare, Loxton, Nuriootpa, Roseworthy and Struan in the South East. Our researchers also work with farmer groups and are the stalwarts of field days far and wide.

Prof Pauline Mooney
Executive Director
SARDI

Scott Ashby
Chief Executive
PIRSA

SARDI plays a very important role in PIRSA's combined efforts to safeguard South Australian excellence in primary production and its reputation as a producer of premium food and wine.

Happy 21st birthday SARDI.

2013

SARDI and Marine Innovation Southern Australia (MISA) research partners, the University of Adelaide and Flinders University, initiate a four-year $20m investigation of the Great Australian Bight ecosystem with CSIRO and BP.

SARDI scientist Dr Jason Emms accepts the inaugural 2013 Eureka Prize for Sustainable Agriculture as leader of the eight- year Future Farm Industries Cooperative Research Centre (CRC) Enrich native forage program.

SARDI's new guide to biological control agents outlines chemical-free weed management for South Australia.

Launch of a new soil disease DNA diagnostic test for Australia's $500 million potato industry.

SARDI unlocks the nutritional composition of Australia's 20 key commercial wild and farmed seafood varieties with a Super Seafood guide (Australian Seafood CRC).

New grazing tolerant lucerne variety, SARDI Grazer, is released for commercial production.

2012

SA's poultry and pig industries benefit from critical R&D capabilities in animal reproduction and welfare via new alliances between SARDI and the University of Adelaide.

SARDI scientists identify ways for the viticulture and horticulture sectors to adapt to hottwer and more variable climatic conditions.

SARDI partners in the Murray-Darling Basin Authority national Fishway Program which provides passage for migratory fish along the River Murray.

Two new lentil and chickpea varieties will help SA growers produce quality, high-yielding pulses for export markets.

SARDI research shows lower salinity in the Coorong is enabling more diverse and abundant fish life.

2011

SARDI Aquaculture improves hatchery techniques for native flat oysters to help establish a new oyster industry in SA.

SARDI helps design an alternative prawn net to reduce catches of non-target species, supporting ecosystems and industry profits.

Entomologists at SARDI quantify the extent of insecticide resistance in horticultural pest, diamondback moth, and seek better control measures.

SARDI targets health benefits to consumers through oat varieties developed with higher levels of the cholesterol reducing fibre beta-glucan.

SARDI partners with Meat and Livestock Australia to develop options for methane emission reduction while maintaining livestock productivity.

Pasture plant Messina is the focus of new research into a viable alternative for grazing in SA's saltlands where commercial legumes fail to survive.

2010

Entomologists at SARDI support greenhouse cucumber and capsicum growers with a sustainable approach to disease management.

Southern Australian Integrated Marine Observing System (SAIMOS), a $9.4 million Commonwealth Government facility, will provide oceanographic data to improve fisheries management and maritime safety along the SA coastline.

Value-added post-harvest solutions for the seafood industry address technical and trade barriers and manufacturing profitability, including export abalone labelling.

A three-year study into root zone water, salinity and nutrient management provides new knowledge and tools for horticulture producers to actively monitor and manage salinity.

The Graduate Access Program (GAP) supports placement of engineering, product management, food technology and marketing graduates in the SA food industry.

In conjunction with the University of Adelaide, SARDI develops effective control strategies for Eutypa dieback, an insidious disease of grapevines.

2009

Two lentil varieties, PBA Flash and PBA Bounty, a new chickpea PBA Slasher and a new oaten hay variety Mulgara are released to growers for commercial production.

A $7.5 million pilot-scale microalgae growth facility is established at the SA Aquatic Sciences Centre for the production and development of biofuels.

A climate adaptation framework, established in partnership between SARDI and GWRDC, will prepare the viticulture industry for the impacts of weather variability and climate change.

Citrus industry partners with SARDI on a post-harvest program to identify treatments to stop decay in export navel oranges.

Joint supervision of more than 50 PhD students builds SARDI's capability and expertise.

2008

The $6.59 million expansion of the Lincoln Marine Science Centre in Port Lincoln with funding from SA Government and Flinders University delivers new research and education capabilities to regional SA and seafood industries.

Launch of the Wine Innovation Cluster, a partnership between SARDI, the Australian Wine Research Institute, CSIRO, University of Adelaide and Provisor.

SARDI delivers expanded disease diagnostic tests and training programs to help protect Australia's cereal and pea crops from preventable soil-borne diseases.

SARDI irrigation trials identify minimum water thresholds needed to protect critical vineyard assets during prolonged drought and ensure that winegrape quality is minimised during heat shock events.

2007

DNA testing can now determine the location of crop and weed roots in the soil profile, offering researchers and plant breeders a quick and efficient 'underground map' and insights into root growth.

MISA research into seafood quality, new product development and biosecurity commences with funding from the MISA Government, Australian Seafood CRC and FRDC.

SARDI designs and implements seasonal forecasting and risk management tools to inform regional communities of their adaptive capacity to climate variability and change. Funding provided by GWRDC, GRDC, ACIAR, Farmbiz and the Department of Climate Change .

In partnership with GWRDC, SARDI identifies beneficial effects on soil microbial profile from the use of reclaimed water for irrigating grapevines.

New SARDI pasture medic variety, Angel, offers tolerance to herbicide residues after cereal cropping.

SARDI and PIRSA Fisheries partner with SA Prawn Fishers to introduce real-time management harvest strategies to underpin the long-term sustainability of Spencer Gulf prawn fisheries.

The causal pathogens of stem canker disease in Brassica vegetable crops are identified.

SARDI partners with the Sheep and Beef CRCs to develop software for use in charting gene families and interactions between gene families to aid sheep and beef breeding efforts.

The Murray-Darling Basin Commission provides funding to identify key behavioural traits in the common carp to help control this invasive fish in the Murray River.

2006

A new cost-effective monitoring tool is designed to lessen the risk of root zone salinity. Developed with funding from the Commonwealth National Action Plan and CRC for Irrigation Futures.

Evidence is provided to US food regulators that South Australian skipjack tuna canned at Port Lincoln meets food safety labelling standards, leading to export orders worth $US30 million per year.

2005

SARDI gains endorsement for a food safety risk profiling framework to guide the classification of all food business sectors based on their likelihood of contributing to food-borne disease.

Molybdenum (Mo) deficiency is shown to be a major cause of poor fruit set and berry development in grapevines and remedial pre-bloom and Mo spray are developed. Funding provided by the SA Government, CRC Viticulture and GWRDC.

Revegetation by Design publication promotes the use of native vegetation to control weeds, pests and disease in horticulture, reducing reliance on chemical control methods. Funding provided by the SA Government, Horticulture Australia and RIRDC.

Provided scientific expertise and analysis to identify suitable zones for the future expansion of South Australia's aquaculture industry.

An inland saline aquaculture system established at Waikerie will provide the knowledge platform to underpin inland seafood aquaculture.

A new service CropWatch Online helps viticulturists access disease, pest and irrigation information from their desk-top or mobile phone device.

DNA profiling technologies are developed to monitor benthic flora and fauna profiles under tuna cages to ensure the ongoing health of our coastal waters with funding support from FRDC.

In partnership with industry, a new model to separate fish sizes is developed to improve fishery management.

2004

Launch of the Marine Innovation SA (MISA) program, an SA Government and $25.8 million investment by MISA, which will enhance marine research and build R&D capability in South Australia.

The $9.2 million Plant Genomics Centre opens at Waite Campus, providing world-class facilities for high-level crop and cereal research.

Dr Greg Nattrass wins the AWI-sponsored 2004 Science and Innovation Award for Young People in Agriculture, Fisheries and Forestry.

2003

Eight new jellyfish species discovered during an expedition off Ceduna in the Great Australian Bight., with four named after SARDI scientists.

The progressive SARDI Fan Sprayer calibration methodology is taken up by growers.

Australian Grain Technologies sets up a commercial cereals breeding company, a partnership between SARDI, University of Adelaide and the GRDC.

SARDI produces several other sheep clones including Macarthur, a clone of an elite stud ram, since SARDI produced Australia's first cloned Merino sheep in 2000.

The Bash 'Em, Burn 'Em, Bait 'Em snail control manual is released after 15 years of research and a $1.5 million investment by the GRDC, SAGIT and SA Government.

Pulse and oilseed pathologists identify symptoms of the disease Ascochyta rabiei in a commercial chickpea crop in the Mid North.

2002

The wild fisheries research programs are restructured to embrace ecosystem-based management of fisheries and their supporting environments.

Pre-flowering sprays of molybdenum on Merlot wine grapes achieve large and significant (222%-750%) increases in bunch yield per vine.

The Food Safety program is launched to assist industry meet rising public health and trade access requirements.

Major meat and wool projects will deliver ovine gene markers for meat production, sustainable parasite control, and identify and control pigmented fibres in the Australian wool flock.

2001

A mulloway aquaculture system is developed following the success of a captive breeding program at SARDI.

SARDI oat breeders produce Australia's first oat double-haploid population.

More than 400 agronomists undertake SARDI training on root disease accreditation.

Specific barley scald resistance genes are accurately identified, as well as genetic resistances for yellow leaf spot, scald, septoria and net blotch.

2000

Oaten hay processors in SA and Victoria form AEXCO Pty Ltd and negotiate licensing rights to new oaten hay varieties produced by SARDI's oat breeding program.

SARDI leads a national effort to develop an insecticide resistance management strategy for the control of diamondback moth in Brassica vegetable crops.

A photographic guide to the common post-harvest diseases and disorders of navel oranges will assist with diagnosis of out-turn problems with Australian citrus in overseas markets.

SARDI scientists produce three healthy lambs from Australia's first cloned sheep Matilda, using juvenile in-vitro embryo transfer technology.

SARDI successfully develops technology for cryo-preserving molluscan sperm. This technique benefits in cross-breeding populations or species that spawn asynchronously, in controlling disease translocation and in gene pool protection.

Commercial release of Kukri, a prime hard quality wheat developed at Roseworthy's wheat breeding program.

The birth of Matilda, the first cloned Merino sheep in Australia. Funded by the SA Government and the CRC for Premium Quality Wool, the project marks a milestone for SARDI's animal reproduction research team.

Commercial release of the early maturing SARDI clover Frontier extends the use of balansa clover to drier areas.

A new management system for pork production results in marked improvement in the health and welfare of pigs and in air quality within sheds.

1999

A program describing SA's marine and coastal bio-geography forms the basis for identifying the high conservation and biodiversity value of South Australia's marine habitats.

SARDI plant nutrition program demonstrates that fluid, multi-nutrient fertilisers are more efficient than granular fertilisers in delivering nutrients (particularly P and Zn) to plants on calcareous soils.

Three new oat varieties were released - Quoll, Glider and Numbat.

SARDI's Citrus Handling Guide and Citrus Growing Manual provides the citrus industry with guidelines for growing and packing quality fresh citrus.

The Australian and New Zealand Field Guide to Diseases, Pests and Disorders of Table Grapes is released by SARDI horticulturists.

1998

SARDI scientists successfully rear 200 King George Whiting spawned in captivity – a first for the species.

By-catch in the SA prawn fishery is cut by more than 60%, improving the commercial value of the catch by more than 10%.

Four new pea varieties, Parafield, Mukta, Santi and Soupa, are released by SARDI.

A shipment of Australian navel oranges arrive in the USA in excellent condition with a low level of mould wastage and rind blemish as a result of transportation guidelines developed by SARDI.

SARDI develops the Crop-Test potato crop nutrient evaluation system, a computer-based tool for potato growers Waround Australia.

1997

In partnership with the FRDC and industry, a computer -based management model is developed for the SA rock lobster fisheries.

A comprehensive survey establishes what share of the catch of each species is taken by recreational fishers in comparison to commercial fishers.

Release of two new biscuit wheats – Buckley and Bowie – and an alkaline noodle quality wheat Krichauff.

Electrophoresis screening procedures for protein quality in wheat will enable breeders to eliminate poor quality wheats early in the breeding program.

A parasitic wasp is released in Riverland orchards by SARDI to control mealy bug in citrus orchards.

Minimum specifications for pig meat hygiene are developed for the Pork Council of Australia's national on-farm quality assurance program

1996

SARDI research on rings in shells of abalone enables the estimation of fishing intensity by revealing the age structure of the catch – an important advance for fishery management.

Artificial collectors to monitor recruitment to rock lobster fisheries successfully measure the numbers of larvae, timing of settlement and environmental triggers.

A new isolated microspore technique is developed to accelerate production of new barley cultivars.

New tillage techniques using accurate seed placement and fertiliser banding systems result in grain yield increases of 10-20%.

Post-harvest application of oil is developed to control insect pests on navel oranges exported to the USA.

SARDI, in partnership with industry, PIRSA and the University of Adelaide, establish the Pig and Poultry Production Institute (PPPI) at Roseworthy to provide a major focus for animal health and nutrition studies.

Selection demonstration flocks were chosen to act as a focus for the interchange of ideas and transfer of innovative breeding technology to the Merino sheep industry.

Dairy farming systems research at Flaxley demonstrate that gross margin per hectare can be increased by at least 50% by increasing stocking rate to drive a high level of pasture use.

1995

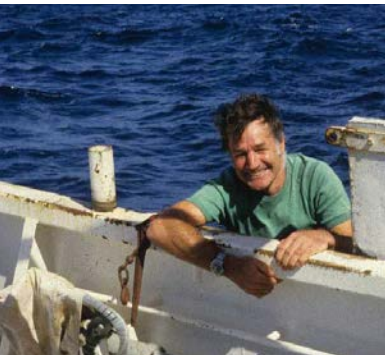
The Industry Commission singles out SARDI as a model agency for State-based research through a national review into government research.

SA takes another step in establishing itself as a world leader in research and development with the opening of the innovative $30 million Plant Research Centre.

Brood stock snapper are conditioned and spawned six months out of sequence from their natural spawning cycle, using a computer controlled environmental system developed by SARDI.

Using grain as a base, SARDI scientists develop a nutritionally balanced diet for farmed abalone.

In the first tests of their type in Australia, SARDI scientists devise a screening method for black spot in peas and Ascochyta and chocolate spot in faba beans.



A quality assurance program will be able to test export oaten hay for annual ryegrass toxicity.

Crown boring weevils are released to control Salvation Jane, leading to the weevil's establishment in the Adelaide Hills.

Post-harvest and transport protocols for the shipment of fresh white onions to Europe will facilitates access and expansion in trade to European markets.

Post-harvest storage treatments are developed for Pink Lady and Sundowner apples.

New sheep genotypes by genetic engineering create another milestone in the evolution of this technology.

1994

SARDI scientists produce a double haploid population of wheat for studies of high and low molecular weight glutenin alleles on dough rheology.

Research into developing manufactured aquaculture feeds reveals a 30% improvement in abalone growth rates, resulting in significant cost reductions for growers.

Research into the effects of soluble non-starch polysaccharides in grain on pig and poultry growth will help to determine the role of dietary fibre in monogastric nutrition.

New spear point seeding systems for broadacre agriculture incorporates new fertiliser placement methods, minimising soil disturbance and degradation during the seeding process.

Diseases and Pests of Grapevines guidebook is released by SARDI researchers.

Viticultural irrigation research highlights new ways to enhance the quality of wine grapes and to improve the quality of wine.

1993

A DNA based diagnostic test is developed to track bare patch disease caused by Rhizoctonia solani.

SARDI researchers discover the cause of bacterial blight, a major disease afflicting the fledging coriander industry.

A new breed of sheep, the Booroola, has the potential to lift by 50% the productivity of Australia's prime lamb industry.

1992

Management and technical support by SARDI scientists establishes the feasibility of rearing and growing wild-caught Southern Bluefin Tuna for a new industry in SA.

Industry guidelines to ensure expansion of oaten hay to the lucrative Japanese market are developed in association with Austrade.

A kit developed by SARDI will allow producers to determine sulphur dioxide levels in freshly sulphured apricots on-farm, enabling greater control over levels of the preservative in the final dried product.

A cohesive, multi-disciplinary research agency, called SARDI, forms within the primary industry portfolio. It is committed to providing a responsive, market-driven service.

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