

Media Release: March 25, 2003

The Next Farming Revolution

Electronic sheep management, drought-resistant cereals and pre-emptive strikes on new diseases are all part of the next wave of technologies to revolutionise Australian farming systems.

Electronics are poised to transform the sheep industry, enabling graziers to move from manual, whole-flock to precision management at the level of the individual sheep.

The result will be sharp increases in flock productivity - more wool, meat and fewer parasite and disease problems per sheep, says Professor James Rowe, CEO of the CRC for the Australian Sheep Industry.

"Starting with radio ear tags, and linking them with race-side diagnostics, a central flock database and automated drafting, we've got the sheep management system of the future under development right now," he says.

The diagnostics could range from simple measures such as bodyweight, to on-the-spot fleece tests and parasite counts. Individual sheep can then be classified and drafted as required.

Beyond the farm, the new data gives the grazier the ability to sell forward over the internet based on detailed information about his stock, their genetic background and individual histories.

"Productivity gain in the sheep industry is currently less than 0.5 a per cent, compared with 2.2 for cattle and 3.5 for broadacre agriculture. Electronics can unlock precision sheep production," Professor Rowe says.

Drought resistance and superior quality are just two of the traits being rapidly transferred to Australia's next generation of cereal crops through the use of molecular markers.

To put Australia into the world lead for malt quality, the CRC for Molecular Plant Breeding (CRCPMB) in partnership with ABB Grains has developed new lines of barley which have just completed their first field trials.

"With traditional plant breeding it takes 12-14 years to develop a new wheat or barley cultivar. Using molecular techniques we've been able to cut that time in half," says CRCPMB chief executive Dr Bryan Whan.

"Like DNA fingerprinting of humans, this powerful technology enables us to pick out the cereal strains which have the precise genes for the characteristics we're looking at, then breed them conventionally."

Working with germplasm from the International Wheat and Maize Centre (CIMMYT), the CRC team has also been selecting wheat varieties with genes for longer roots and other drought-tolerance features, to help Australian farmers better withstand future dry years.

In the longer term, Dr Whan says, a gene from the laboratory plant Arabidopsis appears to significantly enhance drought tolerance in wheat - a clear pointer to the future potential of gene transfer.

Pre-emptive strikes against two banana diseases which entered Australia recently have spared the nation tens of millions of dollars in losses.

Molecular Plant Breeding CRC

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Sophisticated diagnostic tools developed by the CRC for Tropical Plant Protection enabled researchers to identify the invaders - black Sigatoka and tropical race 4 Panama - in the early stages, leading to their successful quarantine and eradication.

"Many of these diseases occur in neighbouring countries in our region and can get into Australia quite easily, potentially causing havoc in crops such as tropical fruit, sugarcane and grains," says CRC TPP chief executive Professor John Irwin. "In any year about \$2-3 billion worth of tropical crops is at risk."

"One answer is to develop the molecular diagnostic tools that enable us to identify an invader as soon as a new disease is detected - and deal with it."

The Centre is developing diagnostics for the leading disease threats - bacterial, viral and fungal - to Australia's main tropical and temperate crops, such as bananas, mangoes, sugarcane, tomatoes, pastures and wheat.

Besides providing early identification of an invader, the work also enables the development of resistant strains of crops or new protective strategies - before the enemy arrives, Prof. Irwin says.

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MEDIA RELEASE: December 11, 2002

MINISTER ANNOUNCES NEW \$150m RESEARCH CENTRE IN MOLECULAR PLANT BREEDING

Approval for a new Molecular Plant Breeding Cooperative Research Centre was announced yesterday, securing Commonwealth funding for seven years.

The Minister for Science, the Hon. Peter Mc Gauran MP, announced the latest round of approvals under the Cooperative Research Centre's program.

Based in Melbourne, MOLECULAR PLANT BREEDING CRC, will continue the work of the CRC for Molecular Plant Breeding (CRCMPB), which currently has its headquarters in Adelaide.

Incumbent CEO, Dr Bryan Whan, is looking forward to the challenges of the new Centre, which will have a new mix of participants and research interests.

"We are definitely building on the past five and a half years of cooperation and research in the areas of cereals and pastures, but there will also be the added research in pasture clovers, pulses and oilseeds," he said.

The core partners of this alliance include: the Victorian Department of Natural Resources and Environment, University of Adelaide, the South Australian Research and Development Institute (SARDI), the University of Western Australia and the International Maize and Wheat Improvement Centre (CIMMYT) - Mexico. Between these core partners and the Commonwealth, cash and in-kind contributions will total in excess of \$150 million over seven years.

The official start date will be July 1, 2003, with head offices at the site of the Victorian Department of Natural Resources and the Environment based at LaTrobe University, Melbourne.

MPBCRC already has significant industry support, with collaborations expected with Germany, New Zealand, Syria and of course, Mexico.

"We are pleased with the extra support from Industry both nationally and internationally," Dr Whan said.

"The new MPBCRC will work with core partners and industry to produce new varieties of cereals and pastures which have benefits such as salinity tolerance, drought tolerance, disease resistance and improved quality."

Education and public relations will also be an important element of MPBCRC activities - targeting industry, the farming community, students and the general public.

More information

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MEDIA RELEASE: September 17, 2002

Experts visit Koppio for the low-down on GMOs

Koppio Agricultural Bureau has invited Drs Bryan Whan and Chris Preston to provide information to the local community on issues surrounding GMO crops including market acceptance, environmental concerns and possible agronomic benefits.

Recent media attention on GMOs has compelled the Koppio Agricultural Bureau to provide information about this technology to its members and the wider community.

Director of the Cooperative Research Centre for Molecular Plant Breeding, Dr Bryan Whan, is pleased to be part of this process, acknowledging the need to create forums in which people can ask questions and get accurate information.

"Our CRC is not only about creating new technologies for Australian farmers, we also want the farming community to know about these developments and give them information to make decisions based on fact," Dr Whan said.

Dr Bryan Whan is Director of the Cooperative Research Centre for Molecular Plant Breeding, based in Adelaide. He has worked in management and research in the agricultural industries for over 30 years. After completing his PhD at the University of Adelaide, he worked as a wheat breeder and later became the Director of the Queensland Wheat Research Institute. He has also worked as a private consultant, assisting a number of agricultural research institutions in Australia.

Dr Chris Preston is a Senior Lecturer in Weed Management at the University of Adelaide and a key researcher for the CRC for Australian Weed Management, also based in Adelaide. Chris is an expert in the field of herbicide resistance in weeds and has been involved in research relating to risk assessments of herbicide tolerant crops.

GMO Information Night - Technology, Environment and the Market

Where: Yallunda Flat Hall
When: September 25, 2002
Time: 7:30pm
All Welcome

More information

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MEDIA RELEASE: August 5, 2002

Publicly funded scientists believe SA research will be left behind under proposed moratorium

The proposed five-year moratorium on genetically modified field trials is at risk of stifling South Australia's scientific achievements in this area.

Dr Bryan Whan, Chief Executive of the Cooperative Research Centre for Molecular Plant Breeding has joined a chorus of SA's publicly funded scientists condemning the proposed Democrats' bill to halt field trials of GM crops.

"Our organisation is cooperative by nature, the collaborations between our five core partners and 11 supporting participants from over Australia and the world are imperative to our success," he said.

"The International Maize and Wheat Improvement Centre (CIMMYT) in Mexico is one of our core partners. They have indicated they hope the moratorium is not implemented due to its potential impact on collaboration with South Australian research organizations."

The CRCMPB has two local core partners, the University of Adelaide and the South Australian Research and Development Institute (SARDI).

There has been evidence that multi-million dollar research projects have by-passed New Zealand as a result of their current moratorium on GM trials, despite the findings of a Royal Commission which handed down a mandate to proceed with caution.

Currently in South Australia, publicly funded organisations make up the majority of research activity in the area of genetic modification of crops. Private companies undertake only a relatively small segment of this type of research in SA.

"The CRCMPB is not a multi-national corporation, we are a government-funded body which wants Australia to be at the forefront of molecular breeding technology," said Dr Whan.

The debate surrounding the proposed moratorium has been focused on herbicide resistant canola, however, Dr Whan believes there are greater opportunities for benefits of this technology in other species.

"Wheat and barley with disease resistance and drought tolerance are in development by our organisation using the expertise of South Australian institutions, The University of Adelaide and SARDI," he said.

"If the moratorium is successful, are those responsible willing to take the blame for the fact South Australia will be five years behind in the race to produce environmentally-friendly, profitable and marketable crop varieties for its farmers."

The competitive nature of the world economy has meant Australian farmers are pitched against heavily subsidised overseas growers. In order to remain competitive, Australia must be at the forefront of molecular breeding research to maintain their position.

Dr Whan believes South Australia's parliament need to be vigilant in balancing their information sources and mindful of the worldwide research which has found GM crops and food pose no new risks to human health or the environment, compared to conventional plant breeding.

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MEDIA RELEASE: April 10, 2002

A roll in the grass doesn't need to end in tears!

Sufferers from hay fever will benefit from a new ryegrass that reduces the sneezing and itching effects of existing grasses.

The Plant Biotechnology Centre (Agriculture Victoria, Department of Natural Resources and Environment) at La Trobe University has conducted the work as a core participant of the Cooperative Research Centre for Molecular Plant Breeding, based in Adelaide.

Perennial ryegrass is common in lawns and recreational areas as well as pasture for grazing and therefore is a major contributor to the symptoms of hay fever for many Australians. Hay fever and seasonal allergic asthma due to grass pollen afflict up to 20% of the population in cool temperate climates, with 1.8 million sufferers in Australia.

Led by Professor German Spangenberg, this world-first research has produced perennial ryegrass plants which have the gene causing hay fever 'switched off'.

"Perennial ryegrass is responsible for a major portion of grass pollen allergies worldwide. We have been able to alter the expression of the genes encoding the main ryegrass pollen allergen in perennial ryegrass towards the development of low-allergen ryegrass cultivars," Professor Spangenberg said.

Molecular Plant Breeding Director, Dr Bryan Whan, is excited about this work, as it is a good example of how MPB research can provide significant benefits for a large sector of the community.

"Being an organisation which usually aims to improve the quality and yield of pasture and grain crops, it's exciting to know our research will also assist in relieving an environment-induced condition that has significant discomfort for individuals and a broader socio-economic impact," he said.

The new grasses being developed by Professor Spangenberg's research team will also have benefits for the dairy industry, with the improvement of milk production as a result of enhanced herbage quality for grazing dairy cows.

Stringent trials of the plants under glasshouse and field conditions over the next five years will be undertaken before these new grass cultivars will become available.

More information

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