



AgResearch Chairman Sam Robinson (left) and Fonterra Chairman Sir Henry van der Heyden officially open Tokanui Dairy Research Farm.

## Farmers flock to Tokanui Dairy Research Farm open day

More than 1,000 farmers and dairy industry representatives turned out for the opening of AgResearch's Tokanui Dairy Research Farm this month – marking New Zealand's largest dairy research investment in 20 years.

Converted with an investment of \$6.5M, the 200-hectare Waikato-based research farm aims to help the dairy industry farm smarter and greener, through world-leading research and technology on all aspects of dairy farming. Driven to balance profit with environmental impact, the farm is aiming for a 20 per cent lower greenhouse gas footprint than an average dairy farm.

Opened by Fonterra Chairman Sir Henry van der Heyden, the open day

gave visitors the opportunity to view feature displays profiling the farm's science and research. Displays included research into high-value milk and dairy beef, improving dairy cow performance and making better environmental management decisions, alongside 35 exhibitors showcasing technologies for tomorrow's farm.

AgResearch Chairman Sam Robinson said the facility demonstrates AgResearch's commitment to developing science to benefit farmers,

and the dairy industry.

"We are pleased to be able to work with Fonterra and other dairy companies, and DairyNZ to ensure every possible advance in dairy output can be studied and commercialised."

**Watch the video**

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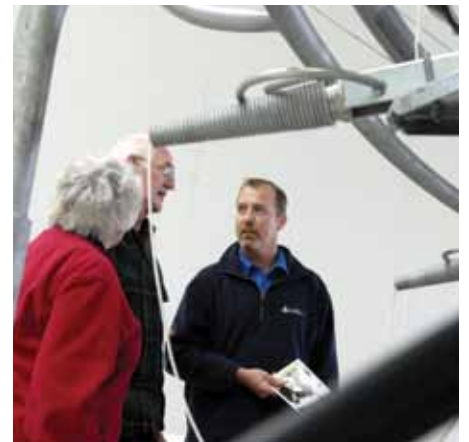


# Highlights from the Tokanui Dairy Research Farm Open Day

November 20







# Lending a hand to Latin America

Small farmers in South America are set to benefit from AgResearch's expertise in developing a healthier environment and obtaining better prices for their crops.

The challenge is to implement biological control to replace chemical pesticides which are causing health problems and environmental contamination for Andean villagers.

In a four-year project under NZAID's Latin America Programme, an AgResearch team led by Senior Scientist Dr Trevor Jackson is providing expertise in biological control and pest management for the benefit of poor communities in the Ecuadorean Andes of South America.

Working with local partner INIAP (a government-funded research institute) the AgResearch team is putting their scientific know-how into helping small producers and communities reduce their reliance on chemical pesticides by implementing biological controls to allow local producers to develop chemical free and organic markets for their crops – Andean potatoes, grains, beans and fruits.

"We're looking to reduce health risks by reducing toxic chemicals used in these communities, and also linking producers into a market chain that brings them better revenue," Trevor says.

"If small farmers can develop an identity for their produce, promoting natural and residue-free products, they can obtain premium prices".

In the first visit of the project, Trevor evaluated laboratory facilities at INIAP to be used for production and quality assessment of biocontrol materials, as well as identifying specific needs within the communities.

Meanwhile, Dr Chris Dake, from



AgResearch Senior Scientist Dr Trevor Jackson (left) and INIAP scientist Senor Cesar Asaquibay discussing "in-field" production of biocontrol agents for small farmers in the Andes, near the town of Riobamba at 3000 meters above sea level in the province of Chimborazo, Ecuador.

AgResearch's Agricultural Systems section, has been developing economic models to evaluate biological controls and supply chain management.

And the knowledge-sharing is a two-way street.

"The Ecuadoreans are looking at similar challenges to ours of producing crops with a minimum of chemical pesticides and fertilisers, so we can learn a lot by working with them in a different

environment where new approaches are being developed," Trevor says.

"It's very rewarding to work with the Ecuadorians who are very willing to be involved in the project, and working with communities where science is really going to make a difference to their development."

For more information contact [trevor.jackson@agresearch.co.nz](mailto:trevor.jackson@agresearch.co.nz)



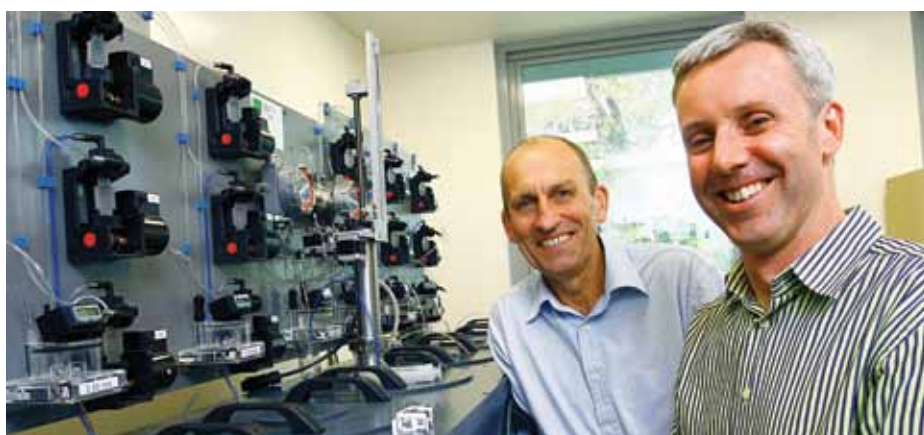
# United front to crack down on agricultural emissions

## Targeted solutions for New Zealand's agricultural emissions is top of the 'to do' list for the Government's Centre for Agricultural Greenhouse Gas Research.

Backed by \$5M of Government funding per annum for the next 10 years, the Centre will develop a national strategy for greenhouse gas (GHG) research and undertake research to reduce GHG emissions from agriculture, improve on-farm productivity, and grow capability in this area of science.

AgResearch has been selected as the host organisation for the Centre and the eight other partners in the Centre are: DairyNZ, Landcare Research, Lincoln University, Massey University, National Institute of Water and Atmospheric Research, Pastoral Greenhouse Gas Research Consortium, Plant and Food Research and Scion.

The Centre's Acting Research Director, AgResearch Climate Land & Environment Section Manager Dr Harry Clark, says there is a growing realisation around the world of the difficulties associated with supplying food for the projected



Centre for Agricultural Greenhouse Gas Research Acting Research Director Dr Harry Clark, (left) and the Centre's Project Sponsor Leader and AgResearch General Manager AgResearch Agriculture & Environment Peter Benfell, with AgResearch's 'artificial rumen' machine, which simulates the action of a cow's rumen, and measures gas production and gas composition, to enable research on greenhouse gas mitigation strategies.

2050 population of nine billion people while meeting the stringent GHG reduction targets. "Through the Centre, New Zealand can play a lead role in international initiatives aimed at increasing resources devoted to meeting this challenge."

The Centre should be up and running in March 2010.

For more information contact [harry.clark@agresearch.co.nz](mailto:harry.clark@agresearch.co.nz)

## Dairy farmers 'wish-list' technology arrives

### New Zealand dairy farmers will soon be able to choose the sex of calves, thanks to a reproductive technology available here for the first time.

An agreement between AgResearch, the Waikato Innovation Park and US-based Sexing Technologies means artificial breeding and embryo companies can access technology that offers farmers fresh sex-sorted semen and embryos.

Available in the US since 2003, a sexed semen facility has been eagerly anticipated by the dairy industry here. AgResearch's Reproductive Technologies

Section Manager Dr Vish Vishwanath says it will give dairy farmers the opportunity to accelerate genetic progress in their herds, and grow export opportunities.

Sexing Technologies will set up a laboratory at AgResearch's Ruakura campus for the 2009 breeding season, with establishment and professional services support from the Waikato

Innovation Park. If farmers are receptive to the new technology, Sexing Technologies will look to establish the laboratory permanently.

For more information contact [vishwanath@agresearch.co.nz](mailto:vishwanath@agresearch.co.nz)

**Watch the video**  
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# Better handling, better beef

Watch the video

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The numbers are in, and it seems New Zealand's headed on the right track with welfare and handling to transform commodity beef into value-added chilled cuts.

To get a good picture of the current state of play in New Zealand bull beef meat quality, an AgResearch team, led by Dr Mustafa Farouk, surveyed the pH status of more than 2000 cattle. Meat pH is a good indicator of meat quality, as it influences microbial shelf life, tenderness, colour and water-holding properties.

It's directly correlated to the level of muscle energy (glycogen) at the time of slaughter. If the glycogen levels in the muscles are low, meat pH will be elevated. Increased pH values in beef are often related to poor nutritional status of the animals or inferior pre-slaughter handling, resulting in stress.

The survey is part of a larger Foundation for Research, Science and Technology programme, aiming to maximise the value of New Zealand beef through improving the performance, quality and consistency of bull beef.

Bull beef is categorised into three groups - normal, intermediate and high pH. Normal sits below the cut-off point of pH 5.8 for acceptable beef quality, intermediate pH beef (5.8-6.2) may age normally and reach acceptable levels of tenderness but can also be tough and inconsistent in quality, and high pH beef (pH above 6.2), while tender, is darker in colour, and can have a shorter shelf life.

The recent survey showed 49 percent of bull beef had a normal pH, a significant improvement from the last survey in 1994, where only 29 percent was in the normal pH range.

The average pH was also improved, 6.35 in 1994, now 5.99.

So it seems welfare regulations coupled with industry understanding of the association between animal welfare and meat quality has had a significant impact on improving the quality of New Zealand bull beef over the last 15 years.

Mustafa and his team will now delve even deeper to determine other issues affecting pH, to offer further welfare and handling recommendations to industry, and see New Zealand beef command top dollar in export markets.

For more information contact [mustafa.farouk@agresearch.co.nz](mailto:mustafa.farouk@agresearch.co.nz)



AgResearch Scientist Dr Mustafa Farouk tests the pH status of beef - he's recently surveyed the pH status of more than 2000 cattle to see how the quality of New Zealand bull beef stacks up - with encouraging results.

# Big science, big results

Watch the video

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Breaking the mould and cracking evolutionary mysteries are now firmly on the AgResearch agenda, thanks to Marsden Fund grants.

AgResearch Senior Scientists Dr Christine Voisey and Dr Christina Moon are two of this year's successful applicants for the prestigious grants, part of The Marsden Fund Council's largest investment ever of \$66 million, supporting 111 world-class New Zealand research projects. The scientists' successful bids will see AgResearch receive one of its highest amounts from the Fund in any one year, a great achievement in the face of tough scientific competition for funding.

Christine's grant of \$825,000 over three years will allow her and her collaborators to build on a recent ground-breaking AgResearch discovery on endophyte fungi and their effects on ryegrass growth. Endophyte fungi are essential to the health of ryegrass, relying on the plant for nutrients, while protecting it from insects.

Last year, AgResearch Scientist Mike Christensen, Christine and team members broke the long-held belief that endophytes only grow at the tips of the filaments (threads of fungi).

Her Marsden Project will delve deeper into this high-profile discovery, hoping to crack the mysteries around mechanisms at play in the transmission of endophytes through host grass seed, and perhaps regulate endophyte growth in plants.

Meanwhile, Christina's research will analyse experimental bacterial populations to understand how they evolve in the presence and absence of air (oxygen). With the help of the Marsden grant of \$760,000 over three years she hopes to tease apart the fundamental processes of evolution - mutation and adaptation - and gain



AgResearch Scientist Dr Rex Munday has received a Kudos Lifetime Achievement Award for his 30-year contribution to agricultural research.

a greater understanding of how these processes work. A detailed understanding of the evolutionary forces that shape organisms in these environments could have far reaching-implications, from understanding the diversity of microbes in the anaerobic rumen, to the development of industrially important microorganisms and understanding human aging.

Three AgResearch scientists have been awarded Kudos Regional Science Awards. Dr Rex Munday received a Lifetime Achievement Award in recognition of his 30-year contribution to agricultural research, including his leading work on the development of the Time Capsule™

controlled release device for protection against facial eczema.

Dr Stewart Ledgard won an Agricultural Science Award for his research in pasture system nitrogen cycling, balancing production and the environment, and his input into developing OVERSEER™ software for farm nutrient management.

And as an emerging scientist in the field of reproduction, specifically epigenetics, Dr Christine Couldrey received an NZBIO Award. Her work has investigated epigenetic reprogramming during cattle cloning, which also has the potential to lead to a greater understanding of growth, development, and disease.



# Second Annual Research Colloquium

## The Centre for Reproduction and Genomics

The CRG, a collaboration between the University of Otago and AgResearch invites you to their second Annual Scientific Research Colloquium.

The Colloquium will showcase some of the exciting research being undertaken at or in association with the Centre.

### INVITED SPEAKERS INCLUDE:

**Professor Sir Peter Gluckman** (Auckland)

Maternal and transgenerational effects –  
the role of epigenetics and developmental  
plasticity in phenotypic development

**Professor Marilyn Renfree** (Melbourne)

Marsupials: Placental mammals?

**Professor David Hulme** (Roslin)

Transcriptional networks and macrophage biology

### NEW FOR 2010

#### The Centre for Reproduction and Genomics Poster Competition

Students and postdoctoral researchers working at or in association with the Centre are invited to take part in our first Annual Poster Competition. Two cash prizes of \$250 will be awarded to the best student and postdoctoral poster.

The Second Annual Scientific Research Colloquium for the Centre of Reproduction and Genomics.  
The Cullen Room, AgResearch Science Campus, Puddle Alley, Invermay  
Thursday 23 February, 2010

Please register at [www.crg.org.nz/colloquium](http://www.crg.org.nz/colloquium) by 8 February, 2010

Registration is free

General enquires can be directed to:

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