

## Study Turns Objection to Food Miles

AERU reports through 2006 and 2007 have been instrumental in defusing alarm over "food miles". The food miles concept, which takes the distance food travels as a measure of its impact on the environment, has the potential to threaten New Zealand exports.

But an AERU analysis has shown that when the energy and emissions from food production are included with transport, New Zealand dairy products, lamb and apples in the UK market have less effect on the environment than competing British products.

The July 2006 study was widely quoted by the New Zealand government and has provided a reference point for New Zealand producers and policy makers. It has been followed by another AERU study which focused on the energy and emissions used in producing dairy products on farms in New Zealand and Britain.

The 2006 study also earned the prestigious NZIER Economist of the Year award for Professor Caroline Saunders, who co-authored the report with Andrew Barber of The Agribusiness Group Ltd. The award's citation says the research has withstood close scrutiny from a wide range of academic and Government bodies and has been widely cited.

The persistence of the food miles debate highlights a much broader set of issues around New Zealand's primary production industries, requiring further research. Energy is just one of the environmental and social externalities that will have to be addressed to satisfy international trade agreements and consumer demand.



## Labour Market Policies Reviewed

The AERU has been involved in two exciting projects researching aspects of New Zealand's labour market policies. The first project was sponsored by the OECD in Paris, and required the AERU to write the New Zealand country study for an international project on integrating employment, skills and economic development policies. The IESSED report was presented by the OECD to the New Zealand Government in October and has been posted on the website of the Department of Labour.

The second project is a five-year research programme on education employment linkages for young New Zealanders, funded by FRST. Researchers from the AERU, the New Zealand Council for Educational Research and He Pārakereke at Victoria University are collaborating in this programme.

The research began on 1 July with the launch of a dedicated website, [www.eel.org.nz](http://www.eel.org.nz). The research team is currently completing a review of the international literature on education employment linkages by young people before starting the New Zealand research in 2008.

## AERU and the EU Research Centre

The AERU is the Lincoln University base for the EU Centre for Research on Europe, with the unit's Director serving as a board member. The Centre provides funding for research, postgraduates, teacher fellowships and travel, and also runs courses for post-grads.

In 2005 Anita Wreford had an internship at the EU Parliament in Brussels and in 2006-2007 the AERU hosted Diogo Santiago from the EU Commission. He spent six months in AERU analysing the trade impacts of EU policies. Earlier this year he presented results of his research, with Caroline Saunders, at the Agricultural Economics Society in Reading, UK.

## Agribusiness, Research and Education Network

The AREN is a collaboration between Lincoln University, AgResearch Ltd, Massey University and the University of Waikato, with the aim of building a stronger foundation for agribusiness research and education in New Zealand. It is preparing four sector case studies – for venison, kiwifruit, sheep meat and dairy industries.

These showed that, in the case of kiwifruit, strong leadership at key times in the industry's development; a strong marketing focus; and the transferring of pricing signals from the consumer to the orchardist; have been important factors in the industry's success.

## Key Contacts

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# 45<sup>th</sup> ANNIVERSARY REPORT

AGRIBUSINESS & ECONOMICS RESEARCH UNIT

December 2007

## A Message from the Director

Welcome to this special publication to mark the 45<sup>th</sup> Anniversary of the Agribusiness and Economics Research Unit.

The AERU was formed to provide research services for a broad range of client organisations on issues relating to the economy, social development and the environment. Over the years it has grown in size and in stature, and today the AERU's full-time team produces work which is both influential and internationally recognised.

The success of the AERU is due in part to the access we have to expertise throughout the University. We have particularly close links with the Commerce Division and the Environment, Society and Design Division, and we also provide a coordinating body for the University's economic, social, and environmental research.

Our research is conducted on behalf of a wide range of clients. These include Government Departments, both within New

Zealand and from other countries, international agencies, New Zealand companies and non-government organisations, individuals and farmers. Our studies are presented either through private client reports or the AERU publication system, as well as in academic journals and books.

Many of our studies relate to major issues of the day – such as sustainable agriculture and international trade policy – and provide insight for debate and policy development. Others seek to inform industry and policy groups as they develop their business strategies and a sustainable competitive advantage. In all cases, our work explores topics that are central to New Zealand's long term interests.

We are extremely proud to provide this research role for our clients, and we hope you enjoy reading about some of the highlights of our recent work.

Professor Caroline Saunders  
Director

## AERU Provides Compelling Case For WTO

An AERU report for the International Trade Centre of the World Trade Organisation has helped to counter efforts to restrict the air freighting of fresh fruit and vegetables into the UK and Europe. In the UK a leading certification group has contemplated removing organic status from air freighted produce, and supermarkets have introduced an airplane symbol on food which has been transported to market by air.

However the AERU's analysis of economic and environmental impacts has provided a much better understanding of the issues around air miles – and subsequently there has been no change to the way organic certification is applied.

New Zealand has little exposure to this debate, but countries such as Kenya and Tanzania stand to lose hundreds of thousands of jobs if trade barriers are imposed. The AERU study found that the threats to fresh produce exporters ignore the shortcomings of food/air miles as a measure of environmental impact and would deliver serious economic harm if carried out.

It also noted that total emissions in these food-producing countries are much lower than in the UK (in the case of Africa around 40 times lower). Air freighted flowers and fresh fruit and vegetables were found to involve only 0.1 per cent of total UK emissions.

The report considered several studies which found that heated greenhouse production systems, home cooking methods, and consumer transport choices can be as significant contributors to a product's CO<sub>2</sub> emissions. One study found a 10km trip in a car to buy one kilogram of fresh produce will generate more CO<sub>2</sub> emissions than the air freighting of one kilogram from Kenya.

Thus when the whole process of getting a product to a market is considered, the emissions associated with air transport tend to be low - and a very small part of emissions for total food consumption.

Mission statement: *To undertake research that will assist decision-making and improved outcomes in economics, business, resource, environment and social issues.*

## Celebrating Excellence in Economic, Environmental and Social Research



AERU Director, Professor Caroline Saunders, and Mary Woods, one of the unit's founding researchers.



Professor Paul Dalziel, Director of AERU's Regional Development Programme, and Tim Hughes, Principal Software Engineer, Airways New Zealand.



Darel Hall, Project Manager, ETITO; Eva Zellman, Research Associate, AERU; and Peter Barrowclough, PGG Wrightson.



Rising stars... Research Assistants (from left) Louise Fergusson, Ross Bowmar and Christopher Ensor, with AERU Personal Assistant, Teresa Cunningham.

## Antarctic Projects Reveal The Value Of The Ice

Antarctic research is worth \$155million a year to Canterbury and supports more than 1200 jobs, according to an AERU study released earlier this year.

The report commissioned by the Canterbury Development Corporation (CDC) is the first to calculate the direct and indirect benefits of Antarctic-related activities in the region.

It found that \$88million is spent directly with 160 firms providing Antarctic support services, including construction and utilities, IT, communications and project management.

However the total benefit increases to \$155million when the wider benefits of this spending are taken into account.

The study's findings have been used by the CDC to develop a plan for promoting Antarctic services in Christchurch, and to discourage relocation of Antarctic support business to Tasmania. CDC believes it should be possible to double the current economic benefit in 10 years. The plan recommends setting up a dedicated Antarctic support office, supported by local and central

government, hosting regular Antarctic events for the public, and expanding Antarctic tourism.

Christchurch is one of five gateway cities to the Antarctic and is used by American, Italian and New Zealand research programmes.

The AERU Antarctic study was funded by the Ministry of Economic Development.



## ARGOS: Understanding Farming Systems in NZ

One of the current key projects for AERU is the Agricultural Research Group on Sustainability (ARGOS), a six year programme funded by the Foundation for Research Science and Technology (FRST). This unincorporated joint venture between Lincoln University, University of Otago and the AgriBusiness Group Ltd is a long term project comparing farming systems for lowland sheep/beef, high country sheep farming, kiwifruit and dairying. The study includes Ngai Tahu properties covering a range of farming approaches.

Now in its fourth year, the project covers conventional farming, integrated management systems and organics. It is primarily concerned with monitoring a range of sustainability indicators – economic, social and environmental. The overall aim is to develop a better understanding of the consequences of different practices,

to encourage innovation and practices which are more sustainable.

The project has a team for each of these sustainability measures. AERU leads the economic research. Glen Greer is developing a financial analysis of all sectors included in the project, and Caroline Saunders is dealing mainly with market access and scoping for policy issues. John Fairweather and Lesley Hunt are part of the social objective team, working with researchers from Otago University. To date they have documented farmers' thinking about how to farm, how they see their farm system, and what constraints to farming they face.

ARGOS has long term funding for six years from the Foundation for Research, Science and Technology.

## Future of Biopharming Unclear

The production of pharmaceutical compounds from genetically modified crops and livestock - known as biopharming - is touted by some as an emerging success story in both agriculture and the pharmaceutical industry. Its advocates say biopharming has the potential to dramatically cut the cost of manufacturing compounds used in medicine, food manufacturing and dietary supplements.

A preliminary economic study by the AERU says that may be the case, but there is still scant information about the final cost of producing biopharmaceuticals, the demand from consumers, and possible impacts on New Zealand's reputation.

The study concludes that until more is known about the value of biopharmaceuticals, including technical issues around their production, suggestions of the benefits of having a biopharming sector in New Zealand should be treated with caution.

It says any forecast of the potential economic benefits of biopharming is impossible to verify at the moment. Several essential dimensions are still unknown, such as the total costs, the impacts of competing technologies, the actual market demand, and the impact on our existing primary sector industries and export markets.



## Study Counts Return From Biotechnologies

An evaluation of the commercial benefits of biotechnologies has found that the application of four biotechnologies has added nearly \$400million to New Zealand's annual economy through primary sector earnings.

The AERU study, commissioned by the Ministry of Research, Science and Technology, has provided the first hard evidence of how biotech is impacting on agriculture, horticulture and forestry. It looked at the use of clonal propagation, marker-assisted breeding, enzyme technology, and biocontrol agents.

Older technologies that have been used for 20 years, such as clonal propagation of plants, have the most impacts. Newer technologies appear to have much promise, but have not developed enough to contribute significantly to the economy.

The largest impacts were found in the largest sectors. The dairy sector, for example, had the largest impact from biotech on a dollar basis. Biotech was used extensively in horticulture,

but the smaller size of the industry meant that impacts were also smaller.

Meanwhile, other AERU work is continuing to examine public attitudes to biotechnologies. "The fate of biotechnology: why do some of the public reject novel scientific technologies?" is based on focus groups and national surveys to explore the range of attitudes and behaviours surrounding biotechnologies and nanotechnologies, and why these technologies have become controversial.

The AERU has also undertaken modeling work using the Lincoln Trade and Environment Model (LTEM) assessing the risks and benefits of adopting GM technologies in New Zealand and overseas. This found that if the GM technology had benefits to consumers then adoption could be profitable, but this was not the case for technologies which just increased output or lowered costs.

## US Biofuels Sector Affecting Producers Around The World

The rapid expansion of the United States biofuels sector is having a major impact on the relative production costs of food producers around the world.

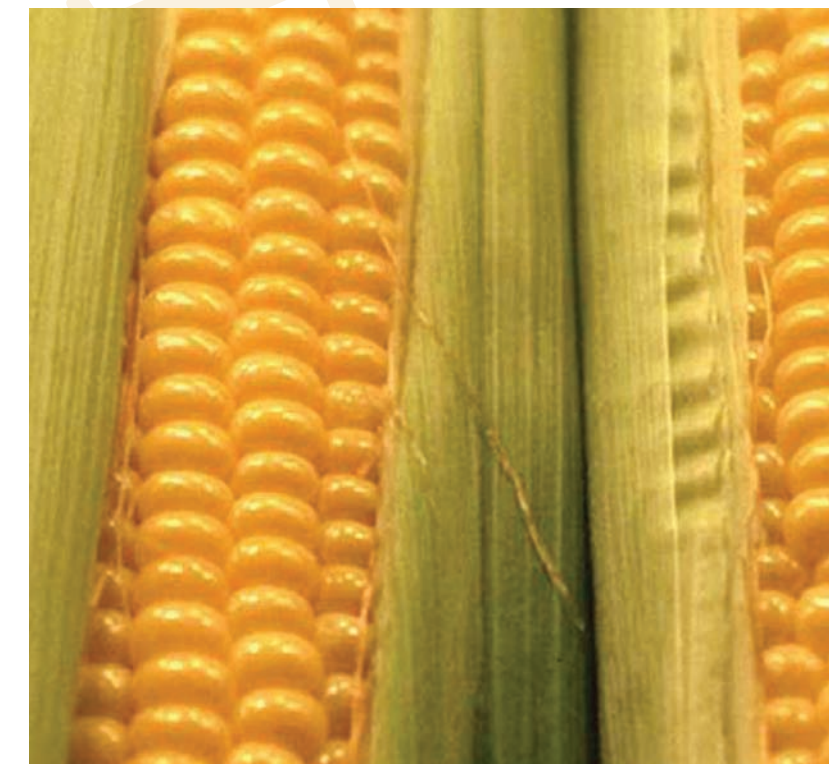
A recent AERU study has investigated this trend and forecast that the price of corn (the preferred crop for ethanol production in the US) will continue to increase, stimulating further corn production until a new equilibrium is reached between supply and demand.

The study uses the Lincoln Trade and Environment Model (LTEM), a partial equilibrium model for 18 countries and 18 commodities, and was conducted in collaboration with the Washington-based World Resources Institute and Landcare Research.

It found that the most dramatic impact is likely to be felt by United States exporters, who will export much less as domestic demand for bio-ethanol uses up the corn crop. Other countries are likely to fill the gap and become significant corn exporters.

The report concludes that while the diversion of corn for biofuels will certainly increase livestock production and food prices, the total price impact is likely to be fairly small.

The authors of the study are continuing to explore the impact of the US biofuels sector on trade regulations with Brazil, which is a major livestock producer and becoming an important corn producer. A second area of continuing research is in the area of environmental impact in New Zealand.



One possible scenario is that a decrease in greenhouse gas emissions in the United States will be offset by higher emissions in New Zealand, as livestock production shifts overseas.

## Consumer Survey Methods Assessed

Most economic consumer research assesses the choices consumers make when faced with different types of products. But less is known about the strategies individuals use when making these decisions. A recent AERU project has used a computerized choice modeling survey coupled with face-to-face interview questions to assess the decision processes used for choosing between different types of potatoes.

The study found that the actual decision processes are not always consistent with standard economic theory, because consumers do not try to use all the information available. Instead, they look at a few important pieces of information and ignore others. And sometimes people even ignore prices!

This finding is important because price estimates tend to assume that consumers consider all the information. This is much like assuming that consumers read the entire list of ingredients for every package of food they buy. By looking at which ingredients consumers do pay attention to, the AERU research team is creating more accurate price estimates.

In particular, the study found that the respondents in the potato choice survey did not make their decisions with the full set of information available. About half chose to make their decision based on only half of the information on offer.