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## **Quality research**

### **Meat researchers at AgResearch**

By Jackie Bedford

A researcher with strong ties to New Zealand's venison industry has been appointed to a key meat research group.

Dr Eva Wiklund took up a position as senior meat scientist at MIRINZ in January. She was in New Zealand for two year-long stints in 1999/2000 and 2001/2002, working with AgResearch on venison research.

"Venison is my passion," she says. She's pleased that there will be opportunities to work on deer meat with AgResearch.

Wiklund has done years of work on reindeer venison in her home country Sweden, and in Alaska. Around 250,000 reindeer are grazed in forests and mountains in Sweden. They are run free-range but are privately owned she explains. "Even though the farming system is very different, the slaughtering and processing side of things is very similar to New Zealand. There are special facilities and the same rules and regulations apply as for other commercial meats; they're not treated as game. The venison research focus is also similar to here in New Zealand: how to use carcasses and what products can be made."

The group Wiklund has joined makes up about half of AgResearch's Food, Metabolism and Microbiology section, headed by Dr Warren McNab. The Hamilton-based group is located on the Ruakura campus in the MIRINZ buildings. AgResearch merged with MIRINZ (previously the Meat Industry Research Institute of New Zealand) in 1999.

There are 28 meat quality and safety research staff based at Ruakura. They do about \$4.5 million worth of research every year under contracts with the government science funding agency FoRST, Meat and Wool New Zealand, New Zealand Food Safety Authority, DEEResearch, Meat and Livestock Australia, Technology New Zealand and individual meat processing companies.

"In the past they've done wonderful work for the industry," says Dave Smith of Duncan and Co who's also Chair of the Venison Processors' Technical Committee. "If you go back to the early days, they did all that research into tenderness and processing. They helped set up a system that enabled us to guarantee tenderness of products and the quality systems for Cervena. I'm a supporter."

Dr Mike North, Deputy Section Manager and head of the Ruakura group says there's been a clear shift to working more closely with the pastoral sector since Andy West became chief executive of AgResearch two years ago. For example, in 2005 AgResearch MIRINZ started hosting an annual spring workshop to present recent findings and get feedback. "Anyone in the industry can come", explains North. "We mainly get technical people from the processing plants, and people from associated industries such as refrigeration and packaging. It's a chance for them to stay in touch with what's happening and to network."

Sometimes the researchers undertake work “even if clients are not screaming out with problems,” says North.

“AgResearch MIRINZ and its predecessors have always strived to improve New Zealand meats. For example, MIRINZ research played a large part in the development of vacuum-packed chilled lamb that lasts long enough to be shipped to distant markets such as the UK and Europe. Chilled New Zealand lamb is now widely regarded as the best in the world.

“However, to keep that reputation, you can’t rest on your laurels. You have to continuously strive for the best quality, shelf life and products. That’s the R & D capability we provide.”

The group’s facilities include meat science, biochemistry, sensory, molecular biology and microbiology labs, some of which are designed to work safely with harmful food-borne organisms. They also have a food manufacturing unit for product development work and an on-site beef and lamb abattoir run as a commercial unit. They cannot slaughter deer on-site, so source venison for their research from a local meat plant.

There have been two main areas of venison research: new appointee Wiklund will oversee continuing work on venison quality, and Dr Dorota Broda is leading work on the occurrence of clostridial bacteria in meat, which cause vacuum packs to blow.

“The problem with these bacteria is that they form spores that can germinate and grow at low temperatures and this can cause spoilage problems even in the most hygienic processing situation,” says Mike North. Earlier work has enabled the researchers to advise the industry on best practice guidelines. The research has shown that the strains of bacteria causing the problem are likely to be carried in to a meat plant on deer hides.

“If this is the case then there’s no single critical control point,” says North. “It’s about taking a broad approach across many levels to get below a critical number of spores. That includes practices to eliminate the presence of spores on the pelt in the first place, not transferring them to meat as the hide is removed, then cooling the meat fast and holding it at as low a temperature as possible (without freezing the meat) to restrict the spores’ ability to germinate and grow.”

Other recent work has focused on benchmarking venison quality. “The main measures of venison quality are tenderness, colour stability, drip loss (water-holding capacity) and flavour,” says Wiklund. “Ongoing work will keep the industry in touch with state-of-the-art knowledge about the underlying mechanisms behind these quality attributes, and how to balance and optimise them.

“In terms of quality, venison is similar to most other red meats, but it also has unique aspects that make it extra interesting. For example, it’s very tender and quite lean and the fatty acid composition can be different – and can be affected by feed.”

Having just started at AgResearch MIRINZ, she is now trying to get in contact with as many people as possible in the local venison industry “to see what issues they’re interested in now”.

*Dr Eva Wiklund, AgResearch MIRINZ, ph (07) 838 5152*

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