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## Presidential Address 2005

### Animal production - the bridge between animals on the farm and the consumer

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The development of man from caveman to the sophisticated being that he is today has been dependent on us using the animals and plants surrounding us as a source of food, warmth and shelter. As we have developed so we have mastered the management of these resources to make life more comfortable. In managing these resources we have developed ways and means of manipulating animals and plants in various ways to produce special products. Regrettably we have often lacked the foresight to look to the future and plundered many of these resources for immediate gain. Nevertheless in managing these resources we have developed technologies to bridge the gap between the raw material harvested from the animal and plant and the end product. Loosely this has been called primary production – taking a renewable primary resource such as an animal or plant product and converting it into a form to meet a human need. In the case of our Society our interests are focussed on animal production – the growth of the animal and the development of technologies to convert animal products into an end-product for the betterment of man.

Despite the importance of animal production in meeting our requirements of food and

aspects of our clothing, current political thinking seems to consider animal production of little importance and a low priority in the overall scheme of wealth generation needed to support a vibrant growing economy. It is difficult to see an economy continuing to grow without adequate nutritious food.

In contradiction of the current political view of animal production I plan to take you through steps in a day in the life of John and Jane Citizen. I will briefly highlight how we are surrounded with products derived from animals that enhance activities in our daily life, perhaps more than we realise. Animal production is not insignificant; it is the foundation of our daily life.

After a good night's sleep John and Jane Citizen swing their feet out of bed, walking on a mat or carpet to get washed and dressed. This involves a series of products related to the humble sheep with New Zealand being the largest exporter in the world of wool suitable for carpet production. Over time man has developed a vast array of animal production technologies to use wool to make his houses more comfortable to live in and his clothes more comfortable to wear. Firstly he domesticated the sheep so he could manage and



later farm it. This was followed by the development of different types of sheep. These were later stabilised as different breeds each suited to survive in different environments to produce different types of wool fibre suited for a range of different end-uses. Examples of this where New Zealand has contributed internationally involve the development of the wool producing Corriedale, Drysdale, Perendale and Coopworth breeds. Having generated the sheep there was the need to develop appropriate animal health, feeding and harvesting technologies to grow fibre with the appropriate characteristics to enable it to be processed into a quality product for delivery to the consumer. A series of basic bridges overarched with new bridges in the high technology area covering sophisticated sheep breeding technologies and measurement of key fibre attributes important in processing.

To begin their day John and Jane will sit down to a breakfast which, as with most New Zealanders, is likely to consist of a plate of cereal and milk, possibly with yogurt, and a piece of toast spread with butter. The common threads here are dairy products derived from the humble cow. The range of technologies lying behind the delivery of these basic staple dietary products to us as consumers is immense.

As with the development of farmed sheep there was a phase of domestication and development of genotypes and breeds of cows differing in the attributes of the products they produce. Milk production has a particular set of unique technologies in that it is dependent on the seasonally based activities of mating, pregnancy and the resulting lactation. No calf born no milk! As such a major emphasis in developing technologies related to milk production has been focussed on aspects of reproduction before focussing on aspects of the physiology of milk secretion and milk harvesting. Animals of the highest genetic merit must be joined, conception must result from one joining occurring as soon after the previous calving as possible with adequate winter nutrition of the pregnant cow such that at calving she has sufficient body condition to sustain a productive lactation. An alternative approach currently being investigated is to lengthen the period of lactation beyond one year to increase the efficiency of the overall system by reducing the costs and problems associated with progressive pregnancies. Then the milk has to be harvested by either once or twice daily milking. This in itself involves another suite of associated technologies. It is then required to be transported to the dairy factory, with appropriate quality control measures and a large number of highly sophisticated

technologies come into play to convert milk to a wide range of specialised products and nutraceuticals. A further example of a complex set of interlinking high technology bridges.

As with the wool industry there still remains the delivery of a quality product to consumers around the world. In contrast to wool products many milk based products are perishable requiring a different suite of technologies to enable milk production to be economically viable at locations distant from the consumer.

If it is the weekend, with outdoor activities planned, breakfast may not be complete without a plate of eggs and bacon or sausages. Production based on poultry and pigs. Again man has domesticated a wild animal and through controlled breeding and management developed two further types of animal that are efficient in converting plant material into tasty nutritious animal protein for human consumption. As with wool and milk production, technologies associated with quality control have been developed to deliver a quality product to the consumer.

During the morning John and Jane may head off for some “retail therapy” wearing fashion woollen clothing and sitting on sheep skin seat covers in their car. After shopping there may be a routine visit to the doctor. While their problem on the day may be insignificant the range of “high-tech” technologies in the medical area developed from animal products in recent years are increasing at a fast rate. It is this exponential increase in animal based pharmaceuticals which is likely to be a key growth area for animal production in the future. From the basic skin care products derived initially from the lanolin in wool grease we now have synthetic steroid hormones, surgical skin dressings, hair removal products synthesised from wool and skin extracts, to artificial insulin. With advances in technologies associated with genetic manipulation there is the opportunity to manage several inherited human disease conditions through the use of stem cell technologies. The future, which is likely to involve products derived from an increasing range of farmed animals, is exciting and beyond our current dreams.

After a light lunch which would likely include cheese and butter our friends may then engage in some outdoor pursuits, a hallmark of the quality of life in New Zealand. Animal production issues are increasingly becoming involved in the environmental sustainability of our wonderful country. We need to maintain our clean green image with streams and lakes that are free of pollutants and able to sustain stocks of fresh water fish. Similarly, when it is in our power, we need to maintain clean air free of pollutants and without the

intrusion of harmful radiation. Increases in such radiation as initiate sunburn and skin cancer is known to be related to changes in the protective capacity of the atmospheric layers surrounding the earth. Contaminants associated with some technologies are known to impact on these layers. At the same time the production of greenhouse gases from our pastoral farming systems have been linked to global warming. Further studies are essential to better understand the complex interactions between carbon dioxide, methane and nitrous oxides in pastoral systems to enable New Zealand farmers to develop sustainable farming systems with respect to the Kyoto protocol of which New Zealand is a signatory. Initially much of this work will focus on issues associated with ruminant nutrition.

Following a relaxing afternoon our couple "stop by" a restaurant. Beef, lamb, venison, pork and poultry, usually accompanied by vegetables and fruit, are all on the menu. Animal production again plays a key role in delivering a quality product with a push for it to be traceable to its source guaranteeing tenderness and freedom from disease – the "gate to plate" catch-phrase.

The couple later return home and retire to bed to sleep soundly on their woollen underlay under comfortable woollen blankets or wool filled duvets.

This brief run through of activities in a day in the life of an imaginary couple serves to highlight the importance of animal production in the daily life of an average New Zealander. This importance is highlighted by the estimate that approximately 40% of the working population are employed in jobs directly or indirectly related to aspects of animal production. Food generated by animals feeds almost all of our population, with the exception of vegetarians and vegans, while products derived from animals clothe all of us at some stage of our life. Despite our dependence on animal production politicians still deem animal production of limited importance for survival and well being in our daily life.

Just as animals are a vital source of our food so the most important criteria affecting efficient animal production is a large number of technologies associated with animal feeding to integrate seasonal variations in feed quantity and quality with seasonal variations in nutrient demands by the animal. Failure to balance these requirements results in a decline in the quantity and quality of the resulting animal products. In short a reduction in the efficiency of production with serious consequences to both the producer and the consumer.

Some urban sections of the New Zealand public are placing increased emphasis on aspects of animal welfare as they seek to make the life of animals as comfortable as possible. This largely focuses on the five F's: freedom from hunger; freedom from discomfort; freedom from pain, injury and disease; freedom to express normal behaviour and freedom from fear and distress. The urban section of the New Zealand public is also demanding increased control on environmental issues. Who carries the cost? Sustainable farming practices must be based on scientific reasoning and effective on-farm procedures.

While government philosophy is becoming increasingly focussed on creating new wealth generating products from animal products, rather than encouraging incremental gains from our existing animal base, efficiency of production is still essential for all animal producers to maintain profitability. New products still require an efficient basic production system. We do not know all the answers and there is scope to improve our efficiency through research, as an increasing number of non-tariff barriers are thrown up by other countries producing competing primary products.

In the mid 1990s animal production was deemed by many to be a sunset industry. Instead the reverse has occurred and agriculture is currently the one sector of the New Zealand economy that continues to outperform all others. This is in no small part due to the expertise of our animal production scientists who over many years have developed innovative technologies that have enabled our primary producers to maintain efficient viable production units. The development of new technologies in the future will continue to underpin our agriculture enabling us to continue to grow food and fibre for a significant portion of the world's population. In this role animal production is the bridge that links the animal to the end-product. It is a marriage of science and innovative technology in which neither can stand alone. Our Society is an important keystone in this bridge.

If this keystone crumbles the bridge becomes unstable, if the keystone is removed the bridge collapses. Farming leaders are currently actively campaigning that the crumbling keystone be strengthened while the bridge is still repairable. Scientifically based research is essential now and in the future to support increased productivity from sustainable farm practices. The New Zealand Society of Animal Production is a keystone to New Zealand's future prosperity.