

MCMEEKAN MEMORIAL AWARD 1999

Geoffrey B. Nicoll

B.Agr.Sc., M.Agr.Sc.(Hons I) (Massey), Ph.D (National University of Ireland)

Geoffrey Blair Nicoll completed his undergraduate and masterate education in Agricultural Science at Massey University in 1975. He worked as a junior lecturer, farm advisor and then research scientist before travelling to Ireland with the assistance of a National Research Advisory Council Post-Graduate Research fellowship to undertake his Ph.D at the National University of Ireland. Geoff returned to New Zealand after completing his Ph.D in 1981 and worked as a scientist at Whatawhata Hill Country Research Station, and then at Ruakura Agricultural Centre under secondment as a scientist in animal breeding to the Lands and Survey Department. In 1987, Geoff took up his current position as head of the Genetics and Nutrition Unit for Landcorp Farming Ltd, a subsidiary of Land Corporation Ltd established as a State Owned Enterprise in 1987 from the Lands and Survey Department.

As Head of the Genetics and Nutrition Unit, Geoff has been responsible for the scientific and technical integrity of Landcorp's sire-breeding programmes for their considerable animal resource, which currently include some 554,000 breeding ewes, 60,600 beef breeding cows, 23,200 breeding hinds and 2,200 breeding does. The Award relates specifically to Geoff's contribution to agriculture during the past five years. During this time Geoff has led Landcorp's scientific and technical involvement in two major initiatives, namely the InnerVision CT scanning venture and the Carwell muscling gene programmes in conjunction with AgResearch.

Landcorp's interest in the use of CT scanning to improve their ability to select animals for the nucleus of the "Lamb Supreme Programme" had developed to a stage in 1993 where it was considered to be a commercially viable possibility. Lamb Supreme is Landcorp's own synthetic terminal sire sheep breed, established by initially screening its considerable sheep resource and with replacements selected solely on the basis of their terminal sire performance rather than any specific breed combination. The use of CT scanning allowed Landcorp to take the "next step" following ultrasonic scanning in the measurement of carcass composition in the live animal. Geoff was instrumental in the establishment of the InnerVision CT scanner facility at Invermay in March 1996 as a joint venture between Landcorp and AgResearch. The installation was completed in time to evaluate 150 of Landcorp's terminal sire ram lambs for mating in that season. The aim of InnerVision was to improve the rate of genetic progress in Landcorp's terminal sire flocks, to provide a research tool for large scale body composition measurement, and to make the CT scanner and associated breeding tools and information available to the sheep industry. All of these objectives have been met, with approximately 150 of Landcorp's ram lambs being evaluated each year, and with increasing animal numbers from the industry at large.

Landcorp's CT scanning operations and subsequent breeding programmes are designed and managed by Geoff, and the performance of their terminal sire flocks have made



an average 30 percent genetic gain in the improvement of weight of meat in the carcass, a halving of the weight of fat, and a doubling of the improvement in eye muscle area, compared with using ultrasound-based selections.

Geoff's advice on genetic improvement is frequently sought by industry breeders, and he played a significant role in the formation of a Texel sire referencing group in the North Island that began in the 1998 season. This has formed the nucleus of a nation-wide scheme that was implemented in the current season.

Geoff was also responsible for the importation of 300 straws of semen from two rams thought to contain a major gene for muscling (Carwell) in 1995. The semen was used to establish a large resource flock, which has subsequently been used to characterise the phenotypes and then localise the gene and develop a DNA marker test. The effect of the gene on the distribution of muscle and fat in the carcass has been characterised in these animals. Work by Landcorp and AgResearch has demonstrated that animals expressing the gene have approximately 8% more muscle weight in the loin with no significant effect elsewhere in the carcass when compared to contemporaries that do not express the gene, and that the gene was located on the telomeric end of chromosome 18. Work is currently underway to characterise its pattern of inheritance and the effect of the gene on meat quality. This work has expanded into a collaboration with two USA-based groups in an attempt to locate the actual gene responsible. Geoff has been a major contributor at all stages in this work, both in the management of the genetic resource animals, in the design and implementation of the experimental programme and as Landcorp's member on the management committee for the programme.

The work that Geoff is being nominated for constitutes only a fraction of his work as a geneticist at Landcorp. His work also includes working with Landcorp's beef cattle, dual purpose sheep, elk and red deer and Boer goat programmes in addition to the work he undertakes with sheep meat breeds. This involves the technical management of 11 sire-breeding programmes involving some 25,700 fully performance-recorded animals in 17 individual flocks and herds each year.

Geoff's publication list totals some 191 articles, comprising technical reports, scientific journal and conference papers, and general and conference extension papers.

This Society has been one of Geoff's main professional associations and he has served as a committee member in a number of positions for a total of seven years. He was secretary from 1983 to 1985, Vice President, President and

Past President in 1993, 1994 and 1995, respectively. Following his time as secretary for this Society, Geoff was the Secretary-General for the Asian-Australasian Association of Animal Production Societies (1985 to 1987). Geoff has not been content with being a regular member in his other professional organisations either. He was also on the Executive Committee of the Australian Association of Animal Breeding and Genetics (now the Association for the Advancement of Animal Breeding and Genetics) from 1988 to 1990.

Dr Geoff Nicoll has made, and continues to make, an outstanding contribution to the New Zealand livestock industry through not only his work directly as Head of Landcorp Farming Limited's Genetics Unit, but also through his support for good science, his production of scientific papers and his assistance in the academic field through being a referee for doctorate student theses. His ability to develop and transfer science in a commercial and practical manner in both a strong commercially orientated business like Landcorp Farming Limited and the industry is exceptional. We believe he is a worthy recipient of the McMeekan Award.

N B Jopson