

## LIFE MEMBER

### Tom N Barry

B.Sc. (Newcastle), Ph.D. (Newcastle), D.Sc. (Massey)

Tom Barry has had a long and distinguished career in ruminant nutrition teaching and research and is recognised internationally for his work, particularly the effects of plant secondary compounds on protein digestion and grazing systems for farmed deer.

Having completed his PhD at Newcastle University in England, Tom Barry arrived in New Zealand in 1968 to work in the Research Division of the New Zealand Department of Agriculture at Invermay. His early publications focused on reducing protein degradation in conserved forages by treatment with formaldehyde. This resulted in increased feed intake, nitrogen retention, growth and wool production in sheep. Studies with sole diets of forage kale found methyl-L-cysteine sulphoxide (SMCO), unique to brassicas, was fermented in the rumen to dimethyl disulphide, causing haemolytic anaemia (red water disease), a reduction in feed intake and lowered growth rates. From this work, recommendations for the management of sheep and cattle fed brassica crops were developed.

In 1985, Tom was appointed Professor of Animal Science at Massey University, despite having no teaching experience, and he has expressed gratitude for the university's confidence in him. He continued his studies of protein nutrition with emphasis on manipulating rumen degradation by the use of plant secondary compounds, particularly condensed tannins. These are found in two forage species – *Lotus pedunculatus* and *Lotus corniculatus* - and analytical methods for measuring tannin concentrations were developed. The high tannin concentrations in *Lotus pedunculatus* were shown to be anti-nutritional in ruminant diets, but the medium concentrations in *Lotus corniculatus* reduced ruminal protein degradation, resulting in increased absorption of sulphur-containing amino acids and greater wool growth and milk production in sheep. Unfortunately, *Lotus* species have low survival rates in grazed pastures and so are of limited practical value. However, incorporating these beneficial attributes into other grazing plants, such as lucerne and white clover is currently under investigation.

Another major area of work has been the study of comparative nutrition in other ruminants - predominately deer and goats - fed fresh forages. These show a greater



ability to use low-quality roughage diets than do sheep. Grazing systems have been developed for efficient venison production from red and red-elk hybrid deer. Including red clover and chicory in grazed pastures enabled greater autumn growth rates and the ability to reach desired slaughter weights by twelve months of age, thereby attracting premium spring prices for export venison. Studies with tropical sambar deer demonstrated a wider calving period and less seasonal changes in growth and feed intake than for red deer, presenting potential opportunities for venison production in developing countries. Work has also been conducted in the Wairarapa on drought feeding of sheep with low-quality browse

species such as willow and poplar.

This large body of work on the nutritive value of forages has been documented in around 300 publications, including 168 papers in refereed journals, 85 conference papers and five book chapters. Tom is an author or co-author of 29 papers published in the Proceedings of the New Zealand Society of Animal Production (NZSAP), and in 2011 was invited to present the Living Legends address on "Forage secondary compounds; past, present and future." In 1996, he gained a DSc from Massey University, based upon his collected research papers to that date, and in 2005 was awarded the NZSAP McMeekan Memorial Award for his outstanding contribution to animal production in New Zealand.

In addition to undergraduate teaching, Tom has supervised a large number of post-graduate students, who participated in many of the above studies. These include 11 Honours, 14 Masterate and 15 Doctoral students. He is recognised for his commitment to his students and inculcating in them an understanding of the rigours of scientific experimentation. Upon his retirement from Massey in 2010, Tom was appointed a Professor Emeritus.

For an outstanding career of dedication to the ongoing understanding of the role of fresh forages in livestock production, both in New Zealand and internationally, Tom Barry is a worthy nominee for Honorary Life Membership of the New Zealand Society of Animal Production.

*Ian Brookes*