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Environmental goals against background of productivity gains

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This Conference is of special significance, in the context of the Society, as it is the Society’s 75th Jubilee. It is an honour to have been President in the Society’s 75th year, and to present this address. One of the good aspects about being a celebration year, is that it provides an opportunity to thank those that have worked on behalf of the Society. Ken Jury in his Presidential address for the 50th Jubilee in 1990 (Jury 1990) paid tribute to those that founded, and worked for the Society in the first 50 years. I take the opportunity here to recognise and pay tribute to those that held office positions on the management committee of the Society over the past 25 years since 1990. Moreover, I would like to thank those that have contributed to the efficient running of the annual conferences. The annual conference, and associated Proceedings, remain the most important activity of the Society, and the Society is extremely appreciative to all those that have taken the organisational or editorial roles associated with these.

The past 25 years has seen many highlights for the Society. Some of key aspects include: development of joint conferences with the Australian Society of Animal Production, new research and travel funding schemes, ongoing commitment to the Young Member Section and contract sessions. These are detailed by Alastair Nicol in the Proceedings (Nicol 2015) and I look forward to his take on these later this evening.

It is pertinent given the 75th year to document progress that has happened since the 50th Jubilee. The last 25 years since 1990 has seen some significant changes in animal production in New Zealand.

In 1990, the New Zealand sheep flock was emerging from changes associated with removal of supplementary minimum prices and stood at 57.8 M ewes. Over 25 years, the number of breeding ewes has nearly halved to stand at 29.6 M ewes in 2014 (Beef + Lamb Economic Service 2014). However, notably over the same time period there have been significant improvements in lambing percentage, with lambing percentage nationally increasing from 100% to 119%. This combined with higher lamb carcass weights in 2014 (18.3 kg) than 1990 (17.4 kg) has resulted in the total amount of sheep meat produced nationally being higher in 2014 at 402,000 tonnes than 1990 at 372, 000 tonnes (Beef + Lamb Economic Service 2014). Undoubtedly, the productivity gains associated with more meat from half the number of ewes has been substantial. Over the same time period the dairy industry has grown hugely from 2.4 million to 4.9 million cows, with considerable growth in the South Island (New Zealand Dairy Industry Statistics 2014-2014). In addition, over the past 25 years there has there been marked improvements in productivity, with per cow milk solids production increasing 43% and milk solids production per ha increasing 63% so that total milk production has doubled over this period (New Zealand Dairy Industry Statistics 2014-2014).

The increases in productivity of the sheep and dairy sector outlined are clearly success stories for animal production. What has driven these gains? The increases in productivity have been facilitated by a research and adoption strategy that has concentrated on the efficient use of pastures and supplementary feed, improved genetics of plants and animals, the reduction of financial, technical and climate risk, and the use of low labour input systems. This has been an economic success at both farm and national level, and illustrates the ability of the animal production industries to research and adopt new technologies.

However, a combination of the scale and intensity of current and proposed farming systems has led to a relatively large adverse environmental footprint on both a national and per hectare basis. Clearly, the animal production industries and society agree that this footprint must be reduced, with three key issues being water quality and quantity and greenhouse gases emissions. While it can be demonstrated that there have been improvements in emission intensity, for example, MS or live weight produced per kg unit of greenhouse gas emission or nitrate loss, total emissions from the New Zealand livestock sector are still increasing. Moreover, regional council rules associated with implementation of with National Policy Statement (NPS) on Freshwater Management, and potential greenhouse gas emission rules that may emerge from Paris Climate change conference later this year are based on total losses, whether nitrate leaching, greenhouse gas emission.

Animal production industries thus, have a clear goal to reduce their environmental impact. In this context, there is a general agreement that the most effective solutions to environmental problems will be those that improve economic output and align with important farmer goals.
and operational procedures. In the past 25 years, there have been many research approaches toward this goal including: improved nutrition, altered grazing management, restricted grazing, housing systems, diet manipulation, new forages, secondary plant compounds, advances in rumen microbiology, lower stocking rates, energy and protein conversion efficiency and animal breeding. Some merit has been demonstrated in most of these approaches.

More recent work in programmes such as Pastoral 21, Phase 2 have attempted to draw the options together at the farm system level. These analyses show clearly that there are technologies to reduce the environmental impact, notably nitrate leaching, of animal production systems, but as yet the profitability of new production systems remains equal or below that of existing systems. The ‘golden outcome’ whereby environmental impacts are reduced and at the same time profitability is increased remains elusive and is yet to be met.

While we search for silver bullets towards this goal, there is unlikely to be a single solution to the meet the twin targets of greater profitability and reduced environmental impact. Rather it is likely to require a range of approaches, including improvements in forages and forage production systems, higher fertility particularly in the dairy herd, improved growth and replacement stock, new approaches to deal with wastage associated with disease, recognition of epigenetic effects, modification of the partitioning of energy and protein in livestock, and incorporation of environmental measures into genetic evaluation indices for both plants and animals. I am sure that the founders of the Society would also like it to be drawn together in farm systems research, with emphasis placed on profitability and interactions with on-farm management systems.

There is a mighty challenge for New Zealand animal production and I am sure that members of this Society will play an important role in this.

References


