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Presidential Address 2012

The New Zealand beef cattle industry

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A quick cursory glance of the past 71 Presidential Addresses reveals they usually take one of three forms. Some have given an overview of the agricultural or animal science research scene with particular reference to funding and in particular the shortfall of funds, others have reviewed the Society’s activities usually through analysis of membership and papers presented at Annual Conferences and suggested future directions for the Society, while others have made a personal statement about an industry or research area. I have chosen the latter and want to speak today about beef production in New Zealand. Beef production gets little recognition in the mainstream press or by many of our farmer politicians. In fact I would suggest many of our Society members would know little about beef production on our farms.



(FAO 2012). New Zealand produces only 1% of the world’s beef, however our annual beef exports account for around 6% of the traded volume (Davison 2010). In the year ended 30 September 2012, 2.191 million adult cattle were processed for beef in New Zealand yielding 575,000 tonnes of bone-in or carcass weight equivalent of beef with 80% being exported. A further 1.694 million calves were slaughtered as bobby veal. Beef is New Zealand’s least diversified meat export with 50% of the shipments in 2011/2012 going to North America (Beef + Lamb New Zealand 2013).

Outline of the New Zealand beef industry

The world has a large appetite for meat. The global consumption of meat in 1962 was 70 million tonnes while today it is 300 million tonnes. The amount eaten by each person has increased from 22 kg in 1961 to 42.5 kg in 2012. Beef was top of the table in the 1960s accounting for 40% of meat consumption. Its share has now fallen to 22% being replaced by pork as the meat of choice followed by chicken (The Economist Online 2012). In New Zealand the per capita consumption of beef is 28 kg while in Argentina it is 54 kg, Australia 39 kg, USA 40 kg and China 4.8 kg (FAOSTAT 2012).

The beef industry plays a significant role in the New Zealand primary sector with beef and veal exports worth \$2.05 billion for the year ended September 2012 (Beef + Lamb New Zealand 2013). There is also another \$1.07 billion in related animal products including hides, tallow, meat meal, pet food and, animal oils and fats. Beef cattle would contribute at least 50% by value of these related animal products. The other significant and often unheralded role of beef cattle is as an important management component of our mixed livestock farming systems.

The annual world beef production is 66.6 million tonnes (carcass weight equivalent) of which 8.0 million tonnes (12%) is traded internationally

It is interesting to reflect on the considerable variation in the size of the national beef herd that has occurred since the Society’s first conference in 1941 when there were 1.9 million beef cattle and 2.6 million dairy cattle in New Zealand (Barton 1954). In the 1950s there were more dairy cattle than beef cattle but in 1960 beef cattle numbers exceeded dairy cattle numbers (White & Patchett 1970), a situation that remained until 1999 when there were 4.4 million beef cattle and 4.5 million dairy cattle on our farms

Table 1 Number of beef and dairy cattle (million) in selected years between 1941 and 2012 and the proportion (%) of beef cattle papers delivered at New Zealand Society of Animal Production Annual Conferences during the preceding 10 year period. (Source: Barton 1954, White JV, Patchett N 1970, Meat and Wool Innovation Limited Economic Service 2002, Beef + Lamb New Zealand 2013.)

| Parameter | Year | | | | | | | |
|---|------|------|------|------|------|------|------|------|
| | 1941 | 1952 | 1962 | 1972 | 1983 | 1993 | 2003 | 2012 |
| Number of beef cattle | 1.9 | 2.4 | 3.5 | 5.3 | 4.9 | 4.6 | 4.5 | 3.9 |
| Number of dairy cattle | 2.6 | 2.9 | 3.1 | 3.3 | 3.0 | 3.4 | 5.1 | 6.3 |
| Proportion of NZSAP Conference papers related to beef | - | 0.6 | 0.6 | 12.6 | 16.8 | 6.6 | 12.1 | 5.8 |

(Meat and Wool Innovation Limited Economic Service 2002). It has been the rapid rise in dairy cattle numbers since 2000 that has changed the face of cattle as an enterprise on our sheep and beef cattle farms (Table 1). Nowadays the cattle policy could be anything from grazing dairy heifer replacements, grazing dairy cows over the winter, often on brassica crops, rearing Friesian bulls for beef, fattening cull dairy cows over the winter, or the more traditional finishing of beef breed steers or heifers, a beef breeding cow operation or a combination of the above. When assessing the contribution of cattle on our sheep and beef cattle farms, the dairy support policies are critical in the contribution that beef cattle make to the New Zealand economy. It is interesting to note the increase in beef related papers at our Annual Conference when beef cattle outnumbered dairy cattle in New Zealand with a subsequent decline of beef related papers over the last 10 years as dairy cattle have progressively outnumbered beef cattle.

Today the beef cattle industry in New Zealand is based on a herd of around 3.9 million beef cattle and 6.3 million dairy cattle (Beef + Lamb New Zealand 2013). There are 1.053 million beef breeding cows producing around 850,000 to 900,000 calves annually. The other source of calves entering the beef cattle herd is from the dairy industry where the number of dairy calf retentions for beef production range between 450,000 and 550,000 calves annually. This is equivalent to around 35% to 40% of the total calves entering the beef cattle herd. It is worth noting that in recent years, 1.4 to 1.7 million bobby calves are slaughtered annually. If some of these calves were retained and finished rather than slaughtering them at a few days of age, New Zealand's beef production could be further increased within a relatively short period. Low beef prices increase the bobby calf kill while high prices tend to increase the proportion of dairy bred calves raised for beef production.

In New Zealand beef cattle and sheep are usually farmed together as they are complementary to one another with respect to pasture management and animal health issues, especially under hill country conditions. It is relatively easy for producers to alter their mix of sheep and cattle to suit current economic conditions and preferences. The main driving force behind this substitution is the relative profitability between cattle and sheep although there is often debate as to how this profitability is calculated as the cattle typically provide a pasture grooming role in hill country to the benefit of subsequent sheep production. The expansion of the sheep flock and the decline in cattle numbers through the late 1970s was driven by market prices favouring sheep. Today beef cattle numbers are relatively static at around 3.8 to 4.0 million with fluctuations being mainly due to changes in the number of dairy calves reared for beef production.

Table 2 Numbers of steer, heifer, cow, bull and bobby calf slaughtered for selected years (Source: RM Davison, Personal communication).

| Class of animal | Year | | |
|-----------------|---------|-----------|-----------|
| | 1992/93 | 2002/03 | 2010/11 |
| Steer | 557,639 | 450,000 | 577,000 |
| Heifer | 199,639 | 229,000 | 409,000 |
| Cow | 587,291 | 834,000 | 856,000 |
| Bull | 610,037 | 653,000 | 434,000 |
| Bobby calves | 812,802 | 1,550,000 | 1,656,000 |

Production levels

Approximately 2,276,000 adult cattle were slaughtered in New Zealand in the year ended 30 September 2011. This group comprised 25% steers, 18% heifers, 38% cows and 19% bulls (Table 2) (Beef + Lamb New Zealand 2012a). It has been estimated that between 80,000 and 120,000 tonnes of beef is consumed in the local market, or around 400,000 cattle. This equates to approximately around 20% of the adult kill leaving 80% for export. The corresponding figures in the 1950s were 70% consumed on the domestic market and 30% exported. In 1980 31% was consumed locally and 69% was exported reflecting the huge increase in the consumption of white meat, consisting of pork and poultry, and the general decline in red meat consumption in New Zealand. Red meats today make up 46% of local consumption while white meats make up 54% of local consumption.

The average carcass weights for steers, heifers, cows and bulls have all increased over the last 30 years. The average carcass weight for steers and bulls was 277 kg and 252 kg respectively in 1980. These weights had increased to 316 kg and 306 kg respectively in 2012 (Table 3). While it is easy to suggest this has occurred because of improved growth rates associated with better feeding and management, it may also indicate an older age at slaughter through farmers being rewarded for producing heavier carcasses. To achieve these higher weights many farmers elect to "carry-through" all or some of their steers and bulls for a second winter such that they range in age from 27 to 34 months at slaughter. At an average birth weight of 35 kg and a dressing out percent of 54% for a 300 kg carcass at 30 months of age (942 days), the average lifetime live weight gain for these steers is approximately 0.55 kg/day. This compares with steer growth rates averaging around 1.0 kg/day on farms with high levels of animal performance where cattle are slaughtered at around 300 kg carcass weight at 18 to 24 months of age.

The beef cattle industry is considered a seasonal industry, principally because most beef is produced from grass. This marked seasonality in supply of

Table 3 Average export carcass weight (kg per head) for steer, heifer, cow and bull for selected years (Source: RM Davison, Personal communication).

| Year | Steer | Heifer | Cow | Bull |
|---------|-------|--------|-------|-------|
| 1979/80 | 277.2 | 210.7 | 185.1 | 252.4 |
| 1989/90 | 291.8 | 217.7 | 182.1 | 277.1 |
| 1999/00 | 311.6 | 227.9 | 196.7 | 301.5 |
| 2004/05 | 318.0 | 237.3 | 202.1 | 311.0 |
| 2008/09 | 306.3 | 232.3 | 200.0 | 301.6 |
| 2009/10 | 312.3 | 234.3 | 203.5 | 306.4 |
| 2010/11 | 306.1 | 234.4 | 203.5 | 298.6 |
| 2011/12 | 316.8 | 245.2 | 205.5 | 309.0 |

cattle with 85 to 90% of slaughtering occurring during the months November to June inclusive, is seen as a limitation on the ability of marketers to meet the demand of some markets. Therefore limits to some of our supply chains become fixed by the availability of suitable cattle in July, August, September and October. This slaughter pattern in export processing plants is most marked for bulls, but is also present for steers and heifers. The seasonal surge in slaughtering follows the spring flush with a lag of about two to three months. It is not helped by an overcapacity in our 11 meat processing companies with the capability to process export beef across a total of 32 plants operating at around 48 to 54% of maximum potential.

Beef breeding cow herds

Of the 1.1 million beef breeding cows and heifers in New Zealand it is estimated that 23% are Angus, 9% Hereford and 10% Angus x Hereford (Beef + Lamb New Zealand 2012b). Angus and Hereford crosses also contribute to a group classified as mixed crosses (30%) while Friesian crossbreds (23%) and others (5%) make up the rest. Presumably farmers prefer Angus, Hereford and their crosses for their adaptability to hill country conditions.

The national calving percentage, calculated as the number of calves weaned as a percentage of cows mated, is between 80 and 85%. Age at first calving is three years of age in traditional beef cattle farming systems although Hickson et al. (2008) found in a survey of farmers that 65% of respondents calved heifers for the first time at two years of age. Statistics New Zealand Agricultural Production census data suggests only 35% are bred at 15 months of age to calve at two years of age however the census data makes no distinction between non-pregnant rising two-year old heifers that were kept as finishing cattle or for breeding at 27 months of age (Hickson et al. 2008). The top third of herds in any year average 90% calving or better (McFadden et al. 2004). There is considerable potential for increased reproductive performance of the national beef herd and in the growth of calves from birth to weaning. A commonly accepted live weight gain over this period is approximately 1.0 kg day while a calf suckles its dam (Morris 2007).

Beef finishing systems

Considerable flexibility and variation exist in the management objectives and feeding strategies for growing cattle. Farmers differ in their objectives in the timing of, and live weights for selling finishing cattle. From an economic perspective growth rates of over 1.0 kg/head/day are required. Such gains cannot be obtained when sheep and cattle are grazing together and competing for a limited supply of available pasture. If cattle are farmed on their own on pasture in excess of 1,500 kg DM/ha or 6 to 8 cm sward surface height, live weight gains in excess 1.0 kg/head/day are attainable in the spring and around 0.5 to 0.75 kg/head/day during the summer and autumn seasons (Morris 2007).

The welfare of beef cattle

The welfare of beef cattle in New Zealand has avoided public scrutiny and has not been a focus of attention of either animal welfare scientists or animal welfare activists. This is probably due to the fact that beef cattle are grass fed and extensively managed. There are few of the major welfare problems associated with beef industries elsewhere in the world. There are only a few beef feedlots in New Zealand, no long distance transport, no live transport overseas for slaughter and our beef plants are well managed with regard to transport, lairage, and slaughter. In fact to quote from a chapter by Kevin Stafford in the societies next Occasional Publication that is about to be published "the welfare of prime steers and heifers from birth on sheep and beef farms through weaning to finishing and slaughter is probably as close to ideal as farming animals allows."

What of the future?

A key issue for beef producers is to be able to produce beef efficiently with high productivity and low production costs, as well as to increase the value of their product. There is a world shortage of beef at present. Demand in the medium term also looks favourable for New Zealand with problems in world supply with alternative land use and unfavourable climatic conditions in several main beef producing countries including Australia, Argentina, USA and Canada.

Extracting value for New Zealand beef will require us to produce beef consistently with particular points of difference from the rest of the world. These might include

- Natural production systems associated with grass or forage based systems, low chemical input, no confinement, high animal welfare standards and environmentally sustainable systems of production.
- A consistent product in terms of tenderness, eating quality, presentation, appearance of meat and fat colour and level of fatness associated with marbling.
- A high standard of food safety with full traceability.
- There are also opportunities for special attributes such as health benefits of beef for humans and highly marbled beef.

It is anticipated the new markets will emerge as the Asian population becomes urbanised and numbers in the so called ‘middle class’ increase with increased purchasing power.

Fellow members of the Society, when you enjoy your steak tonight please spare a thought for the beef industry as it quietly delivers a quality product to New Zealand and the world at large. There is no fuss and no fanfare. In my opinion the New Zealand beef industry has been the quiet achiever in New Zealand agriculture since the inception of our Society. Long may it continue.

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