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Foreword

The efficiency of feed utilisation by livestock has always fascinated scientists and farmers. Respected cattlemen and women can reliably point out 'good doers' and 'poor doers' in their herds. Their experience tells them that some cattle are inherently more feed efficient than others.

The pig and poultry industries have been successful in implementing scientific strategies to improve feed efficiency. Their earlier adoption of intensive feeding systems may have been the stimulus for their interest in the trait, because the daily disappearance of expensive food from feed troughs was more graphically evident.

In the grazing industries the problem is more complex. It is known that the largest cost of a cattle breeding enterprise is the forage eaten by the breeding female. Yet we cannot readily measure forage intake by individual cows. This was recognised at the second Biennial Conference of the (infant) Australian Society of Animal Production in 1958 when the Presidential address noted: *"… efficiency in utilisation of the national pasture should be of great intrinsic interest and importance to every Australian and to members of the (Animal Production) Society in particular. It is an example of a very broad problem in animal production, the solution of which requires many specialists, covering the full range of animal science and grouped most effectively for attack on selected aspects."*

In the early 1990s expansion of the feedlot sector stimulated renewed interest in feed efficiency research. A coordinated attack on the genetics of feed efficiency took place in 1991 when NSW Agriculture and the Meat Research Corporation began a landmark experiment to measure 'net feed intake' and to quantify genetic variation and heritability of the trait in an Angus cattle population. In 1992 this project became part of the CRC for the Cattle and Beef industry (Beef Quality), where it continues to be a focus in 2004. In the CRC it has been possible to expand the scope of investigations to include non-genetic aspect including ruminant nutrition, digestive physiology and animal behaviour. The CRC's emphasis on beef quality enabled studies of genetic associations between 'net feed intake' and other traits such as tenderness and marbling.

This Special Issue of the *Australian Journal of Experimental Agriculture* contains scientific papers updated from a Workshop held by the CRC in May 2000 and adds additional papers from related and more recent investigations.

Australia now claims modest international leadership in some aspects of the 'feed efficiency' story. There is no doubt that it is one of the more complex traits in the beef cattle business. But its full understanding will ultimately bring great rewards to the Australian beef sector, as 'feed efficiency' is a key driver of profitability.

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