THE 2003 FARRER MEMORIAL ORATION

SUMMARY

Rice in Australia– An Example of Cooperative Effort

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I express my deep appreciation to the Farrer Memorial Trustees who have honoured me with the Farrer Medal for 2003. The medal is presented to promote agricultural science. This science remains essential to the maintenance of our basic needs in the face of increasing population.

The list of recipients of the Farrer Medal since its inception is a daunting one and it is hard to reconcile being in that company. The award to Don McDonald in 1977 was recognition of his work for the rice industry as a great plant breeder. I acknowledge his role as my mentor during my early career with rice.

William Farrer was a great plant breeder. He provided a benchmark for all plant breeders in that he was a great collaborator, was a visionary who understood the industry and its needs. He loved field work and understood the relationship between productivity, stress tolerance and grain quality. His work still provides an example to all agricultural scientists.

The relationship between William Farrer as plant breeder and Frederick Guthrie as cereal chemist was important to the development of acceptable cultivars. It has been an example for the NSW rice breeders and I particularly acknowledge the close association between the breeding and cereal chemistry teams at Yanco Agricultural Institute.

The Australian rice industry has expanded rapidly since the first experimental plantings near Leeton in 1922. There were relatively unsuccessful attempts to grow rice in the Northern Territory and Western Australia and there was a Queensland industry from 1966 to 1993. It is the NSW industry that flourished, however, and became a significant export industry. This industry was successful because it identified the right varieties, was able to produce high yield, was located on suitable soils and had excellent people who understood the need for organisation.

The industry organisation was built around a political arm (Ricegrowers' Association of Australia) and marketing organisation through the Rice Marketing Board for the State of NSW. It was enhanced after 1950 by the Ricegrowers' Cooperative (now identified as SunRice) which quickly assumed responsibility for milling and marketing all NSW rice. This high level of organisation, combined with access to water led to the industry expansion. Other features leading to success were the close linkage of production and marketing and a dedication to fostering and using new and advanced technology.

The cooperative nature of the industry encouraged important collaborations with service providers from outside the industry. This led to very close cooperation with industry, research and extension providers and between groups providing these services.

One example of this cooperation is the case of variety development for the industry. Once built solely on short and medium grain japonica varieties introduced from California, the industry now has access to locally developed cultivars in six different classes to meet specific market opportunities. These cultivars are amongst the highest yielding in the world and are available in a range of agronomic types to meet different production needs.

The industry has been successful and has expanded from its inception to one that produced more than 1.7 million tonnes in 2001. There are significant challenges ahead, however, and this has been exacerbated by a drought that saw 2003 production fall to its lowest level since 1974.

There is a need to further add value to rice production. The industry is already recognised as highly vertically integrated and an exporter of milled and packaged rice products that are produced in regional communities. Further adding value through the development of new products will provide better returns for growers and, in turn, higher returns per megalitre of water.

There is also pressure on all agricultural industries to improve environmental performance. The rice industry environmental policy development is led by the Ricegrowers' Association and is a world leader in this field.

Access to water is the most pressing issue for the industry. Water is likely to be limiting for production in the future. Pressures will be due to many factors. Natural variation, as seen in the 2003 drought, is an ever-present threat. It is predicted that climate change will make south eastern Australia both hotter and drier. Tree planting in the upper catchment, in response to dryland salinity, will reduce water harvesting. There will be competition for water from other enterprises. There have already been contributions from irrigators to environmental flows in the Murray and Snowy Rivers and these are likely to increase.

Ricegrowing has an impressive record for improved water productivity. The tonnes produced per megalitre of water have increased 60% in the last ten years. This must continue, however, if the industry is to remain competitive. Improvements are possible through greater yield potential and better production techniques and cultivars that lead to higher average yield. These improvements will be achieved though reduced duration, better selection of suitable soils, applications of precision management and better management of the total rice farming system. Value adding will also contribute to better returns per water unit.

Recent improvements in plant breeding have been rapid and it is now an exciting time to be involved in this science. The rice genome has been sequenced and breeders now have a range of exciting tools to meet the important challenges. It is only 50 years since the Watson and Crick model for DNA was published but the new genetics has given access to new tools including genetic markers and genetic transformation techniques.

The current rice industry position on genetically modified rice is driven by the marketing imperative. There is no genetically modified rice within the rice quarantine area. This is a sensible position and is supported by the plant breeding team. Genetically modified rice would be a relatively low risk crop, however, if production is contemplated. There are no weedy relatives in the crop production area, the pollen is short lived, there is little outcrossing over distance, and dropped seed does not survive longer than two seasons.

There are also potential advantages associated with genetically modified rice including new and improved qualities, better environmental management and productivity improvement. There will likely be applications of genetically modified rice in the future but these will be introduced very slowly and with market support. They are likely to be improvements to nutritional or environmental benefits rather than providing productivity outcomes. They will also use smarter science to ensure a safer use of the technology.

Many challenges remain for rice breeders to ensure a vibrant future for rice in Australia. These include improved yield potential combined with reduced duration, better cold tolerance and qualities to support new improved products. The longer term need for reduced water use will require cultivars able to withstand non-ponded culture for at least a portion of the rice production cycle. This will impose greater challenges for drought and cold stress tolerance.

These challenges can only be met through continued cooperative effort. This has been the cornerstone of the industry and will be required to meet the challenges that lie ahead.

Many from within the rice industry have contributed to the successful development of rice cultivars. This is particularly true of the rice breeding and cereal chemistry groups at Yanco and all extension staff of NSW Agriculture in the rice producing area. The Rice Research and Development Committee of RIRDC has always been supportive as has all components of the industry, including processors and farmers.

August 2003