

THE MCCLYMONT LECTURE FOR 2004

MAINTAINING COMPETITIVENESS – NEW OPPORTUNITIES AND NEW CHALLENGES

T.G. REEVES

Timothy G. Reeves and Associates Pty Ltd, 30 Lansbury Crescent, Highton, Vic 3216

INTRODUCTION

One of the benefits of living and working outside of Australia for a significant time is the opportunity to see and evaluate agricultural systems from a different perspective. In a world where global connectivity is increasingly important, do we really understand the international situation, the new opportunities and the new challenges that confront producers and those who support them?

What is clear is that world agriculture has significant challenges in this still relatively new millennium - how to feed a population growing globally at around 150 people/minute (FAO 2003), many of whom are born in regions that already struggle to support their current communities. An associated challenge is the urgent need to reduce poverty, particularly in the rural areas of developing countries. Over 1 billion people live in abject poverty (less than US\$1/day) and, for many of them, farming is their major occupation, and the only potential pathway to enhanced livelihoods. More people, more food required, and greater incomes are all major challenges in themselves, but they are compounded when one also takes into consideration the issues of natural resource management and the ongoing problems of sustainability. Paramount amongst these is the challenge posed by the dwindling water supplies for agriculture that are exacerbated by the ever increasing demands for water in urban areas. Water shortages will occur without climatic changes, as more and more of the available water is utilised by growing populations, but in many areas of the world, climatic variability will exacerbate this water challenge.

Whilst the situation described above requires urgent attention in much of the developing world, there is also another important perspective that pertains to emerging countries, such as China and India, and the industrialised world. It is forecast that the so called BRIC (Brazil, Russia, India, China) group will be the economic powerhouse of the coming decades, with their large populations and increasing purchasing power. From the viewpoint of Australian agriculture, the emerging nations provide economic opportunities for farmers, but this potential will only be realised if we understand their specific requirements and develop products accordingly. Similarly, new market requirements in Europe and elsewhere will have significant consequences for production systems here in Australia.

So this is the context in which this paper is set – maintaining competitiveness in the face of new opportunities and challenges, and assessing the impacts and ramifications for Australian farming systems, including animal production. In some small way, I hope that by linking the issues of sustainability, farming systems and international agriculture, I am appropriately honouring the memory of Professor Bill McClymont and extending the reach of ‘McClymont Magic’ to another audience. It is a privilege to deliver the McClymont Lecture, and thank you for the honour and the opportunity.

GLOBAL SUSTAINABILITY CHALLENGES

Population growth and food supply

Much has been written about the implications of global population increase on food demands. The International Food Policy Research Institute (IFPRI), in their 2020 Vision, estimate that food production will have to virtually double to meet new global demands. However, it is not just the volume of food produced that is important, but rather the range of issues affecting food security for many developing countries. An increase in total global food supply does not necessarily improve food security at the country level, and more food does not necessarily mean improved access to food by the resource-poor of the world (however, the converse is usually true, that is when food availability declines the first to suffer are normally the poor and hungry). However, for those countries that do have the purchasing power and can participate in global and/or regional trade, imported foodstuffs can

be a key component of their national food security strategy. For countries that do not currently have the capacity to import food, a greater global supply has less significance for their food security, and it is these countries where urgent attention is required to improve their own agricultural production. There are a number of compelling reasons, not least a humanitarian obligation, why it is in Australia's interests to help with agriculture and rural development in these countries. Firstly, as the majority (often 70-80%) of their populations depend on farming, not just for their food supply, but also for their overall livelihoods, stimulating agricultural productivity and growth is essential to break the poverty cycle as well as alleviate hunger. More productive and profitable farming is the platform for future economic development, and at the local level, generates disposable income that underpins enhanced health, education and nutrition. For these smallholder farmers, the imports of cheap grain from industrialised world surpluses, that are often attractive to politicians and bureaucrats, provide only short-term alleviation of hunger, but then exacerbate their poverty in the ensuing periods. Such imports undercut local markets and prices, provide a disincentive to politicians to invest in agricultural infrastructure, and thereby penalise their farming sector.

A second reason why international efforts to improve the agriculture of many developing countries is critical relates to the historical nature of global food trade. Alexander McCalla (2000) reported that, in the case of world trade in grains, regardless of the increasing nature of global grain production over time, only 10% of grain produced was traded internationally. If this scenario holds in the future, it means that global grain trade will have little impact on food security in many developing countries. As a lot of the future population increase will be in such countries, the vast majority of the extra food will be required there, with the '10% trade' scenario, much of the increase will have to come from enhanced in-country production. This increased productivity will not occur without effective 'south-north' and 'south-south' partnerships. Australian agriculturalists have much to offer in such partnerships. Despite these arguments, there are those who still believe that helping other countries improve their agriculture harms Australian farmers, and whilst this is not the case, let them be comforted by the lessons of history. For the large majority of industrialised countries who are now major importers of Australian produce, increased agriculture productivity in the past was the source of their economic development, and the underlying basis of why today they have the capacity to purchase Australian imports. To paraphrase the late, great Derek Tribe ... "by doing good today, we can do well tomorrow".

Water and climate

Around 40% of global food production comes from irrigated systems and, in many countries, including India and China, national food security is dependent on the productivity of these systems. Not surprisingly, it is projected that irrigated areas in developing countries will increase by around 20% by 2030 (FAO 2003). However, the major question concerning the future of irrigation is the availability of water to meet both rural and urban needs, and in some regions it may be difficult to sustain current systems, let alone expanded areas (IFPRI/IWMI 2002). Thus, competition for water would perhaps be the most important natural resources issue for agriculture in the coming decades. In Australia, experiences with the Murray-Darling system are a stark reminder of the complexities involved in managing water resources effectively and efficiently to meet agricultural, urban and environmental goals. It has always been important that appropriate action be taken in relation to the Murray-Darling system - sooner rather than later - but given the water scenario in some of our partner countries, there is an even greater incentive to get it right, as this will be important in building future competitiveness. The water resources challenge will not be successfully met without an integrated approach comprising new policies, enhanced irrigation practices, and more water-efficient systems and varieties (SIWI/IWMI 2004).

For reasons of population growth and intensification of agriculture, water scarcity will intensify in many regions of the world (particularly the Middle East and North Africa). However, it could be further exacerbated under the current predictions for global climate change, and in the shorter term, the greater extremes of climatic variability. Such changes could have significant impacts on national and regional food security in many parts of the world. Indeed, it has been forecast by some that access to water will trigger military conflicts in the future, just as access to oil reserves has in the past. For all of these reasons, it is very clear that water management is a key factor in Australia's long-term competitiveness.

Human health and agricultural productivity

The last crosscutting issue that is significantly impacting on sustainable agriculture and, indeed, sustainable development in many regions of the world is the impact of disease epidemics/endemics on human health. The HIV/AIDS epidemic is perhaps the most publicised of these diseases, and its impacts in sub-Saharan Africa (SSA) and parts of Asia and the Latin America/Caribbean region are devastating. In SSA particularly, HIV/AIDS is changing the entire development landscape (Kadiyala and Gillespie 2003), and it has now been shown that there are strong feedback linkages between food and nutritional security and vulnerability to HIV/AIDS' impacts. Those who have experienced the situation first hand in SSA would have witnessed the ravages of this disease on the whole social and economic framework of many countries. Where disease incidence can be as high as 40% of the adult population, the impacts on productivity, economic reserves, and just about every aspect of community life are devastating. Of particular importance to agricultural productivity are the impacts on labour availability for key farming operations such as land preparation, planting and weeding of crops, and husbandry of livestock. Livestock often represent the economic asset 'bank' of families, but are increasingly required to pay for medical and hospital costs, or for feeding relatives and friends at funeral wakes.

Access to anti-retroviral drugs now (e.g. Vedantam 2004), and hopefully to vaccines in the future, are important tools in the fight against HIV/AIDS, but it is essential that these are only part of a more comprehensive package that also includes the vital elements of improved nutrition and food security, and of course health education. Australia has much to offer in all aspects of the HIV/AIDS campaign and we must carefully consider where to focus our attention most appropriately.

INTERNATIONAL ISSUES AFFECTING COMPETITION

International trade agreements

As international trade has grown (a 17 fold increase in the past 50 years), so has the influence of international trade agreements. In fact, policy changes, including an overall reduction in average import tariffs from 40 to 4%, have contributed significantly to increased trade. Agricultural trade has not grown as fast as overall trade for a range of reasons, but not least is the failure to include agriculture fully in multilateral trade negotiations under the GATT. As a result agricultural tariffs are as high now, on average, as industrial tariffs were 50 years ago (FAO 2003). An important change in agricultural trade has been the switch of many developing countries from being net exporters to net importers of agricultural products. It is expected that net imports of food will continue to increase in the coming decades, and IFPRI's 2020 Vision clearly indicates the substantial increases that will be required in the near future (IFPRI 2001). This dramatic change in demand is, in the context of trade agreements, both a challenge and an opportunity for exporting countries such as Australia. Trading blocks, and regional and/or bilateral free-trade agreements are all increasingly impinging on markets and trade, and Australia must ensure that it is correctly positioned in such agreements to be able to capitalise on future export opportunities.

The Cartagena Protocol on Biosafety, or Biosafety Protocol, is another example of new considerations that are impacting on international trade (Reeves 2003a). The Protocol came into force in September 2003, and institutionalises the precautionary approach as well as establishing a rigorous advanced informed agreement procedure relating to trade of genetically modified products.

At the date of entry into force of the Protocol - 11 September 2003 - certain provisions took effect immediately:

- Countries shipping living modified organisms (LMOs) for intentional introduction into the environment will have to give prior notification of the first shipment to an importing country that is a party to the Protocol under what is referred to as the 'Advance Informed Agreement' procedure. Sufficient information will have to be provided to enable importing countries to make informed decisions.
- Member countries of the Protocol will also be required to use the Biosafety Clearing-House (BCH) to fulfil a number of specific obligations. The BCH is a largely internet-based facility established under the Protocol to ease communications and exchange of information between the Parties.

- All shipments containing LMOs for intentional introduction into the environment will be clearly identified as such in the accompanying documentation which must specify the identity and characteristics of the specific LMOs contained in each shipment.

There are, however, still a number of loose ends and unresolved issues in relation to the Protocol. A case in point is the movement of LMOs between Parties and non-Parties, where it is stated that “such movement shall be consistent with the objective of the Protocol”. Such open-ended statements on an issue as highly contentious as LMOs could well be the source of future disputes between Parties and non-Parties, particularly where significant trade is involved. Hopefully such matters will be taken up by the Conference of the Parties, the decision-making body of all the member countries of the Protocol.

Consumer requirements and producer impacts

Another competitive benchmark in the emerging marketplace is an evermore stringent focus on consumer requirements, and how those requirements translate into obligations for producers, processors and marketers. Perhaps the best example of such an approach is the European Union’s ‘Fork to Farm’ strategy, which seeks to meet consumers’ preferences, particularly in relation to food quality and food safety, but also in other aspects of production (European Commission 2003, 2004). The strategy involves an integrated approach to food safety that includes consideration of animal health, animal welfare, animal nutrition and plant health, as well as the more usual aspects of food safety. The approach entails monitoring and traceability on a range of production aspects, not only within the EU, but also in relation to third countries wishing to export to the EU. Such an approach, with its substantial ‘reach back’ provisions, has major implications for Australian producers if we are to maintain or increase exports to EU countries. The need for detailed supply chain identification would be further emphasised and would need to include data on animal breeding, welfare, nutrition and health. Some producers would consider such an approach to be draconian, but if Australia is to maintain its competitiveness in all viable markets, then our production systems will need to take into account these new requirements.

STAYING COMPETITIVE – IMPLICATIONS FOR AUSTRALIA

Planning to meet new market opportunities

As outlined earlier in this paper, there are significant changes occurring in relation to products, target countries and market requirements. Two opportunities arising are good examples of the need for Australia to develop appropriate strategies in response to them. The examples chosen are:

- the ‘Livestock Revolution’
- new grain products

Firstly, in relation to the livestock revolution (LR), there was an excellent discourse on this at the ATSE Crawford Fund Conference held in Canberra last year (ATSE Crawford Fund 2003), and it is not my intention to repeat that information. However, an increase of meat consumption by over 100 million tonnes, and increased milk consumption of 200 million tonnes, in our Asia region over the next 15 years is something not to be taken lightly in the context of the future competitiveness of our industries (IFPRI 1999). The question posed is how do we effectively respond to such an opportunity? Producers, not surprisingly, are usually conservative in the face of such market news and can usually recall earlier forecasts of ‘booming markets’, and more particularly the ‘busts’ that follow any signs of oversupply. Is the LR of sufficient magnitude and potential importance to Australia for a more coordinated and integrated approach to be taken across the livestock industries? If so, how should this be approached?

In considering the questions posed above regarding the livestock revolution, it is interesting to address the second new market opportunity identified earlier, of new grain products. A Grains Industry Strategy was recently released at Grains Week (GRDC and Grains Council of Australia 2004) that provided a comprehensive outline of future scenarios for the industry. Amongst these were projections that by 2025, to meet the growth in existing demand, the Australian grain industry would need to increase from its current 45 million t/year (approx.) to 70 million tonnes (Wright 2004). However, in order to compete effectively in emerging demands for grains, including new products, the national industry would need to produce 140 million tonnes by 2025! In 1 less conservative scenario, the projection was that by 2025, the total potential demand for grain from the Australian industry could grow by up to 500%. Emerging uses for grain include feed grain; lubricants; starch; and

pharmaceuticals. Interestingly, traceability and segregation were highlighted as major requirements that would have to underpin grain supplies to these future markets.

My conclusions are that a coordinated approach to industry strategic planning is a major pre-requisite to future competitiveness.

Research investment - public and private

There is little doubt that 1 of the key contributors to the success of Australian agriculture has been a strong and dynamic research base. Whilst research is a common factor in most countries, including those of our competitors, there are a number of factors that have enhanced Australian research, and helped keep it relevant and focussed. These include:

- A diverse network of research institutions
- Industry Research and Development Corporations
- Long-term, systems-based studies
- Host-plant resistance approaches to plant health (i.e. low external inputs)
- Strong participation, and in some cases leadership, by producers

It is essential to Australia's future competitiveness that the successful elements of these are not only retained, but strengthened in the coming decades (Reeves 2003b).

The success of many of the Industry R&D Corporations is something that many other countries covet and would like to reproduce. I was made strongly aware of this during my time overseas, and cannot over-emphasise how important the R&D Corporations are to future competitiveness. As with any organisations and processes, there are always improvements that can be made, but in seeking to make those improvements, it is essential that their strengths are also reinforced.

Sustainability of the natural resource base is an ongoing concern for Australian agriculture, and the challenge to improve productivity and profitability, whilst at the same time meeting environmental demands, has become increasingly complex. Long-term systems based research has, to date, provided important contributions to the management of soil acidity, salinisation and water-use. In many cases, key pieces of information came from long-term trials conducted by government or university researchers. Such research is an investment for the future, and managed properly and dynamically, can help to hedge against the risk of future sustainability challenges. This type of research produces public good benefits – environmental, social as well as economic - and fittingly has generally been funded by governments and, in more recent times, producers through its R&D Corporations. However, alarm bells are ringing as this type of long-term research is no longer receiving the investment it requires, as a preference for shorter-term, closer to market, projects has taken over. Long-term studies have never been more required than now - particularly on water-use and catchment management - and such research should be the primary focus for public investment. It is an enigma that long-term problems such as salinity are often funded by short-term government strategy funds. This has to change if competitiveness is to be maintained.

In a point related to that above, I have identified the diverse research network as a strength of agricultural research in Australia. However, it also has the potential to be a weakness if it results in lack of focus and funding that is too thinly spread. The strengths of diversity in the past have been complementarity - e.g. if Victoria wasn't doing it, New South Wales was; healthy competition – often a key factor in driving innovation and pushing research ahead at a faster pace; a multi-layered research agenda from regional research stations to university/CSIRO laboratories; and the capability to build cross-institution, coordinated and integrated research teams when required. However, despite these perceived strengths, the agricultural research environment is becoming less diverse as most public organisations are trying to move upstream in the research continuum, and are increasingly seeking to act like private sector organisations, with an increasing focus on commercialisation (Reeves and Cassaday 2002). As this occurs, it is critical that changes in research organisation and focus do not result in undesired effects on Australia's competitiveness, including our reputation for high quality products from relatively low external-input systems.

The last, but perhaps most important, comment on research is totally positive, as the integral participation of producers and industry in the research process continues to strengthen. This participation has been fundamental in providing focus and direction to researchers and, contrary to

some beliefs, greater concentration on sustainability factors than might otherwise have recurred. A system that provides a dynamic tension/interface between all key stakeholders is critical to successful research - both short and long-term studies - and must continue to be encouraged.

Global awareness and communication

Australian agriculturalists have been much sought after around the world as they are well trained; understand multiculturalism; understand climatic and market risk; and are used to dealing with fragile soils and landscapes. These qualities are important everywhere to a greater or lesser extent, but are all highly appropriate to working in developing countries. We must ensure that we continue to educate and train a cadre of students to maintain this broad understanding of sustainable agriculture. Worldwide, the trend has been for less agricultural students, and for those who do choose agriculture, to be more focussed on biotechnology, bioinformatics and genetics rather than agronomy. Whilst the role of agronomists is changing, they will remain critical in the process of working with farmers to integrate new technologies, genetic or otherwise, into sustainable farming systems (Reeves 2003b). Clearly, other types of graduates are also required, but for all, there are some common requirements:

- Ability to work in teams
- Communication skills
- International networking
- Intellectual property awareness.

International networking or global connectivity is perhaps the issue of paramount importance to Australian researchers as we are geographically isolated. Competitiveness depends upon knowing what others are doing, what others need, what are the impending challenges and on keeping abreast/getting ahead. None of these will be efficiently and effectively achieved without participation in international communication networks. Electronic communication is a vital tool of such networking, and access to electronic databases/news services is a minimum level of participation. Scientific alliances with international institutions are also vital because usually the 'whole' of such alliances is greater than the sum of the parts. Lastly, overseas travel for all research participants - scientists, industry and producers - is essential as there is still no better way to find out what is going on than meeting face to face with those who know! It is increasingly important that such overseas visits include key countries in Asia, Latin America and Africa, as well as the more usual European and North American destinations.

CONCLUSIONS

The winds of change are already blowing over the Australian agricultural landscape and will intensify in the next decade. New market opportunities; more stringent market requirements; international agreements; new technologies, including genetic modification technologies; increasing social and environmental demands; greater private sector involvement in research; and sustainability measures, are just some of the areas where changes could be revolutionary rather than evolutionary. Competition around these aspects will be intense, and Australia must prepare itself through strategic planning and actions if we are to negotiate these changes successfully. The McClymont Lecture has, I hope, provided an insight into global issues that will at least stimulate thought, discussion and debate. As ever, I am optimistic that Australian agriculture will remain competitive, but it will not do so without clear vision and decisive action. This paper focuses attention on some key decision points, but does not pretend to provide the answers, as these must come from participatory processes involving all key stakeholders. Again, my thanks to the Australian Society of Animal Production for the honour of delivering the McClymont Lecture.

REFERENCES

- ATSE CRAWFORD FUND (2003). 'The Livestock Revolution - a Pathway from Poverty?' (Ed. A.G. Brown.) (The ATSE Crawford Fund)
- EUROPEAN COMMISSION (2003). 'DG Health and Consumer Protection - Animal Health and Welfare.' (http://europa.eu.int/comm/food/animal/index_en.htm).
- EUROPEAN COMMISSION (2004). 'DG Health and Consumer Protection - Food Safety - From the Farm to the Fork.' (http://europa.eu.int/comm/food/intro_en.htm).
- FAO (2003). 'World Agriculture: Towards 2015/2030. An FAO Perspective.' (Ed. J. Bruinsma.) (FAO: Rome.)
- GRDC AND GRAINS COUNCIL OF AUSTRALIA (2004). 'Towards a Single Vision for the Australian Grains Industry - 2005-2025.' (GDRC: Canberra.)

- IFPRI (1999). 'Livestock to 2020 - The Next Food Revolution. Food, Agriculture and the Environment Discussion Paper 28.' (IFPRI: Washington, DC.)
- IFPRI (2001). '2020 Global Food Outlook: Trends, Alternatives and Choices.' (IFPRI: Washington, DC.)
- IFPRI/IWMI (2002). 'Global Water Outlook to 2025: Averting an Impending Crisis.' (IFPRI/IWMI: Washington, DC.)
- KADIYALA, S. and GILLESPIE, S. (2003). 'Rethinking Food Aid to Fight HIV/AIDS. Discussion Paper 159.' (IFPRI: Washington, DC.)
- MCCALLA, A.F. (2000). 'Fourth Distinguished Economist Lecture.' (CIMMYT: Mexico.)
- REEVES, T.G. (2003a). 'Risk Analysis in Other International Agreements: the Biosafety Protocol.' (QEAC: Canberra.)
- REEVES, T.G. (2003b). *Proc. 11th Aust. Agron. Conf.* (Australian Society of Agronomy, CD-ROM.)
- REEVES, T.G. and CASSADAY, K. (2002). *Aust. J. Agric. Res.* **53**, 851-863.
- SIWI/IWMI (2004). 'Water - More Nutrition per Drop. Towards Sustainable Food Production and Consumption Patterns in a Rapidly Changing World.' (www.siwi.org).
- VEDANTAM, S. (2004). 'Poor Nations to Get Cheap AIDS Drugs.' (www.theage.com.au/articles/2004/04/06/1081222465948.html?from=storyhs).
- WRIGHT, S. (2004). 'Grain Revolution to Hit Australia.' (<http://www.news.com.au/common/printpage/0,6093,9166217,00.html>).

Email: timothy.g.reeves@bigpond.com