"F*EWE* TURE FARMING"

Meeting the Challenge

Agenda & Speakers Notes

Bendigo Exhibition Centre
Holmes Rd
Bendigo

30th May, 2008

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Agenda

7.45am – 8.30am	Registrations – View Industry Displays
8.30am	Welcome
8.45am – 9.15am	Wool Production Meeting the Needs of the Customer Speaker: Chris Bradford
9.30am – 10.00am	Sheep Meat Eating Quality Speaker: David Pethick
10.15am – 10.45am	MORNING TEA – View Industry Displays
10.45am – 11.15am	Which will be worse – climate change disease or climate change policy medicine? Speaker: Mick Keogh
11.30am -12.00pm	Integrating cereals into a sheep enterprise Speaker: David Watson
12.15pm – 1.15pm	LUNCH – View Industry Displays
Concurrent Sessions	1. Lamb to Loin 2. On Farm Use of Electronic Identification 3. Grazing Management of Cereals 4. Mulesing Alternatives 5. Sheep Genetics 6. Grass Gro
3.00pm – 3.30pm	Decision Making Process, How it Happens On-Farm Speaker: Nigel McGuckian & Andrew Dufty
3.30pm	AFTERNOON TEA & CLOSE

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Richard Gunner of Richard Gunner Fine Meats – Dinner Speaker

Richard's love of the beef industry began as a teenager, leading heifers at the Royal Adelaide Show. He now manages Wanderribby, the family owned Angus beef-producing property at Meningie and also two butcher shops in Mt Barker, where the company's premium, branded product is sold.

In just over three years Mr Gunner has moved the company from a commodity, production-based farm to a value added business, dealing directly with customers.

Abstract
Most primary producers have little contact with the ultimate consumer of their product and as such respond to production and logistics issues in the supply chain rather than the needs of the end consumer. Lamb's production process is at a cross road and the current trend-line may not be in the final consumer's interests which will ultimately affect livestock producers.

Business summary
Richard Gunner's Fine Meats (RGFM) is one of very few companies in the Australian meat industry that is successfully implementing a 'paddock to plate' production and marketing programme. RGFM encompasses a diverse range of business units all working together to add value to primary production and deliver exceptional products to both wholesale and retail customers alike.

Beginning as a straightforward beef enterprise, the business now incorporates not just 1800 head female herd, but also a 5000 head feedlot, a boning and distribution facility, four branded retail outlets, a wholesale business supplying a string of the best restaurants and several respected meat brands, its flagships being *Coorong Angus Beef* and recent addition Pure Suffolk Lamb.

Richard Gunner's Fine Meats has been recognised with a number of awards, in 2002 it won two South Australian Meat Industry Awards and Managing Director, Richard Gunner, was recognised with the prestigious Young Leader of the Year in the Premier's Food Awards.
More recently there has been awards received by the products themselves, including the specialist *Dry-Aged Coorong Angus Beef* being presented with the only Gold medal awarded at the Sydney Fine Foods awards for Branded Beef (2006).

While these awards are gratifying, it is the accolades received from food industry icons such as Stephanie Alexander, Maggie Beer and Leo Schofield that are the most satisfying and inspiring. *Coorong Angus Beef* has been described in various restaurant reviews, magazine articles and television appearances with words including: "*sublime*", "*magnificent*", "*tenderness and full on flavour*", "*superb*", "*full of flavour*" and "*melt in the mouth.*"

Richard Gunner's Fine Meats has grown from an efficient primary producer turning off 1000 steers and heifers per annum in the year 2000 with 3 staff, to a respected, vertically integrated, innovative business processing 100 beef carcases per week, with 50 staff and a progressive, dynamic approach to business.

Value-adding through customer focus
It was the disconnect between the inconsistent beef available through local butcher shops and the exceptional eating experience when eating their own animals that caused the Gunner family to recognise that a lack of customer focus within the meat industry presented them with a business opportunity. Now, Richard Gunner's Fine Meats delivers a consistently high quality range of products to customers and remains responsive to their changing needs.

Through the business' own Feast! Fine Foods stores, Richard Gunner's Fine Meats has been well positioned to develop recipes and trial meal solutions with the aim of adding value to its own meats and distributing the best branded products available, making it the first choice for the discerning customer. While controlling the retail end of the value chain first came about through a desire to guarantee the integrity of the business' product and its brands, it also presents the opportunity to add value to often overlooked 'secondary' cuts and deliver meal solutions that remove the guesswork for consumers by matching the appropriate cut with the optimal cooking method.

Customer feedback is sought at every opportunity, particularly through the Savour Club, a loyalty programme with over 1000 members. The members of this programme are occasionally used to 'test market' possible new products and are encouraged to experiment with unusual cuts. Information on meat handling, recipes and use of under utilised cuts has helped to involve customers more and increase their openness to product innovation.
Adding veal and organic meats to the offer and switching to 100% free range chicken are just some of the steps that have been taken in response to customer feedback. But it's more than that, a request for a leg of lamb to be tunnel boned or searching for pigs testicles for a family recipe are things the business is prepared to do to exceed customer expectations and set the business apart from competitors.

At a wholesale level, as the business encompasses the grazier, retailer, wholesaler and marketer, restaurant customers can request customised products.

Value shared along the agribusiness chain
Each of the business units in the Richard Gunner's Fine Meats value chain must stand alone as a profitable enterprise. Each has its own business and marketing plans, goals, budgets and therefore accountability.

The feedlot, for example, is where *Coorong Angus Beef* is finished on a customised grain ration and a number of other businesses have their own livestock custom fed there. By providing a custom feeding service, the feedlot is always running at capacity, generating a healthy turnover and remaining a viable entity in its own right.

The processing element of Richard Gunner's Fine Meats is outsourced to an independent business, but a strong working relationship with the contracted business is essential to ensuring the standards and business targets of each party are met. Regular meetings are held and ideas shared for the expansion and development of each enterprise. Currently Richard Gunner's Fine Meats is working closely with the meat processor to assist the latter in attaining export accreditation, for the benefit of both businesses.

Managing Director, Richard Gunner, is also a strong believer in helping to advance the meat industry as a whole. Sharing experiences with peers and representing the business in positions that might exact industry reform are important business activities and time is made to be involved on the boards of the South Australian (president) and National Angus Societies and *Certified Australian Angus Beef*. As this is a family business, Richard's wife Elizabeth also takes an active industry role and is currently on the South Australian Sheep Industry Development Board.

Development of strategic alliances to assist value-adding
As well as a mutually beneficial relationship with its processor/partner, RRFM has strategic alliances with like-minded primary producers to help meet demand in Coorong Angus Beef. Other breeders from the Coorong district are now supplying pure bred Angus cattle to meet the demand generated by this product. The Pure Suffolk Lamb brand will also need suppliers, and breeders are being sought to help meet domestic and export demand. Given this is not a geographically specific brand, this does means stock can be sourced from all over Australia with the majority of external

supply at this point in time being generated from Western Australia where close links have been forged with the local Suffolk Association.

RGFM also nurtures relationships with key chefs to gain valuable information about all products' performances in a commercial kitchen to help fine tune the product offer. Chefs too have been used to help develop recipes for value-adding secondary cuts for the retail outlets and develop fresh products, such as Coorong Angus Beef pies and smallgoods.

Development of sustainable competitive advantage through value-adding

Before *Coorong Angus Beef* was developed and the first butcher shop acquired, significant market research was conducted to ensure there was a gap in the market and there was a genuine opportunity to fill it. That same market-driven philosophy permeates the entire business and helps cement a sustainable competitive advantage.

RGFM, as a small business that is also vertically integrated, has the advantage of being flexible and responsive to market demands. This alone presents a significant competitive advantage in an industry that has historically been on the whole unresponsive to consumer needs. By identifying a target market and adding value to essentially generic products, RGFM has found significant business opportunities and a sustainable competitive advantage.

A key success factor in maintaining that competitive advantage is being innovative to keep vigour in the business. For example, the business is currently working with Dr Wayne Pitchford of Adelaide University on a project to develop unique flavour profiles in red meats. The project is basically aimed at determining how the flavours of red meat can be modified by environment and diet. This is ground breaking research within the red meat industry and the results are expected to be extremely significant.

Driza-Bone Activ is now sourcing Merino wool from farmers who have stopped the mulesing practice! Driza-Bone Activ growers care about the welfare of their sheep.

Importantly, Driza-Bone has a unique relationship with dedicated Australian wool growers, allowing them to be extremely selective in ensuring exactly the right type of fibre is used to make the best garment for you. They choose only the finest 17.7 micron wool and use it across their entire range. It is not only important to the consumer to know exactly where their garment is from - it is exciting for growers to know where their Merino ends up. A lot of other Merino is sold via the auction system. The last the farmer sees of his/her wool, is on the back of a truck and they never even know where it ends up. Driza-Bone Activ growers are proud to be selecting the best Merino for your garments.

Superfine Merino wool is proving to be just as comfortable in the Amazon jungle, on Mount Everist and on Bass Strait as it is on the high fashion catwalks of Europe.

A range of active wear produced by icon Australian company Driza-bone® is putting fine Merino wool in the demanding sports environment where it is proving extremely popular.

Driza-bone Activ Merino sports wear has been worn by Shaun Bacon on the 7 day Amazon marathon, the crew of consecutive Sydney to Hobart line honour winning yacht Wild Oats X1, on the slopes of Mount Everist as well as by countless skiers on snow fields throughout the world.

Driza-bone is a company which has been around since 1896 and has a reputation for performance and protecting people from the elements. Our oilskin coats have been extremely popular, but we were looking to move with the changing times and market, to broaden the business with Australian Merino wool which has so much to offer.

Superfine Merino wool has fantastic attributes in terms of moisture absorption, breathability, UV protection, anti static, natural stretch, comfort next to the skin and resistance to stains and odours. There's a clear trend in the outdoor garment sector towards Merino wool as a preferred fibre. It is also a natural, sustainable and renewable fibre which is important for today's consumers.

After extensive market research the company developed a range of men's and women's active wear in three weights under the label, Driza-bone Activ. The sports and leisure wear range is designed to be worn next to the skin and as layers.

The first range of Driza-bone Activ wear hit retail outlets in May 2007 and is now selling in 12 countries. The product is made from 17.7 micron wool purchased from growers through The Merino Company. There's a clear demand for finer Merino wool from consumers, regardless of the market sector.

Driza-bone customers also have a preference for products which don't harm the environment and for wool from non mulesed flocks. Driza-bone source 95 per cent of their wool from flocks which no longer mules their sheep, we need to have a certification process in place which can verify how the wool is grown before we can make any claims to consumers.

Driza-bone don't want to tell wool producers what to do, but as a clothing manufacturer understand that success rests in giving consumers what they want.

David grew up in the Adelaide Hills on a mixed farming enterprise (Beef, Sheep, Fruit) but specialising in a stud Border Leicester operation. Trained in Agricultural Science at Adelaide University and then completed doctorate at Cambridge University, UK (1980). He has worked in the farm animal Industries for 24 years post graduation as a university academic, researcher, teacher and industry practitioner. His research has been wide ranging but has specialised in fundamental and applied meat science in beef, lamb and sheep meats. This meat science research has made a major contribution to the understanding of meat quality and its management. He is head of Production Animal Research at Murdoch University and is program manger for Meat Science in both the Beef and Sheep CRC's.

He has been nationally and internationally recognised for his research and extension by several prizes in recent years

(i) 'The International Meat Secretariat Millennium Prize for Meat Science and Technology' awarded to the Meat Standards Australia Pathways Team, September 2000

(ii) 'Howard W Yelland Award' awarded by the Beef Improvement Association in recognition of his outstanding contribution to the Beef Industry, July 2005

(iii) Elected as a fellow of the Australian Society of Animal Production' for 'exceptional and sustained contributions to animal production through research and service to the livestock industries in Australia and to the Society', July, 2006

(iv) Elected as a fellow to the Australian Institute of Agricultural Science and Technology 'in recognition of an outstanding contribution to the profession of agriculture' – awarded July , 2006.

Abstract

This paper describes the Meat Standards Australia quality trade mark to underpin lamb and sheep meat products. The research to underpin a quality claim found that a supply chain approach was required such that on farm, abattoir and wholesale/retail components of the chain all needed to play a role.

Introduction

The R&D associated with Meat & Livestock Australia's lamb and sheep meat eating quality program has now been published in a special edition of the Australian Journal of Experimental Agriculture (Pethick et al. 2005a). Following the research the Sheep meats Industry, through its peak body Sheep Meats Council Australia, decided that a national quality mark for lamb and other sheep meat products would be commercialised through Meat Standards Australia (MSA). Meat Standards Australia is a business unit of Meat & Livestock Australia that has developed a world renowned grading scheme to underpin beef quality that predicts the palatability of beef cuts and muscles (Thompson 2002, Pethick et al. 2005b).

Pathways to underpin quality

The lamb and sheep meat research (Pethick et al. 2005a) has lead to the supply chain pathways. This requires meeting recommended growth rates, carcase and fat specifications, curfew and lairage times, pH x temperature windows (i.e. electrical stimulation) and meat aging. In addition a cut x cook matrix has been developed for commercial cuts of lamb, hogget and mutton.

A key feature is that the pathways are not difficult to achieve and represent Industry best practice throughout the lamb production supply chain. The commercial cuts highlights lamb as a high eating quality product across the carcase. It also makes clear that hogget or young mutton (2-4 fully erupted permanent incisor teeth) does eat at a lower level than lamb especially in the leg cuts.

Additional recommendations

There are some additional recommendations such as do not feed very high cereal grain diets for prolonged periods pre-slaughter as this can sometimes cause the accumulation of branched chain fatty acids that create an unpleasant odour during cooking.
There are also recommendations for Australian sheep breeding values (ASBV's) to help supply chains maximise eating quality as well as growth and muscle potential of slaughter lambs. The genetic conclusions are that a balanced selection approach for terminal sires using the Lambplan™ carcase plus index will not reduce the eating quality of lamb. Single trait selection can cause problems – for example sires with low growth and high muscle ASBV's can produce lambs which have reduced eating quality due to effects such as lowering intramuscular fat of lamb meat.

Future directions

New research directions (outlined in Pethick et al. 2006) are to more strongly select for carcase yield BUT to also underpin eating quality (maintain tenderness and intra muscular fat) and human health attributes of lamb (omega 3 fatty acids, Fe and Zn). This work forms the basis of the meat science and information nucleus scientific programs within the CRC for Sheep Industry Innovation.

References

Pethick. D.W., D'Souza, D.N., Anderson, C.A. and Miur, LL (2005a) Eating quality of Australian lamb and sheep meats.

Australian Journal of Experimental Agriculture **45**, Issue 5 Pethick, D.W., Fergusson, D.M., Gardner, G.E., Hocquette, J.F., Thompson,J.M. and Warner, R. (2005b) Muscle metabolism in relation to genotypic and environmental influences on consumer defined quality of red meat.

In: Indicators of milk and beef quality, J.F. Hocquette & S. Gigli (editors), Wageningen Academic Publishers, Wageningen, The Netherlands. Pp 95-110.

Pethick D.W., R.G. Banks, J. Hales, and I.R. Ross (2006) Australian prime lamb- a vision for 2020.

International Journal of Sheep and Wool Science 54(1): 66-73.

Thompson, J.M. (2002) Managing meat Tenderness. *Meat Science* **60**, 365-369.

Mick Keogh – Which will be worse, the climate change disease or the climate change policy medicine?

Mick Keogh oversees the functioning of the Australian Farm Institute and its staff. He was previously the General Manager Policy for the NSW Farmers' Association and worked for ten years as an agricultural management consultant, for both private and public sector clients. He obtained a BSc and MSc in Wool & Pastoral Sciences at the university of NSW and grew up on, and continues to be involved in a mixed farming enterprise based in Southern NSW.

Abstract

Government policy responses to climate change are much more likely to have major implications for Australia's agriculture sectors over the next twenty years than climate change itself. There is a very real danger that agriculture in Australia will be impacted more heavily than most sectors of the economy as Australia strives to meet future emission targets. The agriculture sector will need to become very heavily engaged in debates about climate change policy, and will need considerable resources devoted to researching relevant issues to ensure it is not unfairly disadvantaged in the longer term by policy responses. Issues of particular significance will include greenhouse emission accounting rules, mechanisms to avoid international emission leakage, and ensuring the rules of the national emissions trading scheme do not unnecessarily disadvantage farm businesses.

Introduction

Those with any experience in politics are very well aware of the truism that "in politics, timing is everything". There is no end to the queue of brilliant policy initiatives that have ended up languishing in a file somewhere because the timing wasn't right for their introduction. Similarly, there is also a long queue of very able and skilled politicians whose careers were either cut short or never reached their full potential due to unfortunate timing.

The policy developments that have occurred recently in response to the risk of damaging manmade changes to global climate are essentially political, and as such, timing has had a great deal to do with their implementation. If there had not been a severe drought over most of Australia during 2005 – 2007, or if there had not been a national election scheduled towards the end of 2007, or if world economic conditions had not been as buoyant as they were in the decade prior to 2007, then the policy environment associated with climate change in Australia and to some extent globally may have been significantly different. Similarly, if there are dramatic changes in the economic or political situation over the next few years, there is no doubt that timing might again be important in relation to major changes or even reversals of these policies.

This point needs to be made and reinforced at the start of any discussion of national and international climate change policies and their potential long-term implications. The fact that these policy decisions are essentially political, that they are being made in the absence of precise knowledge of their impacts on future climate, and that even if they are successful their impacts will not be able to be observed for another fifty to one hundred years, means that such policies will be particularly vulnerable to changing political circumstances, and the policy environment that exists or is envisaged today may be dramatically different in five to ten years time.

To some extent future national policy flexibility will be curtailed by international agreements such as the Kyoto Protocol, and indeed that is one aim of such multinational agreements. However, it would be a brave politician indeed that would sacrifice national economic well-being in order to comply with an international agreement, and the recent experience of Canada and its revised greenhouse policy in response to a ballooning Kyoto Protocol emissions liability is a salient reminder that there are a great many uncertainties in trying to predict future policy and related economic implications.

That said, there have been a series of policy decisions made and foreshadowed over recent times, and there has also been a large effort made by many groups to model some of the economic impacts of these decisions. The purpose of this paper is to provide some analysis of those policy decisions and their likely economic impacts, with particular reference to the agriculture sector.

A brief history of climate change policy

The first moves to implement international policies in response to the risk of human-induced climatic changes occurred in 1992, when the United Nations Framework Convention on Climate Change (UNFCCC) was ratified. This convention gave broad recognition to the need to take action to reduce emissions of greenhouse gas arising from human activities. The Kyoto Protocol to the UNFCCC was negotiated in 1997, and it provided an agreed approach to measuring emissions, and set specific emission reduction targets for participating developed nations over the period to 2012.

While most developed nations were required to limit future emission levels to around 95% of their 1990 emissions, Australia was set a relatively generous target of 108% of 1990 emissions by 2012 on account of the nation's heavy economic dependence on fossil fuels and coal-fired electricity. Despite the generous target, Australia subsequently decided not to ratify – and be legally bound by – the Kyoto Protocol, an approach also adopted by the USA. Canada and New Zealand both ratified the Protocol, however both have failed by a substantial margin to meet their targets, and Canada has subsequently abandoned it's commitment. New Zealand has persisted, although even by the end of 2007 faced a potential liability of up to $NZ 700 million (which has since diminished to about $NZ 400 million), which the NZ Treasury estimates to be the cost of the volume of greenhouse emission credits that would need to be purchased to offset its excess emissions. Some forecasters suggest that this amount may grow substantially by 2012, the end of the first commitment period of the Kyoto Protocol. The result will be some tough decisions for the New Zealand government, which may have to balance a decision to commit large amounts of dollars to planting trees or buying Russian 'hot air', against the possibility of spending that money on other items such as health or education.

In late 2007, Australia ratified the Kyoto Protocol and agreed to be legally bound by it. To give effect to this will require an Act of Parliament, which at the time of writing has not been legislated. It is unlikely that ratification of the Kyoto Protocol will have much real impact, as Australia is already on track to meet its Kyoto Protocol target. The biggest single reason that Australia will meet its Kyoto Protocol target is that bans on land clearing during the late 1990s and the first half decade of the 2000's dramatically reduced the calculated level of national emissions, at virtually no cost to Australian governments but at significant cost to farmers in NSW and Queensland who had much of their land effectively locked up. Because land clearing was calculated to be a major source of greenhouse emissions in the 1990 base year, the subsequent bans have meant that greenhouse emissions from this source have shrunk dramatically, and effectively negated the 30% growth in emissions from the energy sector that have occurred as a result of increased demand for electricity.

Somewhat ironically, the largest source of these increased emissions are the coal-fired power stations that are owned by, and paying large annual dividends to the very same State governments that imposed the bans on land clearing by farmers to achieve emission reductions.

Being committed to the Kyoto Protocol essentially entails agreement by a national government to be legally obligated to meet greenhouse emission reduction targets that are set internationally. The disadvantage of such an arrangement is that international agreements are only reached through long and tortuous negotiations, during which all nations profess to be acting in the best interests of the planet, but in reality and of necessity need to ensure their own national interests are paramount. This explains, for example, why some European governments, having largely converted to greenhouse emission free nuclear and hydro electricity many decades ago as their coal reserves were expended, are very enthusiastic proponents of rapid and binding greenhouse

emission cuts, while nations such as Australia, the USA, many developing nations and lately Canada are not so sure.

The advantage of a multilateral treaty such as the Kyoto Protocol obviously lies in the fact that, irrespective of where greenhouse emissions are produced globally, they all have the same net impact on the atmosphere, therefore it is essential to have all nations striving to reduce emissions simultaneously. There is no point closing down an emissions source in one country, simply to see it replaced by a new source which springs up in another country, with no net impact on global emissions.

Another advantage of an agreement such as the Kyoto Protocol is that involves the development of common greenhouse emission accounting standards, which theoretically reduces the potential for accounting-based emission reductions, rather than real reductions. This can also be a disadvantage, because national negotiators are very aware of the extent to which different greenhouse accounting rules can change a nation's apparent net emissions. Australia was an early beneficiary in this regard by being allowed to include land-clearing emissions in it's 1990 baseline emission calculations, but has been disadvantaged in more recent times by subsequent decisions which have meant, for example, that emissions arising from ruminant livestock production systems are counted in the national greenhouse inventory, but the removal of carbon dioxide from the atmosphere by those same production systems is not recognised.

A further advantage of participation in a multilateral agreement such as the Kyoto Protocol is the opportunity it may create to utilise international trade to minimise the economic cost of achieving reduced net emissions. A nation that is able to efficiently produce something which generates greenhouse emissions can reduce national net emissions by paying organisations overseas to carry out activities, such as growing new forests, which lock up atmospheric carbon dioxide and 'offset' the greenhouse emissions that have been created. Such trade already occurs amongst nations which have ratified the Kyoto Protocol, and it is argued that access to such mechanisms would be advantageous to large greenhouse gas emitters in Australia. Whether or not this proves to be the case is yet to be seen.

Australian policy responses

Despite not ratifying the Kyoto Protocol until late 2007, since 1997 Australian governments have implemented a broad suite of measures aimed at both better measurement and monitoring of national greenhouse emissions, and also at reducing net emissions.

Initial policy measures included setting up the Australian Greenhouse Office, and the development of standard methodologies for estimating national greenhouse emissions. A national greenhouse emissions inventory report has been produced for each year since 1990, with estimates regularly upgraded as calculation methodologies have been changed. In relation to the national inventory, it is important to note that few if any of the figures it contains are based on actual direct measurement of emissions. Most of the figures are estimates which utilise standard emission factors for different activities, and many of these are based on overseas, rather than Australian research.

There has also been a suite of incentives and research programs implemented for the energy and minerals sector, and some broader programs such as the 'Greenhouse Friendly" initiative which provides organisations with an opportunity to monitor and reduce their emissions, and in return promote their business as being greenhouse friendly.

Perhaps the most significant policy action to date by Australian governments has been the previously referred to bans on clearing native trees on farmland. These were implemented by the NSW and later the Queensland governments, at the behest of the Australian Government. It was initially claimed by the NSW Government that the main reason the bans were implemented was to

reduce the future risk of dryland salinity, the theory being that retaining perennial trees and shrubs which are better at extracting water from deeper in the soil profile would prevent groundwater levels from rising and bringing to the surface dissolved salts which could salinise the land. The difficulty with this explanation was that the areas being cleared of scrub were in the far west of the state, where groundwater tables are often hundreds of metres below the surface and, given the low and supposedly declining rainfall, never likely to rise to anywhere near the surface.

The Queensland Government was much less evasive about the principal reasons for the bans on land clearing, openly stating that the Australian government had demanded the bans be implemented to achieve greenhouse emission abatement objectives, and that they had also been incorporated as a pre-condition into Commonwealth-State natural resource funding agreements. The Queensland government eventually implemented the bans fully in 2004, although it did negotiate some compensatory funding for affected landholders, an action that stands in stark contrast to the cold and calculated indifference of the NSW government to landholder compensation.

During 2006 and 2007, there was an upsurge in policy activity on climate change, as a consequence of a number of factors. These included the proximity of a national election in Australia, the intensifying of an extended drought in southern Australia, an upsurge in international publicity about the issue, the release of a further report by the United Nations Intergovernmental Panel on Climate Change, and the release of a UK government report on the issue by economist Sir Nicholas Stern.

Internationally, the consensus of economists and bureaucrats is that the best way to reduce greenhouse emissions is to ensure that organisations engaged in activities that create emissions pay for the full cost of those emissions to the environment. While theoretically sound, measurement and other factors make this very complex to implement. The preferred way of ensuring greenhouse emissions are fully costed is via emissions trading schemes, which have the added advantage of enabling emissions to be reduced at least economic cost.

The Howard Government commissioned a Task Group in late 2006 to investigate and make recommendations on the design of a workable national emissions trading scheme (ETS). The Task Group's recommendations were released in June 2007 (Prime Ministers Task Group, 2007). The principal recommendations were that Australia should implement a national emissions trading scheme by 2011 or 2012, in which the 900 organisations that are Australia's biggest direct emitters would be required to participate. This group included wholesale fuel distributors, who are to be made responsible for the emissions created when their fuel is used by consumers.

The Rudd Government has largely endorsed this proposal, although set a date of June 2010 as the starting date for the ETS. In addition, the government has set a long-term emissions target of a 60% reduction from 2000 emissions by 2050.

Within the proposed 'cap and trade' ETS, direct emitters will initially be required to estimate their annual greenhouse emissions based on standard methodologies, and will then be required to progressively reduce those – either directly by changing their production systems, or indirectly by paying a non-participating organisation to carry out actions that sequester greenhouse gases from the atmosphere.

The government will issue and auction an annually diminishing volume of greenhouse emission permits (the volume determined by the emissions cap this will periodically be set), with ETS participants required to hold permits equal in volume to their estimated greenhouse emissions at the end of each year. These permits will be able to be traded, with those companies that are economically efficient at reducing emissions able to sell spare permits to other organisations for which emission reduction has a high price. The incoming Rudd Government has broadly endorsed

the proposed design of the national ETS, although vowed to implement it at least one year earlier in 2010.

A major step towards implementation of the ETS occurred in the latter half of 2007, with the enactment of the National Greenhouse and Energy Reporting Act. This legislation requires organisations which produce greenhouse emissions in excess of a threshold level to provide the Government with an annual report detailing their greenhouse emissions and energy use. Organisations are required to register in 2008, and provide a first report for the 2008-09 year. Information arising from these reports will form the basis of decisions about the volume of emission permits that will be available in the first year of the ETS in 2010.

The agriculture sector is the third largest national source of direct greenhouse emissions, behind the energy and transport sectors and directly accounts for 16% of Australia's greenhouse emissions (based on Kyoto Protocol accounting rules). As such, the sector represents a prime target in the national quest to find ways to reduce emissions, not the least reason being that a sector comprising 3% of GDP but producing 16% of emissions is obviously a source of what appear to be low economic cost emissions, the reduction of which may not have a big direct effect on national economic wellbeing.

The Prime Ministerial Task Group recommended that businesses in the agricultural sector should not initially become direct participants in the national ETS, but did recommend that agricultural businesses should become direct participants in the scheme at a later date when measurement and administrative challenges have been resolved.

Some have interpreted this to infer that agriculture has been 'let off the hook', and that businesses in the sector will not have to tackle emissions in the same way that other direct emitters in the economy will. This is an overly simplistic interpretation, and in fact there are some that are of the view that agricultural businesses would be better off being direct participants in the ETS, rather than what has been proposed. The reason for this is that for virtually all sectors of Australian agriculture, there is a high level of trade exposure in domestic markets, and a strong reliance on export markets. This means Australian farmers operate in very direct competition with farmers in other developed and many developing nations.

The implementation of a national ETS in 2010 will result in increases in prices for fuel, energy and energy-dependent services such as transport, and reduce the international competitiveness of Australian farm businesses, especially relative to farm businesses in developing nations that will not have similar climate change policies in place by 2010, and are not likely to for many years.

Apart from striving to be more efficient and use less fuel and energy, Australian farm businesses will only have quite limited options available to generate savings or extra revenue to offset these additional costs. Those with areas of unused land in higher rainfall zones may have the option of planting trees and marketing emission offsets to ETS participants, although administration and management costs are likely to render small areas of trees relatively uneconomic. It will also only be plantations that are established after June 3rd 2007 that will be recognised as offsets, putting those farmers who have already carried out extensive tree planting at a major disadvantage.

While net farm emission reduction is possible through reduced nitrogen fertiliser use; or through enhancing soil carbon levels; or via technologies that reduce livestock emissions, none of these actions are likely to be recognised as marketable offsets in the foreseeable future. In addition, if agricultural businesses are required to become direct participants in a national ETS at a later stage, it may actually be a disadvantage for them to have already harvested their 'low-hanging emission fruits', and have no easy emission-reduction options available.

Economic implications

As noted earlier, one of the most challenging aspects of climate change policy is the degree of uncertainty that exists in relation to the eventual impact of emission-reduction actions on the environment. Equally as challenging, however, is the degree of uncertainty that surrounds the global and local economic impacts of different policy measures.

The economic uncertainty arises because there is only limited knowledge available about the marginal cost of abatement of emissions for existing emitters, and also a great deal of uncertainty surrounding the potential success of new low-emission or emission-reducing technologies. For example, much has been claimed about the potential of 'clean coal' technologies to dramatically reduce greenhouse gas emissions from coal-fired electricity generation plants, perhaps the biggest single source of Australian greenhouse emissions. However, the technology essentially involves capturing the exhaust plume of a coal-fired power station, cooling it down, pressurizing it and condensing it into a liquid, and pumping it a few kilometres underground to a secure storage where it is hoped it will remain permanently. Even coal industry leaders in Australia have expressed doubts about the technical viability of the technology, let alone the economic cost, so it is perhaps no surprise that there is a large element of uncertainty surrounding the economic modelling being used to predict future economic implications.

The Stern Review (Stern, 2007) was released by the UK government in 2007, and attempted to provide a comprehensive review of both the global economic costs of climate change, and the costs of taking action to stabilise atmospheric greenhouse gas at a level that would minimise long-term damage. Stern's analysis concluded that in the absence of any action, over the next 100 years the economic impact of climate change could be equivalent to a permanent reduction of 5% of global GDP each year, with a risk of this damage expanding to be more than 20% of annual global GDP. Conversely, Stern argued that by taking strong action immediately to reduce emissions, the cost of emission reduction might only be the equivalent of 1% of global GDP per annum. Part of the reason for this conclusion is that greenhouse gas accumulation in the atmosphere is a process that has considerable time-lags associated with it, so therefore avoiding extra emissions immediately may have much greater long-term benefits than a bigger reduction in emissions would have at some time well into the future.

The cost of climate change damage estimated by Stern was considerably higher than previous estimates, and the cost of emission reduction was considerably lower. As a result, the Stern report has been heavily criticized, both because of the assumptions underpinning it, and also because it confounds conventional wisdom which holds that a slow initial rate of emission reduction will minimise economic costs while providing time for low-emission technologies to be developed.

A recent analysis (Productivity Commission, 2008) has highlighted that part of the reason that Stern has estimated higher future damage costs is that the analysis placed greater weight on the potential impact of low-probability catastrophic future events than has other analyses. The Productivity Commission concluded that Stern's analysis *"... is based on a single high-emission scenario, inclines towards more pessimistic assumptions on damage costs, and adopts unconventional parameters for discount rates. These traits tend to escalate the present value of future costs and thereby elicit urgency in mitigation measures."* If nothing else, Stern's review and the subsequent debate it has sparked highlight the extreme difficulty associated with attempting to model developments one hundred years into the future, especially when the potential future changes in climate, the potential future success of low emission technologies, and the potential impact of these technologies on future climatic conditions remains highly uncertain. By changing some of the assumptions associated with each of these even slightly, the compound effect over one hundred years can be very large.

Despite the uncertainty of economic modelling, there are a number of conclusions that can be made from first principles concerning the impact of climate change policies. Firstly, Australia has relatively high rates of greenhouse emissions per capita, arising as a consequence of a high reliance on coal-fired electricity generation, and a sparse population which necessitates relatively high transport costs. All other things being equal, the total economic costs per capita of reducing greenhouse emissions in Australia will therefore be greater than the economic costs per capita of emission reduction in an economy which has lower per capita emissions.

Secondly, Australian governments have a high degree of dependency on sectors such as the coal industry, arising not only from the royalty and dividend revenue the sector generates for the respective governments, but also from the critical role coal plays as a feedstock for the electricity sector. Governments are well aware of the sensitivity of consumers to electricity stoppages, or to sudden increases in electricity prices. This means that governments are likely to be very careful taking action that might jeopardize the future supply or increase the price of electricity, and will be anxious to ensure that any other avenues to reduce emissions are taken before imposing large costs on the coal sector. This will include finding ways to reduce emissions from the agriculture sector.

For Australian agriculture, these conclusions have important implications. The Australian farm sector is a 'cost-absorbing' sector in the economy, generally fully exposed to international markets and with little opportunity to pass additional costs on to consumers. As a result, emission abatement or emissions trading costs that will be reflected in increased prices for fuel, electricity and energy-dependent farm inputs will reduce farm competitiveness, lowering the value of export sales and increasing import pressure in domestic markets. This will be particularly the case for farmers in those sectors, such as grains, horticulture, pork, beef, sugar, cotton and dairy who are facing increasing international competition from farmers in the developing nations of Eastern Europe, Asia and South America. These developing nation farmers will not face greenhouse emission costs over at least the next decade if not a longer period. The growth that has already occurred over the past five years in processed vegetable imports to Australia from China, for example, is likely to accelerate, as are imports of products such as pork.

There has been some comment to the effect that as fuel and energy costs are only a relatively small proportion of total farm costs, the loss of competitiveness arising from increased prices for these inputs will not be great. For the average broadacre farmer, for example, ABARE data (ABARE, 2007) reveals that fuel and electricity costs have averaged approximately 8% of total farm input costs over the three years to 2006. A 20% increase in these costs would only increase total farm input costs by 1.6%.

This analysis is overly simplistic, however, because there are a range of other farm inputs, such as freight, crop contracting, chemicals and fertilisers, the cost of which could be expected to be highly sensitive to fuel and energy costs. These energy-dependent inputs represent an additional 22% of average broadacre farm input costs, and in total, energy and energy-dependent input costs have increased from 23.5% to 32.2% of average broadacre farm input costs over the period from 1990 to 2006.

Industry-wide figures also fail to highlight the different input dependency of some sub-sectors of agriculture. For example, direct fuel and energy costs for broadacre crop specialists were more than 10% of total input costs, and energy dependent inputs such as freight, chemicals, crop contracting and fertilisers make up an additional 35% of total farm input costs. This means that the costs of almost half the total inputs of broadacre crop specialists are likely to be highly sensitive to increases in fuel and energy costs.
As would be anticipated, the figure is much less for livestock specialists.

Other plant-based sectors of Australian agriculture, such as the sugar, cotton and rice industries, are likely to have similar input costs to wheat and crop specialists, and be similarly impacted by fuel and energy cost increases.

The conclusion that additional fuel and energy prices will only have a minimal impact on Australian farm competitiveness also ignores the reality that in many international markets, especially those involving bulk commodities such as grains, competition is fierce and even a small loss in competitiveness can result in large changes in the volumes of exports to particular markets. Evidence of this market sensitivity is readily available in the market responses that quickly arise when currency exchange rate changes occur.

Imperatives for Australian agriculture

The ongoing development of climate change policies by Australian and international governments will present some major challenges for Australian agriculture. As noted earlier, as a sector that represents a relatively small proportion of the national economy, but is recorded as being responsible for a relatively large share of annual greenhouse emissions is likely to be a target for other economic sectors and government policy measures aimed at achieving a reduction in those emissions. Further, the disaggregated nature of agricultural industries, and the measurement and administrative challenges associated with the sector's emission profile makes it more likely governments will resort to blunt regulatory measures to reduce the sector's emissions, rather than putting resources into the development of more complex market-based policy instruments. There is no need to look any further than the recent history of land clearing regulations in Australia to see evidence of such an approach, and the impact it may have on either some parts of, or the entire sector.

While agriculture should be part of the response to reducing national greenhouse emissions, the challenge will be to ensure that any response required of the sector is fair and equitable, is developed within a market-based rather than a regulatory framework, and does not simply result in a transfer of both economic activity and greenhouse emission production to an overseas location. To achieve this outcome will require considerable effort in three key areas.

Greenhouse emission accounting methodologies. For a variety of complex and often largely political reasons, Kyoto Protocol greenhouse emission accounting rules as applied in Australia recognise the full range of greenhouse emissions arising from agricultural production systems, but do not recognise most of the greenhouse gas sequestration that also occurs as part of normal production cycles. As a simple example of this, the accounting rules require that methane and nitrous oxide emissions arising from the digestion of pasture by beef cattle are counted as part of the national emission inventory, but do not recognise the carbon dioxide and nitrous oxide removed from the atmosphere by the pasture during its growth. The result is that gross rather than net agricultural emissions are counted, making the sector seem to be a much bigger contributor to national emissions than is actually the case.

To ensure recorded agriculture sector emissions more accurately reflect the cycling of carbon dioxide and other greenhouse gases in agricultural production systems will require that very detailed life-cycle analysis (LCA) research is carried out for a broad range of both plant and animal production systems in Australia. While some efforts have been made to date, there is a need much more urgent efforts to be made, which will, in turn, require financial resources and personnel. Given the contribution the agriculture sector has already made to national emission reduction, and the generous assistance governments have made available to sectors such as the coal industry to address greenhouse emission challenges, it is not unreasonable to expect that such resources should be made available from government sources.

International emission leakage. One very real risk associated with Australia's implementation of climate change policy responses is that the net effect of these policies at a global scale will be

either negligible or even negative because they simply result in the transfer of that economic activity to an overseas location that does not have equivalent greenhouse emission policies, and in many cases may employ production technology that is less greenhouse efficient than that originally used in Australia. This issue is one that is not confined to Australia, but is relevant to many developed nations, - especially those like Australia that have open trade policies. Even for nations within the European Union, which has some quite restrictive barriers to imports, this issue is presenting a major challenge. In a recent speech to the European Parliament (Barroso, 2008) the President of the European Commission stated "*There is no point in Europe being tough (in reducing emissions) if it just means production shifting to countries allowing a free-for-all on emissions. An international agreement is the best way to tackle this … And if our expectations about an international agreement are not met, we will look at other options such as requiring importers to obtain (greenhouse emission) allowances alongside European competitors."*

The recommendation of the Prime Minister's Emissions Trading Task Group on this issue was that businesses competing in international markets against non-greenhouse constrained exporters should receive free greenhouse emission permits as compensation, for so long as the policy differences persist. This recommendation will benefit those organisations required to be direct participants in the ETS, but will do nothing to assist sectors such as agriculture that will face higher input costs and loss of international competitiveness, and will not be direct ETS participants for some time.

There will need to be serious consideration of a range of different policy measures to ensure that Australian agriculture is not needlessly disadvantaged by Australian climate change policy responses. Such policies might include a tax rebate for farm businesses based on the average cost increases of farm inputs arising from Australian climate change policy responses, or some form of carbon tax on agricultural imports from non-greenhouse constrained countries. Another additional measure could be cash payments for farmers who voluntarily adopt greenhouse friendly management practices, utilising the revenue generated from the sale of ETS permits. Such a policy could provide a transitional pathway to ETS participation by agriculture, while supplementing farm income and reducing national emissions. While some of these options may seem contrary to existing Australian trade policies, they require serious consideration because to do nothing may mean that Australian policy responses will be ineffective from a global emissions perspective.

ETS rules. Emissions trading schemes are effectively artificial markets that are created by government legislation. While such schemes have the potential to economically and efficiently result in a reduction in greenhouse emissions, they also have the potential to distort markets and change resource allocation in ways that may not be what was originally intended. As a simple example, a decision to impose rapid cuts in national emissions will result in relatively greater increases in fuel and energy costs, and will also create a higher price for emission offsets such as tree plantations. The resulting reduced profitability of conventional farm businesses and enhanced profitability of tree plantations could result in the conversion of large areas of prime, high-rainfall farm land to plantations, and have major impacts on water resources and broader socio-economic impacts, including reduced food production and export earnings.

Careful design of the rules of the ETS and associated government regulations can assist in avoiding some of the adverse impacts. For example, ETS rules that reduce compliance and transaction costs for paddock-scale offset plantations may assist to ensure that a variety of different land uses will persist, rather than creating plantation monocultures. Similarly, planning regulations that require plantation proponents to fully account for any impact on water resources and other issues such as bushfires and feral pest and weed control will assist in averting any unintended impacts.

An added challenge for the designers of an ETS will be finding ways to recognise and trade non-permanent emission offsets, such as the sequestration of carbon in soils and vegetation, or the incorporation of carbon into the soil through processes such as biochar. These processes provide

real opportunities for both lower emission reduction costs and increased farm productivity, but will require very careful development of the ETS rules to ensure that appropriate incentives are created to encourage them.

Conclusions

The development of policy responses to climate change by Australian and international governments will present some very major challenges for Australian agriculture. The sector will need to urgently muster resources and personnel to respond to these challenges. Responses will be required on a range of technical issues, but particularly in relation to greenhouse emission accounting rules, measures to limit international emission leakage, and ensuring that the rules of the national emissions trading scheme do not discriminate against farm businesses. There is also a need to recognise that many of the decisions that will be made will be largely political, and it will take some very adroit positioning by the agriculture sector to ensure that those decisions provide advantages and opportunities for agriculture, and the sector does not continue to be the sacrificial lamb used to achieve national greenhouse emission objectives.

References

ABARE, 2007. Australian Bureau of Agriculture and Resource Economics. Agsurf database. Accessible at www.abareconomics.com

Barroso, 2007. *"20 20 by 2020: Europe's Climate Change opportunity."* Speech by the President of the European Commission to the European Parliament. Brussels, January 23rd, 2008.

Prime Ministerial Task Group on Emissions Trading, 2007. Report of the Task Group on Emissions Trading. Canberra, June 2007.

Stern, 2007. *Stern Review of the Economics of Climate Change.* Government of the United Kingdom.

Productivity Commission, 2008. "*The Stern Review: an assessment of it's methodology."* Productivity Commission Staff working paper, January 2008.

David Watson has been a partner in the agricultural consulting firm Agvise Pty Ltd at Inverleigh since 2005.

Prior to this he managed a group of large private properties across south western Victoria owned by Yaloak Estate. And was a past president of the Grassland Society of Southern Australia and Chairman of Geelong branch of Southern Farming Systems.

For the last three years he has been involved with Grain & Graze on applied research for issues pertaining to improving productivity of mixed farms in SW Vic.

Principle areas of investigation include;

- Grazing cereals
- Lucerne in the cropping system
    - Increasing winter productivity
    - Increasing animal performance
- Integrated Pest Management IPM
- Grazing management of stubbles
- Drained pastures
- The role of native grasses in mixed systems

The presentation will look at what we have learned about grazing winter cereal crops.

In short;

- We know we can graze any cereal not just oats & winter wheat
- We know that grazing must be completed by Growth Stage 30 or grain yield will suffer
- We know that stubble mass and hay or silage yields will be reduced by grazing
- We know that nitrogen and sowing rate will impact dry matter and grain protein
- We have modelled significant increases in overall farm profitability by implementing a strategic cereal grazing strategy on a mixed farm
- Adoptions in our area is high

The 70 page book “Free Food for Thought” contains all that is covered in this presentation and is available at the conference.

Nigel has worked with rural communities, businesses and families for 25 years. He has a wide range of experience in business consulting, training, project management and facilitation. He has written many publications which are now widely used on farms such as succession planning, business skills and farmer skills. He is always innovative in his approach and provides leadership.

Making Confident Decisions in Drought

Complexity of Decisions

Mixed farming is the predominant farming system throughout Australia. The majority of these farms are managed by a farming family. The mixed farming enterprises are often a range of crops and one or more livestock enterprises. The land or pasture resources are often fragile or in need of repair. This is a difficult system to manage and a difficult environment in which to make decisions. The theories proposed by Snowden about simple, complicated and complex decisions[1], discussed below, are very useful in understanding how farmers make decisions.

Simple Decisions

The easiest decisions are simple. There are a few variables and there is a clear right or wrong answer. For example, deciding how much drench to give a 45kg wether may be considered a simple decision. The farmer would refer to the label recommendation and drench accordingly. Throughout the day, many simple decisions are made with little conscious thought.

Complicated decisions

When a number of variables are involved, but the relationships between variables are clear and well documented, a decision can be considered complicated. Deciding on a pest control program in a wheat crop could be considered complicated. Significant expertise and experience is required, however information on relationships and responses is available which the expert can use to make a decision. Again, many complicated decisions are required on mixed farms. For example, a range of crops are grown and different soils and paddocks have different histories and weeds. These decisions are often made by the farmer with assistance from a trained and experienced agronomist.

Complex decisions

When a number of complicated decisions come together and interact and the variables and trade offs cannot be quantified or weighed against each other, the decisions may be considered complex. For example, deciding how many livestock to run on a farm, which also has a range of crops, is a complex decision. Although a theoretical optimum number of livestock could be calculated using a modelling approach, many variables would remain unaccounted for such as the effect on the environment, the need to manage labour, the impact on recreation time, the increased risks, and long-term price forecasts. The number of variables is very high and cannot be modelled.

Drought can dramatically increase the complexity of decisions faced by farming families. Large and long-term questions about the families' future intersect with seemingly small and simple questions about production. The uncertainties that drought introduces make it difficult to know what can be relied on. 'Simple' parts of the decision become complicated and complicated parts of the decision become complex. The BCG research suggests that farmers are losing faith in "rules of thumb" they have previously relied on, as patterns such as "a good year always follows a bad year" seem to no longer hold. Climate change predictions meant that even the question of whether the drought will truly break is up in the air, as is the question of what problems are attributable to drought (and will therefore be relieved when (if) the drought breaks).

[1] Snowden D.J. (2003) Managing for serendipity or why we should lay off "best practice" in KM.

How can farmers make decisions in such a difficult, complex environment? The theory on decision-making suggests:

- we can improve decision making when the decisions are complex by "story telling". This is, of course, what farmers have been doing for many years. They like to learn by discussing options with others.
- a set of principles or boundaries are established and decisions are made within these boundaries in an ongoing way. For example, farmers will apply a principle such as "I don't want to put all my eggs in one basket" and then adjust the systems to suit.
- past experience is very important in making complex decision making. This tends to make complex decision making conservative.

Improving decision making on farm

Success in farming comes from making the best decisions you possibly can at all times. The Grain and Graze social research gives some tips on how to make the best possible decisions.

Be clear on your goals

Firstly, and most importantly, everyone in the business must know why they are in business and what they are trying to achieve. Be aware that some goals may be hard to define. It is important to make time to sit down and work out what everyone wants.

Be objective where possible with separate parts of the decision

Complex decisions involve many complicated parts. Some of these parts have a quantifiable relationship which is known, while other parts have relationships which are unknown. Where the relationships are quantitative or logical, make sure you know what they are.

Trust gut feelings in making overall, complex decisions

Where the relationships are known, you need to use a combination of gut feeling and past experience to put together all the parts of a decision and make a decision. Your gut feelings are usually a guide to your goals and motivations.

Do not delay in making decisions

Delaying a decision, due to uncertainty, can be the worst thing to do. It often means that in effect you are making a decision, but passively rather than actively. This is not a good route to making the right decision. Drought and the uncertainties it introduces often mean people fall into the trap of continually watching and waiting.

Simple and smart, but keep synergy

Because everything is getting more and more complex, it is important you simplify your system. Previous work by RMCG has shown simple uniform systems are a characteristic of many successful farming businesses. At the same time, farmers need to develop a system where the enterprises work together so they have optimal synergy.

Story Telling' is Helpful

By sharing openly and honestly your stories about complex decisions, you will improve your decision making. It will help you understand your goals, motivations, fears, experiences and biases. To tell your story effectively this you need to trust others and be prepared to talk about profitability.

Working With Advisors

If we recognise mixed farming decisions are complex, then the following issues may be helpful for those whose work it is to help with them:

- Farmers have been making complex decisions for many years and have had a lot of experience. Advisors must understand the farmer's situation before they can adapt their advice to suit you.
- Advisors and researchers can help farmers make complex decisions by asking which parts of the decision (the complicated parts) can be clarified by a greater understanding of the interaction between variables. Farmers will often delegate complicated parts of the complex decisions to advisors. For example, agronomy decisions are often made by a consultant agronomist with little input from the farmer. This allows farmers to focus on the complex decisions.
- Farmers may be helped in making complex decisions, by their advisors providing a forum for "story telling". This forum can be assisted with a range of information (e.g. research results, demonstrations).

An Example – Drought strategies.

Making confident decisions during a drought is very difficult. The decision making process is made even more difficult than usual because of the extra stress and uncertainty in a drought.

If we follow the ideas in this paper, farmers would be more confident by following these steps:

- Firstly remember there is no one right answer and there is an answer which suits your situation. Recipes may be helpful but need to be adapted to the individual, unique situation.
- It is essential to know where you are at. To help understand this, calculate the profitability of the business over the past five years. This will give a good guide to profitability. A simple model can then be used to understand the sensitivity to varying commodity prices.
- Estimate the profitability of the farming system in the future. Consider the effect of varying price and yield.
- Look at the effect on labour requirements.
- Consider the effect of things getting worse. – Another drought.
- Ask yourself what you prefer to do, what strategy is most appealing?
- Discuss the above with other family members who are affected.
- Discuss all of the above, (warts and all) with someone you trust and is objective.
- After you have done all of the above, do what you think is most right, and then RELAX.

Conclusion

There is an increasing need to help farming families make confident decisions about their future directions. Understanding the importance and limits of their role gives advisors a good base from which to help mixed farmers and their families make decisions towards their goals. Such assistance is only of growing importance in the context of drought and the large number of uncertainties and pressures it introduces.

Andrew is a committed woolgrower from Western Victoria and winner of the inaugural Raising the BAA competition for enterprise innovation in the wool industry. He is a BESTWOOL/BESTLAMB member and was a prominent figure whilst involved in the BESTWOOL/BESTLAMB Advisory Committee.

Raising the Baa state winner

Interview with Andrew Dufty, VIC and National winner

Production driven and labour efficiency pays dividends

Farmer:	Andrew Dufty
Location:	Melville Forest, Victoria
Property size (ha):	1450
Enterprises:	Fine wool
Annual rainfall (mm):	550-650
Soil type:	Grey sandy loam
pH ($CaCl_2$):	4.5

Since purchasing their property at Melville Forest, north-west of Hamilton, Victoria in 2000, the Dufty family have aimed to increase wool production to align themselves with the top one percent of producers by volume (that is, 300 plus bales). During 2006-07 they achieved their aim producing 308 bales with an average micron of 18.5mm.

The increased volume of wool will allow Andrew to market more of his clip during 2007-08, with a 40 bale parcel consigned for value adding into active sportswear through the Merino Company.

In the past, Andrew has forward sold wool with good results and says he will continue to do so when the prices are right.

Andrew has been increasing sheep numbers over the past seven years which has seen the area sown to crop progressively decline and being resown to pasture at the end of the cropping phase. The plan is to sow 100 hectares annually over the next 10 years. Andrew says the combination of improved pastures and sheep genetics should see them reach their goal of producing at least 50 kilograms per ha clean wool within the next five years.

Labour efficient and profitable

Andrew currently runs 12,000 merinos on his 1450ha property and is working to increase grown sheep numbers to 15,000 during the next five years.

Benchmarking has been the key to Andrew's success and has allowed him to increase his labour efficiency from 6126 dry sheep equivalents per person in 2003 to 8983 DSE/person in 2007. Comparative analysis has been used to benchmark since 2003-04.

The Dufty's cost of production was $10.82/kg clean wool during 2007, almost $4/kg below the state average of $14.23/kg clean wool. Wool gross margins for 2007 were $237/ha (2007), an increase of $115/ha since 2005 ($122/ha) and well above the state average of $157/ha.

Operating profit for his wool enterprise has also increased dramatically from $61/ha in 2005 to $108/ha in 2007. This compares favourably to the state average of minus $44/ha. All analysis information comes from benchmarking done through the DPI Wool Industry Farm Monitor Project which covers the whole of Victoria.

In addition to running an extremely efficient fine wool operation, Andrew works between 30 and 50 hours a week off-farm.

Extensive improvements have been made to the property over the past seven years including extending and improving laneways, updating sheep handling systems (new easy-flow covered yards), pasture improvement programs and improving water supplies. Dams supplying tanks reticulating to troughs or watering straight from dams.

The majority of paddocks directly access the laneway system of which most has been gravelled to allow for year round access. Mustering and pasture management have also been assisted by fencing off all creeks, and land class fencing has been undertaken. Difficult to manage areas have been planted for either revegetation or into long term forestry leases.

Another key to Andrew's success and efficient operation is having a written business plan with clearly defined goals and milestones.

Environmental impacts and benefits

Environmental development has been ongoing on Andrew's property since 2000, with over 150,000 trees planted in various locations across the property to address various issues including stream health, soil erosion and increased pasture utilisation.

An environmental best management practice (EBMP) audit was carried out during 2001-02 as part of the initial EMS work on the property. Implementation of identified issues including:

- Increasing the % of protected native vegetation
- Establishing and maintaining perennial pasture
- Improving water availability and access
- Improved knowledge of land classes and capabilities
- Establishment of stock containment area

Andrew has identified 70ha of the property for vegetation planting for carbon sequestration. There is approx. 80 ha that has already been planted to native species that would qualify for credits and it is possible that Carbon Smart would be considered as a means of disposing of those credits. The 70 ha identified is an additional area to the one already planted. In addition we are on a share basis with Timbercorp for any credits generated as part of the blue gum lease.

Learning from international experiences

As part of his national title, Andrew will travel interstate to visit other state winners and will also travel overseas to England and Denmark to see what impact increasing environmental regulation is having on agricultural enterprises.

Andrew said increasing environmental regulation will rapidly become a fact of life on Australian farms and it is important farmers have an understanding of the impacts on wool growing and general farming prior to implementing such schemes. This will allow integration into farming systems with as little impact as possible on production and profitability.

1. Lamb to Loin

Lamb carcase specifications have changed considerably during the life of the lamb industry. How close you, as producers, supply lambs that meet those specifications will impact on the value of products produced from the carcase and subsequently on the profitability of the butcher.

Brendon Watts (Brendon's Quality Meats - Doncaster) will demonstrate how lambs that are in specification can be utilised and the opportunities that they present compared to lambs that are outside of specification. Stuart Warner (DPI Rutherglen) will be on hand to help people relate the carcases back to the live animals with a brief fat scoring demonstration and discussion.

2. On Farm Use of Electronic Identification

Hi Tech Hits the Sheep Industry - Individual Sheep Management Using Electronic Tags
Come along and hear about the hidden potential within your flock and see a demonstration of electronic tags and sheep handling equipment

There is a large variation in most characteristics within sheep flocks, as shown in the table below. Identifying the higher producing animals is an area where significant gains in sheep productivity can be made.

Variability within a Merino flock creates opportunities for selection and management			
Trait	**Production level of flock**		
	Average	**Top 25%**	**Bottom 25%**
Wool traits			
Clean fleece weight (kg)	4.6	5.3	3.9
Fibre diameter (µm)	20.4	18.9	21.9
Stable strength (N/ktex)	35	42	28
Meat traits			
Growth rate (g/day)	284	357	200
Fat depth (mm)	10.6	8.9	12.5
Reproduction			
Lambs weaned per joined	0.86	1.43	0.28
Profitability traits			
Fleece value per ewe ($)	$54	$82	$37
Carcase value per ewe ($)	$33	$56	$12
Source: Atkins, Richards and Semple (2006) – Proceedings 8th World Congress on Genetics Applied to Livestock Production			

Remember, the cost of running a low producing animal versus a high producing animal is the same.

Collecting and handling the data manually is very time consuming and prone to transcription errors. These are significant disincentives to the collection and effective use of the data.

Recording data electronically for each animal allows the data to be easily manipulated to select the most productive sheep without having to physically handle each sheep individually.

In a project funded by the Department of Primary Industries, six farms have been set up Victoria to look at the practical use of electronic tag systems and to evaluate the on-farm economic benefits of using electronic identification.

The project is supported by Allflex, TruTest and Prattley. MS&A is responsible for managing the data from these sites and interpretation of the information on these sites.

For details about the trials contact

- Jim Shovelton (03) 57953445
- Andrew Speirs (03) 5581-2826
- Charlie de Fegely (03) 5352-3534
- Erica Schelfhorst (03) 5430-4444

3. Grazing Management of Cereals

To graze or not to graze?

But it's not a dual purpose variety?

Winter cereals provide and opportunity in a mixed farming system to ease the winter feed shortage. Results from the Grain & Graze project show that cereals can be grazed without impact on grain yield, as long as a few "rules" are followed. This presentation will outline the grazing management "rules" and provide you with the skills to assess the crop Growth Stages which is critical in the decision making process.

A grazing cereal feed budget program in the final stages of development and soon to be freely available will also be demonstrated. This program will increase the ease with which cereal grazing can be practiced across a farm with a range of cereals and stock classes.

4. Mulesing Alternatives

Ian Evans, representing Australian Wool Innovation Ltd (AWI), the industry's research, development, marketing and innovation body, will present detailed information on R&D into mulesing alternatives as the industry approaches the 2010 phase out.

The presentation covers a number of areas, including the need for alternatives and what some of them are. Information will also be provided on a range of practices currently being undertaken by some growers to prevent and manage flystrike. There will be an opportunity for questions and to see the clip alternative first hand.

5. Sheep Genetics

Confused by Australian Sheep Breeding Values?
After this session you will understand the principles, role and value of ASBVs and how to use them to select better rams for your business.

Ram breeders Phil Toland, Toland Poll Merinos and Steve Parker, Longford Coopworth and Texel studs and Goyarra Poll Merinos, will explain how they successfully combine ASBVs and visual assessment to improve ram selection in their studs.

Using Merino, Coopworth and Texel rams Phil and Steve discuss and demonstrate how use ASBVs to enable you to maximise the value of genetics in your sheep production system.

This session will also overview current research and developing genetic tools such as genomics.

6. Grass Gro

Grazing enterprises are currently faced with a range of challenging issues which have a significant impact on productivity and profitability. GrassGro is a computer based decision support tool developed by CSIRO which can provide important information on the potential consequences of management decisions when addressing key grazing issues. GrassGro models the whole grazing system (soil – pasture – animal) and allows a broad range of management options to be compared quickly and easily for a grazing enterprise.

This demonstration of GrassGro will provide a simple overview of what GrassGro is, how it works and how it can be applied in the decision making process. A crossbred ewe enterprise near Bendigo will be used as an example to show how GrassGro can contribute important information to help answer questions such as “what is the best lambing date for my property?” and “given the current conditions, how much supplementary feed am I likely to need over the next 3 months?”.

This demonstration will show how graziers and agricultural consultants can use GrassGro to test management options against a wide range of seasons, to achieve more profitable and sustainable utilisation of pastures.