

# Address to RPCV

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FUTURE FARM  
INDUSTRIES CRC  
PROFITABLE PERENNIALS™ FOR AUSTRALIAN LANDSCAPES

## **Delivered by Kevin Goss, Chief Executive Officer, Future Farm Industries Cooperative Research Centre**

### **Introduction**

Thank you all for coming here today.

I would like to begin by saying that I accept as irrefutable the scientific evidence that Australia will experience a drying climate and our agriculture will bear the brunt of less rainfall.

However, Australian agriculture isn't a faultless victim of global warming.

On the contrary, it plays a significant part in the problem. Sixteen per cent of global warming emissions attributable to human activity are caused by agriculture.

Having contributed to and expecting to be adversely impacted by global warming, Australian agriculture will inevitably be drawn into a policy debate on how to reduce its environmental footprint.

If agriculture responds inappropriately, there will be an impact on the National economy. The recent prolonged drought alone reduced the Gross Domestic Product by 0.5 to 1.0% and this was felt in the economy.

Therefore, the challenge for the whole country, not just farmers, is to work together and create new forms of water-efficient agriculture that reduce greenhouse gas emissions; for dryland farming as well as irrigated agriculture.

I'm not here to paint a gloomy picture of the future, but instead to convince you that we can tackle the challenge of climate change and that farmers can have options to adapt to climatic variability sooner than you may realise.

In other words we can provide farmers with the real choices they need in a changing climate.

Already, there are farming systems and new plant technologies under research and development today that are better adapted to drought and erratic rainfall. In essence, the first step in creating Australian farming systems ready for a drier climate has already been made.

Their performance under the drought and unusual seasonal conditions suffered in recent years has given us pointers for more productive, environmentally friendly and better adapted farming systems for tomorrow.

We can continue this work now because no matter what the big policy decisions are, these changes still have to be made, and the sooner the better. We don't even have to resolve the

argument whether climate change is due to human activities; farmers face climatic variability today.

## **Perspective**

Most of you here have witnessed Australian governments and the agricultural community engage in discussions about climate change policy in recent months. At the forefront is Professor Ross Garnaut's recently released interim report on climate change – a report that focused on the need of greenhouse gas emission targets and the establishment of a national emissions trading scheme. Its emphasis was largely on the mitigation of greenhouse gases – a very important part of but not the whole climate change response.

Governments need to be reminded that adaptation measures to climate change are also an important consideration. Professor Garnaut acknowledged this but didn't discuss adaptation, saying it will be a prominent feature in his final reports. Importantly, he made the point that climate change will continue to occur even after mitigation schemes have come into effect.

Agricultural production will be particularly vulnerable to these lagged responses.

With that in mind, I will now summarise some of the evidence about the potential impact that climate change will have on Australian agriculture and the potential offsets from adaptation.

Using accepted climate change scenarios and its own global trade and environmental model, ABARE in its December 2007 commodity report predicted a 9% reduction in wheat and meat production by 2030, and a 13-19% decrease by 2050. The reference point for these reductions was continued productivity growth at historic levels. Also of concern, the predicted negative impact on exports was even greater and it varied significantly with commodity.

I conclude from this work several key points:

- The likely negative impact of climate change on agriculture under the 'do nothing' scenario is very significant but not disastrous.
- This may be a worst case scenario because the prediction does not take into account the possibility of increased plant growth from carbon fertilisation.
- Adaptation is not taken into account either.

ABARE quoted an earlier study that estimated the likely benefit from on-farm technological adaptation measures in the wheat industry. It calculated that the predicted negative yield impact in 2030 could be reduced from 9% to 5% through adaptation – a significant reduction.

What is adaptation and what are these adaptation measures we talk about? They can be simple technologies such as better plant cultivars or complex farming systems such as 'no till' crop establishment. And better cultivars and 'no till' cropping in particular have revolutionised crop water use efficiency resulting in greater and more reliable yields, especially in average to below average rainfall years.

However, an outstanding feature of Australia farming is what we call 'mixed farming'; the combination of cropping and livestock production in one farm business. It has proved to be resilient over many decades and particularly adaptable in recent years.

A 2007 report from the National Grain & Graze Program, a joint venture by GRDC, AWI, MLA and L&WA has revealed that the productivity of the livestock enterprise is what distinguished the high profit farms from the low profit ones, not cropping. This at first seems

counter intuitive given the recent dominant trend of farmers increasing their cropped area. The results can be explained by the recent difficult seasons when the data was collected. The key point is that over time and variable seasons, the mixed farm is the best bet, with crop carrying the farm business in some years and livestock in others.

My take on this analysis is that adaptation of dryland agriculture to climate change is an important and realistic objective.

## **Vision**

My vision is that Australia takes the opportunity to accelerate research and development into farming systems capable of maintaining agriculture's productivity growth, reducing its environmental footprint, and adapting to climatic variability. We can make these gains in the short term while preparing it for climate change in the longer term.

The 'millennial drought', the worst since the Federation Drought around 1900, and recent unseasonal rain has had an upside. It has given perennial plants a chance to prove themselves to be superior performers in grazing systems field trials.

The timing is right, and if we continue to find new ways to adapt, I predict that in a few years we will see generational change in the make-up of Australian farmers - a change that will build the long-term capacity to cope with climate change.

## **Concerns**

However, I am concerned that climate change thinking is "off the mark" Put bluntly, we are in danger of passing up an opportunity to make significant and immediate headway against climate change because of distractions with the wider policy discussion.

I have several reasons for this concern:

Firstly, climate change policy development is paying 'lip service' to adaptation.

For the time being it is focussed on setting greenhouse gas emissions targets and trading schemes.

More disconcerting is the skewed government investment in climate change programs. Climate change modelling and impact assessments consume most of the resources. The big ticket items for adaptation research include work on plant growth function under elevated atmospheric carbon dioxide.

I am alarmed at the little consideration for adapting farming systems to the climatic variability that is already upon us. Mitigation, climate prediction and impact analysis are important for the longer term, but where will the practical options come from for farmers who need solutions in the shorter term? I will speak to this shortly.

Secondly, there is 'hype' in the farm community that farmers will be able to sequester carbon in plants and soils and sell it through emissions trading. This is a distraction. Experience with the NSW Greenhouse Gas Abatement Scheme has already shown that individual farmers and incremental improvements in soil carbon will not be in the market.

These schemes are for larger players who can validate to a fussy buyer or regulator the amount of carbon sequestered, underwrite its security for 70-100 years, and manage the risk of depletion events such as fire and erosion.

Enthusiasm for profiting from 'carbon farming' should not cloud the overall challenges for agriculture – reducing greenhouse gas emissions and adapting farming systems to be sustainable through the changing climate.

Thirdly, gaining drought tolerance through the technical fix of genetic modification is attractive but only one of the plant improvement tools available. In selecting among the mix of plant technologies, speed, cost and reliability of getting a result will be the key to right choice.

Drought tolerance GM is a far cry from introducing single genes into cotton for Heliothis control or into Round-up ready canola. There are an unknown number of genes involved in drought tolerance, which dramatically increases the complexity of the task and raises the chances of adverse outcomes. This will require more time and money.

There is no 'silver bullet' for drought tolerance. The work on drought adapted farming systems that I describe today is a quicker, cheaper and more reliable path which can also provide genetic understanding for the biotechnology approach.

## **The Way Forward**

Today I am here to personally promote a way forward for farmers to adapt to climate change by developing practical options through accelerating research and development and taking advantage of a once in a generation opportunity.

On what basis can I make this claim? My argument is that:

- There are promising plant technologies and farming systems in trials now.
- There are imminent economic and social changes that make this the right time for their adoption on farm.
- I lead the Future Farm Industries Cooperative Research Centre (FFI CRC), the perfectly placed National joint venture to take up the challenge.

One of our success stories is EverGraze™, a new grazing system that pushes the limits of productivity and water use in high-rainfall zones. You will hear a lot more about EverGraze™.

Picture a 70 ha research site – there are three of them across Australia, including at Hamilton in Western Victoria. On it is a unique combination of perennial pasture plants grazed intensively by highly fertile sheep nurturing additional lambs in specially formed nurseries. The pasture species and sheep breeds at the outset may be familiar to you, but their combination under high performance management is radically different. And so are the results.

At Hamilton, the meat turn-off per hectare was 50% superior to the top 20% of producers in the South West Farm Monitor project. The site has just completed three tough seasons with the 2006 rainfall 30% below the 40 year average. Beef steers on other plots have also shown this superior performance.

What is causing this productivity boost? The combination of perennial plant species fully exploits year round rainfall, no matter how variable, to match animal feeding requirements. To top it off, strategic mowing of the taller perennial grasses provides shelter for lambing ewes and young lambs, providing them with a more benign environment for growth and survival.

An equally important objective for EverGraze™ is greater water use and enhanced environmental benefits. In 2007, there was no recharge to ground water at the Hamilton site, effectively removing any salinity risk. There was ground cover year round, preventing erosion. It has been so successful, we are now expanding EverGraze™ onto low-input native perennial grass sites, adopting the same principles and adding a biodiversity objective.

EverGraze™ is iconic for future farming systems that are more productive, more environmentally friendly, and adaptive to climate change. It has very strong industry backing, with major investment from MLA and AWI. Complementary to and based largely on the successful EverGraze™ model, are other future farming systems planned for the medium and low rainfall zones – some are even more radical.

Enrich™ is a project that is selecting and developing deep-rooted perennial forage plants for grazing in harsher environments marginal to cropping. Some of these plants, including Australian native plants, are new to agriculture and well adapted to climatic constraints. Their success will come from biochemical research into matching animal nutritional requirements with beneficial compounds that can reduce methane output and control intestinal worms. Enrich™ can be a cleaner, greener livestock enterprise for farming districts facing the largest climate change impacts.

The lower rainfall mixed farming zones offer particular challenges in seeking new plant technologies, but new opportunities are emerging.

For example, a plant that has captured the attention and imagination of our plant breeders by showing great promise in plots in WA is *Bituminaria bituminosa*, a perennial pasture legume from the harsh climate of the Canary Islands. It has stayed green all summer and thrived in unseasonal summer rain. Another promising perennial pasture legume is *Cullen*, a straggly Australian native plant that has good nutritional value and persistence.

I have said that the timing is right for bringing on these farming systems and plants under an accelerated program of research in partnership with farmers, training of farmers' advisers and adoption activities. Under FFI CRC's current plan, EverGraze™ will be adopted on 500 farms in 2009 and on 2,400 farms by 2014. Its companion farming system, EverCrop™, and the Enrich™ options will be ready for farmer adoption from 2014. Also in our plans are short cycle woody crops in wide spaced formats with cropping and pasture, and profitable crop and livestock production from salt affected land.

Why the urgency? Why seek to accelerate this plan even further? Technological and social change in farming is cyclical, in that it follows economic peaks and troughs. And it's not what you may think. Most farms change hands in good economic times, not during drought. It's at this time that farms amalgamate and new talent enters farming, providing the means for investment in new technologies and practices. As I look forward, commodity prices are particularly strong and there's a better than even chance of an average winter season. Farmers will be inclined to crop heavily in 2008, to return significant profits within one year. They will be ready to invest in the next cycle of technological changes, and as I have demonstrated the mixed farm with new perennial plant-based systems will be the best long term bet.

With accelerated research and development, and effective farmer collaboration in trials and demonstrations, we can take advantage of a once in a generation opportunity.

What are the credentials of the Future Farm Industries CRC to do this? FFI is a unique public-private joint venture of R&D organisations, industry and regional organisations covering Victoria, New South Wales, South Australia and Western Australia. Think of who

should be involved in such a venture and we have them collaborating – departments of primary industries, CSIRO, universities, and conservation agencies. Landmark, one of Australia's biggest agribusiness firms is a core commercial partner. We have the financial backing of the major R&D corporations and the Australian Government, and several catchment management authorities are involved in our projects.

FFI CRC is not just a research venture. We will train farmers and those servicing, advising and influencing their business decisions such as Landmark agronomists, government extension officers, farm management consultants, natural resource management coordinators, and leading farmers under a National EverTrain™ program.

FFI CRC is setting out to develop climate adapted farming systems and plant technologies under the Profitable Perennials™ brand. Our target with current resources is adoption on 7.5 million hectares by 2020. However, the total area farmed in the relevant rainfall zones is 60 million hectares, so there is plenty of scope for acceleration and expansion.

## **Conclusion**

In summing up I would like to say that Australian agriculture is on the verge of a new opportunity for accelerated research and development to adapt farming systems to climate change. Such a concerted R&D program will build and enhance the capacity of Australia's agribusiness and natural resource management sectors and sow the seeds of generational change.

The timing has never been better. Agriculture's improved economic outlook, and structural adjustment and recovery from the 'millennial drought' will drive additional investment in these new farming systems.

The Future Farm Industries CRC is a national joint venture with the right partners and proven track record and know-how to lead the way and make these changes.

It is imperative that we act now and invest in innovation, research and development and national collaboration on adaptive farming systems for mixed cropping and grazing that will give farmers options quicker, cheaper and more effectively.

Farmers will have real choices for a changing climate.

Thank you for listening.

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Future Farm Industries Cooperative Research Centre aims to transform Australian agriculture and rural landscapes by developing and applying Profitable Perennials™ technologies to innovative farming systems and new regional industries.

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