

Agricultural Literacy

-Farming Matters

A report for



by Roma Britnell

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Foreword

This report describes the findings and reflections of a dairy farmer from Woolsthorpe in Victoria following a Nuffield study tour to Europe and the Americas in 2012. The study tour went to Brazil, Mexico, USA, Canada, UK, Central and Eastern Europe and its objectives were to:

- Compare Agriculture's value to nations, particularly between developed and developing nations and use that comparison to appraise if the Australian nation has an appropriate valuation of agriculture.
- Better understand the future world demand for food and where the supply will come from.
- Research, in the countries visited, their community's attitude to farmers and agriculture and if they have a national vision for agriculture.
- Compare the understanding of the value of food production in the western world relative to that of developing nations.

The background to the objectives above was that, with the increasing urbanisation of Australia, there is the potential for a growing disconnect between city and country. With this poor understanding of farming comes the risk of government policies that hinder farming, as those policies are supported by an agriculturally illiterate electorate.

Against this threat is a fantastic opportunity for Australian food producers, as the world population increases and demand for food rises rapidly. The study tour will help to assess the sources of this additional food and that in turn will help to assess the size of the opportunity for Australia. How much of that opportunity is captured will be based on both:

- how well farmers step up to the challenge, and also
- how much support the rest of the community gives them to supply the increased demand, (and not necessarily in the form of subsidies).

As a result of the tour the author believes there is no doubt a challenge ahead for agriculture across the world to meet the increasing demand for food. Her findings also led her to believe

that the farming community, particularly in Australia, are up to the challenge. However the emerging realisation that the community is facing about food shortages could be restrained by a community who are not aware of the benefits of increasing the food supply. If there is “urban” resistance to this extra growth we could end up with increased regulation, reduced research dollars and policies that don’t support this growth in production. This threat could hinder Australian agriculture’s ability to perform and compete internationally; to minimise the threat we should discuss a cross-commodity program, which involves government, and develops an understanding within our urban community of modern farming practices and the benefit of this to the environment, animals and people of Australia.

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Abbreviations

GDP	Gross domestic product
FMD	Foot and mouth disease. A disease that affects livestock. Outbreaks can decimate agricultural regions and affects trade. Australia is FMD free.
EXACAL	A unit of food production value
EU	European Union
PETA	People against the unethical treatment of Animals
CFI	Centre for food integrity, USA
USA	United States of America
ROI	Return on Investment
MDB	Murray Darling Basin

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Executive Summary

This report reiterates the pivotal role food and agriculture play in the Australian economy, the rural communities that produce and process it and in the world food markets, where Australian food is widely eaten and valued. Different industries have varying economic and social importance to our nation but a case needs to be argued that agriculture is worth more than \$41 billion. Agriculture also delivers the following additional benefits to Australia:

1. Ecological services to our Nation; Agriculture industries have an environmental value that can and will ensure (or threaten) our future sustainability, depending on the way we manage the environment.
2. Agriculture has a role to play in national security, particularly as we see more social unrest in some parts of the world which are going hungry.
3. Regional liveability, or standard of living. Whilst this is not usually considered when working out the GDP of a nation it is one of the many benefits brought to a nation via agriculture, and should be considered when thinking about the investment and planning needed to ensure a productive future.

An impending 77% rise in food demand is coming from 3 directions;

- a) increased population,
- b) better-off consumers changing their diet and
- c) less subsistence farming as more people move to cities, stop growing their own food and need to buy from shops in towns.

This demand is set against a reduction in the amount of productive land, as:

- a) land is taken up for the housing of rural people moving to the cities for work
- b) the absence of any significant spare land waiting to be farmed
- c) political and community pressures against clearing forests for food production and
- d) reduced rates of land reclamation.

This demand offers Australia a great opportunity to be part of the supply solution. The study findings, across 20 countries, firstly in Europe and secondly in the Americas indicate

Australia has as good as or better chance as any other to treat this 77% growth in food demand as an opportunity. We should do our best to maximise for the benefit of Australia.

In Europe the range of productivities between the best and worst farmer in a region and one country and another was marked. This offers large potential for greater production but the market is confused by a subsidy system that appears to favour environmental and rural community outcomes, rather than productivity and production for export. In Northern America the market works more freely than in Europe and an interesting feature of their landscape was the business case for improving the trust for Agriculture by the population. This has led to the food chain building a Food Integrity body to collect and distribute strong messages to improve the trust in the American food system.

At the conclusion of the study tour the overall picture of the findings and the understanding are included in the dot points below.

- Planning is key to expanding food production over time and farmers, food industry people and the community need to be in the planning team. We need a national food debate.
- Food demand is going to burgeon over time.
- Farmers in Australia and other countries need more community support for their food production efforts.
- Environmental sustainability is important to non-farm people.
- More food will have to be produced with a smaller environmental hoof print per unit of production.
- On the face of it there didn't appear to be any dormant land waiting to be turned into food producing land.
- Prices will help to stimulate demand.
- Some Governments seemed to be good at grasping opportunities. Ours (Australia) seemed to be more in a problem solving mind set.

One of the main themes to emerge from the study tour was the potential for greater production in Australia against a phenomenal increase in demand from the world's bigger and richer populations. The opportunity to expand agriculture in Australia is huge but there

are nagging doubts about our ability to plan to manage this growth, and the level of community support for such a plan.

All of this led to a set of six recommendations to advance agriculture in Australia and benefit all Australians.

1. Lobby for the Australian Government to take a bolder approach to grasping the opportunity extra food demand will offer Australia
2. Build better statistics and information on the value of agriculture to the nation across the triple bottom line.
3. Australia should start a debate on the value of agriculture and build agricultural literacy amongst our leaders and the general population, using the findings from items 1 and 2 above.
4. Use these increased levels of agricultural literacy to develop support for the development and resourcing of food growth plans at Federal, State and region levels. Such plans should reflect an understanding of the impending increases in demand and the capacity of Australia to supply that demand, using accurate models to guide the planning process.
5. Increase the knowledge of the triggers for better adoption of production technologies and invest in supporting on-farm innovation designed to deliver that change.
6. Measure the existence of any country-city disconnect and, if it exists, assess its significance and the implications for a cohesive Australasia. Take action if necessary.

Introduction

This report describes the findings and reflections of a Dairy farmer from Woolsthorpe in Victoria following a global Nuffield study tour. Throughout the tour the author heard and discussed the views of an impressive list of speakers from around the world including farm leaders, politicians, researchers, entrepreneurs, trade negotiators, lawyers, activists and food processors. Amongst the topics discussed was:

- a) the growing demand for food in China and India,
- b) the need for more efforts to develop new research,
- c) Africa's enormous potential and the capacity and potential in South America,
- d) the challenges and developments in irrigation districts in California and Mexico,
- e) millions of tons of vegetables grown in glass houses and across vast acreages of the landscape in many countries and
- f) the yield, potential, rainfall, land prices, community values and environmental challenges experienced by people from all walks of life, in developing and westernized countries alike.

The report describes the four objectives of the study tour and starts by contexting the agricultural industries' position in Australia. The report then describes the impending wave of extra demand for food as the world population grows and with this back drop painted then describes the study tour findings across 20 countries, firstly in Europe and secondly in the Americas. The report analyses those findings in Chapter 5, especially against the likelihood of an increasing "disconnect" between Australian farmers and the Australian community and why the question of how farming is of value to Australia and must be addressed.

Finally the analysis leads to a discussion of how Australia responds to the increased demand a world food shortage might bring.

Objectives

- Compare Agriculture's value to nations, particularly between developed and developing nations and use that comparison to appraise if the Australian nation has an appropriate valuation of agriculture.
- Better understand the future world demand for food and where the supply will come from.
- Research, in countries visited, their community's attitude to farmers and agriculture and determine whether a national vision for agriculture exists.
- Compare the understanding of the value of food production in the western world relative to that of developing nations.

Chapter 1

Agriculture's value to Australia

Agriculture is important to Australia. Across the country there isn't a person in the nation that has not thought about food in the last 24 hours. Yet the connection between hunger and the production of the food to satisfy this hunger is weak and for most Australians the value of producing food to our nation isn't understood adequately. The following list of Australian food statistics gives an overview of the critical place food and agriculture play in Australia.

40% = Australia's annual farm and fisheries production that is exported to Asia

77% = Increase in the value of world demand for food in 2050 compared to 2007

3.2 billion people in Asia Pacific's middle-class by 2030

\$40.7 billion = Total value of farm and fisheries production (2010-11)

\$27.1 billion = Total value of food exports (2010-11)

\$82 billion = Total value of food and beverage processing (2009-10)

15% = National employment involved in the food supply chain

>90% = Total food production jobs located in regional Australia

50% = Total food processing and manufacturing jobs located in regional Australia

31.6% = Australians living in regional Australia

>90% = Fresh produce sold is produced in Australia

17% = Average percentage of after-tax income spent on groceries

2% = Of Australians go hungry at some time in the year

89% = Australian agricultural land that is entirely Australian owned

~60% = Australian land mass managed by farmers

\$715 m = Australian Government investment in rural research and development in 2008-09

361kgs = Average food waste generated per person in Australia each year

68% = Australian adult males are overweight or obese

55% = Australian adult females are overweight or obese

25% = Australian children are overweight or obese

60 million = People fed by Australia's current agricultural and fisheries production

400-500 million = Estimated number of people help fed by Australian's through international agricultural development programs

~7% = Australia's aid program spent on food security (DAFF 2012).

The statistics above demonstrate the pivotal role food and agriculture play in the economy, rural communities and the world food markets, where Australian food is widely eaten and valued. The impending rises in food demand offer the country a great opportunity to be part of the supply solution. The next chapter describes that supply-demand equation and how the findings from the study tour influence our response to this opportunity (and threat) for Australia.

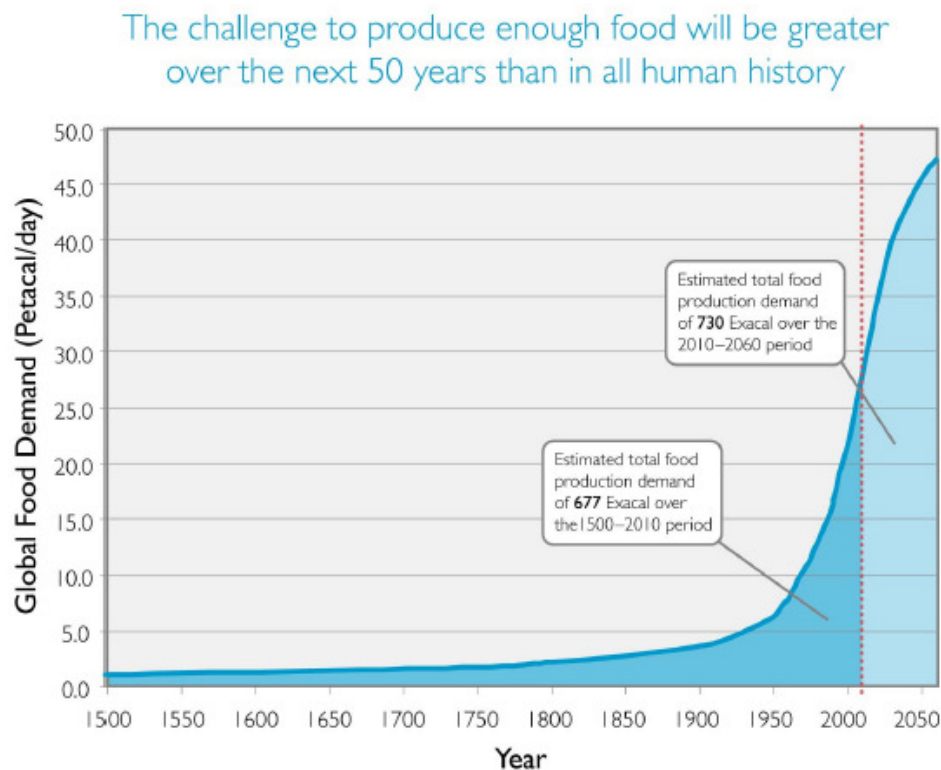
Different industries have varying economic and social importance to our nation but a case needs to be argued that agriculture has more than \$41billion worth of production. Agriculture also delivers to Australia:-

1. eco-services to our nation; Agriculture industries have an environmental value that can and will threaten or ensure our future sustainability depending on the way we manage the environment.
2. Agriculture has a role to play in national security, particularly as we see more social unrest in some parts of the world which are going hungry.
3. regional liveability, and whilst this is not usually considered when working out the GDP of a nation it is one of the many benefits brought to a nation via agriculture and should be considered, when thinking about the investment and planning needed to ensure a productive future.

Chapter 2

Feed demand over the next 40 years

In the 43 years to 2050 the value of world demand for food will increase 77%, the following graph demonstrates the enormity of this increase.



(CSIRO, 2009)

The graph above presents a staggering challenge for the world to overcome and as the population becomes more urban-centric and memories of food shortages become more and more distant (compared to the post-war 1940's), the urban support for a growth in supply cannot be presumed.

The core of the challenge is to find ways to produce more food to supply this demand and secondly to align the Australian community with the farmers as they meet this food supply opportunity.

The most recent example that displays a potentially negative urban bias is the recent discussion in Australia of a Carbon Pollution Reduction Scheme. The farm sector was placed in the polluter's basket. This does not reflect an understanding that food will have to be produced and solutions will need to be found which balance the impact on the natural environment with the food production process. Agriculture has a challenge to regain its place of importance in the arena of politics and gain support.

The future challenge for Agriculture is to find ways to meet the demand that the future growth in population brings, and it is the role of government to be planning to be ready for this well-documented prediction. Today farmers support a world population of seven billion. Somewhere near the mid-point of this century that number is expected to reach 9 billion and 10 billion by the end of the century. It took from the birth of man until today to reach the six billion mark. In the next 40-50 years that number will grow by 50%. We will need to increase global food production by 77% at the same time as the resources (land, water, energy, and people) that underpin agriculture are in decline. (Bellotti, 2009) It is worth keeping in mind that we are limited by the fact that only 7% of the earth's surface is arable, therefore we need food policies that will preserve all arable land for food production.

There will be an increased demand for meat as second-world countries achieve higher standards of living. Other consumers are choosing fish as a meat alternate and this is putting a great deal of stress on the world's fish supplies. Countries like Brazil have seen a 20% increase in people who have shifted out of poverty into a middle class in the last 10 years (Suzuki, 2011). It is nations like Brazil that will continue to increase the number of people entering the middle class that will put an even greater than predicted demand on food production. Not only will this mean the world will need more food to feed more people but the people moving into middle class will demand more of it too (Spangenberg 2011).

Population is just one of the factors that challenge our future and that places pressure on farmers and influences how they will meet the challenge. Issues such as food security, global food systems, poverty, urban planning, water management, pollution, preserving wilderness, and international relations are others. It is important to consider the importance of free trade and the advantages this has brought to the world (Roush, 2011) However it is also important to balance this with the national interest.

We don't need to compromise our stance on free trade but we do need to proceed with less haste and more caution when we enact legislation that impedes our international competitiveness. Our current community attitude is not allowing this. So free trade is good and lowering tariffs is fine. But imposing costs like a tax on carbon is an example of an area that will disadvantage farmers by making them internationally uncompetitive through domestic policies. The current Carbon Tax (October 2011) impacts the dairy industry by affecting the milk processors. The cost incurred will make them unable to sell competitively on international markets. The tax will cause the product to cost more than the countries they compete with, so this cost will have to be passed directly down to the supplier/shareholder (the farmer). Farmers are forecast to be disadvantaged by \$5,000 to \$7,000 on average per farm (Australian Farm Institute, 2010). This will cut farming family incomes by 10%. It is a very real possibility that, for many, absorbing another cost might threaten their viability. The average dairy farm income is between \$50,000 and \$60,000 per annum (Australian Bureau of Agricultural and Resource Economics and Sciences, 2010). There are no other farmers in the world that are directly affected by their countries' carbon taxes like Australian Dairy farmers will be (Poole, 2011)

Chapter 3

Findings from Europe

Across Europe the study tour included visits to a range of farms, food infrastructure sites and meetings with many agriculturalists and food industry specialists. The land appeared to be fully used and European Agriculturalists (specialists) supported that observation, however the quality of farming on it seemed variable and over a range wider than the best and worse in Australia. The countries that had surplus arable land, also had policies that prevented further development. Surprisingly Brazil, a developing country had such areas. The impact the damage to the reputation of Brazil from the Amazon jungle clearing has left a legacy that the Brazilians are trying to repair. The savannahs were protected from ever being farmed or developed. In the former communist block countries the weed burden appeared to be higher and the crops thinner than their neighbours in Western Europe. This observation was supported by specialists who confirmed that broadly yields were lower in the former Soviet-bloc countries as they adapt and adjust to market conditions and incorporate modern technologies and management methods.

The thinner crops, gaps in drilled cereals, higher weed densities, poorer looking livestock and older machinery left observers believing productivity was not optimal. The lasting impression was that there was no vacant land waiting to add to the food supply but that the current systems are not delivering anywhere near capacity. However the extra production cannot be switched on quickly; the improvement in management skills and adoption/purchase of new technologies is a medium term project so greater food production from the former Soviet countries is unlikely to happen in time to fill the forecast extra world food demand.

In all European countries land is being lost to building development and in some cases forestry. One specialist described how 10,000 ha are being lost per year in Italy alone. This is not a food industry asset that can be replaced unless we reclaim land which is currently under water, similar to the way which the Dutch “made” new land from reclaimed coast line. The pressure in European countries on land is more intensive than in Australia because of the population density. Australia has one of the lowest population densities in the world and the study tour was a strong way to bring this comprehension to the fore. The benefit for food

security of having a low population density is jaw-dropping when compared to most other countries in the world.

The population density has other impacts including pollution and speed of information travel between people in informal groups etc. The quantity of waste to be disposed of is markedly higher per hectare than in Australia because of the much higher numbers of people per unit of land. The impact of poor decisions in the past around waste disposal is marked, especially around the Mediterranean, where there is almost 2500 items of waste per square metre on the floor of this huge sea and 94 percent of this is plastic bags. The Mediterranean sea is very polluted. The fish stocks are at critical levels. It was claimed that 650,000 tons of sewerage alone is dumped annually, still today into the Mediterranean and that is only the sewage. (Birhingham, 2011) The importance of efficient waste disposal in Australia was highly evident, as the waste in the Mediterranean is ruining livelihoods and recreation and is unlikely to be swept away by tides, as the water turnover through the narrow mouth of the Mediterranean takes about 100 years.

The support for agriculture by government and the community varied markedly across Europe. Some specialists (Haniotis, 2011) reported strong government support, especially where the cost of supporting sustainable rural communities and the loss of eco-services provided by agriculture is properly valued against the cost of supporting agriculture. There is recognition that this in turn sustains rural communities and delivers essential eco services. There appeared to be a belief that the support by the community for agriculture was based on a six factors:

1. the level of urbanization,
2. the maturity of that urbanization (how long was it since the “urban dweller” generationally moved to the city,
3. the quantity of planned public relations input by farmers to explain their value,
4. the level of active support to farmers by Government to demonstrate their value (points 3&4 above help improve the Agricultural literacy of non-farming peoples),
5. how active the “Green” lobby groups were (reflected in the level of urban environmental literacy) and
6. the length of time since food shortages were a part of urban life.

The level of community support manifests itself in a number of ways, with some food companies joining the campaign to improve agricultural literacy, because that activity supports the continuity of supply into the processing companies. Elsewhere the environmental literacy is having radical impacts on Agriculture – an example is in Denmark where the Government has agreed to environmentalist wishes to return waterways back to their original condition. This noble aim means that for significant areas which were marshland, drained several hundred years ago, must now be decommissioned from food production and returned to the marshes and bogs they were in the 18th century (Thalbitzer, 2010).

This strong legislative response was not uncommon but then again neither were the incentive systems in place. Europe uses the carrot and the stick to achieve community outcomes. The use of subsidies is well recorded in Europe and while these delivered the regional and eco-services outcomes described above, several specialists were envious that our farmers in Australia would be delivering productivity gains as they were at the pointy end of world food market forces. Along with the subsidies that some farmers rely on to remain sustainable, the carbon pricing was believed to be having variable impacts on farmers across the continent. Within the EU there is a single approach which is excluding farms but not those further up the supply chain (Haniotis, 2011). However the EU system is not across the whole of the continent and some specialists were concerned that a variety of systems across differing European countries will add a level of confusion across Europe and will reduce investor's confidence to buy land and grow food.

Across Europe food exports make a significant contribution to the wealth of the continent and this looks likely to continue despite increases in the European population. With the increasing population in Europe and the relatively productive agriculture they enjoy, any future increases in world demand for food will not be met instantaneously by European farmers. However if food prices rise massively, there could well be a productivity response by farms in Europe as the economics of production shift in their favour. Farm economists in Europe agreed that there is a wide range of productivities on farms, with some at the right hand side of bell curve of profitability already producing at near their maximum. However the remainder of the farms still have capacity to increase output and if the prices and costs were right they could contribute significantly to world food supply.

Chapter 4

Findings from the Americas

A study tour of continental America is a challenge for a student to take in – its vastness and diversity are astounding. The continent spans virtually the whole longitude line between the poles and at its widest the continent spans one quarter of the latitude line that goes through New York.

Beginning to describe the America's agriculture and its people is nigh impossible. When you consider having to compare Canada with Cost Rica and Chile, there is a gulf between their land, topography, climate, government and standards of living. This report will focus on the politics around food production, how the varying populations view food, the people who grow it and rural development.

The view of many urban people in the USA about their farmers was reported as being moderately negative and this is a large risk to the farmers and the processors. It was described to me how *“The car is a king polluter but ignored because of its utility – food is a much smaller polluter but because it is one step away from the consumer it is castigated for polluting”* (Baise, 2011).

Behind this inequality, according to one commentator, the farmer and the food processors and producers have lost the trust of the consumer. This position and its risk to the food industry has been recognised in the USA and along the food chain funding has been attracted to develop a Centre for Food Integrity. This organisation exists to build consumer trust and confidence in today's food system by sharing accurate, balanced information, correcting misinformation, highlighting best practices that build trust and engaging stakeholders to address issues that are important to consumers. (Arnot, 2011) It does this by leading the public discussion to build trust in today's food system and facilitate dialog with other stakeholders in the food chain to create better alignment with consumer expectations

Underpinning their work is a belief that farmers' “license to produce” is evaporating and that the contract between producer and consumer is broken. As a result of this missing contract the community supports agriculture less and less and the example was given in the States

about the complaints about the mud on the road, noise emitted by machinery working late into the night or smells from animals – these complaints by farm-illiterate people is a symptom of that broken contract. The term “low agriculture literacy” bluntly describes people with a low knowledge and understanding of the source of their food and the need for sound land planning.

A corollary of this poor urban support is the political will the government shows in supporting agriculture with policies and resources. In the US the level of support for agricultural extension has fallen not just because of budget constraints but also because the will of the broader community is not behind that sort of investment. One observer pointed out that not only do farmers receive inferior extension services than they did previously; they also are less inspired to be more productive as community criticism grows.

A fascinating debate came out of this statement as one farmer said that, statistically, if people are generally well fed and resourced only one in seven people wake up in the morning asking how am I going to make more money today; the other six care more about either having an easy time or making the world a better place. If money was not a driver to produce more food for six out of seven, what would inspire them to produce more? Possibly social pressure would drive production but if that social pressure was all the other way we may need to consider a different model to feed the world’s growing population or for government and farmers themselves to take greater responsibility for the western world populations saying “thank God for agriculture”. The only growing redeeming feature for agriculture seemed to be the realisation that food production did deliver eco-services to the community – a message that farmers are not using in their advocacy work, with one exception. The Californian lettuce producers were using “eco-service delivery” in their lobbying efforts to their State government.

Despite the sub-optimal community food support the strategic importance of food production by government did get a say in the Food Bill where the delivery of a good food diet for school children was linked to this key piece of agricultural legislation. Elsewhere the value of the food industry in the US is very well understood by the private sector with companies targeting parts of the supply chain with a view to having more control and with that control bigger opportunities to drive profits and wealth.

By contrast in Mexico and in the southern Americas this poor community support for agriculture was either non-existent or not evident. Evidence was present for quite the opposite; strong government support. An agriculturalist in Brazil explained that food production was seen as a strategic imperative to help keep a population civil – “A hungry man is an angry man”, nobody mentioned eco-services; they just seemed grateful there was food at a price many could afford. This did not mean that the Southern American governments were ignoring the environmental effects of food production; more that sustainability of the natural resources happened but was not publicised as the community was not clamouring for environmental results – however government could deliver them if they were asked for. An example of this is the 50 metre boundary required around waterways on properties and the legislation that requires all farms to designate twenty percent of the farm for native vegetation.

The challenge of feeding a larger and richer world population will partly be met with new technologies and their adoption by farmers. Some of the emerging research from this co-operation concentrated on the benefit of reducing meat production and encouraging consumers to a more vegetarian diet to maximize food supply. While the findings were highly complex one headline from one of their research projects was that a vegetarian future would not necessarily mean a lighter environmental footprint. This might mean that for example, in Brazil, where the middle class is already 20% bigger than it was 10 years ago (Suzuki 2011), the demand for a more protein-rich diet will not automatically have to be delivered by vegetables as the world becomes more conscious of calories and protein delivered per hectare.

The South American commentators who contributed to our tour spoke of the need to consider Free Trade Agreements (FTA's) carefully and where they provided win – win outcomes for both parties proceed with caution. They commented that some FTAs were being used as barriers to other countries and the more this happened the less the chance of a WTO round being successful. Overall the observations were that agriculturalists in Southern America were well-briefed on world food matters and found it odd that the carbon price in Australia seemed to impact on the competitiveness of the Australian exporters. They were surprised at our reports of the lack of philosophical support for agriculture by the Australian community and believed their Governments led the discussion for the support of their food producers and that support for farmers was in the DNA of most countries in Southern America. In contrast

to this general support we did hear the belief that today's farmers were paying the price of the actions of their forebears, which in turn had been encouraged by the Governments of the day eg. land clearing and irrigation infrastructure.

Chapter 5

What could it mean?

The exposure to different production systems, food markets and policy settings on this study tour massively broadened the way the author saw the food provision situation in Australia. The challenging high demand we are likely to see for food in the world over the next 40 years is coming from 3 directions:

- a) increased population,
- b) better off consumers changing their diet and
- c) less subsistence farming as more people move to cities, stop growing their own food and need to buy from shops in towns.

This demand is set against a reducing amount of land for production as

- a) land is taken up for the housing for rural people moving to the cities for work,
- b) the absence of any significant spare land waiting to be farmed and
- c) political and community pressures against clearing forests for food production and probably land reclamation.

Land is the foundation of most food production (fish is a major food in some communities) and is being lost at varying rates across the world. However productivity maximisation is a long way from optimum in every country visited. The accepted average potential pasture utilisation figure, for Western Victoria is 7 t/ha. The average for the region is 2t/ha (Wiese 2012). This Australian example of 30% efficiency for pasture utilised per hectare in Western Victoria was described to many specialists and they universally agreed that many of their farm production systems were working at less than 50% optimum.

How this demand is met in the context of the production systems, the markets and the policy settings will be of very significant interest to the Australian farmer. Production systems have and will change over time and farms will adopt new technologies and research findings to partly meet demand. The addition of new land to meet the increased demand is highly unlikely as clearing forest for production is seen as unsustainable. The other alternative is to reclaim land that is currently under water, a little like they have in Holland over years. This extra demand needs to be delivered via sustainable systems as our populations are becoming

increasingly environmentally literate and where wealth is high and food shortages unheard of consumers place far more value on green production than on feeding the world.

There is a conflict in many countries between the affordability of food as an ingredient of social order (as opposed to disorder) and the affordability of farming to produce that food. Many specialists across the world cited policy settings that encouraged low food prices thus preventing civil unrest. With this governmental influence the farmers in some economies were penalised. In Australia where only one person in three live outside major cities, food is relatively inexpensive because of the cheapness of land and a major cost of the food at point of sale is the distribution costs as we are such a thinly populated land.

Both within Australia and abroad (to a lesser degree) there was evidence of the social pressures to restrict agriculture contained in legislation that has implications for the bigger picture the food challenge poses. Doing so reduces the available resources needed to meet the challenge. It would appear that the smarter approach to the challenge is to invest in joint research with the landscape managers to find win/win solutions for the environment and food production.

The overall picture of the findings and insights arising from the tour are included in the dot points below.

- Planning is key to expanding food production over time and that farmers, food industry people and the community need to be in the planning team [We need a national food debate]
- Food demand is going to burgeon over time.
- Farmers in Australia and other countries need more community support for their food production efforts.
- Environmental sustainability is important to non-farm people.
- More food will have to be produced with a smaller environmental hoof print per unit of production than before.
- On the face of it there didn't appear to be any land waiting dormant to be turned into food producing land.
- Prices will help to suck demand through.

- Some Govt's seemed to be good at grasping opportunities – ours (Australia) seemed to be more in a problem solving mind set.

Chapter 6.

The home picture

The findings above, point strongly to the value of developing food plans at a National, State and Regional level in Australia. The discussions overseas with policy makers and leading farmers brought out the value of a unified food policy; Governments and food industry leaders spoke of that goal and described a variety of methodologies to achieve their plans. Depending on the local conditions the plans had targeted a variety of community engagement levels to align the rest of the community with the plan.

The reflection on the findings above have strengthened the author's belief that the methodology used to grow dairy in Western Victoria is a model that has much merit to develop an agricultural sector. "Down the Track" was a project initiated in 2007 to develop a growth plan for the industry with a community willing to deliver it. The agreement to fund it was preceded by a communication campaign to develop a regional leadership group aware of the importance of dairy to the region and the potential benefits of growing it to the region's economy. The campaign won the hearts of the local and state government staff, the leaders of the regional milk processing companies and the farmers and they enthusiastically supported the project with funds and personnel.

With this support the development of "Down the Track" successfully attracted funding for the project but then wisely invested half of the resources on engagement rather than pure research. The result of the engagement was that about 1,000 stakeholders contributed to the plan and in the process went away with some of the industries statistics, understood its importance to the region and became "dairy literate". The upshot of this literacy is that

- Farmers pride and sense of importance increased and confidence lead to investment.
- Non-farmers become interested in considering a career in agriculture.
- The community recalibrated their appreciation of agriculture's value and this strengthened farmers' "license to farm".
- Policy-makers understood the significance of agriculture and
 - a) supported pro-agricultural policies, and
 - b) became advocates for agriculture to receive increased levels of resources.

The notion of agricultural literacy is one that relates back to many of the countries that were visited on the study tour. The level of agricultural literacy amongst policy makers and the general public was markedly greater than that which exists in Australia generally.

Chapter 7

Summary and Recommendations

One of the main themes to emerge from the study tour was the potential for greater production in Australia against a phenomenal increase in demand from the world's bigger and richer population. The opportunity to expand agriculture in Australia is huge but the nagging doubts are, do we have a well thought through plan to manage this growth and will the community support the plan.

The author interviewed Mike Taylor the ex-chairman of the Murray-Darling Basin Authority (MDB), as part of the research, and he said "There is no country with a greater disconnect with agriculture than Australia", and this too became the conclusion of the author, as supported by Taylor (2010). This disconnect could prevent Australia taking full opportunity of the extra food demand.

Over the world there is potential to produce more food by adopting many of the technologies that already exist and also investing in research into new technologies. Better adoption is the key in many areas as the general opinion seemed to be that yields from the optimally managed systems exceeded the average by 200%.

While much of the extra demand may be supplied by new technologies and better adoption of them by farmers the access to resources is likely to decline. In Europe there is such a strong environmental lobby some land is being returned to "nature" and some new technologies cannot be adopted as they are not considered sustainable. Irrigation waters are being shared more and more with environmental needs and land and water are critical elements to increasing the supply of food.

Agriculture may not employ as many people "down on the farm" as it used to but it is still a cornerstone of many local economies, providing income and job opportunities for residents.

(Fuerth, 1999) There is an unspoken expectation that farmers will continue to farm into the future; this is the definition of sustainability, which is to continue to be able to do tomorrow what you are doing today. Farmers throughout the centuries have farmed with future generations in mind. Passing onto the child the land farmed by the father formed the social contract that existed and ensured that the environment was cared for.

As population densities grew in parts of the world pressure was applied to different ecosystems and cracks began to appear. Some of the directions governments innocently gave like, 'clear the landscape or lose your ability to stay on the land' were directions poorly understood by the government at the time as far as future implications went. This direction was given to the soldier settlers as part of the scheme following the Second World War. The farmer is blamed for some of these past mistakes. Much investment is now made by the farmer and government in recognition of the need to show that we have as little impact as possible on the environment. The problem is that society is mostly unaware of this policy direction. Urban-dwellers seem to assume that there is all take and no give when it comes to balancing production and the environment.

It is the historical role of food production that agriculture played in communities that established the positive reputation farmers had with community. In the past there was an understanding of food and agriculture being associated. This is lost today and there are many people with no family link to the farming community.

Today there is also a socially active and well funded segment of society that is opposed to human use of animals for any purpose. This segment is raising concerns within the general public about the treatment of animals on farms and in the food processing system. Somehow farming has also been caught up in the environment debate and is portrayed, at times, as the cause of the current poor environmental situation. The animal activists have capitalised on this. The agricultural community have reacted to the issues in a piece-meal fashion. They have feared the consequences and the extra publicity, of giving the issues airplay. There has been no investment collectively in a proactive approach by all agricultural sectors. This is impossible to achieve currently without government assistance, as there is no framework to assist in a cross-agriculture approach. The lack of recognition of the problem is the reason that a taskforce cannot be formed to address it. There are examples however of other issues that does see action collectively. Examples that see this sort of approach would be

agricultural issues that affect bio security. If we have an issue that may affect bio-security, such as FMD, our government coordinates the issue and works with industry to find a solution. This is what is needed to address the city/urban disconnect so Australia can play the necessary role to ensure food for the future. Currently despite the social contract being broken, this is not recognised as an issue requiring attention. The understanding of the importance of agriculture is lost.

The author's research encompassed many countries across the world in both Western countries and developing nations. There are many factors influencing the way agriculture is viewed in the different places due to differing factors. Food security is high on the agenda in some. Hunger is a vivid memory for others. All seemed more aware and interested than Australia in meeting the challenge of the "disconnect" with community.

Against the objectives of the study trip the table below outlines the results found:-

Objective	Summary Finding
Compare Agriculture's value to nations, particularly between developed and developing nations and use that comparison to appraise if the Australian nation has an appropriate valuation of agriculture.	Value varied and generally is lower the more developed the country. In Australia the valuation is well below what other comparable countries enjoyed and is considered by the author to be well below optimal levels.
Better understand the future world demand for food and where the supply will come from.	There are not many places waiting to be cultivated and turned into arable food producing land. The idea of clearing forests to produce arable land is not considered sound. The options left are developing new technologies or more importantly using the ones we already have. There is huge capacity to produce more that we do now just with the current technologies.
Research in countries visited their community's attitude to farmers and agriculture and if a national vision for agriculture exists.	Not all countries have a National Vision for Agriculture and food production. Those that do, such as Brazil, have a better appreciation of the value farming delivers to the triple bottom line and often resources follow that appreciation.
Compare the understanding of the value of food production in the western world relative to that of developing nations.	The context to the understanding is much different in non-developed countries, where the provision of affordable food is a civil necessity to retain peace. In first world countries the majority of people have not experience hunger or food shortage and its value has diminished compared to their developing world neighbours

Therefore the following actions would take Australia towards a community that is informed and able to be involved in embedding Agriculture into the future.

1. Lobby for the Australian Government to take a bolder approach to grasping the opportunity extra food demand will offer Australia
2. Build better statistics and information on the value of Agriculture to the Nation across the triple bottom line
3. Australia should start a debate on the value of agriculture and build agricultural literacy amongst our leaders and the general population, using the findings from item 1, above.
4. Use this literacy to develop support for the development and resourcing of food growth plans at Federal, State and region levels that understand the impending increases demand and the capacity of Australia to supply that demand (use successful models to guide the process of planning)
5. Increase the knowledge of the triggers for better adoption of production technologies and invest in supporting change on farm to deliver that change
6. Measure and define if a country/city disconnect exists and if it does determine its significance and the implications for a cohesive Australasia. Take action if necessary.

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Plain English Compendium Summary

Project Title:	
Nuffield Australia Project No.:	
Scholar:	Roma Britnell
Organisation:	'Briland Farms'
Phone:	0409 504 482
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Objectives	<ul style="list-style-type: none"> • Compare Agriculture's value to nations, particularly between developed and developing nations and use that comparison to appraise if the Australian nation has an appropriate valuation of agriculture. • Better understand the future world demand for food and where the supply will come from. • Research in countries visited their community's attitude to farmers and agriculture and determine if a National vision for agriculture exists. • Compare the understanding of the value of food production in the western world relative to that of developing nations.
Background	The level of support by the community for agriculture in Australia may be diminishing - this study tour set out to uncover if this is normal and if not what could be done to remedy the support and explore how to tie this in with the expected increase in world food demand.
Research	Current research funded by Landmark
Outcomes	The demand for food will provide opportunity. The greatest challenge will be the community and the disconnect resulting in the ability to farm being threatened in Australia.
Implications	Continue to advocate to bring the community along with the growth in food production – increase general community agricultural literacy
Publications	Murray Goulburn Newspaper. 3 articles published

