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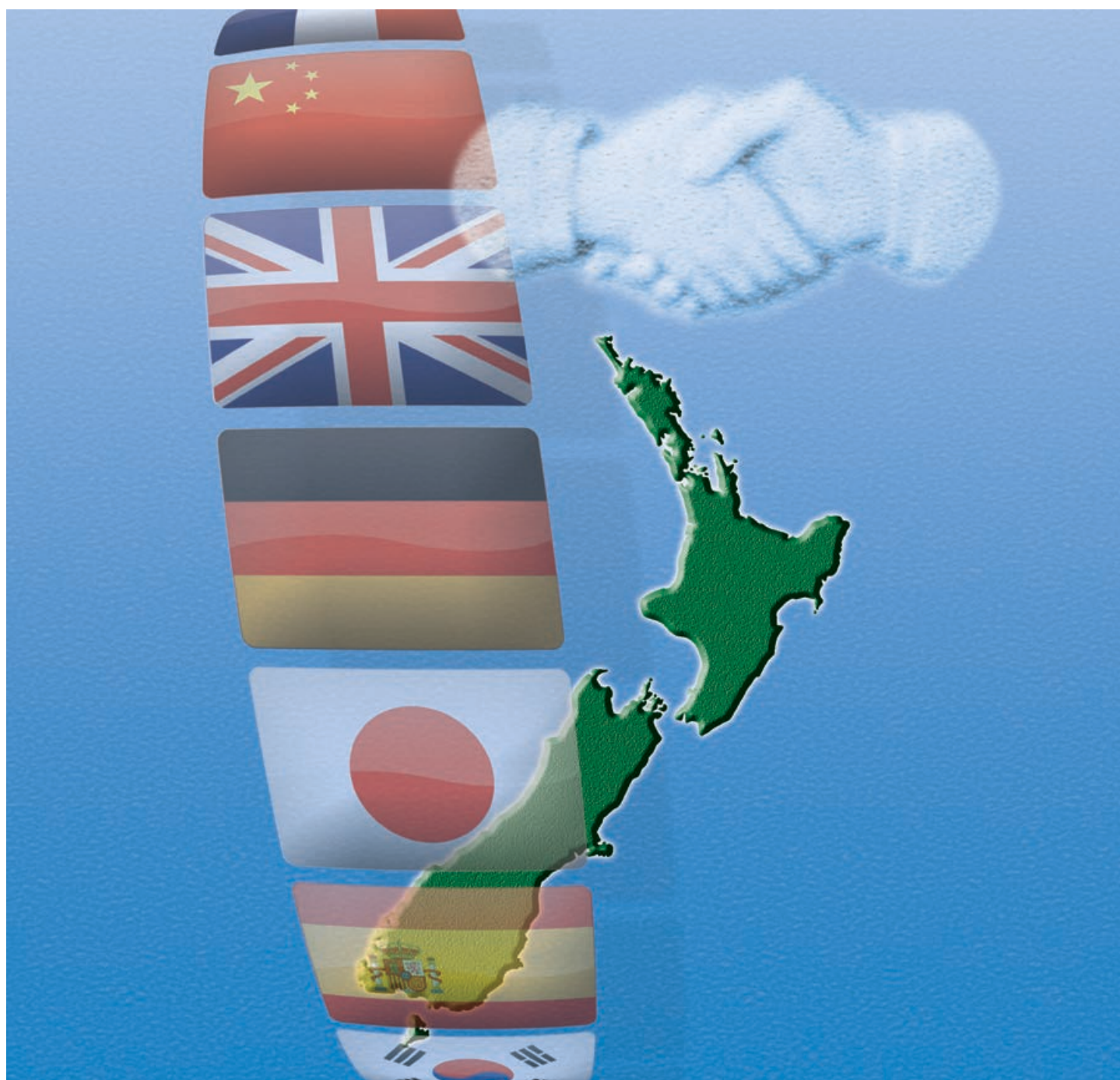
Trends in the price of rural land

Managing change

The New Zealand hop industry

VOL 17 NO 2 JUNE 2013 ISSN 1174-524X

Primary Industry Management







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Primary Industry Management is the quarterly journal of the New Zealand Institute of Primary Industry Management Incorporated. It is supplied free of charge to more than 700 NZIPIM members involved in rural consultancy, education, science, technology and agri-business. It is also available on subscription to the wider rural community with an interest in technical, management and rural business information.

Primary Industry Management is dedicated to the publication of articles on all aspects of agricultural science and the management of primary industry resources. The opinions of the contributors are their own and not necessarily those of the publishers or editor. The whole of the literary matter of *Primary Industry Management* is the copyright of the NZ Institute of Primary Industry Management.

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Subscription

\$75+GST (New Zealand), \$100 (Australia), \$120 (other countries). Subscription enquiries should be directed to the NZ Institute of Primary Industry Management.

Primary Industry Management

Volume 17, Number 2 June 2013

ISSN 1174-524X

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Working with other countries

The lead article in this issue of *Primary Industry Management*, written by Alistair Polson, is about free trade. The article is very well written and explains a complex subject in a language we can all understand. Agricultural tariffs on imports around the world average 40 per cent, compared with a tenth of that figure for non-agricultural goods. This means that, for example, the average kiwifruit grower pays around \$30,000 in tariffs and other New Zealand exporters many millions more.

However non-tariff barriers are also prevalent. One non-tariff barrier in the news as this editorial is being written is the hold-up of lamb exports into China. It could just be a simple error in the paperwork, which is how it was first reported. As matters unfold it all gets a little murky. If it was just that the Chinese authorities did not recognise a change in the name of the new Ministry, as was first claimed, it should have been solved with a simple phone call or email. Who knows exactly what the reason was? We may be told, or we may never find out.

It could be a cross-cultural problem. China works differently from the average country in the western world. The article by Sharon Lucock, Keith Woodford and Malcolm Cone explains how doing agribusiness in China is different. Chinese behaviour is based on thousands of years of arranging activities to match the changes in the natural environment. Nature has always been unpredictable so the Chinese way was to respond and adapt rather than to resist. This is reflected in their current business practices, which have direct implications in business relationships with other cultures, such as New Zealand. A contract is only a starting point in a Chinese business relationship. A lot more still needs to be done if the relationship is to succeed.

Another article in this issue of *Primary Industry Management* by David Rendall looks at opportunities for New Zealand agribusiness in parts of sub-Saharan Africa, where much is in stark contrast to New Zealand. The population is close to 900 million, of which over half are rural dwellers. In comparison New Zealand has less than five million people of whom only 20 per cent are rural. The land area in sub-Saharan Africa is 2.5 billion hectares, New Zealand covers less than 30 million hectares. However, Africa offers challenging opportunities for New Zealand with our farming models very relevant.

Rural land prices in New Zealand are subject to cycles in frequency and magnitude which means that owning rural land is more than just a minor risk. Kevin Wilson, in his article on trends in the price of rural land, takes us through the rural land price changes from the 1950s when accurate data on rural land prices first became available, to the present day. The article also looks forward as farm debt stays high and could get higher.

How farming consultants or advisers are used is considered in an article by Geoff Taylor. Apparently only half of the 50 per cent of farmers who use consultants find the interaction valuable. Geoff Taylor suggests that a farm advisor should be a technical expert, a facilitator, a personal coach and a change agent. In particular, advisors should support clients to take a more planned approach to managing change.

Governance and new skills are considered by Peter Allen in his article, particularly the role of a consultant on advisory boards for dairy farmers. The consultant on the board would have no power of instruction or veto but could offer advice and opinions. This article complements the one by Adrian van Bysterveldt on the Large Dairy Business Project which aims to help governance and manage change for farmers. Both articles are well worth reading and digesting.

Safety has been quite a hot topic recently, particularly as the government is setting up a new stand-alone agency devoted to work health and safety. Farming safety is not a good story as, linked with forestry and fishing, it is one of the least safe industries to work in. Some significant changes in attitudes are needed, along with government support, if the appalling death and injury rate is to be reduced. We hope to be looking at farm safety in future issues of this journal.

In the meantime it is worth being reminded of the worst accident problem on farms, namely the quad bike. Over 800 serious injuries are caused every year by quad bikes, as well as a number of deaths. This is just not acceptable. Perhaps the lead should be taken from Landcorp. They have decided that quad bikes are so dangerous that they should not be used on their farms. All new Landcorp farms now do not allow the use of quad bikes and consideration is being given to withdrawing quad bike use from all their other farms.



Alistair Polson

Free trade – has the war been won? A New Zealand farmer's perspective



Comprehensive free trade with unrestricted flows of goods and services and people is still an aspirational goal for most of the world. Trading blocks such as the European Union and the United States come close, but even New Zealand's own CER with Australia still has restrictions. It has always struck me as ironic how the European Union and United States enjoy the benefit of free trade within their borders, but some sections of agriculture turn protectionist when it comes to inter-country trade. The relative status of free trade is a continuum with North Korea and its attendant poverty at one end and perhaps Singapore or maybe New Zealand at the other.

A high-level stocktake of indicators of trade restriction reveals that in a post-Uruguay Round world there is much to be done, which is why 'unsurprisingly' the Doha Round was launched in 2001. Agricultural trade still faces average bound tariffs of approximately 40 per cent while other non-agricultural goods have an average of four per cent imposed upon them. Agricultural trade also has restrictions on volume with quota limits which, when combined with over-quota tariffs, are effectively a shut-out for goods.

In practical terms this means the average kiwifruit grower pays \$30,000 in tariffs, the lamb and beef exporters pay \$200 million across the industry, and in dairy the figure is many times that. There are other insidious distortions which affect world markets. The export subsidy regimes in dairy from the European Union and United States drive markets down at critical times as well, and domestic support for inefficient producers means their product crowds out the goods from efficient unsupported producers.

Also seldom featured are non-tariff barriers which are so prevalent in agricultural goods. Whether it is a perceived biosecurity risk for apples into Australia, chilled pork into New Zealand, dodgy unscientific excuses around human health risk over hormones in beef, or genetically modified organisms into Europe, the result is the same. Domestic producers are protected and consumers in that country pay more, exporters are stymied and the world's resources are wastefully allocated.

In short, agricultural trade is still a mess and remains a point of acute interest to New Zealand given our export profile and the importance of trade to our economy. If we woke up tomorrow and had total free trade, the benefit to this country would be counted in billions of dollars and make an appreciable difference to our nation's GDP. The Doha Round of World Trade Organisation talks was to have addressed important problems in agriculture. The three pillars of market access, export subsidies and domestic support were front and centre in the discussions.

General consensus

There remains a large measure of agreement on the texts for the Doha agreement. The consensus was that, for example, deep cuts needed to be made in all tariffs with perhaps a 70 per cent cut in tariffs over 75 per cent. This looks encouraging until you realise the countries are allowed to declare a number of their imports

as sensitive products and escape significant tariff reductions in return for some increased quota access. Much of New Zealand's agricultural export profile falls into the sensitive product category.

Therefore Doha, as it was shaping up in the texts of 2008, was not perfect. However, it is significant progress on what has gone before, especially with regard to the elimination of export subsidies. In any event, the deal remains deadlocked and is in cold storage.

Sensitivities around agriculture were a main reason for the breakdown of the Doha Round and are always an obstacle in bilateral or regional agreements. This is not surprising given the circumstances around food production and consumption. Very little of the world's food production is actively traded across borders. For example, the figure for milk is around seven per cent, lamb eight per cent and beef 12 per cent.

Traditionally food was perishable and consumed close to home, but with the advent of good cold storage and transport facilities circumstances have changed. This will help increase the percentage of production which is traded on a global basis in the future, especially as the emerging markets of Asia develop.

Resistance preventing change

Most resistance to liberalising agricultural trade comes from developed economies such as the United States, Japan and the European Union. The policy-makers in these countries know that protecting their agricultural sectors is bad for their economies, but the cost of protection is simply not high enough to promote change. Agriculture in these economies is usually less than two per cent of GDP.

Farmers in general also wield a disproportionate amount of political power and their localised intense pain outweighs the generalised benefit to the consumers which is spread so thinly, and usually measured in dollars per week per family. The amount spent by families on food in these economies is also small. In the United States, for example, only seven per cent of household expenditure is on food, so who cares if a few dollars can be saved on that item unless you happen to be in the low income bracket.

The cost to governments in maintaining agricultural protection is also tiny in most cases, less than one per cent of their budgets. It is little wonder that governments have little stomach for reform, especially as farmers hold a special place in the hearts of largely urban-based populations. Organised farmer groups have played on problems such as food security and food safety to great effect. Farm leaders will freely admit that subsidies do not protect farmers in the long run from greater economic forces.

The French dairy farmer must have been one of the most protected species on earth, but despite the best efforts of the Common Agricultural Policy dairy farmer numbers have declined from 360,000 to just 60,000 in the last 30 years. There is a general recognition that subsidies, including tariff protection, have failed their own farmers, cost tax payers and consumers, and prevented proper allocation of resources. The

moral war in one sense has been won but the mopping up operation will continue for many years.

The battle of Doha

The battle of Doha is a heavy campaign defeat which will prolong the struggle for liberalisation and its attendant wealth creation. Fortunately, New Zealand's trade policy strategists have always had a fall-back plan, a second front to continue with the warfare analogy. This has been the pursuit of bilateral trade agreements or free trade agreements with the growing economies of the Middle East and Asia.

There is a fundamental shift in the world's wealth to these regions and they will increasingly demand protein which New Zealand specialises in producing. It makes sense that we try to cement trade agreements within the Asian region as it reflects the change in the flow of our exports. In 1960, a total of 75 per cent of our exports used to go to the United Kingdom and Europe, and now it is less than 15 per cent and 40 per cent goes to Asia.

Our exporters find the mature markets of the European Union and North America are hard places to improve market share, even with better market access, as they have to win over customers from other suppliers. The expanding markets of China and India, and other countries such as Indonesia and Vietnam, are much easier places to improve sales volumes as there are significant growth opportunities from new demand if exporters can operate within an open and fair trading framework.

Stunning success

New Zealand's free trade agreement with China has been a stunning example of the success of this alternative strategy. Trade flows, particularly for milk powder, have grown exponentially since the agreement has been in force, with dairy exports approaching \$3 billion. We were able to secure a free trade agreement with China because we were small with good practice and importantly, China wanted our products.

The China free trade agreement still remains China's only one with a developed country. New Zealand, on the other hand, has struggled to initiate or complete deals with Korea, Japan and India. However, significant progress has been made with Russia and the ASEAN agreement has been completed.

New Zealand has the problem that it brings a very small consuming economy to the negotiating table with virtually no tariffs to use as bargaining chips. For many countries we also aim to export products which are sensitive to their domestic producers such as dairy and beef. This makes life difficult for us, and we tend to get bumped down the queue which creates another problem as competitors get ahead of us in the race to secure access for their goods.

Noodle bowl effect

In the Republic of Korea, for example, New Zealand faces a 45 per cent tariff on kiwifruit. Chile, a large kiwifruit producer, has a free trade agreement in effect with a declining

tariff which will see Chilean fruit enter virtually duty-free in three years from now. This will make New Zealand fruit look very expensive with a resulting loss in sales and revenue. There are numerous other examples of the need to create defensive positions in the region and this is one of the reasons there are over 300 free trade agreements completed or under negotiation around the world. This noodle bowl effect has resulted in a multitude of agreements, all with different rates and rules that are less than optimum in increasing trade flows.

To summarise the current position –

- New Zealand's first priority has been Doha but that agreement is on ice
- We have had some success with high-quality bilateral agreements, but have perhaps harvested the low-hanging fruit
- Our position is also being undermined by other agreements and whole noodle bowl effect for the Asian region
- New Zealand needs to be part of a wider comprehensive trade agreement where our smallness is less of a problem.

Trans Pacific Partnership

The arrival of the expanded Trans Pacific Partnership is therefore very timely. The original Trans Pacific Partnership actually started in the late 1990s from a shared strategic vision between Singapore and New Zealand to create an APEC-wide trade liberalisation platform. The key to any region-wide agreement is to attract the world's number one economy, the United States, to the party. This was achieved in November 2011 in Honolulu and the P9 was born.

The nine APEC leaders involved clearly stated their commitment to an agreement which had a goal of 'comprehensive duty free access to each other's goods markets'. This was a very good starting point, and since then Canada and Mexico have officially joined, with Japan now undergoing a consultative process to do the same. This would make a P12 with the number one and number three economies along with Mexico, Canada and Australia adding to the commerce that Peru, Chile, New Zealand, Singapore, Brunei, Malaysia and Vietnam bring. The eventual aim of the Trans Pacific Partnership is to bring the whole of the APEC region on board, which would create a massive trading block involving greater than 60 per cent of the world's trade.

A new club

The aim is to create a high-quality agreement which drives tariffs down to zero, but importantly deals with the non-tariff barriers. The issue of regulatory coherence is vital in terms of creating genuine trade opportunities. Trade rules within the region are to be science-based and provision will be made for the settlement of disputes between members. If this sounds and looks like a World Trade Organisation structure it is because it is meant to be.

The architects of the Trans Pacific Partnership hope to use this as an opportunity to clean up the noodle bowl effect and create an ambitious, high standard agreement so large that it forces the World Trade Organisation members

to redefine its timetable and re-ignite the Doha round. The model is start small, agree on a high standard amongst a small group, then bolt on other countries who would be forced to accept existing high standards to participate in the rewards of membership.

Tim Groser, the Minister of Trade, describes it as the formation of a club with a strict dress code, and it is not just a matter of turning up and demanding membership – a jacket and tie are required. For jacket and tie read tariffs and other direct barriers to imports. The formation of this club looked easy with nine members, but perhaps the group lacked some economic critical mass. Even amongst the nine there were sensitivities. America's dairy industry felt threatened by the New Zealand dairy farmer competitiveness. A lot of work has been put in by New Zealand representatives to clarify the relative size and strength of our industries.

New Zealand produces around 2.5 per cent of the world's milk and will not fill the growing demand of the Asian region in the years to come, which leaves a significant opportunity for United States exports. Parts of the industry have already started to change their focus a little to exports, with a little over 13 per cent of national production exported currently and further growth predicted. This 13 per cent of an industry five times the size of our own is significant and amounts to around half our volume.

The American dairy industry, it is fair to say, was struggling with the logic of these arguments until Canada and Mexico joined the Trans Pacific Partnership in November 2012. Their addition will provide further export opportunities close to home which has brought about a change in thinking. Now Japan has announced its intention to join, subject to the agreement of existing members, the momentum has really changed gear but unfortunately some of the drive train is not connected.

Complex situation

The situation is complex, but Japan presents opportunities for the United States dairy and beef industry and perhaps rice. However, the Trans Pacific Partnership presents a problem for the protected United States sugar industry because the lower cost Australian industry would like to export there. In Canada, 85 per cent of their agriculture is export-orientated and that portion of agriculture is very much in favour of a high-quality Trans Pacific Partnership deal, especially for the beef producers who see immediate gains from the Japanese market.

The problem for Canada and all Trans Pacific Partnership members is that Canada has a supply managed sector of dairy and poultry which relies on 299 per cent tariffs to protect their system. If there is to be any significant tariff reduction in the case of dairy in Canada then the ensuing imports would collapse the supply-managed system and reduce dairy farmers' extraordinary profits.

Understandably the Canadian dairy farmers are fighting this with all their considerable resources, especially as there are \$30 billion Canadian dollars of quota which would become worthless. The vital political question is will the

Canadian government over-ride the protestations of a vocal few and put the interests of the exporters first, and also deal with the quota issue with its potential fiscal impact, or will it argue successfully for an exemption for dairy?

Japan will also look to exempt its sensitive dairy, beef and rice sectors but at the same time demonstrate that it can join and adhere to the principle of eliminating tariffs over time. A stocktake will show that in agriculture at least Japan, Canada and the United States have sensitive sectors with a high degree of political power and influence, which will encourage their respective governments to carve out their industries from an agreement.

No exceptions

The obvious problem for everyone is that if one exception is allowed, then quickly all will rightfully claim exemptions. In a typical quirk of trade negotiations the Mexican's sugar industry, ostensibly in favour of free trade, would not like to see movement on sugar protection. They have preferential access to the closed United States market and would not want to compete with Australian imports.

With dairy, beef, sugar, rice and perhaps cotton out there would be nothing in it for New Zealand and Australia and limited returns for many Canadian, American and Mexican farmers. The potential for breakdown would therefore be real. New Zealand farmers would recommend to government that we walk away from a deal that did not include dairy and beef.

Most importantly, in the longer term any lowering of standards among the founding members of the Trans Pacific Partnership would become permanent. So each new country which joins in the future would expect to have its sensitivities addressed. This would mean the chance to create a gold standard template in a regional agreement would be lost and a chance to influence worldwide agreements would also disappear.

A mini Doha?

The reader could be forgiven for thinking that a mini Doha has been created with all the associated problems, and to some extent this is correct. The problem members faced in deciding whether to accept new applications was that, without the three most recent countries, there was a lack of critical mass. The United States government is not inclined to expose their dairy industry to New Zealand products for modest market opportunities amongst a smaller group of nations.

The addition of Japan and a possible rethink on Canadian dairy, carved out under the North American Free Trade Agreement, is a meaningful incentive to take some risk. Agriculture is, of course, only one chapter of 17 and each has problems to be agreed. Agriculture, or goods, is more difficult than most and like Doha will probably be the last to be settled. Given the size and complexity of the negotiations, and Japan's recent joining, any timetable allocated must be extended and hopes of completion this year seem improbable.

Urgency and a deadline

An important problem about the speed of completion is to create a sufficient sense of urgency amongst the participants, a deadline which creates enough tension to ensure the inevitable political solutions are found. For their part, the negotiators must go as far as they can to leave a small number of outstanding problems which beg solution to benefit the rest. This alone will not be enough and the role that President Obama will play will be critical if he wants to leave this agreement as a legacy of his presidency.

To be successful, the United States administration must count backwards from the desired date of eventual passage through the House and the Senate to a time for completion that allows for this process. Allowance also has to be made for mid-term elections as well, which means that by the end of April 2014 would be a good time for the United States to exert the considerable pressure it possesses. Negotiators should, however, resist the temptation to rush negotiations to avoid the risk of lowering standards. New Zealand and others need to be patient to ensure a quality agreement.

Critical time

The Trans Pacific Partnership negotiations are at a critical time for New Zealand. The Doha Round of reform was the opportunity to make the most comprehensive gains for trade. The Trans Pacific Partnership is an outstanding opportunity to create an export-friendly trading environment in our key future markets. The alternative is bleak by comparison despite what some excellent potential agreements with Russia, Taiwan and India might offer. We do not have a heavy club to swing so we need to be part of a team batting line-up.

Some of the changes we are asking importing countries to make are far-reaching and fundamental – if there is any doubt about that, ask a Japanese rice grower. The fundamental changes will need to be away from market price support to non-trade distorting green box payments for the Japanese and from tariff protection for Canadian dairy farmers and sugar producers in the United States. New Zealand and others can play their part in the process by offering reasonable phase-in periods for the adjustments to take place, but at the same time insisting on the end goal of tariff elimination.

New Zealand's farmers, processors, suppliers, advisors and scientists also have something unique to offer in the discussion in that we have successfully undertaken major structural reform ourselves. This experience is available to farmers and agricultural industry facing change within the Trans Pacific Partnership region. It will not provide all the answers, but perhaps be part of the greater puzzle that gets the Trans Pacific Partnership across the line.

Alistair Polson is a sheep and beef farmer, kiwifruit grower and has been a New Zealand Special Agricultural Trade Envoy since 2004. The views in this article are of the author and are not government policy.

Barry Brook

The importance of whole farm management A case study New Zealand Farming Systems Uruguay



This article was presented as the Sir James Stewart Memorial Lecture in 2012

My interest in the Sir James Stewart Memorial Lecture was based on four main reasons. I had enormous respect for Sir James and his ability to relate to farmers and rural professionals in a very practical way. I am concerned that the focus on whole farm management has reduced in the last decade and needs to be reprioritised. It is, or was, an area of comparative advantage for New Zealand and it is a subject Sir James was passionate about.

Sir James also had a deep interest in and fondness for Uruguay – he visited on four occasions and recognised the agricultural potential there. The broader story of how New Zealand Farming Systems Uruguay (NZFSU) came about has rarely been told, and I thought would be a useful case study of the application of whole farm management.

What is whole farm management?

Whole farm management is the organisation of, and decisions about, production from the use of land, labour and capital. Whole farm management is a framework for thinking about the whole farm business rather than its component parts.

I will explain what I mean by whole farm management by using an example. When I did my DipVFM in 1969, we needed to complete a field test as part of the exam programme. The field test lasted a week starting with being given an envelope inside which were two items of information – the name of the farmer whose property we were to visit for a day, and of the staff member who would accompany us to the property.

Our task was to arrange the visit with the farmer and staff member, find our way to the property, and spend the day getting enough information to complete the following reports –

- Property report
- Management report
- Budget for the next financial year
- Development plan for three to five years with full budgets
- Detailed valuation using supporting comparative sales information
- Productive valuation.

To be able to complete that set of reports you needed to be very good at –

- Asking questions
- Observing your surroundings such as soil types
- Organising a lot of information
- Knowing what good looked like and what opportunities there were
- Thinking your way through trade-offs and make value judgements.

That is the knowing and thinking part of whole farm management but it does not include the other important element – the doing part, or making it all happen. The reason for using that example is to illustrate that there is a framework involved in whole farm management. It is all encompassing and involves numerous value judgements.

Whole farm management is both a science and an art involving a number of competencies. It can also be thought about as a process of understanding the opportunities and the constraints. It is a bit like doing a strengths, weaknesses, opportunities and threats analysis in a business. It is, of course, no different from business management and it is something Sir James Stewart excelled at.

Why is whole farm management important?

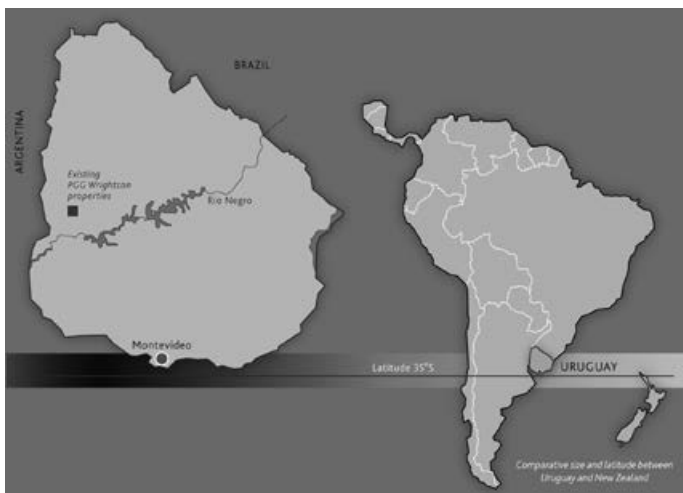
The simple answer is that without it, you will only have part of the picture, you will be relying on assumptions, and you will be taking much greater risks. Business success is about getting the best from the resources available to you, and too often we limit what might be possible by imposing artificial limits or settling for second best.

What we should be doing is seeking the best information possible and aiming for world best. The whole farm management approach can be applied in many situations, not just to a single farm. It can be applied to a number of farms, a region, or at industry level. The case study I will use is NZ Farming Systems Uruguay. This shows the application of the whole farm management approach in a different part of the world in Uruguay in South America.

Exploring Uruguay

I was fortunate to be given the opportunity to live in Uruguay for three months in 1999. Wrightson had acquired a 51 per cent controlling interest in a seed business, Semillas PAS, and the company asked me to go to over there and oversee the initial establishment of the Wrightson involvement.

The rationale for the investment was that significant parts of Latin America were suitable for New Zealand and Australian-bred pasture plants. In addition agriculture in this area was likely to intensify, creating a demand for New Zealand plant varieties. Wrightson was prepared to take a greater risk in anticipation of greater reward compared to the strategy of simply earning royalties on seed sales as had been the earlier approach. Uruguay was a politically stable



Relative latitudes

economy with orthodox economic policies and represented a sound base from which to develop a business.

The rationale from the Uruguayan end was that they also saw potential market growth and were keen to secure access to New Zealand and Australian-bred plant material on a longer term and more committed basis. They had dealt with Wrightson Seeds for a number of years and had a preference for the company's germplasm with a view to establishing a leadership position in Uruguay.

While living in Uruguay I took the opportunity to learn as much as I could about the make-up of the agriculture sector and its challenges and opportunities. I thought that Wrightson might expand its future involvement in Uruguay and Latin America and any insight gained would assist in identifying those opportunities.

This was a unique opportunity and, as an aside, it is the sort of opportunity that many more New Zealand agribusinesses should offer to executives as a means of developing markets and businesses outside the country. Serious time spent in new markets will pay dividends and trumps flying visits in developing market understanding.

Agriculture in Uruguay in 1999

I gained knowledge from numerous visits to farms and businesses operated by people making a difference, trying new ideas, and those recognised as top performers and leading thinkers. The picture was that of a country with enormous agricultural potential and a conservative outlook borne out of the harsh experience of financial risk and volatile economics.

For a New Zealand agriculturalist it was easy to be enthusiastic about the agricultural potential in Uruguay. I am sure Dr McMeekan from Ruakura and Professor Sir James Stewart had a similar reaction when they first visited.

The agricultural landscape

Uruguay is relatively flat to gently rolling with the highest point only 500 metres above sea level. Soils range from shallow in the north to deep rich loams near the rivers. All have been mapped and carry a productivity index in the range 0 to 270 with top arable land having values of over 200.

Uruguay's climate is between temperate and sub-tropical. It is on a similar latitude to Northland, with the climate more like that of south east Australia, with summer daytime temperatures in the 30s. Rainfall averages around 1,200 millimetres a year and is reasonably well distributed.

The combination of topography, soils and climate offers Uruguay a wide range of land use options from pastoral farming, arable cropping and including intensive horticulture. While its total land area is only 66 per cent of that of New Zealand, the farmed area is similar at around 15.5 million hectares. In addition, Uruguay has a much higher percentage in arable land use categories 1 to 4, with Uruguay at around 50 per cent compared to New Zealand's 25 per cent.

The main land use in Uruguay is extensive beef cattle farming, and most of the grazing land is unimproved native pasture producing three to four tonnes of dry matter per year. Dairying is concentrated in the south-west of the country

with around 2,500 suppliers to Conaprole, Uruguay's main producer cooperative. Only around 20 per cent of the dairy farms had herds of more than 100 cows.

The relative economics of dairy farming in New Zealand and Uruguay were presented in the NZFSU Prospectus in 2006 as shown below.

What stands out in this comparison is the lower land

Typical dairy farm performance

	New Zealand	Uruguay
	2004/05	
Kg milk solids per cow	339	327
Cows per hectare	2.7	0.8
Kg milk solids per hectare	895	275
Milk price	\$4.44	\$4.00
Total farm expenses	\$2,441	\$886
Economic farm surplus per hectare	\$950	\$308
Total farm assets per hectare	\$36,084	\$5,144
Economic farm surplus and total farm assets per hectare	2.6%	6.0%

productivity in Uruguay but similar milk price. Lower land prices there also enabled a higher return on total assets to be achieved compared to New Zealand.

The overall impression of agriculture in Uruguay in 1999 was one of opportunity for improvement in both productivity and profitability, particularly in pastoral farming, which was reminiscent of New Zealand in the 1960s and 1970s.

Constraints to intensification

It was also important to understand why the abundance of opportunities in pastoral agriculture had not been exploited in Uruguay. My observations identified quite a number of reasons –

- A lack of good schooling and other services in rural Uruguay saw most land owners living in Montevideo or other cities and spending reduced time on the farm
- A minimal input and low-cost extensive farming approach reduced risk and could be operated with low-cost, low-skilled labour
- Good specialist technical knowledge existed, but there was a lack of whole farm management and experience of efficient grazing management systems.
- Pasture development was regarded as relatively expensive, many farmers were reluctant to borrow and development capital was limited and expensive
- High input, more intensive systems were perceived as more risky and demanded a greater level of skill and continuous attention to generate sufficient benefits.

There were exceptions, and experience varied across different enterprises. The rice industry demanded precision in flood irrigation and pest and disease management. In addition there were numerous examples of high input, intensive arable cropping enterprises operated at relatively high levels of performance such as maize, soya beans, wheat and barley.

Risks are always present

While the scope and potential for growth and development in Uruguay's agriculture was large, there were potential risks. Wrightson experienced two severe shocks early in its existence. First, in early 2001, foot-and-mouth disease was discovered and the whole agricultural economy went into lockdown. Markets froze and cash dried up.

That was a chilling experience to live through and demonstrated to an outsider how adept Uruguayans are at dealing with such difficult situations. Cash was king but without it, barter trade became the order of the day and many innovative non-cash deals were struck keeping businesses operating.

In Wrightson, the staff accepted a 50 per cent wage cut to enable the business to continue to trade. Staff preferred to keep their jobs at any cost. I also experienced first-hand the way in which Uruguayan businessmen applied drastic cost control when business survival was at stake.

Uruguay had been declared free of foot-and-mouth disease in 1995 and, following the 2001 outbreak, the government introduced compulsory annual vaccination and was granted foot-and-mouth disease-free with vaccination status by the World Organisation for Animal Health within six months. The effect of the foot-and-mouth outbreak was severe, but within nine months business in the rural sector started to recover as markets opened up gradually and cash started to flow again.

However, in 2002 along came the Argentinean economic crisis which sent shock waves through the Uruguayan economy. Argentinean withdrawals from Uruguayan banks started a bank run and a package of measures supported by the International Monetary Fund was required including floating the local currency, the peso. A sharp devaluation and surge in inflation created short term pain but confidence was restored.

Applying whole farm management

During this period, Wrightson had taken an important strategic step. After a couple of seasons of lifting the sales of proprietary seed products in Uruguay, stories were emerging about farmers being disappointed with the performance of the new pasture plants.

After more detailed investigation it was found that the new proprietary grasses had not been managed properly. The usual extensive farming systems with large paddocks and limited movement of stock meant grazing management was poor and soil fertility was often inadequate. The Wrightson response was to set up a demonstration farm to show farmers how to get the best from the improved proprietary grasses. A 400-hectare property, Cardo Azul, was leased and a beef finishing system was established.

The important elements established on Cardo Azul were water reticulation around the farm, electric fencing and grazing management systems. The property was located in the west of Uruguay on soils of relatively low fertility. Extensive measurement was established and within two seasons the level

of productivity had been improved dramatically.

Beef production of 1000 kilograms of live weight per hectare per year was being consistently achieved when the surrounding undeveloped land was producing only around 100 kilograms. The whole farm system was working well and interest from farmers and technicians was high. Wrightson held many field days on Cardo Azul and the main milk co-operative, Conaprole, used the property to extend the knowledge of its technical advisory officers.

The demonstration farm experience was a very important one from a variety of viewpoints and it highlighted the fundamental importance of whole farm management. It also reinforced the importance of marketing the whole system and not simply selling grass seed. I remember in 2000, when discussing strategic options for Wrightson with a Uruguayan economist, he said: 'Why don't you sell the whole package and not just the seed?'

This thought was further reinforced by an investment banker, one of the owners of Cardo Azul. He became very interested in the farm with the high return on investment that he was seeing.

Commercial scale dairy farming

The next step was to apply the whole farm management system on a commercial scale dairy farm. Leasing opportunities were not readily available and farm ownership ended up being the preferred option. A suitable dairy farm with a number of attractive features near Young in the west of Uruguay was acquired in 2004.

The farm of 2,600 hectares comprised three units. Two were adjoining and one was 15 kilometres away. All had high-quality soils and there was a 48-bail rotary cow shed on one farm with a high-producing mature Holstein herd of around 1,000 cows.

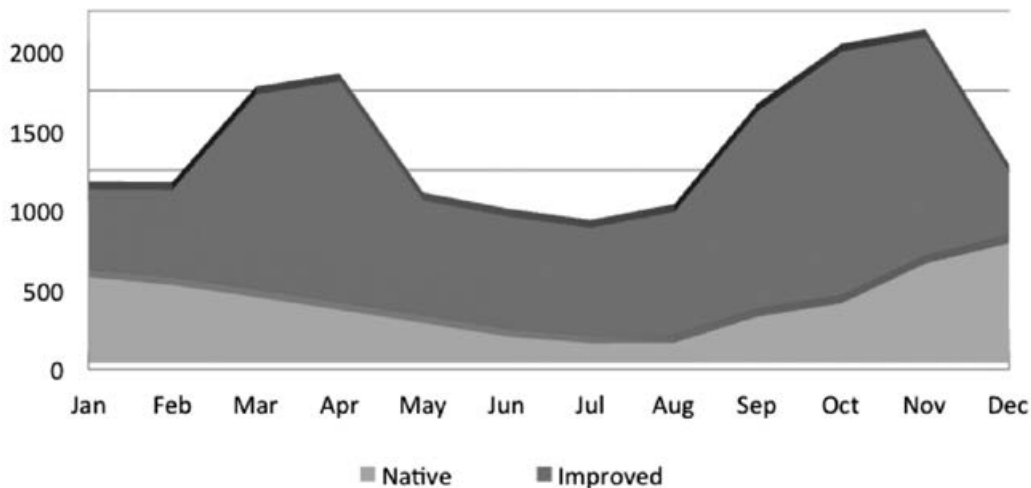
The plan was to introduce a New Zealand style pasture-based grazing management system. Being further north, the area experienced hotter summer temperatures, with daily

summer maximums often being in the 30s. Irrigation was also to be explored. Again the accent was to be on the whole farm management system.

There were a number of uncertainties in the plan, although in each case there was some knowledge to go on. For example –

- **Soil and plant fertiliser needs** It was known that phosphate was required as well as strategic nitrogen, but we were unsure about other elements such as sulphur and potash. We were also unsure about lime although the pH seemed fine.
- **Pasture plants** The Cardo Azul experience of short rotation ryegrass was useful, but the new farm with hotter summers meant deeper-rooted fescues were favoured. Plenty of volunteer clover and lotus was available.
- **Irrigation** Big centre pivots were being used in arable areas with sophisticated flood irrigation in rice growing areas in the north east. Systems were based on storage dams using land contour. There was good expertise in select areas, but this had not been fully applied in dairy farming.
- **Dairy cow genetics** The Uruguayan dairy herd was based on North American Holstein genetics with high milk yield and use of concentrate feeds. Feeds used included grain and meal often fed under a wire on the ground and use was poor. Our thinking was that New Zealand genetics would better suit grazing systems so the intention was to breed a cross-bred cow, a Jersey Friesian cross known locally as Kiwi cows.
- **Calving pattern** Dual calving in spring and autumn was thought to be the best fit to the pattern of available pasture, and with reasonable winter grass growth it was probable that a greater proportion of the calving would be in autumn. With irrigation it was probable that the balance would swing back to favouring spring calving.
- **Level of supplements** We were unsure of the level of supplements which would be required as we transitioned from local genetics to New Zealand cow genetics.

Kilograms of dry matter per hectare



The big opportunity

Meanwhile, within the Wrightson business, momentum had developed in the strategic thinking and future plans. The Wrightson board supported the thinking that had been developed in Uruguay and it was decided that the time was right to take a big bold move, as the Uruguayan economist had said 'to sell the whole package.' The thinking was that New Zealand had expertise in whole farm systems, dairy farming in Uruguay was the most profitable pasture-based enterprise, and it had vast areas of relatively cheap land with serious productivity improvement potential.

Some New Zealand farmers were trying to exploit the opportunity on their own in Uruguay with varying degrees of success. The Wrightson thinking was that with the application of serious resource and expertise and local involvement, investors could be given an opportunity to harvest the fruits of the New Zealand comparative advantage in whole farm management. By applying New Zealand-style intensive grazing management systems on relatively cheap land in Uruguay under dairy farming, investors would reap the rewards.

Many of the investors were expected to be New Zealanders and New Zealand farmers. Rather than have a go alone, a business of scale could be established to provide them with a serious investment opportunity.

Other problems

Back at Wrightson's home base there were a few other things going on at the same time. Williams and Kettle had been acquired and a merger with PGG was put in place in 2005. The Uruguayan initiative was initiated in 2005/06 and the prospectus for NZ Farming Systems Uruguay was launched in November 2006.

Tackling this big opportunity was to be a major challenge. Not only were there a number of unknowns, but also large-scale development brought its own problems. This was a bold undertaking, similar to the large-scale land development by Lands and Survey in the 1960s and 1970s. On top of that were other concerns which would be faced including –

- Language and culture
- Lack of experience in large-scale dairy farming in Uruguay
- A further lack of experience in basics such as building cowsheds
- A high level of bureaucracy in government and banking services.

While the challenges were substantial, the rewards expected were also considerable in what was perceived as an investment environment at the time favouring land-based activities.

NZ Farming Systems Uruguay in 2012

Today NZ Farming Systems Uruguay is one of the world's largest dairy farmers, rivalling the largest in New Zealand

such as Landcorp and Dairy Holdings. It is by far the largest dairy farmer in Uruguay. In 2012 45,000 cows were milked in 48 cowsheds and the season's milk production expected to be 230 million litres. This is close to 11 per cent of Uruguay's total milk production and around 17 per cent of the milk collected by the country's main co-operative, Conaprole.

It is estimated that NZ Farming Systems Uruguay has created at least 1,000 jobs directly and indirectly, and is one of Uruguay's largest rural employers. Seven hundred of those jobs are on the farms with the balance in suppliers and servicing businesses. More than US\$300 million has been invested, net of land sales, in the purchase and development of dairy land and livestock.

Total land area is 35,000 hectares with over 15,000, or 44 per cent, devoted to dairying. Of this, 4,000 hectares are irrigated with 35 large centre pivot systems and the plan is to increase this to nearer 7,000 hectares, or 45 per cent of the effective dairy area. The table below shows the level of performance in recent years.

NZ Farming Systems Uruguay key performance indicators

Measure	2011	2012	2013 (estimate)
Milking cows	21,000	31,700	43,500
Milk price US cents per litre	38	40	34
Milk production million litres	105	152	230
Milk solids per cow in kilograms	350	345	385
Dairy area effective hectares	12,620	14,500	16,500
Milk solids per hectare	584	750	1,000
Milking sheds	32	44	48
Irrigated area hectares	3,000	3,800	4,800

This shows how scale and performance have been ramped up in the last two years. Last year's milk price of 40 cents a litre is the equivalent of around seven New Zealand dollars per kilogram of milk solids.

Per cow and per hectare, milk production is now at more respectable levels, with 2011/12 recording production at 345 kg milk solids per cow and 750 kg milk solids per hectare. However, given the level of supplementary feeding this level of performance is still well below what the business is capable of.

Challenges faced and lessons learned

There is no doubt that a tremendous amount has been achieved in the nearly six years since NZ Farming Systems Uruguay was first launched. However, initial shareholder investors have had a rocky ride, are yet to receive a dividend, and have seen the share price decline.

Agricultural development projects like NZ Farming Systems Uruguay are long term by their nature and do not generate the quick returns generally demanded by equity markets. Patient capital is required. In addition, as with any large-scale development project, there are always challenges which arise along the way which have to be dealt with. Some problems were overlooked during the planning stages, some arose as the project unfolded, and some mistakes were made.

Below is a summary of the main challenges faced along the way and observations with the benefit of hindsight.

Plan execution and priorities

Early on in the project, land prices were increasing in Uruguay and it was decided to shift the proportion of capital investment away from development to acquiring more land. As a result the rate of development slowed, in particular, irrigation development.

This strategic move, while locking in better land prices, delayed revenue generation and performance was heavily penalised during the dry summers and localised droughts.

Pastures

Pasture establishment was not the problem but pasture retention was, especially before full development of the irrigation systems. Grazing pressure was high during dry periods damaging some of the new pastures. With young pastures and low initial fertility, growth rates were lower and more variable.

In these conditions, pasture grazing management was more difficult, especially for less experienced farm managers. There is also some evidence that the ME level of the grass was lower than desired at certain times of the year for good levels of milk production necessitating some use of concentrate feeding.

The company now, with new majority owners Olam International, has developed a higher input feeding system with in-shed feeding systems and the cows receiving one-third of their diet from concentrates. This feeding regime has improved per cow milk production, but it has also added significant costs.

Cows and infrastructure

The North American Holstein genetics were not bred for all grass farming. The local cows are not good foragers and are less robust than New Zealand dairy genetics. They are more difficult to get in-calf and high levels of lameness were experienced in some herds. The plan was always to move to New Zealand genetics but this would take time. With the initial focus on increasing the dairy cow herd, there was little opportunity for culling, resulting in a wide spread of calving and retention of poorer producers.

The scale of development put pressure on suppliers and contractors. Lack of experience of building cow sheds and large-scale water reticulation caused delays and higher breakage rates in the early stages of development. Some of the dams for irrigation water took up larger areas and affected the effective grazing area. Electricity supply was deficient in most areas and required substantial development and investment by the local electricity supplier.

Finance and the people

Initial land acquisition and development was equity financed and loan financing was envisaged for later stage development. As the project unfolded, a number of factors put a squeeze

on availability of cash. The land portfolio was larger, development and revenue generation were slower, and then along came the global financial crisis.

During this period, loan financing from a bond offering to Uruguayan pension funds was under way and was seriously delayed by the global financial crisis. Given the perfect storm faced by the business it was a tribute to those involved, especially the Uruguayan leadership team, that the bond financing was successful.

NZ Farming Systems Uruguay embarked on a large-scale dairy farm development never experienced in Uruguay. While the main members of the management team had development experience in other farming systems, for example rice growing and arable farming, dairy farm development was new. In addition, the New Zealanders involved did not have dairy farming experience in Uruguay and also needed to understand and work with the local culture.

The original plan was to employ suitable Uruguayans in the main senior roles with farm managers to be experienced in New Zealand dairy farming systems. The Uruguayans appointed to senior roles proved very valuable, but numerous difficulties were faced in recruiting suitable New Zealanders.

With the passage of time, the plan evolved to employing Uruguayans as farm managers and supporting them with New Zealanders providing strategic advice. This was especially in areas such as grazing management, getting cows in-calf and reporting systems.

Summary of the project

With the benefit of hindsight, plan implementation proved more difficult than first thought and achieving target milk production performance took longer. Normal practice would be to develop a model irrigated dairy farm first to iron out the right system and whole farm approach before replication on a large scale. This would have taken some years and the opportunity for the big project may well have been lost.

In spite of the long list of challenges, a significant amount has been accomplished and there have been numerous positive experiences along the way.

The enthusiasm of Uruguayans

Uruguayans took ownership of the project from the outset and their enthusiasm developed from a feeling that something incredibly worthwhile for Uruguay was being built – history was being made. Land was being developed, jobs were being created, and milk was being produced which would be turned into products for earning export income for their country. Now with 700 staff working in the business, a large pool of Uruguayans is learning about large-scale dairying.

Uruguayans took ownership of the project from the outset because of the strength of the local leadership and the sheer determination and hard work put in by the leadership team. No challenge was too daunting and their persistence and dogged determination was impressive. The project management experience gained will be very valuable for these individuals in future.

Impressive scale

The sheer scale of what has been achieved is impressive and the productivity improvement across the 35,000 hectares is enormous. One of the impressive achievements was the acquisition of a substantial land portfolio without inflating land prices.

Support for the local leadership was vital, especially when confidence waned at times. Keeping the faith, focusing on the vision, and following the whole farm management approach were essential. There was a natural tension around the level of adoption of the New Zealand farming system versus the level of adaption required for the local conditions. Other very effective New Zealand input was around specific issues including cowshed design, grazing management, reporting systems and financial planning.

Financial payback

For the current majority shareholder I have no doubt the project will be profitable given their discounted entry price. The business also now has the scale which provides options for vertical integration and further expansion. PGW certainly benefitted from the growth in the NZ Farming Systems Uruguay business as well. For the initial shareholders who remain, it appears likely that they will lose the opportunity to participate in the future upside. The recent offer of 75 cents a share by Olam International may prove too tempting, and they only need to acquire another four per cent of the shares to reach the 90 per cent threshold for compulsory acquisition.

Importance of trust

The importance of trust in the local leadership cannot be over-stated. Carlos Miguel de Leon, Wrightson's South American General Manager, not only had respect in Uruguay but from his actions the board and management in New Zealand developed total trust in his ability. Few people fully understood and appreciated the challenges Carlos had to confront in Uruguay following the global financial crisis. I was one of the few and have the utmost admiration for how he led his team through those incredibly difficult times.

Value of whole farm management

To sum up, I hope you have an appreciation for whole farm management and how in any project or enterprise it is understanding and applying the total system that is most important. I mentioned the value of demonstration farms and model farms to test and evaluate systems and reduce risk. In the case of NZ Farming Systems Uruguay, whole farm management helped maintain confidence in the face of adversity and enabled the many achievements to form the platform for tackling future challenges.

From the broader perspective, I have been encouraged by the work DairyNZ is doing in the whole farm management space. I am not fully familiar with what the universities are doing, but I strongly encourage the focus to be on what Sir James Stewart believed in and practised so effectively and passionately.

2013 NZIPIM Conference Christchurch

**Lincoln University Monday 5 to Wednesday 7 August
Lincoln Event Centre, Lincoln, Canterbury**

The conference opens at 1.00pm on Monday 5 August. The programme will begin with an international perspective on the opportunities and challenges for agriculture over the next decade, and explores how rural professionals can capture future opportunities.

The second day will involve two concurrent sessions. One of these sessions has a strategic focus and will include presentations on –

- Governance
- People management and personal development
- Equity investment in farming
- The latest updates on TAF

The other session will focus on –

- Farm management and science
- Latest innovations on farm
- Update on the latest research
- Information on ruminant nutrition
- Nutrient benchmarking with arable farmers

The final day Wednesday 7 August will be a dairy focus day. In the morning this will include presentations and discussion, and in the afternoon a visit to Lincoln University's research dairy farm to look at the latest pasture research programme.

A full copy of the programme and registration forms will soon be available on the NZIPIM website. Accommodation is available at The Famous Grouse Hotel, Lincoln 03 325 2408, and at the Lincoln Motels 0800 001 689 on a first come basis.

— I hope you can join us at the conference in Lincoln —



David Rendall

Into Africa

An agribusiness opportunity



New Zealand and Africa, is there a case for New Zealand agricultural principles, systems, technology and value chain operations to contribute and thrive in sub-Saharan Africa? The contrast is stark.

Sub-Saharan Africa has a total population of around 875 million people, of whom over 60 per cent are rural. The region is relatively well endowed with natural resources. The total land area is greater than Europe, North America and China combined – 2,455 million hectares. Of this, 173 million hectares are under annual cultivation or permanent crops, about a quarter of the potentially arable area.

In the region as a whole the arid and semi-arid agricultural ecological zones encompass 43 per cent of the land area. The dry sub-humid zone is equivalent to 13 per cent, and the moist sub-humid and humid zones jointly account for 38 per cent. In west Africa, 70 per cent of the total population live in the moist sub-humid and humid zones, whereas in east and southern Africa only about half of the population live in these areas. Across east and west Africa an estimated 50 million livestock producers support their families and communities, and a massive meat, skins and hides industry based on animals which are fed solely on natural dryland pastures.

New Zealand has four million people, of whom 80 per cent are urban. It covers 26.8 million hectares, of which 9.5 million is in sown pasture or under cultivation and 4.3 million in tussock or unimproved native grasses which operate under a temperate climate. In 2012 it had 6.5 million dairy cattle, 3.7 million beef cattle, 31 million sheep and a million deer. New Zealand has a rural population of around 276,000 people.

The situation

Over the past 50 years the world has more than doubled food production. This increase in agricultural production came from improved understanding of farming systems, new high-yield crops, expanding irrigation along with synthetic fertilisers and pesticides. The world faces a new challenge, with a 50 to 80 per cent increase in food demand expected by 2050. This is due to the global population being expected to reach more than nine billion people and continued trends in consumption, diet and food waste.

The challenge is made all the more significant with increased demand for resources such as water, energy and arable land. The prospect of climate change also raises the uncertainties inherent in meeting future food demand. The food security challenge in sub-Saharan Africa is complex and paramount, with approximately 200 million people across the continent currently affected by chronic malnutrition and a population approaching a billion. By 2050, that figure is expected to more than double.

Importance of agriculture

The agricultural sector plays an important role in Africa. Most Africans depend on small-scale farming systems as the primary source of their livelihoods, with women playing a major role in production, processing and marketing agricultural produce.

Agriculture is therefore a vital factor in efforts to reduce food insecurity and fight poverty. Farming households build their livelihood strategies around their livestock and crops. Urban people, who now account for more than half of the continent's population, obtain virtually all their food from local markets.

Improving agricultural productivity in Africa will be crucial in meeting the increasing food and nutritional demands. However agriculture also plays a major role in soil fertility, natural resource management and environmental protection. Agricultural production systems therefore need to be intensified sustainably and with greater integration across important sectors – from the farmer to the end market.

This need requires more focus on the quality and quantity of agricultural education at all levels, from farm worker to researchers. The emphasis being placed on the need for strong science and management skills highlights this requirement.

Despite its importance, sub-Saharan Africa's agribusiness sector faces numerous challenges. In many countries in the region most crops are produced by small farms with limited mechanisation, inputs and awareness of improved husbandries, which leads to poor yields. Fragmented markets, price controls and poor infrastructure also hamper production and access to markets. Inadequate access to suitable financial products aggravates the situation. Many agricultural products produced in the region, such as maize and rice, have low profit margins. This means that sub-Saharan Africa is ill-equipped to meet its food requirements, which are set to double in the next 30 years, or even sooner.

Need for change

The need for change is increasingly being recognised and perhaps, more importantly, accepted. This acceptance is being reflected in public recognition by leaders of the importance of a robust policy and governance environment and a return of multilateral and bilateral financiers to the rural sector.

The second critical area is the importance of recognising that increased agricultural productivity needs to be the result of meeting consumer needs for the region to be an economic development force. Thirdly, advances in science and technology have to be made and these need to meet the requirements of small-holder operators who are the major investors in agribusiness in sub-Saharan Africa. Finally, their needs to be support and capacity building of new leaders in agribusiness, science, technology and education.

As New Zealand entities and others look to invest and contribute to meeting market needs, the critical aspects of agribusiness which need to be addressed include –

- Enhancing agricultural productivity
- Upgrading value chains
- Exploiting local, regional and international demand
- Strengthening technological effort and innovation capabilities
- Promoting effective and innovative financing
- Stimulating private participation
- Improving infrastructure and energy access.

There are some good and bad agribusiness investments. The reality is that the majority create a mixture of positive and negative effects. The positives are mainly related to economic development in terms of jobs and access to markets. However, they often include some investments in social infrastructure, better rural infrastructure, the transfer of useful technologies and skills and in a smaller number of projects, increased production of staple foods. The negatives are most often associated with a lack of consultation with the communities concerned, not developing local skills, limited transparency, an absence of mechanisms for resolving disputes, and problems involving land rights, especially informal ones.

Monitoring risks

Negative effects are also seen in irresponsible environmental practices and in the social and economic consequences if the investment fails. Projects are more likely to succeed in the long term when agronomic and economic fundamentals are sound. While bad luck and bad management can destroy a sound enterprise, good luck and good management rarely compensate for a project which is fundamentally flawed. It is necessary to monitor such risks in a timely manner.

Most agricultural development investments have focused on supply interventions such as improved seed and fertilisers. Many pay too little attention to the demand side, the place where the increased production will ultimately go. Unless the planners know the answer to this critical question, that increase will probably fail to produce economic gains and make it hard to carry on with the investment.

In investing in rural enterprises it is necessary to recognise that the subsistence requirements of small-holder households have to be met. Once done, it is then possible to consider the four main sources of demand – export markets, domestic urban markets, domestic rural markets and food processing.

Private agents

Food processing is attractive to many governments because it is a source of demand for agricultural products and a job creator. For export goods, downstream processing may be discouraged by United States and European tariff regimes which favour raw goods over processed goods. African countries can, however, counter this problem by cutting their export taxes on these goods.

Increased food security and agricultural productivity is not a sole source responsibility. It requires the active and profitable involvement of private agents such as farmers, farmers' organisations, input suppliers, warehouse operators, buyers and traders including international trading companies. Agricultural policy-makers and bureaucrats often overlook or disdain dealers and other middle men, yet they perform essential tasks such as linking small farmers to markets or providing inputs appropriate for local soil conditions.

Governments and international and bilateral financiers rarely have the local knowledge or capacity for these jobs. In addition international trading companies not only contribute technologies and management skills, but are also major

buyers. Public and private investment in infrastructure such as water supply, roads and ports plays a role in agricultural development too.

Relying on private sector agents, such as input suppliers or buyers, has several advantages. They usually have access to capital and organisational know-how. In a competitive market they must learn quickly to survive and make money. Private sector agents can also link small-holder farmers to markets effectively.

Large nucleus farmers, agri-dealers and warehouse operators can market the output of many small-holders at once, with economies of size which give the latter better prices than they could get on their own. Developing groups, especially for small-holders, is a vital aspect of efficient linkage to markets as well as for extension, technical services and inputs.

It is important that any external investment should bring benefits to the receiving country and its communities in terms of technology transfer, employment creation and linkages if these investments are to be win-win rather than neo-colonialism. These beneficial flows are not automatic, and care must be taken in the formulation of investment contracts and selection of business models. Appropriate legislative and policy frameworks also need to be in place.

It is necessary to recognise that investments in developing country agriculture, especially acquisitions of agricultural land, continue to raise concerns. Complex and controversial issues – economic, political, institutional, legal and ethical – are raised in relation to food security, poverty reduction, rural development, technology, public private partnerships and access to land and water resources.

Against this background, many African countries are making strenuous efforts to attract direct foreign investment into their agricultural sectors. They see an important role for such investments in filling the gap left by dwindling official development assistance and the limitations of their own domestic budgetary resources, creating employment and incomes, and promoting technology transfer.

The opportunity

Investment advisers such as McKinsey have been actively involved in planning and implementing agricultural development in the past 10 years or so in African countries and across the public, private and social sectors. They have learned four lessons –

- Aim for narrower, higher-effect projects
- Pay more attention to the market for agricultural goods
- Ensure clear roles for the private sector
- Think about implementation from the start.

McKinsey say there are some other important observations for us when we consider opportunities for investment, noting that the paradigm is shifting from whether we should we invest in Africa to managing risks of not being in Africa. The main factors that McKinsey holds out for consideration include –

- A significant gap between actual and perceived risk in Africa which spells opportunity

- Despite the low base, the growth experienced is attractive and appears to be more sustainable than in the past
- These new opportunities are the result of consumption, a growing middle class, urbanisation and strong infrastructure needs
- The African food revolution is not yet here, but the markers have been laid out
- You need to be well entrenched by the time this happens to be able to capitalise on it
- Generally, there is a strong loyalty to successful first mover.

Given the operational challenges of Africa, gaining access to realisable opportunities usually takes longer than expected. This needs to be taken into account when calculating the return on investment from entry into the African market. It is necessary to build and allow teams to learn because it takes time. Ten years is a realistic initial phase.

It is important to get directly involved because learning through third parties takes too long and is not an effective market feedback mechanism. At the same time, investment in local capacity is needed. To compete like a local, you need to have a local base with local capability.

A possible strategy

To strengthen New Zealand's involvement, the upscaling of market-led food production will need a collaborative approach. It will be helpful if our government develops a coherent long-term view of helping access and entry into eastern and southern Africa. This could well be by building on the credibility of Massey and Lincoln Universities as respected sources of agricultural capacity building and education.

Particular focus should be on farm management, integrated systems and value chain development including food safety and biosecurity. Building linkages with sister institutions which focus on strengthening diploma and undergraduate education, while attracting higher students into the pay-as-you-go postgraduate sector, is a business model with potential.

Investment in science and technology development is also important. However the initiatives of the Commonwealth Scientific and Industrial Research Organisation, based on their comparative agro-climatic advantage and institutional capacity for operating at least in the medium term in Africa, make this a likely area for New Zealand primary sector research organisations to be involved.

From these entry points it will be possible to gather and assess opportunities for agribusiness that meet the main principles for responsible direct foreign investment. These include –

- Existing rights to land and associated natural resources are recognised and respected
- Investments which do not jeopardise food security, but rather strengthen it
- Processes for accessing land and other resources, and then making associated investments, are transparent, monitored and ensure accountability within a proper business, legal and regulatory environment

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Xiaomeng (Sharon) Lucock, Keith Woodford and Malcolm Cone

Doing agribusiness in China



There is a widespread belief that partner arrangements between New Zealand and Chinese businesses have a high risk of failure as a result of different ways of doing business. This article presents perspectives on these cross-cultural problems, developed from interviews with nine informants from the food and agribusiness sector, including four New Zealand entrepreneurs who currently work and live in China. Also interviewed were five Chinese who are either entrepreneurs themselves, or middle to senior management working closely with New Zealanders. The information presented here is the first stage of a research project investigating cross-cultural business relationships between New Zealanders and Chinese in New Zealand agribusinesses operating in China.

Main findings

The first stage findings confirm that there are major cultural differences which arise from different world views. Chinese cultural perspectives are a result of the historical context, and Chinese behaviour is mainly a consequence of Daoist beliefs combined with Confucian moral values. As a result there are distinct characteristics of the Chinese way of thinking which are important for New Zealand entrepreneurs to understand.

Chinese tend to go with the flow

For thousands of years, Chinese people learned to arrange their activities according to the changes of the natural environment. They cultivated in the spring and harvested in the autumn. Nature was also unpredictable so the Chinese way has been to try and respond to large forces and adapt, rather than fighting them.

This mode of thinking still exists today and is reflected in their business strategies. It is different from the dominant western style of strategic thinking where a goal is set and then a detailed procedure to achieve such a goal is worked out for implementation. Chinese strategic thinking relies on the inherent potential of the situation. They prefer to be carried along and react to this potential as it evolves. In other words, the Chinese tend to be flexible and 'go with the flow'.

This strategic thinking has direct implications in cross-cultural business relationships. Western partners usually expect to develop a contract and an associated plan, and then follow it to achieve the pursued target. The Chinese tend to see a contract or a plan as simply a snapshot in time. They expect to change the plan as things progress to suit the situation. Therefore, contractual details are likely to be seen by the Chinese as guidelines which in practice may or may not be followed.

Towards opportunities

A main attribute of many agribusiness projects is that they have long production and investment cycles. In addition, they take place within a variable biological environment. The notion that a contract could take into account all of these

uncertainties would be unrealistic. One New Zealand entrepreneur leading a large-scale horticultural operation in China commented that at the incubation of this business venture he was approached by local Chinese inviting him to hop on board what would be an exciting train journey. The Chinese themselves did not know where the train would stop and how the business would evolve. All they needed to know was that it was travelling towards opportunities.

Another implication of this Chinese strategic thinking is the need to be presented with a situation which possesses a good position and potential before they would have the confidence to take a further step. The train journey example mentioned above depicts precisely such a situation. Although the destination of the journey was unclear, the people involved perceived themselves as heading into a good space from which great potential could be realised.

This means that when New Zealand entrepreneurs are aiming to form a business relationship, it is necessary to reveal the current situation and its potential in a way that would be perceived favourably by potential business partners. The New Zealand party's sincerity for collaboration alone will not secure the partnership. The Chinese will want to see that the potential collaboration is on an upward trend, with scope for everyone to be a winner in all those within business arrangements which will evolve.

Harmony

From the perspective of operating within an existing cross-cultural business relationship, the Chinese tendency to go with the flow has another implication. They tend to avoid coercion or confrontation. The Chinese world view emphasises the harmonious coexistence of man and nature with the ultimate goal being that the two are unified. The word harmony therefore becomes a core value to many Chinese and is reflected in how they do business. For example, coercion is regarded as non-productive and destructive for a relationship. Chinese people rarely resort to legal action when things go wrong.

In saying this, many Chinese people appreciate the simplicity of a more direct approach in the west where things are more clear cut. They see that the Chinese balancing act of juggling relationships to create and maintain harmony can be tiring and inefficient. However, the unwritten social rule of maintaining this is so dominant in their society that most feel obliged to follow the rule regardless of liking it or not.

China is a country ruled by people, not by law

Despite all the rules and regulations in place, the reality of China is that this is a country ruled by people, not by law. China has never had a separation of powers between governance and judiciaries throughout its history. Those who make the laws also practice them, often making their implementation appear to be subjective and ambiguous.

Combined with the Confucian value system, where hierarchy is highly regarded and therefore authorities are

not to be challenged unless they have deviated from the principles of good government, the Chinese tend to defer to those who are in power and rely on kinship. This is another element emphasised by Confucian teaching. It means that networks and patronage are probably more reliable than the legal system, particularly when it comes to problem solving. This reliance is the reason why the Chinese see the need to establish good *guanxi* – relationships or connections that are often long-term.

The key to establishing good *guanxi* is to create inter-dependency and where this exists there is security in the relationship. To create inter-dependency, first there needs to be an alignment of interests. Such an alignment should be on two levels. First, there is the policy level, where the New Zealand entrepreneur's business aim needs to be in line with the target that the Chinese central or local government wants to achieve. This is because the influence of the authorities on businesses in China cannot be ignored.

Second, on the personal level, it is important for the alignment to be in the best interest of each party for the other to succeed. Nevertheless, the alignment of interest is only the start of creating inter-dependency within a business relationship. Therefore the partnership structure needs to be set up in a way that those involved would not want to do anything else but to work towards the success of the other. It is through this symbiotic inter-dependency that a strong relationship or *guanxi* can be established.

Chinese strive to survive

It is not just the population growth within the last 100 years that has made survival in the forefront of Chinese people's mind. Throughout its history there has been a struggle with a relatively small amount of land to feed a relatively big population. Many Chinese are therefore hard-wired in their minds to have survival above everything else.

The not-so-well established social welfare system means that, for many people, security for the future relies on themselves and their only child. This usually means that they need to earn as much as they can and whenever they can. Combined with the Confucian value of gaining social recognition as a main goal in life, along with the vast opportunities in recent economic development, many Chinese have become increasingly materialistic and eager for a quick success. Unfortunately, this is often accompanied by short-term thinking.

Two motives

At the operational level, this quick success could mean a tendency to take short-cuts and cause inconsistency in product quality, which can be a major challenge for New Zealand agribusiness ventures in China. At the relationship level, this quick success almost seems contradictory to the desire to form long-term *guanxi*. However, it is actually possible for a person to possess both motives.

Whether someone is worth forming a long-term *guanxi* with, or can be taken advantage of with a quick success

scheme, often depends on the circumstances. Ultimately, many Chinese are opportunists. Their survival instincts teach them to be more pragmatic about how someone should be approached before considering the morals of the exercise involved.

From a New Zealand business perspective, the first step towards building an effective business relationship with the Chinese is to understand their drive to survive. They need to convince their Chinese counterparts that their future is secured for survival before discussing anything else.

At the same time, New Zealanders should not present themselves in a situation where circumstances would allow people to take advantage of them in a quick success scheme. There is also a need to recognise people who could potentially have more of a tendency towards quick success, and therefore avoid making costly commitments to them. In other words, the alignment of the moral principles of both parties is very important for a solid foundation for establishing a long-term effective business relationship.

Projects or products

An implication of this quick success versus *guanxi* approach can be particularly important when dealing with officials who are often more interested in projects rather than products. Whereas a project often has a start and finish time, a product in China refers to the long-term focus of certain business activities which will continue production to remain profitable. For example, a project from the perspective of an official could be building a fruit processing plant at a certain location, where the start and end time are clearly defined. But whether this processing plant will remain functional and profitable will depend on the management of the plant to process particular products.

Due to the five-year plan scheme in the Chinese government, and the considerable transfer of government officials between roles and locations, there is a tendency for

some officials to focus on construction projects rather than profitable products. Considering the long-term investment cycles of agribusinesses, it is particularly important for New Zealand entrepreneurs to identify from quite early on in the process whether a potential collaboration would be project or product focused before getting too involved.

Summary

Chinese think rather differently from New Zealanders. Their world view and social structure encourage them to be more reliant on network and patronage rather than law, and be non-confrontational and go with the flow, particularly when it comes to business strategies. A contract is therefore only a starting point rather than the finish line of a business negotiation.

When entering a negotiation, the New Zealand entrepreneurs will need to present a potential business environment. This would enable the Chinese counterpart to be in a good position, with promising potential to satisfy their desire to survive and to convince them of the upward trend for their advantage. They also need to identify and avoid those who are out to get quick success. Then to move on, and work towards forming a long-term *guanxi* with those who are more interested in a product rather than just a project. To build this relationship, the collaborative business structure will need to be so that everyone involved is inter-dependent.

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- All those materially affected are consulted, and agreements from consultations are recorded and enforced
- Investors ensuring that projects respect the rule of law, reflect industry best practice, are viable economically and result in durable shared value
- Investments generate desirable social and distributional impacts and do not increase vulnerability
- Environmental effects from a project are quantified, and measures are taken to encourage sustainable resource use while minimising the risk of negative effects and mitigating them.

The capacity to identify and obtain investment opportunities is critical and cannot be done from a distance.

It is not a sprint, and it requires that the investor is accepted in the local context. A consortium approach, working with land and agribusiness educational linkages, may offer a viable mechanism for building these necessary relationships. Africa offers challenging opportunities to be an active and constructive part of its massive world. New Zealand farming principles and cooperative agribusiness-based models are highly relevant.

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Elena Garnevskva and Nelly Bencheva

Overview of the Bulgarian dairy industry



The agricultural sector plays an important part in the Bulgarian economy. During the last two decades, the contribution of agriculture and forestry to GDP fluctuated substantially, ranging from 17 per cent in 1990, to 26 per cent in 1997, and then down to around 11 per cent in the last decade.

In the last few decades, agricultural industry in Bulgaria and the dairy sector in particular has undergone dramatic changes. This has included the period under communist rule with a centrally planned economy, economic reform from a centrally planned to a free market economy, the European Union accession process and joining in 2007.

Transition from communist rule

During the period of communism, from 1945 to 1989, agriculture was characterised by large state-controlled and over-specialised agricultural industrial complexes, centrally determined prices, guaranteed markets and no recognition of market forces. During that time, the main aims of agricultural policies in Bulgaria were to provide an adequate supply of basic food products at low prices to the domestic market. There were several hundred large livestock state farms and collectives and the livestock was diverse with productive dairy animals. The milk produced was processed in less than 50 large processing establishments.

The transition period from 1990 to 1999 began with an agricultural reform which was characterised by the liquidation of the large agricultural industrial complexes, development of a private sector, land restitution, privatisation and price liberalisation. The farming structure that emerged consisted of a large number of small private farms. These were mainly semi-subsistence types, a very small number of large farms and private production co-operatives. Due to the radical transformation of the dairy sector, the number of dairy animals, milk production and dairy products declined dramatically.

Into the European Union

The European Union accession process from 2000 to 2007 began with the introduction of the Special Accession Programme for Agriculture and Rural Development, which aimed to prepare Bulgaria for the entry into the European Union. The first signs of recovery were apparent as the agricultural policies became more consistent with long-term aims of developing an efficient, competitive and export-orientated agricultural sector and improving the incomes of those working in agriculture.

The effective use of the programme's funds and natural resources, together with the establishment of newly private dairy farms and processing plants, led to the limited revival of the dairy sector in Bulgaria. The National Plan for Agriculture and Rural Development defined the dairy sector as a priority sector for European Union funding and investments. Its main objectives were to revitalise the dairy sector and improve the quality and competitiveness of Bulgarian dairy products.

European Union funds under this programme were mainly used for

modernisation of the dairy farms and improvements of the dairy products. Despite all the efforts and European Union funding, the dairy sector could not fully recover. Dairy farmers were confused with all the new regulations for health and hygiene standards and European Union quality control requirements.

They questioned the ability of the sector to cope with all these new challenges as well as to take advantages of the forthcoming membership. Despite many positive changes in the dairy sector in the 2000s, the lack of clear long-term national policy for the dairy sector, weak institutional and business training, and poor management of the European Union's funds were among the main reasons for the limited absorption of its funds for modernisation and innovation of dairy farms.

Marketing opportunities

Bulgaria joined the European Union in 2007 and the Common Agricultural Policy was introduced, applying all requirements and mechanisms concerning livestock products, particularly milk and their products. This policy imposed strict hygiene requirements which demanded substantial efforts and investment from ordinary producers.

Individual milk quotas for market supply to dairy plants and for direct marketing were also allocated as part of the quota system. Since the policy's introduction in 2007 the dairy sector has continued to encourage –

- Concentration and modernisation of Bulgarian dairy farms and processing plant
- Implementation of the Common Agricultural Policy requirements in the production and marketing of animal products
- Development of the dairy sheep, cattle and buffalo breeding
- Introduction of a milk quota transfer system, as well as of rules for good practice in raising agricultural animals.

The European Union accession revealed significant economic, financial and market opportunities for change in the direction of modernisation of the dairy sector in Bulgaria.

Dairy farming

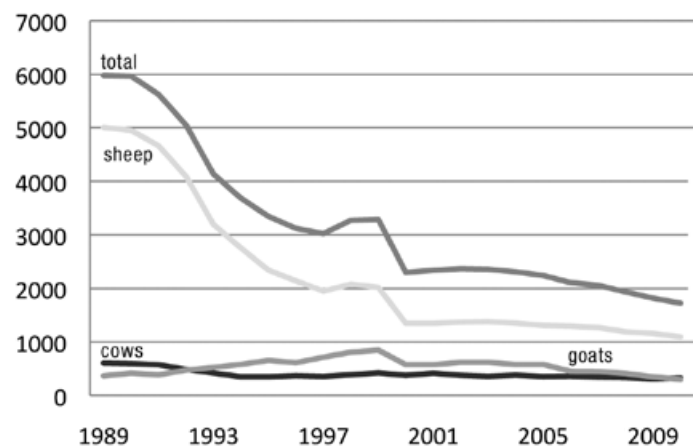
Milk production and dairy animals

Milk production and dairy animals in Bulgaria decreased over the past 20 years. In 2010, the total milk production was less than 1.3 million tonnes, which was only 60 per cent of the milk production in 1989. In the last decade about 85 per cent of the total milk production comes from cows, followed by sheep and goat milk with about seven per cent each. Bulgaria also produces buffalo milk, which accounts for about one per cent of the total milk production in the last 10 years.

The number of dairy animals decreased more than three times from six million in 1989 to 1.7 million in 2010. The sheep sector was most affected by the agricultural reform. The sheep population in 2010 was reduced by a factor of 4.6 and by 4.2 compared to 1989. The greatest decrease of sheep was observed during the transition period.

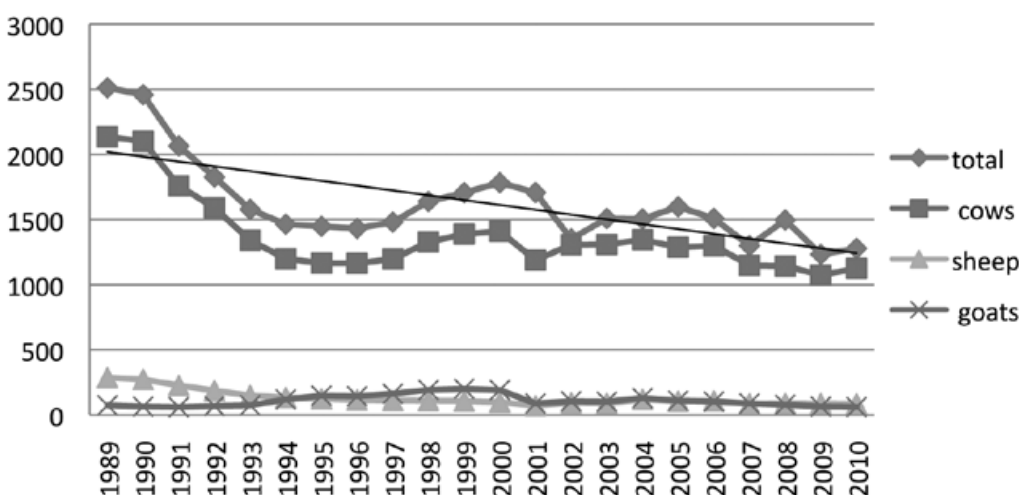
In the 1990s, the number of goats doubled and then slowly decreased to the pre-reform levels of 306,000 goats in 2010. The goat sector was the only one sector with positive trends during the transition period due to cheap ways of semi-subsistence milk and meat production for the rural population.

Thousand animals



Number of dairy cattle from 1989 to 2010 in Bulgaria

Thousand tonnes



Milk production for 1989 to 2010 in Bulgaria

The reduced number of dairy animals and milk production over the last two decades was a result of continued farm restructuring, farm consolidations, lack of financial resources, low purchasing prices of milk and high prices of animal feed. Many farmers were forced to either reduce their number of animals or stop their livestock operations. In addition, numerous small-scale farms have been unable to meet the European Union quality and safety standards and liquidated.

The trend of reducing the number of dairy animals and milk production has continued at a slower pace since Bulgaria joined the European Union. The average milk per cow in 2009 was 3,512 litres, which is about half the average for other European Union countries. Poor feeding is the main factor affecting the low average productivity.

The farm gate price of milk after 2000 varied between €0.18 to €0.27 per litre, while the direct sale price was about €0.15 higher than the farm gate price. The price for goat, sheep and buffalo milk was a little higher, between €0.05 and €0.10, compared with cow milk.

Dairy farming structure and herd size

After the collapse of communism in 1989, the structure of dairy farms was dynamic and resulted in two main types, a large number of small semi-subsistence type farms with one or two animals, and a small number of large farms which had more than 20 dairy animals. In 2007, almost 80 per cent of the 97,538 livestock farms in Bulgaria kept between one and two dairy animals while the number of animals in these semi-subsistence farms made up 36 per cent of the whole herd. A total of 93 per cent of the goats were kept by semi-subsistence type farms. This structure has serious challenges in terms of farm modernisation, quality, safety and production efficiency.

The first four years of European Union membership appeared to be very difficult for the dairy sector farmers and processors. However, there was a positive change as the number of small farms has slowly decreased in favour to the larger farms of over 20 animals. In 2010, 49 per cent of the milk produced came from larger farms with more than 15 cows. The number of farms with over 100 milk cows has been growing by two per cent in the last few years, reaching a total of 38,900 cows in 2010.

Consolidation

Although a trend towards farm consolidation has been apparent in the last decade, livestock production structures have remained fragmented even after the European Union accession. The number of dairy farms with cow and buffalos decreased from 200,000 farms in 2000 to 75,000 in 2010, while the average farm size increased from 1.6 cows in 2000 to 4.2 cows in 2010.

Restructuring, consolidation, modernisation and optimisation of production process in dairy farms continued under the pressure of the struggle for survival and the effects of Common Agricultural Policy. Due to the large degree of fragmentation in livestock production, only a few large

farms have benefited from the implementation of the policy. Farms for production of milk in Bulgaria are divided into three categories or groups –

- Those farms which adopted the European Union hygiene and quality standards
- Farms in transition to attaining the European Union hygiene and quality standards
- Farms producing milk not reaching the European Union standards.

In 2008, there were limited numbers of farms in the first group but their number had almost doubled in 2010 to 2,589 farms. Bulgaria is one of the European Union member countries that cannot fulfil its designated milk quota.

Dairy processing structures

At the end of 1990s, only about 25 per cent of the milk was processed due to market difficulties and low purchasing prices offered to the farmers. However, during the European Union accession period, the share of the processed milk increased as a result of improved product mix and market structures, and increased exports of value-added dairy products such as cheese.

In the mid-2000s, around 60 per cent of the total produced milk was processed by dairy plants, while the share of the processed sheep and goat milk in 2009 was only five per cent and one per cent respectively. These types of milk were not a priority for the industrial dairy plants in Bulgaria where sheep and goat milk is used for brined cheese and other specialty products.

Dairy processing structures were also affected by the economic reform in the country in the last two decades. At the beginning of the reforms, dairy processing was highly concentrated in about 50 processing enterprises, which were inherited from the period of socialism. As a result of privatisation in the 1990s, many small businesses were created, together with a number of big players that were established by privatisation of the state-owned companies.

Decreasing number of processors

In 1995, there were 826 dairy processing companies but none of them were eligible to sell products to the European Union market due to poor quality. At the end of 1990s, there were only 40 industrial dairies with processing capacity of more than 30 tonnes of milk per day. However, their average capacity was between 20 and 40 per cent due to low milk supply, fragmented markets and poor milk quality.

Since 2000, the number of processing enterprises has been decreasing and in 2009 there were 227 dairy processing plants. Only 65 companies, mainly large dairy processing enterprises, managed to match the European Union standards and were eligible to sell on the European Union markets. The other dairies were small, having had difficulties in expanding and undertaking investments to improve quality standards and some of them were liquidated in the last two to three years.

The dairy sector in Bulgaria attracted foreign direct investments in the 2000s. Foreign-owned companies, such as Danone in France, Vivartia in Greece and GED in Spain,

Dairy processing enterprises

Years	Number of dairy processing enterprises	Dairy processing enterprises eligible to sell on the EU market
1989	53	none
1995	826	none
2005	303	21
2009	227	65

own the biggest milk processing plants in the country. As with the farms above, dairy processing enterprises in Bulgaria are divided into three categories based on the quality of raw milk supply –

- Dairy processing enterprises which process raw milk meeting the European Union hygiene standards, the only companies that can export their products to the European Union
- Dairy processing enterprises with two processing lines, one that meets and one that does not meet European Union standards of raw milk. Dairy products from the first line can be exported and from the second line are only for the internal market.
- Dairy processing enterprises which process milk which does not meet European Union standards and their products supply the domestic market only.

The dairy processing enterprises faced many difficulties over the last 20 years but the greatest challenge was the poor quality of milk supply. Some farmers intentionally mixed different types of milk from cows, sheep and goats which created difficulties for the dairy processor to ensure a good quality of milk supply.

This problem forced many dairy processors in Bulgaria to purchase better quality milk from neighbouring countries. Many small milk processing companies were forced to obtain milk from hundreds of kilometres away, which meant they had to increase the price of their dairy products or under pay the farmers for the purchased milk.

Dairy consumption and trade

The main Bulgarian dairy products are fresh milk, yoghurt, brine cheese called sirene and dry-salted cheese called kashkaval. During the transition period, production of all dairy products decreased except for sirene and kashkaval due to the rapid decrease of milk supply. Between 1989 and 1999, fresh milk production halved and brined cheese decreased by 35 per cent. Fresh milk production decreased by another 46 per cent in the last 10 years. Production of cheese remained relatively stable over the last decade, while production of yoghurt slightly increased in the last seven to eight years.

Consumption of dairy products in the country in 2009 declined compared to the 1990 level. However, after 2000 the annual consumption of dairy products increased slightly due to the country's economic growth and increased incomes and health benefits. In 2009, the dairy consumption per person of households was 63.4 kilograms, of which 27 kilograms

was the yoghurt consumption and 14.4 kilograms was the cheese consumption.

The trade volume of dairy products increased in the last decade. Only 7,000 tonnes of dairy products were exported in 1999 compared to 35,300 tonnes in 2010. Around 65 per cent of the dairy export was cheese exported to Romania, Greece, the United States, Lebanon, Australia and others. Imports of milk and dairy products increased almost threefold in the last 10 years reaching 36,000 tons in 2010. Most important import products were milk powder, cheese and butter, mainly from Germany, Poland, the Netherlands, France, and Hungary.

Challenges and opportunities

The dairy sector in Bulgaria had faced serious challenges and problems in the last two decades including –

- Low productivity and efficiency due to the use of primitive technologies and lack of research and development
- Semi-subsistence dairy farms with more than half of the produced milk consumed by households
- The vast majority of the dairy farms are small and fragmented and it is very difficult for them to meet the increasing requirements for high quality animal welfare and food safety
- A very limited number of collective organisations, such as cooperatives, which could increase the competitive power of the small and fragmented dairy farms
- A lack of effective and active industry associations which can provide innovative industry leadership.

On the other hand, the implementation of the Common Agricultural Policy also presented some opportunities related to –

- Wider market access of Bulgarian dairy products
- Increased foreign investments in the dairy industry
- Introduction of new technologies for production and processing of milk
- A stable and predictable macro-economic environment
- Promotion of better milk quality, safety and hygiene as well as animal welfare and environmental protection
- Better access and effective use of the European Union funds.

The dairy industry in Bulgaria had been badly affected and had faced serious challenges in the last two decades. These were a result of a new organisational, market and economic environment influenced strongly by the European Union accession. To overcome these challenges the industry must collaborate and work together. They can benefit from the opportunities provided by the European Union membership and the Common Agricultural Policy to increase efficiency and competitiveness of Bulgarian dairy farms and dairy products.

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Kevin Wilson

Trends in the price of rural land



The frequency and magnitude of cycles in the price of rural land in New Zealand in the past 150 years require them to be considered more than just a minor risk of owning rural land. Data exploring the relationship of economic measures of productivity with the price of land is scant, but the relationship appears tenuous at best.

New Zealand history shows that land values can and do increase by large percentage amounts in short time periods given high confidence and the availability of finance. Conversely, land values can also decline by greater than 20 per cent over one or two years. Sales volumes tend to fall before prices and then tend to recover while prices may still decline. Subtle changes in the start and end points of analysis on land prices can markedly alter the magnitude of changes being measured, as is the case with many sets of data.

Data and measures

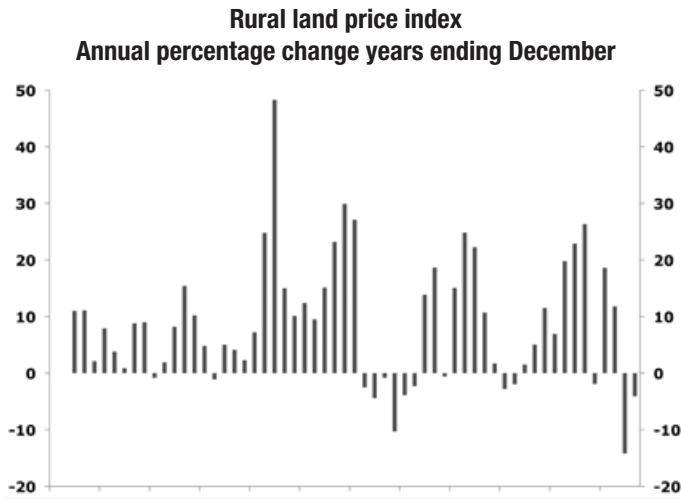
Robust data on land prices is not available before 1950. The recognised source of data on property sales in New Zealand from the early 1950s was Quotable Value New Zealand Limited. This company began life as a government department, the Valuation Department, which had its origin in the 1890s and provided independent valuations mainly to local authorities for rating purposes. It passed through several changes in the 1980s and 1990s to 1998 when it became a state owned enterprise, Quotable Value Limited. Its brand has evolved and it is now known as Quotable Value and will be used in this article to refer to data from the above sources.

One recognised measure of changes in sale price of various categories of property has been the Quotable Value land price index. The index is derived by comparing the sale price of a property with the last rateable value assessed by Quotable Value. An index is used rather than the average sale price, which is influenced by changes in the mix and quality of properties sold over time.

Brief history of the rural index

Rural land values have generally increased each year with incidences of single exceptions and three periods of two or more consecutive declines. Prices increased at an overall modest rate in the 1950s and 1960s on the back of aerial topdressing, along with general development on the farm, lifting the productivity and standard of improvements. Values escalated rapidly in the 1970s, with a short-lived commodity boom, high inflation and government-sponsored incentive schemes.

Falling real incomes and increases in interest rates started a modest decline in land values in 1983, which accelerated when the Douglas economic reforms were announced in December 1984. The rural land value index fell a total of 24 per cent over the six consecutive years from 1983 to 1988. The index turned negative again in 1991 on the back of a 30 per cent fall in the dairy payout and a 10 per cent fall in lamb prices. The index went negative again in 1997/98, as a result of the Asian



crisis, a drought and a lift in interest rates from nine to over 11 per cent.

The index had rapid increases in the early 2000s caused by interest rates falling to 30-year lows in 1999, a large boost in the farm gate dairy prices and the ready access to credit. There was a sharp change of direction in 2006 followed by an almost similar magnitude rebound in 2007 and 2008. The onset of the global finance crisis in 2008 set off another sharp fall in the index.

Critique of the index

The index suffers from several flaws. The ability of the index to accurately reflect trends in the price of land relies heavily on Quotable Value fairly reflecting the value of property when it sets the rateable value. The confidence of the market in the accuracy of rateable value has eroded over the past 20 years or so but the data was still widely quoted.

In 1989 the index changed from an annual to a half-yearly series. Annual series data from this date is derived from the half-yearly series but is not strictly comparable with the earlier series. Quotable Value changed the basis of calculating half-yearly data again in 2000 from when the notice of sale was received by the department to when the sale actually took place. The effect of this change is minor, but is a blimp in the consistency of the index.

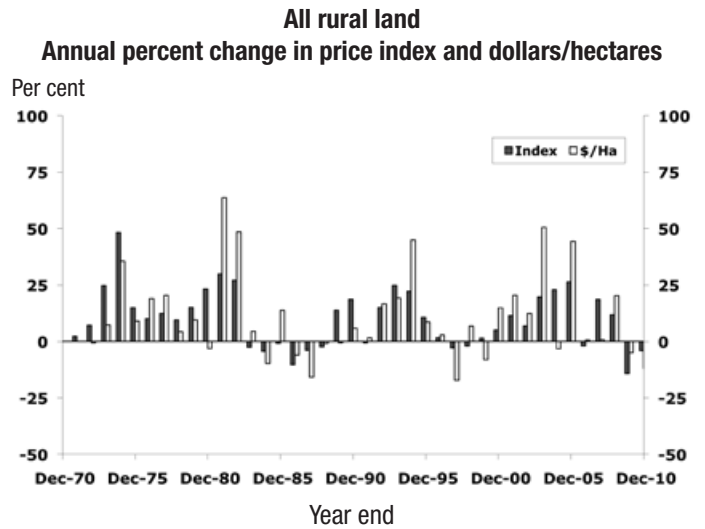
The data was always dated. Half-yearly data was always released seven to eight months after the end of the half year. Now the index is no longer published. Quotable Value has seriously cut back on the effort put into compiling data on rural sales for general publication. The long-running series *Rural Property Half Year Sales Statistics* is no longer published and the index stopped at the end of December 2010.

Percentage change

What are the alternatives? Indexing an increase in the average sale price does not take account of the increase in the size of rural land parcels being sold. An average price per hectare is a meaningless figure at one level due to the great diversity in farm types, location and standard of improvement, but it is fact. The sale price and the area of the farm are known accurately. What matters is the percentage change in the

price between periods. This approach is now favoured by the writer.

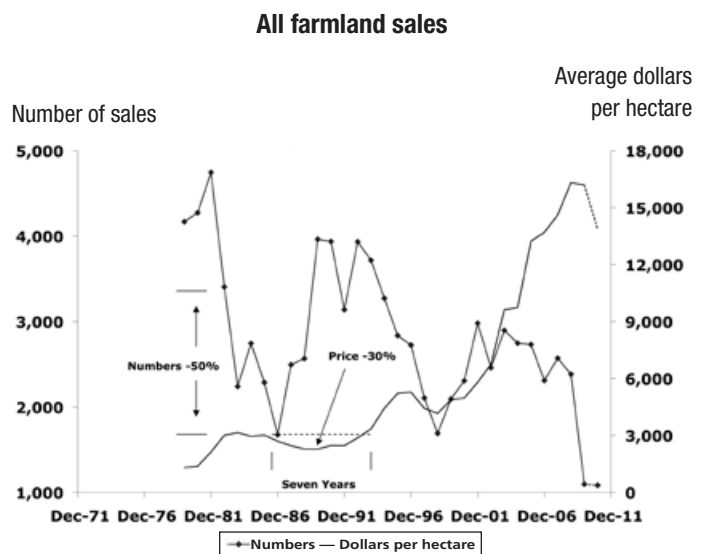
Changes in the Quotable Value index and average price per hectare follow similar trends but do not always move in synchronisation or with the same magnitude. The aggregate percentage changes of both measures are close to each other. The same observation applies to the same comparison by farm type.



Market trends in a downturn

The 1980s

The volume of rural land sales peaked in 1981, and the average price per hectare in 1983 on falling numbers of sales. The number of sales continued to fall and bottomed in 1986 after dropping 60 per cent from the peak sales volume, or 50 per cent from the peak land price per hectare. The average price per hectare bottomed in 1987 at 67 per cent of the peak. The numbers of sales were increasing again at this point. The availability of finance for land sales was not the problem.



It took five years from the lowest land price before the average price per hectare exceeded the previous peak or 11 years peak-to-peak of 1982 to 1993. That period could be

shortened to seven years if the correction in the number of sales and land price up to 1984 is considered a normal market correction.

There were few mortgagee sales in the late 1980s, but the government-owned Rural Banking and Finance Corporation had a number of 'assisted' sales where the property was sold under a process to minimise any loss the corporation might incur. The corporation's debt discount scheme also played a significant part in reducing the effect of the economic reforms on land prices.

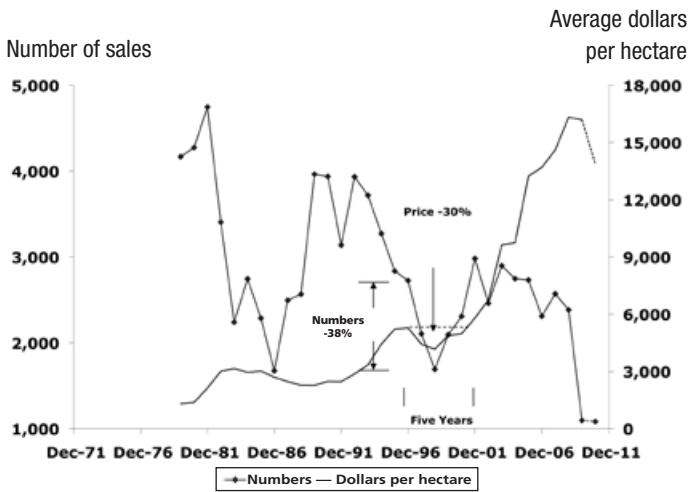
The 1990s

Land nearly doubled in price between 1993 and 1996 on the back of renewed confidence in the industry. Interest rates were trending down. Then came a lift in inflation to 4.6 per cent, the Asian crisis and the 1997/98 drought, particularly on the East Coast.

The rural retail carded floating interest rate jumped from nine per cent in mid-1994 to 11.95 per cent by June 1996, but the availability of credit was not constrained. The volume of sales fell 38 per cent from the 1996 peak sale price per hectare. It took until 2001 to regain 1996 volume.

The average price per hectare fell 28 per cent in 1997, had all but recovered that loss by 1999, then declined another 10 per cent in 2000. A 33 per cent increase in 2001 brought the average price per hectare above the level of 1996, that is, four years after the low point. The changes in the volume of sales and land price again had lags against each other as in the late 1980s.

All farmland sales



From 2000 to 2008

Confidence was high and credit regained the double digit annual percentage growth of the 1990s. Gross farm incomes had a steep roller-coaster ride, fluctuating from new highs back to old lows. Interest rates hovered between seven and nine per cent until 2007.

Current position

The current pastoral land price shock looks modest compared to the past. The drop in the volume of sales is

similar, but the apparent decline in prices much less. Perhaps the psychological shock has been greater after the expected continuation of the golden run from 2000.

The shock was initiated by a combination of restricted availability of finance, an over-correction in dairy product prices, cumulative cash losses and a gloomy forecast dairy payout. It was neither the result of a detrimental interest rate shock, as the cost of finance rates was low and has fallen further to a 50-year low, nor of a wholesale collapse in all New Zealand farm product prices.

Debt was high, but was incurred on similar or higher than the then interest rates, and was supposed to be sustainable on status quo budgets. That is not to deny that some farm businesses had accumulated excessive debt and that land values reached levels which were high relative to longer run income and profit expectations. The combined effect of the above was a loss of confidence by everyone – buyers, sellers and banks – and a fall in the rural land price.

Lies, damned lies and statistics

How far the price of land has fallen since 2008 depends on who is measuring and what is being measured. Anecdotal evidence suggests that land values have declined by between 10 and 20 per cent from the peak in 2008. Quotable Value now only publically make available data on all sales in a land use category. It is not split into 'units' and 'other'. The number of sales had a downward trend before 2008. Note the similarity in the percentage drop in the number of sales to previous price corrections.

Trend in the number of rural land sales from Quotable Value

Year end December	Dairy	Finishing	Store
2008	639	1,175	217
Low point	242	465	99
When	Dec 2010	Dec 2009	Dec 2009
Reduction percentage	62	60	54
2011	266	539	111

The data suggests that the price of dairy land was still falling in year end December 2011, but perhaps the price of sheep and beef farms had bottomed?

Trend in the price per hectare for rural land from Quotable Value

Year end December	Dairy	Finishing	Store
2008 dollars per hectare	34,000	12,500	4,800
Low point	27,400	11,100	3,700
When	Dec 2011	Dec 2009	Dec 2010
Reduction percentage	20	11	23
2011 dollars per hectare	27,400	13,800	4,000

The Real Estate Institute of New Zealand also publish sales data and on a monthly basis. Their data also suggests that the price of dairy land is still falling but that the price of finishing land is now over 40 per cent higher than 2008.

It also shows a sharp fall in the number of sales but with a recovery taking place.

Trend in the number of rural land sales from Real Estate Institute of New Zealand

Year end Dec	Dairy	Finishing	Store
2008	375	361	1053
Low point	121	90	421
When	Dec 10	Dec 09	Dec 10
Reduction percentage	68	75	40
2012	180	257	731

Trend in the median price per hectare for rural land from Real Estate Institute of New Zealand

Year end December	Dairy	Finishing	Store
2008 dollars per hectare	33,000	13,900	16,600
Low point	30,300	10,400	13,100
When	Dec 12	Dec 10	Dec 11
Reduction percentage	11	25	21
2012 dollars per hectare	30,300	19,500	14,100

Interpretation of the data is best done by comparing it with the same quarter the previous year or with the data from three months earlier. The data includes the number of sales and the median price per hectare. The report is on parcels of farmland sold, not just farms as in the more conventional use of the word. The data includes mortgagee and receivership sales where the Real Estate Institute of New Zealand is involved, but excludes lifestyle blocks. Previous reports provided a rolling quarterly median sale price, and it uses a rolling quarter to try and smooth 'noisy' data.

Data is split including dairy, arable, finishing and grazing land. The consistency of the split is questionable and trends are erratic, even on a quarterly basis. The numbers of sales

in finishing and grazing land are the converse of Quotable Value data.

Looking forward

Agricultural debt is considered high and its growth is regaining momentum. Rural land remains over-valued in the opinion of some commentators. The roller-coaster ride in gross incomes and the weather continues. Uncertainty surrounds global political and economic events. Any prediction about the timing of future trends in rural land prices needs a string of assumptions that would take another article to elaborate on. Overall, nothing changes – or has it?

In the past, banks have been prepared to closely manage stressed accounts either towards resuscitation or an agreed and managed sale. There is plenty of evidence now that they are less concerned about taking the ultimate and very public step of mortgagee or receivership sale, although in a measured and methodical way. That puts another dynamic into the market and should influence the amount that buyers are prepared to pay and borrow.

It is also perhaps stating the obvious, but there will be more rural land price cycles in the future. There will be a lot of paper wealth created by the top of the cycle and realised by a few who sell at that time. At the bottom there will be a lot of angst for the relatively few landowners who run out of financial rope for whatever reason. Bankers will fret about security margins, and there will be varying degrees of nervousness amongst many other rural landowners who will have seen equity disappear and be wondering how long before it might be recovered. The dynamics in the market have shifted and should influence the amount buyers are prepared to pay and borrow and perhaps the amount lenders are willing to lend.

Kevin Wilson is a semi-retired rural economist living in Blenheim.



**Jeremy Bryant, David Chapman, Graham Kerr, Glenn Judson,
Tim Cookson, Grant Edwards, William McMillan, Murray Willocks,
David Green and Bruce Thorrold**

Forage value index

The science



DairyNZ, in collaboration with the New Zealand Plant Breeding & Research Association which is the organisation representing most of the commercial plant breeding companies, has developed an economic forage value index. This allows farmers and advisors to compare perennial ryegrass cultivars in overall economic terms for seasonal dry matter production.

Forage value index ratings are currently only available for a limited combination of cultivars and endophytes, but this will increase later in 2012 as more data becomes available. The index is a combination of seasonal dry matter production traits and regionalised economic values. Information on nutritive value within two years and persistence within three to five years currently being collected will be available and combined into the forage value index.

It is worth noting that farmers should choose cultivars which have the characteristics, such as particular endophytes, which suit their system and environment. This is especially the case in the upper North Island where the use of AR37, NEA2 and Endo5 endophytes is recommended.

The forage value index is most similar to the production worth of dairy cows. The index and the production worth give an estimate of profit in the individual. For the forage value index this is in dollars per hectare for a perennial ryegrass cultivar and endophyte combination, and dollars per 4.5 tonnes of dry matter eaten for a dairy cow for production worth. The current index is made up of seasonal dry matter production traits corresponding to winter, early spring, late spring, summer and autumn. These combine with economic values to make the overall forage value index.

Performance values

In the forage value index system, each of the traits is expressed as performance values relative to the average performance of a genetic base. This base is 'all perennial ryegrass cultivars first tested in National Forage Variety Trials administered by NZPBRA before 1996'. The genetic base includes cultivars with familiar names such as Nui, Yatsyn and Bronsyn.

Performance values for winter, early spring, late spring, summer and autumn dry matter production have been estimated. These are shown as the expected total change in dry matter production over that period. For example, plus 300 kg dry matter per hectare over the months of June and July for a winter dry matter performance value, relative to the genetic base.

There is re-ranking of cultivar performance for dry matter yield when comparing performance in sites north of Taupo – the upper North Island – as opposed to sites south of it. This is commonly referred to as a genotype by environment interaction, where genotype refers to a particular cultivar or endophyte combination. The term environment relates to the set of climatic, soil, pest and diseases and management conditions for a particular region. This means the best cultivar and endophyte combination for Southland is not necessarily the best for Northland.

We therefore have a forage value index for the four regions mentioned above which use different economic values and in some cases different performance values. For example, upper North Island uses economic values and performances value for this region. However, regions further south use economic values estimated specifically for the region, multiplied by performance values for the lower North Island, upper South Island and lower South Island combined.

There is a limited number of trial results from the upper North Island, but the cultivar and endophyte results from the upper North Island and the rest of New Zealand are not totally unrelated. This allows 'out of region' information to be used when estimating performance values. For example, the correlation between summer dry matter production in the upper North Island and the rest of New Zealand is 77 per cent, whereas for early spring it is only 19 per cent.

These seasonal correlations were used to merge out of region data back into a performance value. This ensures valuable data is not lost and provides a more robust estimate for the upper North Island which otherwise may have been based on single trial results. It does, however, mean that the forage value index and performance values in the upper North Island are more subject to change than for other regions.

National forage variety trials

Performance values are derived from national forage variety trials data. The national forage variety trials system was set up in 1991 by the New Zealand Plant Breeding & Research Association. This included the plant breeding companies Agricom, Agriseeds, Cropmark Seed Ltd, DLF Seeds Ltd, Grasslanz, PGG Wrightson Seeds and Seed Force Ltd as a means of independently testing new cultivars of ryegrass.

Over 110 individual replicated, small plot yield trials have been completed under the national forage variety trials system. Included are 44 perennial ryegrass trials which provided data on the potential dry matter yield and seasonal growth pattern for a range of cultivars.

The system's trialling of a new cultivar is the one of the final steps in a breeding programme before release for commercial use. This process also involves crossing and individual plant selection from hundreds or thousands of breeding lines, and plot screening trials using phenotypic or genotypic recurrent selection approaches.

The time taken from the initial plant crosses to cultivar release may take 14 years. Crosses and individual plants may get rejected because they have poor disease or drought tolerance, are susceptible to pest attack, or show average or

poor yields. Only the very best cultivars reach the national forage variety trials, and may still be rejected for commercial use.

In 2011, the system was reviewed to see how it could provide better information to support the calculation of the forage value index, by providing information on persistence and nutritive value such as metabolisable energy concentration. New initiatives in 2012 include the sowing of specific perennial ryegrass persistence national forage variety trials on commercial dairy farms under normal grazing management, to provide more realistic rankings of cultivar persistence. Specific trials will be set up to collect information on the nutritive value of perennial ryegrass cultivars. Information from these persistence and nutritive value initiatives will be built into the forage value index over time.

Economic values

Performance values derived from trials are then combined with economic values to give a forage value index. An economic value is the expected change in profit per unit change in a trait value. For the index, we have estimated economic values by simulation modelling using Farmax Dairy Pro for traits such as winter dry matter production. An example is the expected increase in profit from each additional kilogram of dry matter per hectare increase in pasture production over this period. These economic values are updated annually and use current and historical market values for specific farm expenses, milk price and supplement costs.

Economic values differ by region. These values mirror the seasonal balance of feed supply and demand on farms in the different regions. The value of additional feed in a particular season in a specific area reflects how well the extra feed can be used, for example, to substitute for purchased feed to save costs or extend lactation to increase milk income.

In summer in the upper North Island, additional pasture can replace expensive supplements, allow for higher per cow intakes, or extend the dry-off date. On the other hand, in summer in the lower South Island, additional pasture may create a larger pasture surplus that has to be conserved.

Eligibility for an index

To be eligible for an index, new cultivar and endophyte combinations must have progressed down individual company forage breeding processes and demonstrated high dry matter yield performance over three years. They must

	Upper North Island	Lower North Island	Upper South Island	Lower South Island
Winter dry matter	0.29	0.37	0.43	0.39
Early spring dry matter	0.46	0.46	0.40	0.44
Late spring dry matter	0.19	0.15	0.29	0.22
Summer dry matter	0.39	0.32	0.16	0.10
Autumn dry matter	0.40	0.31	0.28	0.25

have participated in at least three separate national forage variety trials, one must be north of Taupo, and no more than 50 per cent of these trials related to a specific cultivar can be managed by a particular company. These tests are carried out using comprehensive and scientifically-based protocols. All results are subjected to a rigorous peer review before publication is considered.

Practical example

Nui with standard endophyte in the upper South Island region is used to illustrate how its forage value index is calculated. First, it is given a star rating for its individual performance values. If it is in the top 20 per cent it is given five stars, and one star if it is in the bottom 20 per cent of forage value index eligible cultivar by endophyte combinations. Nui with standard endophyte receives one star for all traits, with the exception of early spring dry matter production where it receives three stars.

Performance values are then multiplied by economic values and summed to calculate its index. Note that the forage value index of Nui with standard endophyte is penalised as it performs poorer than the genetic base from winter to late spring. As persistence and nutritive value information is added to the forage value index, its index could increase or decrease but this information is not yet available. Currently its estimated the index means it is eligible for a one star forage value index.

DairyNZ research initiatives

Careful consideration should be given to the expression of the trait under real world sward conditions in the target sowing region. To better understand this we have sown new pastures at four sites – Newstead, Waikato; Massey University, Manawatu; Lincoln University, Canterbury and Woodlands, Southland. Here eight cultivars of perennial ryegrass are being grown with or without white clover and at two levels of nitrogen fertiliser input to investigate –

Nui SE	Star Rating	PV	EV	Contribution to FVI
Winter DM (kg DM/ha)	★	-101	x \$0.37	-\$37.4
Early Spring DM (kg DM/ha)	★★	7	x \$0.46	\$3.2
Late Spring DM (kg DM/ha)	★	-21	x \$0.15	-\$3.2
Summer DM (kg DM/ha)	★	-95	x \$0.32	-\$30.4
Autumn DM (kg DM/ha)	★	61	x \$0.31	\$18.9
FVI (\$/ha)	★			-\$49

1 star out of a possible 5 (bottom 20%)

Estimated that Nui SE will grow 101 kg DM/ha less during May and June than the genetic base (all cultivars trialed before 1996)

Estimated that every additional kg grown in this period is worth an additional \$0.31 farm profit.

Estimated that Nui SE is \$49 less profitable than the genetic base

Illustration of how the forage value index is calculated and what it means in practical terms for the lower North Island region

- If the rankings seen in national forage variety trials, where only the ryegrass component is measured, are the same as the rankings calculated when grass and clover are grown as a mixture where total pasture yield is measured?
- If the rankings do differ, what are the factors responsible for re-ranking?
- How to adjust national forage variety trials data to produce a robust estimate of relative rankings for total pasture yield including clover.

Along with each experiment, the same eight ryegrass cultivars are compared using the standard national forage variety trials management protocols. This enables direct comparisons of rankings from the trials versus the four treatment environments – clover or no clover, moderate or high nitrogen. The experiment will continue for five years and provide comprehensive information on dry matter yields, clover and grass content, and nutritive value.

Pilot scheme

A pilot cultivar proving scheme has also been started where three to five perennial ryegrass cultivars are sown in a mixture with two standard white clovers in strips lengthwise in paddocks on six commercial dairy farms. Paddocks are subject to normal farm management, with the farmer carrying out regular farm walks to determine growth of individual cultivar strips. At regular intervals, nutritive value is assessed by sending pluck samples away for analysis or taking visual scores of persistence.

Information from these farm trials will be used to test that cultivar rankings in a commercial farm environment match those derived from small plot trials. Information from commercial farms may be used to estimate trait values, such as seasonal dry matter production, metabolisable energy and persistence, and forage value index. Within the next 12 to 24 months we expect to start further research to –

- Estimate the rate of genetic gain currently being achieved in whole pasture performance from perennial ryegrass breeding that will allow us to propose genetic gain targets for the future
- Compare the efficiency with which dry matter produced by different cultivars can be utilised by dairy cows and converted to milk.

Further out still, we anticipate running a full-scale grazing trial using cultivars with highly contrasting forage value index and performance values to confirm that differences in profit predicted by the index are achieved on-farm. This will be similar to the animal strain trials carried out in the 1980s and 1990s. It will be a major milestone in the life of the forage value index, and could well have a significant influence on the future direction of plant breeding for New Zealand dairy pastures.

Jeremy Bryant, David Chapman and Bruce Thorrold are based at Dairy NZ. Graham Kerr and Murray Willocks are with New Zealand Agriseeds Ltd. Glenn Judson is at Agricom Ltd and Tim Cookson at Cropmark Ltd. Grant Edwards is based at Lincoln University, William McMillan at W McMillan Consultancy Ltd, and David Green at PGG Wrightson Seeds.

Cros Spooner and Richard Li

Web based lambing percentage benchmark tool



At Beef+Lamb NZ we are attempting to make benchmarking straight forward with minimal data entry and for the system to manage complexity. Research shows that data collection and benchmarking are very important for improved farm profitability.

We have started with one of the most widely referenced benchmarks in the sheep industry. The lambing percentage benchmark tool is designed to help users build a clear understanding of where their farm stands among a broader group such as regional, land type or stock classes. The user can even compare their business performance going back 10 years.

Data up to the spring of 2010 is actual lambing percentages from surveyed farms, is provisional for the spring of 2011 and estimated for 2012. The distributions are weighted averages of individual farm class data to correctly portray a whole region or the New Zealand lambing percentage distribution. This allows users to evaluate where their lambing percentage result sits nationally within a particular farm class. If there are insufficient observations within a class and region you will need to compare your farm with its whole farm class or the region distribution. The farm class descriptions are explained below and the table shows the estimated number of commercial sheep and beef farms in each class.

Farm class			Estimated farm numbers
1	South Island	High country	220
	Extensive run country located at high altitude carrying fine wool sheep, with wool as the main source of revenue. Located mainly in Marlborough, Canterbury and Otago.		
2	South Island	Hill country	850
	Mainly mid micron wool sheep mostly carrying between two and seven stock units per hectare. Three quarters of the stock units wintered are sheep and one quarter beef cattle.		
3	North Island	Hard hill country	1155
	Steep hill country or low fertility soils with most farms carrying six to ten stock units per hectare. While some stock are finished a significant proportion are sold in store condition.		
4	North Island	Hill country	4020
	Easier hill country or higher fertility soils than Class 3. Mostly carrying between seven and thirteen stock units per hectare. A high proportion of sale stock sold is in forward store or prime condition.		
5	North Island	Intensive finishing	1515
	Easy contour farmland with the potential for high production. Mostly carrying between eight and fifteen stock units per hectare. A high proportion of stock is sent to slaughter and replacement are often bought in.		
6	South Island	Finishing breeding	2690
	A more extensive type of finishing farm, also encompassing some irrigation units and frequently with some cash cropping. Carrying capacity ranges from six to eleven stock units per hectare on dryland farms and over twelve stock units per hectare on irrigated units. Mainly in Canterbury and Otago. This is the dominant farm class in the South Island.		
7	South Island	Intensive finishing	1132
	High producing grassland farms carrying about ten to fourteen stock units per hectare with some cash crop. Located mainly in Southland, South and West Otago.		
8	South Island	Mixed finishing	600
	Mainly on the Canterbury plains with a high proportion of the revenue being derived from grain and small seed production as well as stock finishing.		
Total of all classes:			12,370

Sheep and beef farm survey 2012 to 2013

First log in

When the user first logs in, the page shown is as below. By default, the first page has been set as Spring 2012 (Estimated) lambing percentage overview for all New Zealand and all classes as shown in area A. Each bar represents a lambing percentage farms group from 80 per cent on the left to 180 per cent on the right.



When the user moves the mouse pointer over a vertical bar, a screen will automatically pop up showing more detailed information as shown in area B. In this example, the user points the cursor to lambing percentage 135 per cent bar so the pop-up screen shows 10.9 per cent of farms had a lambing percentage between 130 per cent and 135 per cent.

The user can fill in their own data in area C, and compare the performance with others by year, classes type or by region. Area D is designed to display the information. When no data has been filled in area C, it will provide the short usage guidelines. However when the user fills in the data and clicks the Calculate button, the calculation result and potential revenue change will be displayed.

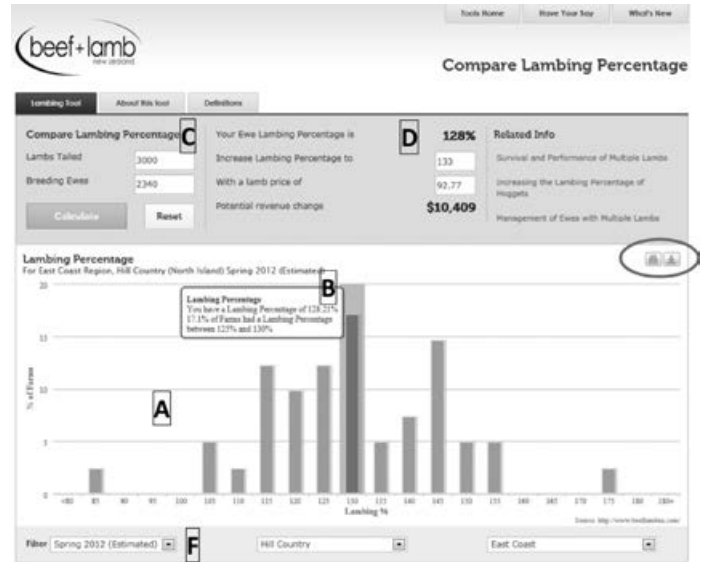
Three lambing related reading materials have been listed in area E. Area F is the filter area. It provides three different filter options for the lambing percentage tool, by year, by class or by combined regions. The user just needs to click the drop down button in each filter option to see the full list. The user has approximately 540 combined options from 10 years, nine classes and six regions to filter the output.



Filter options

Adding personal data

The following illustration shows an example when the user fills in personal data to calculate and compare the lambing percentage. Once the user completes the three steps of data input, the lambing percentage overview of the hill country class at East Coast will be displayed in area A. The user's personal lambing percentage group bar will be highlighted.



Spring 2012, East Coast region, hill country lambing percentage with personal input

The user can move the cursor over the bar, and a pop up screen will show more detailed position information. As indicated on the illustration there is a lambing percentage of 128.21 per cent, and 17.1 per cent of farms had a lambing percentage between 125 per cent and 130 per cent.

Based on the user input, area D represents the calculation result and the potential improvement suggestion. In this example, it shows the ewe lambing percentage is 128 per cent, and suggests that if the user can increase the lambing percentage to 133 per cent, with a lamb price of \$92.77 the potential revenue increase will be \$10,409.

By default, the potential increase is set at five per cent, but the user can modify it to any value they want, and the system will automatically update the revenue change. The default lamb price comes from Economic Service Farm Survey. The user can change it and the revenue will update. We aim to develop tools which are informative and relevant to sheep and beef farmers, and the lambing percentage is one of the online initiatives. The main propose is to use the minimum cost to quickly develop and release the proof of concept, and get feedback from the real users.

When the users want to understand more detail then increased data is required. At any time, the users can access the online feedback form and submit this back to us. The feedback will be reviewed and responded to each week.

Cros Spooner is the Chief Operating Office and Dr Richard Li, Enterprise Information Services Manager, Beef + Lamb New Zealand

Geoff Taylor

Managing change

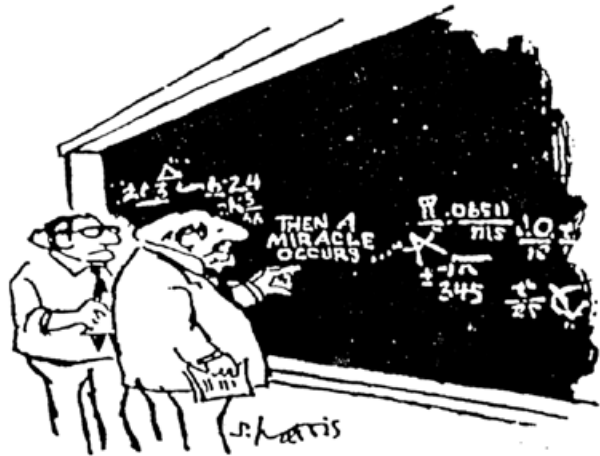
The key to unlocking the value of innovation on farm



The ANZ 2012 privately owned business barometer Agri Insights reveals that approximately 50 per cent of farmers are using a consultant, but only half of them are finding this interaction to be valuable. This rather alarming perception of value is not investigated further by ANZ, but provides cause for question. How is value created within a consultancy or advisory relationship? For the purposes of this article the terms consultant and advisor are used interchangeably.

The traditional consultancy sees the consultant provide expert opinion on the performance of a business and offering recommendations as to how the business can be improved. The consultant may or may not be involved in implementation. This approach is less common on-farm, with most consultants involved in the implementation as well and taking more of a coaching role.

This implementation space is where value is created. That is, in the ability of the advisor to work with and support their client to turn technical knowledge into value, as assessed by the business.



"I think you should be more explicit here in Step Two."

The consultant as a change agent

The world view represented here is that in an advisory capacity, whether it is working for an industry organisation or in paid consultancy, the essence of interaction with our clients is change management. The consultant is therefore mainly a change agent and value is created when they successfully support their client in the implementation process to benefit the farmer client. Unfortunately, this is often unrecognised and undervalued by both the advisor and the client.

This is not to underplay the value of technical skills as they are an important part of the equation, but in many respects technical skills are simply a licence to

play. They equip the consultant to diagnose problems and recommend solutions, an important part of continuous improvement but insufficient on its own.

Too often consultancy assumes that the client has the wherewithal to implement potentially complex solutions and create value. This little miracle which governs the success of implementation deserves a bit more investigation. It presents a real opportunity for enhancing client success.

Innovation adoption revisited

In 1993 EM Rogers described in his book, *Diffusion of Innovations*, the innovation adoption decision-making pathway illustrated below. This pathway is conceived of as a journey for the client which leads from awareness of the opportunity through to evaluating, testing and ultimately a decision to accept or reject the innovation. In practice, this seemingly linear journey is often a complex network of inputs, conflicting information and feedback loops.



Five steps in Rogers' innovation adoption process

The pathway does, however, provide a useful framework for thinking about the work which is undertaken within an advisory relationship. The purpose of this relationship is to work through the model to diagnose and resolve performance problems within the farm business.

The consultant acts as a facilitator of the process and an input to the process using technical expertise. It can be argued the consultant is focused on the first three steps in the process, identifying and evaluating opportunity, with the client taking a greater responsibility in the later stages.

Farmers often reflect that they are as technically competent as their advisor, so the logic of a consultant focusing on a technical offering seems flawed. If value is really created from successful support of innovation implementation as proposed, today's consultants must actively consider their involvement in the later phases of the adoption pathway

The effect of scale and complexity

Changes over the last 25 years have seen dairy farm businesses grow, bringing an increase in staff numbers, different



Range of considerations when implementing technical change

ownership structures such as equity partnerships, and raised public interest in farming practice. This means the manager now has a wider and more complex range of considerations to be weighed up to implement innovation.

Traditional consultancy and advisory practice is built on the relationship between the consultant and the manager or owner of an agribusiness. It is an interaction between these individuals with little involvement of others involved in the business. Given the changing business environment, this model can no longer be sufficient to meet the needs of today's dairy farming businesses. Others have an important role in the success or failure of innovation. They need to be considered, and involved where appropriate to enhance the likelihood of success.

The technical nature of the challenge is relatively simple. It either can or cannot be addressed within the financial and infrastructural constraints of farm resources. However, even profitable and sustainable innovation options can still fail to be fully and successfully implemented. Often this is because the process has been too technically focused without consideration of other systems factors and the needs of stakeholders. It is only if the manager who gains and maintains commitment of everyone involved that the innovation has the greatest likelihood of success.

When you boil it down, the complicating factor is people. A successful manager needs to bring a range of people along with them. Those people are likely to have different relationships to the business, different goals, capabilities and attitudes that all need to be considered to ensure successful implementation. This is where a good advisor can make a real difference, by supporting their client in the implementation process to maximise the benefits to the business.

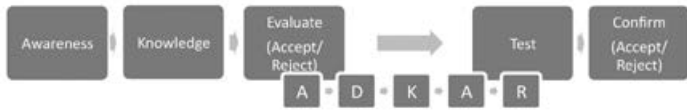
Understanding change management

A good change management model could prove to be a worthy addition to the consultancy. A widely available model is ADKAR, the initial letters of the bullet points below, which describes from a manager's perspective, the requirements to successfully bring staff and others along with change. It suggests managers need to create –

- Awareness of the need to change
- Desire to participate and support the change
- Knowledge of how to change and what the change looks like
- Ability to implement the change on a day-to-day basis
- Reinforcement to keep the change in place.

The model can be positioned beside Rogers' adoption model as illustrated on the next page. The rationale is that as managers enter the evaluation phase, it is the best time to get feedback and to start to build commitment to change by involving of stakeholders in the process.

This highlights the fact that the stakeholders in the business have different needs from the consultant's clients and need to be considered separately. It also highlights the need for the consultant to work with their client on developing knowledge and ability to change and to help reinforce commitment to change.



The four functions of the advisor

From an advisory point of view this model suggests there are four functions of the advisor –

- Technical expert advising on the innovation
- Facilitator to help the client work through the innovation adoption process
- Personal coach working with the client to help develop the knowledge and ability of the client and to keep them motivated to achieve the change.
- Change agent working with stakeholders in change management to increase chance of value being created.

In general consultants play roles one and two quite well, although a technical bias can sometimes limit the wider system view. Roles three and four are less evident to an outside observer. High performing advisors will be intuitively playing these roles with their clients but they may not even be aware of it. For advisors not in the previous group, a specific focus on the challenges of motivating the manager and bringing others along with the change will probably bring dividends.

Managing the manager in the role of personal coach, or keeping them on track and accountable for change initiatives, will provide benefits. Bringing people along through the change management process is not a new concept, but neither does it seem to be widely applied in a small business setting. Usually the focus is on the manager’s technical performance of their role. Working with other stakeholders, or helping the manager to plan interactions with others in change management is something that many advisors need to think consciously about.

Preparing for positive change

It has previously been stated that this aspect of advisory work is often undervalued. Being explicit with clients about these considerations also represents a means to help them to understand the consultant’s role in change and to value this aspect of the advisory relationship.

The culmination of the process is the decision to accept or reject the innovation based on success criteria. Not all innovations will be accepted, and not all of them will make sense. However, effectively supporting the business through change will ensure that it is the value of the innovation which is tested and not the value perceptions, motivations or attitudes of the staff or other stakeholders in the farm business.

Conclusion

The maximum value is created in the advisory relationship when the advisor supports their client with implementation of new innovations, rather than simply leaving the manager with a set of recommendations to implement. Technical innovation is an important source of opportunity for the

Awareness	<ul style="list-style-type: none"> • Who are the stakeholders? • What is being proposed? • How might it affect them?
Desire	<ul style="list-style-type: none"> • How do stakeholders perceive the change and how can we align perceptions to help gain commitment to change? • How can we involve people along the way to give ownership? • What incentives can be put in place to motivate desire to change?
Knowledge	<ul style="list-style-type: none"> • What does success look like? • What will the change mean to stakeholders on a day-to-day basis? • How will stakeholders be supported to make the change? • How long will it take to get there? • What systems/processes need to be reviewed to embed the change in daily practice?
Ability	<ul style="list-style-type: none"> • What skills and attitudes are required in the team, including the manager, to enable change? • How do we build those skills if they are lacking? • Have we got the right team and if not how do we need to do to attract the right team in the future? • How does the change alter the people risk profile in the business and do we need to focus on retaining important staff?
Reinforcement	<ul style="list-style-type: none"> • How do we measure progress to ensure the right results and to keep the team motivated? • How about the softer aspects of success such as team satisfaction? • What quick wins can we find to build a culture of success? • How do we sustain performance over the long term?

business, but it is not until it is successfully implemented that it will be of value. A consultant has a vested interest in creating value for their client, which is why the client pays their bills, so they must consider how they can support implementation more effectively.

The growth of businesses means that management of multiple stakeholders, especially staff, during the change implementation process is far more important than is generally recognised or valued by either the client or advisor. It is too great an assumption to make that the manager has the capability or capacity to manage this implementation fully. A perfectly good innovation can fail if the people in the business are not brought along on the change process.

Advisors can help their clients by supporting them to take a more planned approach to change, especially with respect to managing important people in the business. The result is likely to be greater client success with innovation, greater levels of client satisfaction with the advisory relationship, and an enhanced view of advisors in the agricultural community.

Geoff Taylor is Development Team Leader, People & Business at DairyNZ in Hamilton.

Adrian van Bysterveldt

Large dairy business project



Over the last 20 years, most dairy farming business have grown in size and complexity. In response to the challenges which these farming businesses now face, DairyNZ has instigated the Large Dairy Business Project which is jointly funded by the dairy levy and Primary Growth Partnership funds. The project has two main objectives –

- To build a body of knowledge of effective business governance and management disciplines. It will be appropriate for dairy farmers, particularly those with large dairy farming businesses and with multiple farms, their farm supervisors and farm advisors
- To support change in farm business practices by implementing improved knowledge and understanding of these effective business governance and management disciplines and practices.

Background

The first 16 months of the project has been a research phase. Farmer and advisor surveys and interviews were undertaken to understand the problems facing larger dairy farms and businesses and the current level of governance practices. An analysis was also carried out on an industry database to understand how farming businesses were organised. A search was undertaken for existing governance resources which could be adapted for farming families, as well as skilled professionals who are working with farmers to develop governance effectiveness in their businesses.

Increase in size and complexity has seen herd size grow to an average of 386 cows by the 2010/11 season, which is an increase of 100 cows in just eight seasons. In regions such as Canterbury this change has been even more dramatic, and the average herd is now over 750 cows. At the same time, some farming businesses have taken advantage of a more favourable lending environment, inflating equity in their land and expand into multiple dairy farm enterprises often spread over two or more provinces.

Number of farming businesses which have one or more dairy farms

All New Zealand											
Number of dairy farms per business	1	2	3	4	5	6	7	8	9	10	More than 11
Number of businesses	7,568	1,193	328	108	44	24	19	21	16	9	35
Taranaki region											
Number of businesses	1163	198	42	9	5	3	0	0	0	1	1
Southland and Otago											
Number of businesses	633	142	56	16	8	6	6	2	1	1	3

Significant variation exists between regions and reflects the recent expansion of the dairy industry through the conversion of land into dairy farming.

Number of business with a dairy farm outside their home region

Home farm region	Businesses which have an investment in dairy farms outside that region
Northland	16
Bay of Plenty/Central plateau	51
North Waikato	76
South Waikato	64
Taranaki	35
Lower North Island	22
Top of the South Island	4
Westland	3
Canterbury	28
Southland/Otago	39

The way farms and herd-owning share milking businesses are owned may also be changing, although this perception is purely anecdotal. The following tables clarify this for the 2010/11 season. There was insufficient information for some farms to assign them to a category.

Ownership structure of herd-owning sharemilker businesses

Sole trader	Trust	Family partnership	Family company	Syndicates
190	305	766	839	70

There are distinct regional differences that are not explained just by the rate of dairy expansion. The influence of local professionals and their advice on issues such as asset protection and tax planning seem to be more evident in regions where farms are smaller and the average age of the farmer older.

It appears that multiple farm businesses across New Zealand are more commonly associated with company structures. A total of 1,099 businesses opt for all their ownership being within companies and 934 business including non-company entities in their ownership profiles. When Dairy Holdings, Landcorp and Fonterra are excluded, multiple farm ownership is dominated by family corporates. However, there are big regional differences reflecting the influence of local professionals.

Individual New Zealand dairy farm ownership

Sole trader	Estate	Trust	Family partnership	Family company	Syndicate	Maori trust/ incorporation	NZ government
832	86	1940	3361	4308	985	93	66
Taranaki							
111	22	712	581	294	33	3	N/A
Southland / Otago							
38	0	192	168	501	225	0	N/A

Trading entity of multiple dairy farm businesses in New Zealand

Sole trader	Trust	Family partnership	Family company	Syndicate	Family company and syndicate	Mix of company and non- company	Maori trusts and incorporations
49	233	240	638	217	244	387	25
Taranaki							
9	91	48	42	10	2	93	2
Southland/Otago							
2	22	15	78	69	46	54	0

The development of farming syndicates has added a new dimension to farm ownership and for many people this has made ownership in much larger operations possible. These farming businesses are using the full range of possible management relationships to involve the actual farm operator.

Discussion

The trend to larger farms, more multiple farm business and more farms in these businesses is continuing. The change to this increasingly complex business situation has occurred in a relatively short time and many businesses have outgrown the ownership and governance structures as well as the management skills of their owners. New Zealand dairy farmers are not alone in this phenomenon, which has been found in farming businesses across the world as well as in urban businesses that are successful and growing.

Unfortunately when these large growing businesses fail, the repercussions extend beyond the immediate financial losses to family and business relationships, environmental mismanagement and failures in animal welfare. The media interest in these events affects all dairy farmers. Improved business governance and the implementation of good business disciplines in dairy farming businesses will continue beyond the end of the current global financial crisis. The increased scale of farming businesses and general expectations of labour management, animal welfare and environmental management is increasingly putting constraints on businesses operating farms. This may be helped by the adoption of advisory or formal governance boards and both of these will require new skills by farmers and advisors alike.

The Large Dairy Business Project will be focused on building capability using written resources as well as building partnerships with skilled professionals and in workshops on governance and supervisory management. These will then be organised into a range of opportunities as part of an extension plan which will be rolled out across New Zealand.

Adrian van Bysterveldt is Development Project Manager – Large Dairy Businesses at DairyNZ based in Lincoln, Canterbury.

Peter Allen

Governance

New skills required by farmers and advisors



In his article on the Large Dairy Business Project, Adrian van Bysterveldt talks about some of the constraints and opportunities which are being experienced by dairy farmers in New Zealand. External changes such as the global financial crisis, expectations concerning labour management, animal welfare and environmental management bring situations that farmers have little choice but to face and respond to. Internal changes on the farm, such as the growth and scale of the business, different structures of business ownership and family succession are opportunities which similarly need to be dealt with.

Changes such as this have an effect on every dairy farming business and bring an assault on financial performance and health, how the farm is operating, how it is managed, as well as on lifestyles. Good governance practices meet and handle this. The complexity added by the constraints and opportunities of today's dairy farming can also be successfully tackled by adopting good governance practices.

Good practices

With complexity and problems come new information which is often outside the normal comfort zone and experience of business owners or directors. However decisions need to be made about the new information and circumstances. To continue to make good business decisions in spite of the complexity and problems with financial health and performance, farm business directors need to deliberately and purposefully apply good governance practices.

The challenge is that, if governance is an answer to these problems, it may require new skills by farmers and advisors alike. Governance is the system by which those who have been entrusted with directing and leading a company make good decisions consistently. The greater the complexity, the greater the need for better decision-making to match it. Dairy farm owners and their advisors can face these changes if they grow in their ability to make good decisions. This is the essential core of governance practice.

Advisors to farmers can have a leading role in this. By guiding farming families and their businesses into the use of good governance practices, farmers will increase their decision-making capability and be able to respond to change.

Governance for dairy farmers

Governance for dairy farmers at its highest level is a formal board of directors. In this situation, directors assume responsibility to direct the company towards achieving its fundamental purpose by acting solely in the best interests of the company. How formal governance works is well described by many authors, and most usefully by the New Zealand Institute of Directors' recent publication *The Four Pillars of Governance Best Practice for New Zealand Directors*.

If farm advisors are called to understand governance practice, and guide their clients into it, a very useful way of doing this is to be involved as a member of an advisory board of their client. This is the next level down in terms of governance

practice. The advisory board would consist of at least one external advisor, along with its directors.

There are situations where the formal board of directors of a company asks an advisory board made up entirely of independent people for opinions, with none of the company's directors involved. That is not the use suggested here, but an advisory board where the directors of the farm, who are also usually the owners, meet regularly with their chosen advisors and run the process like board meetings.

Opinion or advice

In this case the advisory board members who are not directors have no power of instruction, direction or veto. They can only offer advice or opinion without directives. The directors of the company are using the advisory board to gain an additional perspective about strategic planning, business development, and especially to learn governance. In this context it is useful to boil down governance principles to a level which is very practical. There is a good chance that successful governance will happen when the advisors lead the directors to do the basics –

- Clearly articulate the purpose and strategies
- Create an effective governance culture
- Understand their roles and responsibilities as directors as distinct from other roles they have
- Run effective board meetings using an agenda
- Maintain a disciplined schedule for board meetings
- Use a decision-making framework which includes systems to record lessons from mistakes
- Have a commitment to continuous learning and the demonstration of progress in governance capability
- Hold themselves to account by ensuring relevant timely reports and key performance indicators are produced
- Manage risks effectively.

A valuable practice is to formulate these basics into a system the client agrees to. The system starts as a thinly populated handful of pages and grows as the client develops their understanding and commitment to each practice. As they explore the topics their lessons are recorded as refined and improved ways of working, and they discover that each page can be filled and developed.

Good for business

One basic governance practice of particular benefit in a small-to-medium sized dairy farming business is the development of a decision-making framework by which future decisions are made. The directors agree that in certain circumstances, for example for expenditure over a certain value, they will follow specific decision-making steps. This one practice alone can save a family business from the disastrous consequences of hasty or ill-informed decisions, as well as restoring the confidence of family stakeholders in the decision-maker.

The result of following these basic governance practices is a governance system which is uniquely adapted and effective. This can take them as far as they want to go.

When people say governance is good for business it would be easy to jump to the conclusion that it is not for

me, based on the common view that governance is only for large organisation. Larger organisations use governance practices because they know the best decisions cannot be made without it. Smaller businesses can equally benefit from appropriately scaled governance practices.

Governance for smaller businesses does not mean unnecessary and costly bureaucracy? Costly big company governance systems do not have to be rigidly applied to smaller businesses. But a good system for smaller farming businesses can start with the fundamentals and enable the directors to learn and grow into even better decision-makers.

Not a director

A common mental hurdle which advisors come to when considering being part of an advisory board is whether participation would make them a deemed director. The Companies Act 1993 is sobering when it says a director includes 'A person in accordance with whose directions or instructions the board of the company may be required or is accustomed to act'. Could an aggrieved stakeholder, such as a bank, use this clause against the member of an advisory board to find someone to blame?

This may seem worrying until you look closely at the wording, in particular the words directions or instructions. In practice, the type of situation which would indicate a person could be a deemed director are when advisers –

- Give directions or instructions rather than their opinion or advice
- Provide clients little choice, say without stating alternatives
- Do not leave the choice to the client
- Do not have a terms of appointment document which clearly defines the difference from director
- Are not understood and the client defers to the advisor to make decisions
- Does not bill regularly and services are not well described
- Develop a dependent relationship
- Suggests to third parties that they are effectively a director, for example, by becoming a signatory
- Are not interested in helping the client learn better decision-making
- Have in mind to control, especially strategic direction, rather than to advise and empower the client.

Summary

The environment for dairy farming businesses is changing, whether by external factors or internal desires, and with those changes comes complexity and threats to financial health and performance. These challenges can be successfully met with good governance practices. The challenge is that this may require farmers and advisors to use new skills. An appropriate way for farm advisors to get into governance practice, and guide their clients into it, is to be involved as a member of the clients' advisory boards. These should be run using the fundamental principles of governance and where learning is vital.

Peter Allen is owner of Business Torque Systems Ltd based in Palmerston North.

Doug Donelan

The New Zealand hop industry



Hops are an essential ingredient in beer. The oldest recorded food standard in history, the 'Reinheitsgebot' or German beer purity law, states that beer can only be made using the three ingredients of malt, hops and water. In more recent times, yeast is generally accepted as the fourth essential ingredient, but back in 1516 when the law was enacted no-one knew what yeast was or actually did. In many parts of the world since then, changes have made their way into certain parts of food legislation to permit other adjuncts and additions. However, hops have remained firmly in place. Quite simply, if it does not have hops, it is not beer.

What are hops? Hops, as grown for brewing, are the flowers of the female hop plant *Humulus lupulus*. Technically they are strobiles, or cone-like structures which form as an *inflorescence* beneath a bract at the terminal ends of the plant laterals. Hops are diecious, meaning that there are male and female plants which are a perennial rhizome. They emerge as shoots in the spring where a small number, perhaps two or three, are selected and trained to grow up a string to reach maturity in autumn.

Cultivation and kilning

Wide-scale cultivation is made possible with a structure of poles and wires to create a framework over land to support the binds as they grow to a height of approximately five metres. When mature and laden with flowers, the whole bind is cut down and transported to a picking machine. The picking process is one of feeding the binds into a machine which initially removes the cones, feeding the remaining laterals into a secondary picking operation. Here further cones are removed and conveyed through a series of cleaning belts until only the cones remain, and they are then conveyed to the kilning operation.

Kilning is carried out at 60°C with process time varying by variety. However, six to eight hours would be considered an average time to reduce the moisture content to between eight and ten per cent. The dried hops are pressed into bales after a period known as conditioning in heaps on the kiln floor to allow cooling while moisture equilibrates.

At the time of writing, the 2013 hop harvest had begun and this coincides with the shortening day length and the approach of autumn. The flowers move into maturity, with early varieties ripening toward the end of February and other varieties being either mid or late season and all coming into maturity before the end of March. Picking windows can be quite short for some types, and growers need to plan their gardens to have a mix of varieties to ensure they can take full advantage of a relatively brief harvest period.

The bales, with an average weight of around 120 kilograms, are transferred from the farm to a central storage and processing facility in Appleby near Richmond in the Nelson region. Here they are weighed, graded and sampled for quality checks and analysed for their alpha acid content. This content is an international measure of importance to brewers. It is the conversion of these acids to a soluble form during boiling in the brewing process that determines the bitterness of the resulting beer.

Hop chemistry

Hop chemistry is a very complex study with a focus on the major component of the hop known as lupulin, a resin stored in glands within the hop cone. The lupulin contains the bittering acids, but also a vast array of other components including the all important essential oils that contribute to a beer's flavour and aroma profile. There are over 100 different hop varieties grown internationally, with no two being the same, although some with higher alpha acid content may bear similarities.

It is the variation of hops and how they are applied to the brewing process that gives rise to the myriad of beer styles, categories and sub-categories produced internationally. New Zealand grows 20 different varieties of hops, with 12 of those unique to this country having been developed from our own hop research and breeding programme partnered by Plant and Food Research.

Selling and distribution

After the hops are received into store and assessed they are put into cold storage and held until processing begins once harvest is complete, generally in late March. All the analysis is collated and the bales are batched for processing into pellets or for re-packing of whole hops for sale to brewers or distributors. In some instances, brewers will visit the hops store to select the hops they have contracted using a process of sensory evaluation and scoring.

Different brewers may have variations in selection criteria, but most agree that it is the intensity of aroma which makes one sample stand out from another. The process of hop selection is a tradition still upheld by many brewers,

with some brewing companies having a policy that they will not brew with hops that they have not selected. This time-honoured process sets overall quality performance measures across the industry. Growers aim to have their hops selected for inclusion into contracts while serving to benchmark the industry's own selection and grading processes.

Original varieties

Hops are not a native to New Zealand so early settlers from England and Germany around 1840 brought hops here which they grew to brew beer for the table as part of household duties. During this time the local brewers retained their preference for imported varieties, which we can only speculate was based on their indifference to the quality of the domestic offering.

The hops grown at that time were varieties called Fuggle and Golding from England and Spalt from Germany, all of which had adapted to the local conditions, although they did not perform all that well. In the later 19th century and early 20th century New Zealand was expanding rapidly and the brewing industry was keeping pace.

The outbreak of World War I significantly affected trade, which in turn meant that the hop supply was also restricted from imports. This forced an alliance between the brewers and the local hop growers, which was to change the fledgling New Zealand industries for ever. The brewers required greater efficiencies from the hop producers than that which was on offer from the traditional varieties, so a hop variety was needed which could produce a better economic return.

In California, a variety called Cluster was being grown and it was on a similar latitude of 41 degrees – hop maturity



Hop kilning



Hops ready for picking

is latitude specific. It was believed the Californian would be suitable and so it was introduced and rapidly expanded. The Cali, as it was affectionately known, thrived and soon made up most of the plantings throughout the industry. Unfortunately, the strategy was risky with over-reliance on a single variety.

Disease eradication

The Californian proved to be susceptible to black root rot, *Phytophthora cactorum*, which started to appear in the early 1930s. This insidious fungal disease was capable of destroying the entire crop, with the industry along with it. By the late 1940s, it was widespread and proving nearly impossible to control. An initiative to combat the disease was developed with the collaborative efforts of the growers, brewers and the government.

In 1947, the New Zealand Hops Research Committee was established. It comprised members of the government Department of Scientific and Industrial Research, the Brewers Association and the hop growers.

Work began on the development of a variety which would be resistant to black root rot. The starting point for this, not surprisingly, was the old line varieties brought in by the early settlers as these hops had not succumbed to the disease. The ubiquitous Fuggle had still been grown, and even though it yielded poorly, it had displayed resistance to the disease even in badly affected gardens. The crossing of the Californian with Fuggle and subsequent selections and back-crossing produced three new root rot resistant varieties – First Choice, Smooth Cone and Calicross.

As well as their disease resistance, these varieties were developed by selection for several other characteristics such as yield, alpha potential, maturity and suitability to machine picking. The New Zealand hop breeding programme had been firmly established and the hop industry was set to embark on a major change.

Research organisations

The Department of Scientific and Industrial Research went on to be known as the Horticulture and Food Research

Institute of New Zealand, which has recently emerged as Plant and Food Research. It remains the home of the New Zealand hop industry's breeding and research efforts. The New Zealand Hops Research Committee celebrates its 66th anniversary this year. It also remains the research body for the New Zealand hop industry comprising growers, brewers and Plant and Food Research in its representation.

Considerable advancement has been made in quality and efficiencies to the brewing industry via the research committee. The contribution made to the success of both the New Zealand hop industry and brewers internationally can never be overstated when speaking of the efforts of its members.

Plant breeding

The growers rallied round their research committee and put in place a programme of development which would increase the efforts in plant breeding and draw on the brewer representative knowledge of quality expectation. New Zealand growers needed to produce hops that the market wanted and develop the capability to produce quality. The hop growers strategy was to sell themselves as the brewer's grower and take their products to the world.

Having an active breeding programme and research committee gave them an edge to develop new varieties and to meet the changing needs. How hops were being handled at picking, post-harvest storage temperatures and processing procedures all had parameters that needed to meet with brewers' expectations. The New Zealand grower became more focused on quality with processing practices and procedures, as these were all seen as marketable points of difference.

Technology again was behind the change, with domestic and international brewers demanding much more from their hops. Commodity alpha acid was still at the forefront, but it was not just about bitterness contribution. The New Zealand varieties which were emerging from the breeding programme could be tailored to specific needs. The distance from the northern markets, once viewed as a barrier, became seen as advantageous for off-season supply and risk mitigation.

Hop marketing

Hop marketing in New Zealand has gone through several models. Looking back to the early days, breweries bought directly from individual growers and this system developed into an organised pools system based on quotas through the Growers Association. Hop marketing was also regulated by the government in 1939, and this model saw a system of price-fixing and quotas. This was, quite ironically, with a view to ensuring that the domestic hop requirement was met before export sales.

Under this system it could be seen that any export hops would be below the domestic standard for which there were no real incentives to improve. By the early 1960s, the absurd pricing controls were removed by the government and the growers were again allowed to offer hops domestically and

for export competitively. This brought about a greater quality focus and meant that the growers could once again actively market their hops. It also helped in realigning the brewers and growers strategically with a flow-on to further quality improvement.

Cooperative owned by growers

Today the industry model is one of a cooperatively grower-owned company, a vertically integrated business governed by a board of directors who appoint a chief executive officer to manage the off-farm interests of the industry. New Zealand Hop Limited was created in 2005 from the merger of New Zealand Hop Products Limited, the cooperative's processing company, and the New Zealand Hop Marketing Board, the growers' marketing arm which evolved out of the deregulated marketing committee.

Throughout the 1970s and 1980s the industry released several new varieties, both of the high alpha and aroma types, but it was the aroma which pushed the boundaries. By the mid-1990s, the industry had a diverse variety portfolio to rival the traditional northern producers. However, the cyclical nature of the market and the pressures of a competitive global market required the industry to look for greater product differentiation.

Integrated pest management by the use of predators was soon to be adopted to create spray-free production, while organic hops were emerging with New Zealand at the forefront. The research committee was being called on again, and the 'Hops with a Difference' programme emerged with a view to capitalise on hop-breeding selections in search of unusual and unique flavours and aromas.

Major industry change

Entering the new millennium, the brewing industry was undergoing major change and top-end consolidation was pushing the international hop markets into commodity trading. Traditional beer markets were under pressure, and hops were losing their fundamental synergy with brewing. Beer volumes were decreasing, or at best static, and rationalisation was pushing raw material pricing down.

Lower bitterness had been appearing as a consumer trend for several years, and increased brewing efficiencies for hopping was considered the universal fix. This made alpha a vital word in the brewery industry and pricing was being brought down to unsustainable levels. Buying patterns had changed and forward contracts were expiring without renewal in favour of the spot markets. Internationally, brewery inventories were reducing while the growers were forced into surplus. In more recent times, the hop market internationally has found itself in a structural deficit created mainly by unsustainable purchasing behaviour.

Industry growth strategy

With the brewing and hop industries being so inextricably linked, it is hard to fathom how such a situation could exist. Boom and bust scenarios continued to produce uncertainty

at the farm gate, and a major over-supply for alpha acid internationally called for a change in the direction for the New Zealand hop industry's marketing strategy. In 2010, an industry growth strategy was adopted by the board of directors in response to successive years of international market supply and demand imbalances which were creating incremental seasonal surpluses.

An opportunity was seen to increase New Zealand hops in the international craft beer markets, especially in the northern hemisphere. Re-branding and repositioning of the industry's varieties was vital to the success of the strategy, which has been focused on a higher value for growers to improve farm gate returns. The result has seen a considerable change in what is planted and grown. On-farm structure has diversified by increasing which varieties and how many are grown for customers across different markets. Behind it all is the underpinning by the research programme and an ability to breed unique hop varieties which the market wants.

PSA a timely warning

The hop industry has its share of risks outside market forces and sees the major threat as the introduction of disease from lapses in biosecurity protocols. Several hop pests and diseases exist outside New Zealand which, if introduced, would almost certainly have a catastrophic effect on the industry.

The recent incursion, from alleged negligence, of the PSA bacteria and its dire results on sections of the kiwifruit industry has served to remind us just how fragile and exposed rural industries are. This message needs to be brought home to the Ministry for Primary Industries at every opportunity.

Succession planning had also previously been identified as an area which could create risk for an industry with strategic growth plan. Presenting a sustainable future to the shareholders has resulted in some younger farmers stepping back into an active role on the farm. Company structured, leasing and joint venture farming operations have emerged to negate succession risk and shore up supply into the future.

Positive growth period

The New Zealand hops industry is in a growth period in what has been a challenging economic period for exporters and in spite of weak currencies in target international markets. The current harvest is looking to produce around 750 tonnes from approximately 370 hectares, of which 95 per cent is forward sold on a contract basis and 85 per cent is exported.

Not all the current contracts are at the higher value levels. However, the strategy has a balanced mix of varieties across different market segments. These act to spread supply risk while increasing the average farm gate return and laying the groundwork for the Nelson region's future generation of hop growers.

Doug Donelan is CEO of New Zealand Hops Limited in Richmond, Nelson.

Profile

Graham Cooney Fellow of the NZIPIM



Graham was brought up in south Canterbury, but was educated at boarding school in Oamaru from the age of five. His father was a country school teacher and he spent a lot of time on farms in the Otaio area in the school holidays. This began a life-long interest in agriculture.

On leaving school he did a Bachelor of Agricultural Science at Lincoln College, which was completed in 1973. He was fortunate to be educated by some outstanding practitioners – people such as Sir James Stewart, Gerald Frengley, Terry Ludecke, Jim White and Karl Jagusch. He owes a good deal to those individuals who not only passed on knowledge, but also demanded that their students find solutions to farm management problems by thinking both methodically or outside the square where appropriate.

Early career

On finishing his degree, Graham was posted to Invercargill with the Ministry of Agriculture and Fisheries as a farm advisory officer. He was allocated the central Southland region, an area mainly consisting of sheep and cropping with some cattle and a small amount of dairying. This period is remembered with some affection. Many friendships were made with farmers who were thirsty for knowledge in an environment where incomes were acceptable but not spectacular. The farming was intensive and the properties were generally not large.

He remembers some good advice when he started. Never assume that the farmer you are talking to knows something. So always start at the beginning and mention every point that is important, even if it seems trivial or minor. Graham spent a lot of time working with discussion groups. Major topics he can recall include all grass wintering, both ewes and hoggets, and grass grub treatments and much of the advice was technical rather than financial.

The latter part of his time with the Ministry coincided with the Muldoon era when subsidies in the form of supplementary minimum payments were put in place. Loans such as land development encouragement loans and livestock incentive schemes were also taken up by many farmers. However, he believes this created a mentality of looking to the government for assistance when international prices fell, rather than concentrating on growing the market.

In 1979, Graham decided to set up his own farm consultancy business in Southland. This was very successful and he was soon busy. It had coincided with buying 65 acres in the Waianiwa district, and along with a young family there was not a lot of spare time.

In the next few years farm incomes fell. At the Institute of Agricultural Science conference in 1983 he was asked to give a paper titled 'Government policy impact on intensive Southland farms'. Preparation for this was to alter his way of thinking and led to some major changes in his business career. The Muldoon government had gone from a major input into agriculture in the annual budget to a non-existent one.

Many incentive schemes had led to a massive increase in production, but there had been very little extra effort put into processing and marketing efficiencies. New Zealand exporters were having trouble selling the product at viable international prices and subsidies from the taxpayer were making up a bigger and bigger part of farmer's incomes. As Graham saw it, the money within New Zealand was going around in a bigger and bigger circle but not enough new money was coming in from new export markets.

The change of government in 1984 changed all that and turned agriculture on its head. In general, terms, Graham supported the moves being made by Roger Douglas at that time and nothing has happened in the meantime to change his view on this. He believes that like any radical programme there will always be mistakes in the execution, but in general he feels it was the correct thing to do.

However, the transition from a subsidised regime to a non-subsidised one was not easy. The government introduced a restructuring scheme where lenders, having decided an individual farmer was competent, would write-off a proportion of debt while at the same time lifting interest rates on the remaining debt to market rates. Graham was involved in dozens of these meetings and still considers the policy and the process as a very successful one in extreme circumstances.

Blue Sky Meats

In 1986, the sheep meat prices were at rock bottom. Lamb was less than \$20 a head and mutton was virtually worthless. In Graham's view the exporters and processors were not moving fast enough in turning around their processing costs towards a further processed high-value marketing programme. He considered that a new company starting

from the ground up would be the best way of helping his sheep farming clients to get better prices.

A small plant was built at Morton Mains, initially killing 5,500 animals a week. This was on a five-and-a-half-day week and one shift. It was structured as a public company with many of his farming clients investing. Graham himself borrowed a considerable amount and became a major shareholder and managed stock procurement.

In 1990, it became apparent that he could no longer do both tasks alongside each other. Apart from the workload, there were potential conflicts of interest. In the torrid stock procurement battle that led to the demise of Fortex and Weddell, Graham was being asked to give advice to clients who had contracts at Blue Sky Meats but saw better opportunities elsewhere. He sold his consultancy business and went to Blue Sky on a full-time basis.

Recent business interests

In 2007, Graham resigned from his full-time position at Blue Sky Meats and inherited the role as Chairman of the Board. He still holds that position, but is also involved on the boards of a number of other mainly non-agricultural organisations. From 2002 to 2011, he was Chair of the Southern Institute of Technology, the Invercargill-based polytechnic, which also has campuses in Hornby, Christchurch and Queenstown.

After a period as Chairman of Rugby Southland, during which time the region won the Ranfurly Shield for the first time in 50 years, Graham was elected as one of the two South Island representatives on the board of the NZ Rugby Union.

In the last 12 months he has been a Ministerial appointment to the NZ Racing Board. He is also an independent Chair for Invercargill law firm Preston Russell, who are the local Crown prosecutors, as well as being a shareholder and director of Geni Southland, Bay of Plenty and Auckland. So what was to be retirement has become as busy as ever.

Throughout his career Graham has been supported by his wife, Jill. They have been married for 38 years and have three adult children.

Future for sheep meat

The sheep meat industry is facing challenging times. Dairy conversions in the South Island and urban encroachment in the North Island are taking what used to be sheep finishing or breeding land. Many feel that the structure of the dairy industry is the reason why they appear to be more successful.

Why has land use moved dramatically towards dairy? Graham considers that there are some clear reasons.

Dairy produces one homogenous product, and that cannot be held on-farm to be used in a bartering negotiation. The manufacturing decisions can be made well in advance of receiving the raw product. In contrast, the sheep meat industry has well in excess of 100 different specifications that can come from lamb carcasses. In addition it does not know the number of animals it will get well in advance and,

most importantly, the size and type of animal is a complete guess. He believes that the industry has moved from freezing carcasses and further processing later, to processing within 24 hours of slaughter. This requires a certain amount of risk about what specifications to use.

Technology has allowed workers to milk perhaps 10 times more cows per worker than was the case 25 years ago.

Importantly, a dairy farmer can make management decisions today about rotation length and feed allocation to their cows and see the results at tomorrow's milking. That does not happen in sheep farming.

The wool price has had a significant effect on sheep farmers' returns. When Blue Sky Meats started, a sheep farmer received less than \$20 for a lamb, of which more than \$10 was the skin and wool. The price is now around \$90, of which less than \$5 is the skin and wool.

Graham believes it is critical that the industry develop a strategy for the whole industry. Many people talk about structure, but that is a pointless exercise unless there is a strategy behind any structural changes, which must be commercial and not artificially created.

In his view the *Red Meat Sector Strategy* released in 2011 provides a catalyst for an industry strategy. The vast majority of companies have accepted the recommendations and the first steps towards an industry strategy have been achieved with the recent announcement of the partnership including Beef + Lamb NZ, the government's Primary Growth Partnership fund, two banks and a leading accountancy firm. It is the industry's last chance to get it right. For Graham, it still relies on a farmer vote to give a mandate for Beef + Lamb NZ to commit to their funding. If that vote is not a positive one then it means farmers have already arrived at the conclusion that the industry's future is limited.

The critical role of NZIPIM

Just before setting up Blue Sky Meats, Graham became the Southland-Otago councillor on what was then the Society of Farm Management. In the mid-1980s he became national president of that organisation and in the late 1980s was made a Fellow.

Graham believes that the NZIPIM has a critical role to play in the future of the red meat industry. In the past, he has been openly critical of the lack of interest from members in being part of the industry solution. He says that criticism still applies. For example, he has never been contacted by a member of the NZIPIM who wishes to find out or debate the policy of his company or the industry as a whole.

He feels that registered members, who make their living by offering advice to farmers, are not interested in finding out the finer details, good or bad, of the red meat industry because there are more profitable areas to be involved in. If that is so, then the industry must take some of the blame.

Finally, he believes that in the seven-year programme which makes up the Primary Growth Partnership there will be a need for significant numbers of professional people, many more than are presently available. This will become both a challenge and opportunity for the NZIPIM.

