Access to Agronomy for Pastoral Farmers in New Zealand

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Introduction

Pastoral Farmers in New Zealand are renowned for their expertise and ability to grow grass and to convert that to meat and milk more efficiently than anyone else. This may well be the case although how near that is to the economic optimum is what this project aims to find out. The perception is that although good, on a world scale, at maximising pastoral production and efficiency, that New Zealand can do a lot better.

Pastoral farming consists of two separate farming systems operated as one. The first is the production of pasture or other forage. Some of this is done on intensively managed land, such as the Canterbury Plains or Waikato. Pastoral production also occurs on more extensively managed land such as South island high country, where there is little direct management of the species grown except that done via grazing pressure. The other part of pastoral farming is the livestock themselves. Pastoral farmers have a choice of species, dairy or drystock (sheep, beef or deer breeding and/or finishing) farming and also the intensity of the management input. Much of the research done previously is in the areas of animal production, health and reproductive efficiency. Relatively little appears to have been done on the best species, cultivars and management systems to enable the above to be achieved to a greater efficiency and reduced cost.

Many organisations and individuals would dispute this, but this is a widespread opinion and and is reflected by the column inches in the farming press. The plan is to try to find out, by speaking and comunicating with people and organisations in this area, how close each of the main sectors within New Zealand are to the potential. (The two main sectors are dairy Farming and beef/sheep/deer farming, herein after referred to as the drystock sector). In the drystock sector, farmers appear to think that the most immediate and cost effective improvements in their own farming operations come from changing breed or type of stock. My intention here is to show that great improvements can also come from changing management systems and pasture species and I will try to demonstrate this.

Agronomy, the study of soil management and crop growth, is provided to farmers and growers in a number of ways and from a variety of sources.

- State institutions, e.g. Crop & Food, Commercial organisations and University Departments, carry out primary research.
- Secondary research is carried out using the knowledge accumulated, mainly by the above, with a particular aim in mind. This could be developing a new cultivar or applying a chemical solution to a crop differing from that for which it was originally developed for.
- Commercial trials. These will be carried out by organisations like Foundation for Arable Research (FAR) or by seed companies such as Agricom Ltd or Agriseeds Ltd so that the information gleaned can be spread to their farmer members or customers.
- Farm based trials. Interested farmers or groups to try to find a solution to a particular problem by carrying out trials at farm level and scale.

In this study I intend to show how research is directed, the information gained is disseminated, and if this can be improved for the general good of pastoral farming, and of individual farmers, in New Zealand.

What is the Current Situation?

Primary research, on fundamental issues and problems, is often driven by government departments and their agencies. This then translates into what funding institutions can apply for funding to develop solutions. This, of course, leads to much duplication, both within and between countries and therefore progress is much like that of the stock market. All stocks are down or the brokers all pile into the same sector at the same time. This leads to more volatility than necessary and often to the wrong direction being taken. This is noticed later when the market suffers a 'correction'. This means that research makes great leaps forward in only one area only to find later that the whole picture is now missing an area that has been left behind. This situation is often exacerbated by limited government funding, and also by targeting or distribution of those funds. This means that the information transfer process tends to lurch from one 'hot topic' to another without the whole being taken into account.

There are also Industry Funded bodies such as DairyNZ, Beef and Lamb New Zealand and Deer Industry New Zealand. These are funded by a levy on all producers in each sector and carry out functions as laid down in Statute. Each of the industry bodies in New Zealand is established under a separate act, whether for pastoral industries or other agricultural of horticultural industries and is different and has slightly different functions and obligations. These bodies are concerned with issues such as overseas funding of in-market functions to help exporters, new cultivar development, new techniques, animal welfare issues, regulatory functions and so on. DairyNZ doesn't carry out in-market functions because all this is done by Fonterra (primarily, but also by the other dairy companies). This is because the industry effectively operates under one co-operative (Fonterra has about 90% of the milk supply in New Zealand) umbrella whereas the meat industry is fragmented with no dominant player. Therefore DairyNZ can carry our far more production related work than their drystock counterparts. This has, in part, led to a dearth of production related work done through the industry body in drystock farming in comparison to dairy. This means that as every year passes, the dairy industry is progressing faster and leaving the meat producers further behind. These bodies have also tended to concentrate their funding towards animal issues and wider industry issues as opposed to agronomic solutions to the problems faced.

I spoke with Jason Gardner from Agriseeds. He said the biggest issue they faced in trying to get their new varieties of grass and other pasture seeds to market was the cost in the small New Zealand market. They tried mailers and with the cost running at around $3 per address, the return was small. This, of course, added to the cost of the product and farmers were less likely to take up the product or to look for alternatives. They also worked with 'advertorial' in the print media to give case studies and examples of their product in successful use. Jason also said that, in New Zealand, plant varieties do not have to be on a 'National List' to be marketed. This meant that there was substantial product on the market of dubious or unproven use but in the hands of marketeers who were sometimes successful in the market place for only a short while. The other main problem they faced was that farmers in general appeared to be apathetic to new products and to innovation in general. He found this to be particularly the case with drystock farmers This had the effect of further reducing the size of the market and making their costs on a volume basis prohibitive. Overall, however, he found that the single factor restricting market growth was the lack of ability to penetrate the market and to create sales. Those that were interested had good 'buy in' and the rest were largely disinterested and dismissive.

Dawn Dalley PhD, a regional scientist with DairyNZ, explained how the organisation uses the levy money received from all dairy farmers to help improve their performance economically, environmentally and keep improving animal welfare. It does not lobby politically on behalf of the industry leaving that to others. The organisation is split into two parts, DairyNZ Inc and DairyNZ Ltd.
DairyNZ Inc receives the administration part of the levy, which is used to set five and ten year plans for the whole industry and to prioritise the objectives. These are then contracted out to operate the projects to meet the plan or at least work towards them.

DairyNZ Ltd is the visible side of the levy body that farmers and others interact with directly. It consists of four parts: research, extension and development, policy and a small administration side. The research side runs its own farms and carries out research as directed by both DairyNZ Inc and DairyNZ Ltd. It also carries out trials work on behalf of others on projects that will directly help the wider industry. The main part (and visible one) is the consulting and extension division. There are about 30 offices throughout New Zealand which work with farmers on a group basis. They are also available individually via an 0800 number for particular problems. The extension service runs a business group that benchmark costs on a regional basis so that farmers can see how they are performing on a relative basis compared to the average or even the top 25%. They run technical groups where the farmers are measuring and monitoring pasture performance and herd performance on a weekly basis. They are also looking at information management to sift through all that is sent/received by farmers from all sources to sort out the information that is relevant. They run regional trials that are aimed at the high performance groups who then pass the information down to the other farmers in the area. In this way they are getting the best local and national contemporary research and trial work to those who are eager to keep up with the latest research and then filter on from there. It would appear that the biggest difference between DairyNZ and Beef and Lamb NZ is their focus on improving performance, profitability and environmental awareness throughout the industry. The extension division also funds 53 scholarships at Lincoln and Massey Universities for students who are interested in doing a dairy-related theses, are from rural areas or are from families of levy payers. The industry advertising seen on TV and in the written press is also funded by this division. Campaigns such as 'Go dairy' trying to get people from other walks of life into the industry have been run every couple of years or so. These have been measured to be a success. They run the DairyNZ website which amongst other the things, contains farm facts and also tools for dairy farmers to use re. pasture cover, usage and cow management and financial tools. They also publish 'Inside Dairy' monthly for all levy payers, which contains topical management articles and other matters of interest.

The other divisions of DairyNZ are research, policy and administration. The research division has one farm, Rakaura in Waikato, which works as a research and development farm. The division works closely with the extension division in deciding which projects to proceed with or to develop further. The information gained through the research is then distributed to the dairy farmers through the extension division.

A large proportion of the levy is also used to help fund the Animal Health Board in New Zealand which is set up to try to eradicate tuberculosis(Tb) and to monitor the whole animal sector of the economy for disease. They also have to have plans in place for epidemics (such as foot and mouth). The Animal Health board receives the rest of its funding from levies gathered at the time of slaughter for cattle and deer.

Sally Truelove is an agronomist with Mountainview Agronomy Ltd near Methven. This company was spun out of Molloy Spraying when David Molloy saw an opportunity for a standalone agronomy service in Mid-Canterbury. They charge for agronomic advice on all types of farm and are becoming more involved in the pastoral sector, especially Dairy. They receive raw data and technical advice from chemical manufacturers, seed houses and others; re-analyse the data to their own situation and try to put it into practice throughout the region. They also have a paddock recording service, which is a particular requirement of the vegetable sector but is in fact law for all paddocks although widely ignored. They keep supply of products and advice separate so that their clients can see where the costs arise. This is particularly important where clients insist on buying generic products from the cheapest supplier. They see themselves as filling a 'gap' in the market in supplying information and advice to farmers independent of supply and therefore without any conflicts of interest.

Agricom Ltd have set up a beef agronomy trial farm near Oxford where they have planted six double lane of different pasture types to demonstrate the advantages of pasture renewal specifically for beef production. They have done this because they saw a gap in the research field in that many trials have been carried out with lamb growth, generally because it is easier to set up and control. They have left a lane with old pasture, and planted long term, short term, tall fescue and kale (for winter monitoring and reseeding). These plots are then stocked with an appropriate number of weaned calves in the autumn and grown through. Weight gain per animal and per hectare is measured and recorded against a target so that they can work out the cost of reduced growth. This is because of the extra feed consumed to reach a target weight at a later date. In doing this they have worked out the real benefits of reaching targets and optimising animal growth. The stocking units carried and growth achieved on the new pastures are around 20% greater than on the old pasture. This works out at a real return on seeding costs of around 20% per annum. These results tie in very closely with the pasture renewal charitable trusts figures worked out on an industry basis. They try to manage the pastures to the highest standard and weigh and record the animals regularly. The plots are partly irrigated, so as to remove the effect of moisture availability on each pasture type's susceptibility to water stress. The results are then tabulated and the information gained used for the purposes of marketing their varieties to farmers for beef production. All pastures are fertilised and managed according to best practice. This has lead to good production, even from old pasture. This shows that old pasture can perform under intensive regimes although overall production and stocking rate is still about 25% below that of new pasture with novel endophytes. (An endophyte is a fungus found in permanent pasture ryegrass that affects animal health and provides it with protection from a range of insect pests. Several different endophytes are available.) The advantage they have over a 'normal farm' is that they can control the stocking rate by removing or adding animals to keep the growth pattern at its optimum. The other main issue they have been faced with is parasite management, which on an solely beef unit is proving to be a real challenge.

Aaron Hutton from RD1 Ltd said the biggest problem in the drystock sector is farmer engagement and also the low number of key decision makers in the industry especially as it is now in a contraction phase. This compares to the dairy industry in an expansion phase and with a client basis hungry for new information and the willingness to 'try it on'.

He also compared Beef and Lamb New Zealand to DairyNZ and how they operate as levy bodies. He said that 'essentially DairyNZ operates as a large farm consultant and does no past market work. Contrast this to BFNZ, which runs generic Monitor farm days, which tend to be short on detail and long on waffle. You cannot get good information across to 100 or so farmers in an informal situation. The dairy industry has some small high performance groups of likewise people who want to 'push boundaries' not only in performance but also in cost effectiveness. He also outlines the situation with seed companies and how they operate coming from his past experience with Agriseeds and how new varieties come to the market and the differences between companies. Some work with the National Variety trials and others do not. Some also use very selective data with which to market to farmers. There is also the cost of direct marketing to the farm market with a general mailer to all rural mailboxes costing upwards of $60,000. For the feedback they generally get, this is not seen as cost effective but the cost of not doing it can be greater. There is not so much trading of seed off the general market, i.e. farmer to farmer, as there was because of the fear of being caught especially with the widespread use of novel endophytes. This has meant that the quality of seed planted has generally increased but that the use has concentrated more to the dairy sector. This has been caused by two factors, firstly the low profitability of drystock over the last few years and also dairy farmers' willingness to embrace new technology.

Jansen Travis from Beef and Lamb New Zealand (BLNZ) has told me of some of the difficulties they face in getting the information out to farmers and their levy payers. There has been for many years obstruction, for commercial purposes, by meat processors so that BLNZ was not able to collect the names of the levy payers or how much they paid. The levy payers therefore had to register and sign up to be able to vote at elections for board members or to be able to receive direct communications from BLNZ. This has not only hampered their progress but also has had a negative effect on farmers' opinion of them as an effective organisation. He also stated that the organisation feels hampered by its voting structure, which means it has to obtain a majority for each levy it administers both on a livestock basis and on a voter basis. Therefore a lifestyle block owner with 4 lambs sold in a year has as much say as a levy payer with over 100000 stock units. Thus they are in a weak position statutatorily and have to work very hard to maintain their position every five years when the votes take place. On a rough calculation Jansen estimated that each of their extension staff had over 3000 sheep and beef farmers for whom they were each responsible for as opposed to DairyNZ where each of their staff were only responsible for 300 dairy farmers. This, of course, means that most farmers have no direct contact with the organisation at all.

The main method BLNZ use for information transfer is through the monitor farm network. In each area, a farm is chosen and then studied for three years. It receives consultancy help over the period and farm profitability is monitored. The information and changes are then disseminated to local farmers through a series of open days. The success of this depends greatly upon the ability and resources of the consultant/facilitator to generate interest and to make changes and obvious progress. The ability and willingness of the host farmers to take action and move out of their comfort zone will also have a bearing on the success of their time as a monitor farmer. The combination of these two are crucial to the success of the monitor farm network in each area.

The other main difficulty BLNZ faces is that dairy farmers can measure performance daily because the cows are through the milking shed once or twice per day. Beef and lamb performance is measured over a much longer time scale and so individual animal performance and paddock performance is not clear because it is not easily measured daily. As a result of this infrequent performance measurement, farmers do not know whether their stock are growing well, or which paddocks are producing the best results. An additional reason for a lack of progress in the drystock sector is as a result of slow genetic progress. This is because, on most farms, breeding records of individuals are not kept and therefore the best genetics are not necessarily being kept for future breeding stock. Jansen also accepted that this is a very 'broad brush' approach to getting information across to the target farmers. As a result of this BLNZ have now started to set up a series of 'Beef Profit Partnerships'. These are small, focused groups of farmers who set out, with a consultant, to achieve a set of defined aims within a three-year period. This is a format very similar to that used by DairyNZ and also used by the Beef cooperative research centre programme in Australia. With a small group, success is much more easily achieved, because the group can meet more often, have the ability to discuss and measure data and therefore know whether or not they are on target to meet their objectives or not. After three years the group will host an open day within their region on one of the members' farms and try to spread the 'message' from farmer to farmer. The success of the few pilot schemes will depend to a great extent on the quality of the group coordinator.

The New Zealand Grassland Association was founded in 1931 by a group of scientists interested in grass and pasture management as a way of circulating information from the institutions to the wider public. It still has a small membership, around 700, with a bias towards academics but many farmers are also members. Most of the farmer members are those who are interested in 'pushing boundaries' in their management of pasture and their whole farm. Their main activity each year is holding a conference to report on the year's research papers, to discuss and disseminate the information. The conference moves around the country and this year will be held in Lincoln during November. They then publish a journal reporting on the proceedings. The information contained is more the kind that agronomists, scientists and product salesmen use because most farmers do not read scientific papers. The papers may also have a regional bias depending on the location of the conference. Last year, the conference was in Whangarei and many of the papers were about Kikuyu management, which is only relevant in the upper half of the North Island. The quality of the information provided is of a very high level and therefore of interest only to a small selection of pastoral farmers. They also produce regular newsletters, which often have a more topical nature to them. E.g. the latest one is mostly concerned with carbon credits and carbon accumulation under grassland.

The Pasture Renewal Charitable Trust was set up by most of the seed supply and chemical companies to try to increase the rate of pasture renewal in New Zealand independently of any particular brand or product. They have also carried out studies to show the benefit of increasing the rate of pasture renewal, both to individual farmers and also to the economy as whole. According to the "Economic analysis of the value of pasture to the New Zealand Economy" (Pasture renewal charitable trust, report by BERL) the level of increase in production performance, employment and GDP could increase just by increasing the level of annual pasture renewal. The current rates of pasture renewal in each sector vary, but in the Dairy sector average around 6% annually and 2.65% in drystock farms. The authors estimated that if the rates were lifted to 12 and 8% respectively that production would lift by up to 30% leading to an increase in farm gate revenue of 1.5% on drystock farms and up to 1.6% on dairy farms nationally. They suggested that GDP might be raised by $1Billion nationally if the response rates were at the higher level. If the rate of renewal was maintained over a number of years, the contribution to national GDP could be raised by as much as $3.2Bn. There are very few ways to make a contribution such as this without changing the economy markedly.

Table 1
Value of pasture products to the New Zealand economy, June 2007 year

Measure	2007 Estimate	With increased pasture renewal
Value at farm gate	$10.2 billion	$11.8 billion
Direct GDP	$5.2 billion	$6.0 billion
Total GDP, incl. upstream and downstream effects	$20.5 billion	$23.7 billion
Direct employment (FTEs)	35,400	41,100
Total FTEs, incl. upstream and downstream effects	277,300	321,600

Source: BERL

The above table shows the national response from increased pasture renewal across the whole pastoral sector.

Table 2 Summary of model results- farm gate value

Farm Type	Existing Pasture renewal level	Current farm gate value($m)	Target pasture renewal level	Level of Pasture response	New farm gate value due to renewal			Percent increase in farm gate value		
					Method 1	Method 2	Method 3	Method 1	Method 2	Method 3
Sheep and beef	2.04%	$3538	8%	30%	$3626	$3623	$3701	2.5%	2.4%	4.6%
Dairy	6.11%	$6630	12%	30%	$6745			1.7%		

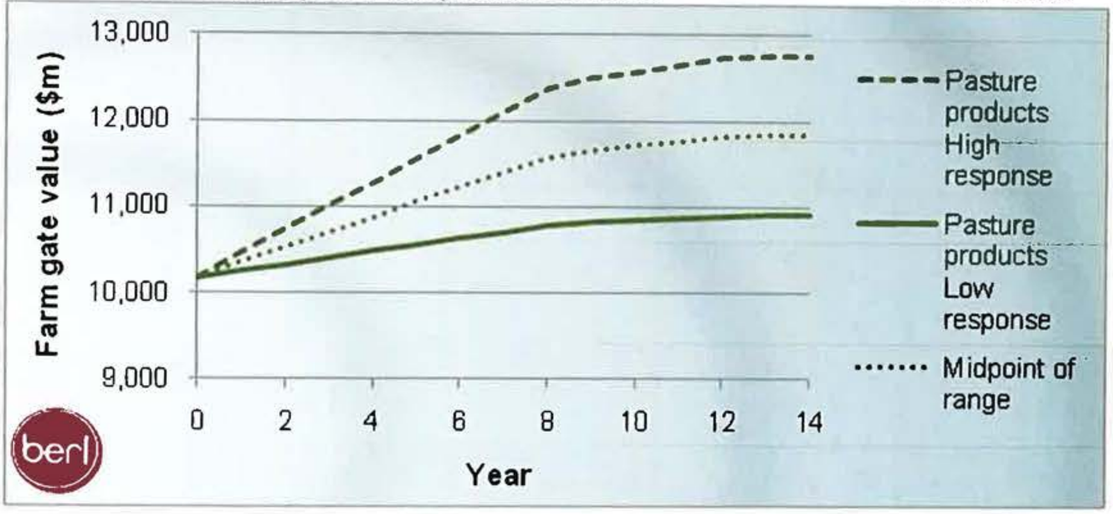
Source: BERL.2007

Methods 1 and 2 were calculated using farm gate values as a base for the results produced. Method 3 used a stock unit basis for the results expressed. The total response at the farm gate of $278m at 2007 prices has with the multiples used (upstream and downstream) for GDP calculation of $3.2Bn. This is equivalent of over 250,000 extra tourists to New Zealand each year. (BERL)

Graph 1

Pasture renewal multiple years, 10% production decline

Source. BERL



The graph above shows the response, in financial terms, of the effect of increased pasture renewal. The midpoint is the figure used in table 1 in working out the value at farm gate and the effect on the downstream and upstream effects on the whole economy. When taken down to an individual farm level, and trying to work out the cost effectiveness of such a programme, the higher responses would come from farms where little had happened over the recent past and with full management and other agronomic inputs. This shows the effects are multiplicative and compound from year to year up to a plateau reached after about 12 years.

Table 3 shows the effect of continuing to re-pasture (using method 1 only) down at an on farm level.

Table 3 Multiple year analysis, method one

Measure	Sheep and Beef		Dairy	
All $m	Low (10% response)	High (30% response)	Low (7% response)	High (27% response)
Farm gate Value (June 07 year)	$3538		$6630	
Highest production reached 10% decline	$3852	$4494	$7022	$8222
% increase	8.9%	27%	5.9%	24%
Highest production reached 20% decline	$3833	$4422	$7017	$8122
% increase	8.3%	25%	5.8%	22.5%

Source: BERL.

The response nationally was lower for dairy farms because the rate of renewal is already higher. This report was done using data from 2006 and 2007, which was when lamb, beef and dairy prices were low, therefore the response economically should be even greater now, since prices are higher relative to input costs. They have produced online calculators that farmers can use to work out the worth of renewing pasture, both for dairy and drystock. These are only a guide, because they make many assumptions and cautious because of the large variation in farm circumstance. Any re-grassing programme should perform as well as the models as a minimum. The sponsors of the Trust are using it as a 'voice' to get their joint point of view across, both through the press with sponsored articles and directly with farmers through the web site.

The Internet has all the information needed (and more) but the information wanted has to be found in an easy to use format. The individual web site's design is not always user friendly and therefore many farmers will not investigate or refine searches further. (This perhaps has to do with the average age of farmers.) The print media is presented daily, weekly or monthly and is a mix of editorial and advertorial. Using the printed press also means that much of the information presented has to be read or listened to with some cynicism because the information is potentially biased and therefore the press to get a message across is quite legitimate but not necessarily reliable. This has the effect of 'dumbing down' the information received.

Private or bespoke groups of likewise farmers can join together to form groups to pull all the available data together to find the way forward. This is of course only available to small numbers of farmers and probably only area-specific but has the advantage of being entirely in the farmers' interest and not necessarily of their suppliers of inputs. Therefore many supplier companies will try to dis-establish these groups because they will be perceived to be a threat. The only way for these groups to establish and to progress is through confidentiality, which will also not be seen as in the general interest and of the belief amongst New Zealand farmers that the cooperative approach is always the best.

Discussion

The two main pastoral sectors in New Zealand, Dairy and Beef & Lamb, appear to have different levels of support and also interest in improving pastures and their management. The dairy sector has very good technical support from its levy body, DairyNZ, that enables farmers to stay focused on what they are doing and how they are doing it. There appears to be no organisation in a similar manner to either help or steer the drystock sector. There may be some clear reasons for this:

1. The similarity of dairy production systems and the major differences between farms in the drystock sector. Many dairy farms have a milking platform that is used during the season for milk production only. This ground is not used during the winter for grazing and growing young stock. Any surplus production during the spring will be conserved for silage. The cows will be wintered off platform on either another block within the farm or off grazed all together under contract. The young stock post-weaning will be off site as well, and therefore not interfering with the main aim of producing grass for the cows. Drystock farms tend to be more integrated, i.e. breeding stock and young stock on the same production unit with different classes of stock prioritised during the year. This means that compromises are introduced into the system with the inevitable consequences.

2. The clear focus of dairy farmers and the support industries.
   The dairy industry has become well known for its focus and drive to increase production and profitability. This is partly due to the repetitive nature of daily or twice daily milking. Drystock farmers tend to be doing

different work most days and the variation is greater, both daily and seasonally. Dairy farmers see their cows at each milking session and often hill cows are only handled three or four times a year. This means that individual production is not known and therefore selection is based on perception of traits rather than measurement. As a result of this the rate of progress over the last twenty or so years has leapt forward in the dairy industry and crept forward in the Drystock sector.

3. The drystock sector is complicated by the differences between farms. We have seen how similar dairy farms are in their structure and aims. The converse is true of drystock farms. Some have just sheep, or cattle, or deer, or a combination of these three species. Some also have a proportion of arable ground. Some have gone into dairy grazing for part of their stock units held. Some fatten heifers, others rear bull beef or have breeding cows. All these farmers do this in the belief that what they are doing is in the best interests of their farm within the constraints they have to deal with. This has meant that, over time, the drystock industry has become divided and unfocused. With very few farms having the same production systems and aims, the advice and agronomic industry has been able to exploit these weaknesses. This has, in turn, led to an industry that is inward looking and lacking drive to succeed. (There are, of course, individual exceptions to this generalisation.)

4. The single product in the dairy industry with a single selling period (for farmers), excepting winter supply. Dairy farmers sell their milk during the production season when the grass is growing. Farmers tend to start calving in early to mid August and dry them off in late May. Therefore peak production falls very well with the grass growth pattern, peaking in late October/early November, and tail off from there until May.

5. The wide range and timing of stock sales from drystock farms.
   Drystock farmers sell their stock at all times of year with peaks of production and troughs of price. There are also farmers who sell store, at weaning, to others to finish. Farmers can sell lambs at different weights to coincide with price peaks (or other market signals) or off load because of looming drought. This, of course, gives the traders/finishers buying opportunities. Meat companies find this a great problem also because of the fluctuations in product available to market through the year. They have been taking active steps in an attempt to even out the production cycle across a year therefore stabilising market returns. This has been only moderately successful so far.

6. It also shows how fragmented the drystock sector is; there is no common aim. Farmers not only supply different companies, they have intense loyalty towards their own customer, especially if this happens to be one of the large cooperatives. There is also competition between farmers to a level with stockbreeders supplying store stock to finishers. As is the case with most trades, there tends to be more winners on one side of the equation than the other. This with drystock farming tends to be the finisher. The higher and more difficult (i.e. later in the spring) the farm is, the more difficult they find the trade in the autumn because their weaning weights tend to be lighter (because of the short season) and therefore penalised in the market place. The proportion of the final sale price of these store livestock can be as low as 30% of the final sale price (at the works, not even retail). This is in normal conditions excluding drought or any other mitigating factors.
   There is also the stud stock industry, which competes to sell genetic gain to other farmers. There is intense

competition between these studs to claim the greatest potential gain and progress by using their genetics. The biggest issue this has, especially in the sheep industry, is the proliferation of breeds (and composite breeds) all claiming to be the best for others to use, often with very little data to back this up. This has, with a few exceptions, only served to sow confusion and lack of overall direction within the industry as a whole. These are only two examples of the competition between farmers in the drystock sector, the type of which is not seen in the dairy sector at all. It serves more to point out the differences between them rather than the similarities.

7. The average quality of land type in each sector.
   Most dairy farms are either in areas with reliable annual rainfall or irrigation. They compete for land use as an option with a range of other farming types. In the North Island it may be orchards with kiwifruit or avocados. In the South Island it may be general cropping or specialist seed production. In many irrigated areas there has been recent displacement of the drystock sector by the dairy sector with the advent of widespread efficient irrigation. Drystock farms fill the rest of the land use from urban boundaries to the highest peaks. Much of this land is grazed but not intensively managed as cultivatable land. Therefore any production gains have to come from genetics and stock management to a far greater extent. This limits the economic gain that can be made from these higher areas and therefore we shall concentrate on the cultivatable area.

8. The average levels of inputs into each sector and therefore the competition for sales.
   This, of course, relates very closely to the average level of gross output per hectare in each farm type. Drystock farmers have been in a cycle of low returns for some

years now, so have been reluctant to spend the money required to renew pastures because the extra returns, for the work and money involved, were not perceived to be there. But, as has been shown above from Agricom and PRCT, the return on investment in renewing pastures is viable even in the relatively low performing drystock sector. The challenge lies in convincing farmers of the case, especially when their topography and soil type warrant it. It is too easy for these farmers just to carry on as they have before. Farmers have generally fertilised for soil maintenance levels (of phosphorus in particular) and not used nitrogen fertilisers very much at all, preferring to rely on nitrogen fixed via clovers and other legumes. In, contrast, the dairy sector has been enjoying better times and therefore the level of on farm investment (both immediate and long term) has continued to rise specially in the continuing rate of conversions to dairy farming from other land uses (now increasingly cropping farms and not just drystock farms with the advent of the wider availability of irrigation).

Conclusions.

The dairy sector is performing well, both in historical and actual terms, and has a high interest in maximising performance daily and annually. This is easy to measure and monitor because daily production is measured and valued. Thus the management and investment decisions on farm can be made easily. In contrast, on a drystock farm, daily production is difficult to measure, the value of outputs is not predictable in actual terms, although trends are easier to pick, and therefore the on farm decisions are much harder to make in this situation. There are many more variables to take into account on a drystock farm than a dairy farm. This has led to a period of stagnation in farm improvement nationally. This can be seen by the vast improvement in national GDP from increasing the rate of pasture renewal on drystock farms compared to the GDP benefit derived from a similar increase in the rate on dairy farms. This means that the dairy sector is performing at a level very close to its theoretical maximum and that the drystock sector is not.

There is a multitude of reasons for this:

- Agronomically, drystock farms are potentially more complicated than dairy farms.
- Production is measured daily on a dairy farm and therefore the benefits of inputs can also be measured accurately and quickly.
- The only measurement done on most drystock farms is through meat works leading to average lamb weights or calf weaning weights either on farm or through the saleyard and therefore totals per hectare or per production unit per year and comparing from year to year. This is inaccurate and very slow. This leads to mixed interpretations coming from the data available. There is also, of course, a large seasonal input into the data. Thus, investment decisions on farm are imprecise and vague. This had led to much scepticism from

farmers on the benefits of increased agronomic inputs, whereas many seem to be able to justify an expensive bull! All farmers can cite instances of a failure at some stage in the past that means that they put off what should be happening, usually just to 'another day'.

- For a drystock farmer to achieve the full benefit from an agronomic programme may mean that he would have to change more than just some of the pasture on the farm. It may mean changing the management systems on the farm entirely or even the stock mix to achieve what is possible. This for many would be a step too far. Therefore, again nothing happens or has to wait for a generational change.
- The support that dairy farmers get from DairyNZ and also dedicated supply companies (such as RD1 Ltd) retains farmer focus. Their meetings are conducted with this in mind. Generally, the process for transferring new ideas and research works well and leads to good progress within the industry.
- The support that drystock farmers get from BLNZ and supply companies is generally poorly focused and sends out mixed messages. There is a plethora of small companies all pushing their ideas and products, some of doubtful providence upon a confused, divided and unfocused industry. There are too many breeds, production systems and individual farmer aims for there to be focused research and advice.
- As has been shown in the "Economic analysis of the value of pasture to the New Zealand Economy" (Pasture renewal charitable trust, report by BERL), the gain to be made with more pasture renewal in the drystock sector far outstrips the dairy sector. This shows two things:

1. The dairy sector is performing closely to economic optimum and the scope for much immediate improvement is limited. Conversely the scope for improvement in the drystock sector is huge, to the level

of an extra 20% production, just from upgrading pastures. If only some of these measures were implemented across the industry, the economic well being of New Zealand would change markedly.

2. The drystock sector is in danger of becoming extinct. As Eoin Garden, Chairman of Silver Fern Farms said at a recent producer meeting: 'the meat industry model is broken as we stand' we need to implement change or it won't be here soon. Their competition, of course retorted that it was only the company, not the industry as a whole. Mr Garden was right though; the whole drystock sector needs to change, from the bottom up and this would have to include old prejudices, loyalties, breeds, processors, supply companies and long held attitudes. The current debate over wool is only indicative of how divided the sector is. We should not be fearful of competition in either the supply side or the processing side of our businesses, neither has the dominant position in the world of Fonterra. Supply shrinkage might eventually persuade the meat companies to pool resources for the wider good, but it cannot be forced. They might, in the meantime, market their product and help the whole industry. But, for the meantime it is up to each individual farmer to make his own luck, where opportunity and planning meet.

As the motto of the Border Crop and Grassland Management competition (in the Scottish Borders) says:

Its nae wat ye hae, its wat ye dae wi wat ye hae.

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