

Levy oration – 2015

New Zealand dairy farming has lost its competitive edge

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The title of my talk was the headline for an article by Rod Oram, a respected Business Analyst, who from my point of view always makes sense when he writes or talks about what is going on. This is an absolutely appalling situation to be in, to have lost our competitive advantage. The questions I will try to answer in this talk will be:

1. How did this happen?
2. What must be done now?

Current situation (November 2015) on dairy farms:

- \$5.04/kg milksolids (MS); farmers' breakeven milk price (Source: DairyNZ)
- \$4.60/kg MS; Fonterra's forecast milk price
- Due to increased average cost of production; AND decreased global price
- Dairy farmers in most countries are also unprofitable at current prices.

The farmer's breakeven milk price, which presumably is about their operating costs, is estimated to be about \$5.04/kg MS. Fonterra's current forecast milk price is \$4.60 and the global trade auction this week there were decreases rather than increases. It is cold comfort, but dairy farmers in most other countries are also "stuffed" like we are here.

To give us a bit of perspective the most recent (2013/2014) full economic data shows that over the past 13 years milk production/ha (and/cow) has increased (830 to 1060 kg MS/ha and 316 to 377 kg/cow, respectively), which is not surprising because more milk has been almost the total focus of the industry. However, operating costs have increased by about \$1.67 (\$3.50 to \$5.17, with respective pay-outs of \$4.96 and \$7.69/kg MS) and that is where the competitive edge has gone missing. And it is worse than that, because assets per kg/MS have gone up heavily too, and debt has doubled in that 13 years. So it is not just operating costs, it is actually the capital structure and the "stuff" behind. Now the farmer needs over an \$8.00 pay-out to get a reasonable business profit, and it is not going to happen this year obviously.

How did this happen?

- Dazzled by pay-outs of \$7 to \$8 forever?
- Focussed on increasing MS production
- Increased expenditure on "feeds"
- Changed whole-farm systems

What must be done?

- Return to "grazing systems"
- Re-develop "an ineradicable belief in the key importance of low-cost milk production" (McMeekan 1964).

How did this happen and what must be done?

I think we were dazzled by the first \$7.00 pay-out in 2007, but costs went up by about \$1.30 kg/MS in one year because of the focus on MS and increased expenditure on feeds. The most dangerous bit of course is farmers cannot just bring in extra feed to the same system, they have to change the system; this makes a much more radical shift than just bringing in a sort of marginal input, it is not a marginal change, it is a whole system change.

Obviously, to give a recipe of what must be done is going out on a limb, but basically, return to grazing systems. I am sure Sir Bruce Levy, being a grass person, would have been glad to hear what I am saying - **get back to grass, get back to grass**. But it is not as simple as that of course; some farmers can use other ways of doing things and be successful at it. But obviously costs must be reduced to restore competitive advantage, and grazing systems are our best thing.

I found this lovely quote in McMeekan's book (1964 edition, top of page 5) (I only heard him speaking once) but I can imagine him saying it, and the word "eradicable" stuck in my mind. McMeekan said "we must develop an eradicable belief in low cost milk production". Every dairy farmer should have that slogan printed across their brain every morning and say "get eradicable".

First of all the virtues of grazing systems. The changes that have occurred in New Zealand dairy systems over the past 100 years have been incredibly large, and include changes in milking systems because that is an important component of the whole dairy production. And the last bit I will extol and advocate hard for is once a day milking (OAD). I am delighted to hear that you had a speaker yesterday who has part of the herd on OAD, so it's not totally disreputable to this audience.

New Zealand exports 95% of the milk that is produced, therefore, the dairy industry has to be competitive; if not, 95% of this milk will not find a home. Grazing systems have the lowest costs both in

the world and in New Zealand and the International Farmer Comparison Network has produced tables of relative costs; grazing is always about 50-70% lower than even big feedlots and certainly lower than confinement systems. So moving away from our basic competitive advantage of grazing is a risky thing to do, and now farmers must reduce costs. It is nice to read reports from discussion groups and the OAD discussion group itself, that farmers are reducing inputs, it makes common sense. This does not mean farmers do not spend any money, as that would be ridiculous, because farming is spending money, but it is spending money to make a profit - the bottom line is crucial.

High quality pastures are New Zealand's natural competitive advantage; it is a biological solar panel for a perfect renewable feed supply that fixes 5 t carbon/ha/year.

I was just going to get you to imagine that we are standing in the paddock that the cows are going into tomorrow and there will be about 2600 kg DM/ha, all green and glossy, 12 megajoules (MJ) of metabolisable energy (ME), the best food that could be available; but 20 days ago there was only 1600 kg DM/ha in this paddock. Where has it come from? Nothing has been done to the paddock, it has just grown with sunlight and rain. As long as the sun gets up, and the sun will get up because the All Blacks won, and the rain (touch wood) will continue (that is a touchy subject in a lot of districts at the moment) and that grass appeared. It is a wonderfully renewable feed.

And in addition, we have cows and they are marvellous things, they are milked, they walk to where the feed is, they harvest their own feed, they lie down and are comfortable in the paddock, then they walk back to the milking shed, and the only essential machine in that system is the milking machine.

I think that is one of the dangers that people look at grazing systems and think if they have not changed they are old fashioned, we have to do something different. But of course they have changed there have been enormous improvements in every key component such as soils, pastures, animals, milking, and the way that all components are put together have improved too. So they are not old fashioned.

A report put together by W.M. Hamilton in 1944 concluded that up to the 1940s grazing pastures was the main feed, and not surprisingly, there was some hay, silage and crops. Crops were actually decreasing in importance during the 1930s, probably because pastures were getting better, reducing the need for crops. Hamilton said that New Zealand was unique amongst dairying countries in the world with almost total reliance on grazed pasture all year to produce milk. McMeekan (1964) did not mention supplementary feeding or responses to supplements, palm kernel

or maize silage; there was mention of grazing, hay, silage and crops. So clearly the dominance of grazing persisted through to about the 1970s.

Data from a New Zealand Dairy Board survey in 1966/1967 showing that 84% of farms purchased no feeds, although some might graze some dry cows off or purchase some heifers. The 16% that did purchase feed including a bit of hay, silage and mangolds (fodder beet). Maize silage started to become important in the 1980s and by the 1990s it was well established as a feed source. Palm kernel appeared in the late 1990s and has been increasingly used. Today, palm kernel and maize silage make up about 4 million tonnes, or about 15% equivalent of the whole dairy herds annual requirements.

The use of purchased feeds in New Zealand dairying systems

There has been a dramatic increase in purchased feeds on-farm since the 1990s. DairyNZ Systems 1 and 2, low feed input, purchased less than 14 % of feed while systems 4 and 5, high feed inputs, purchased more than 20% of feeds. In 2001/2002, 70% of dairy farms were low input compared with only 13% in 2013/2014, comparable data for Systems 4 and 5 were 13% and 29%, respectively. Considering the low input farms are our "competitive advantage" farms and we now only have 13% of them, where has the dairying interest gone?

To feed forage supplements, you need to have somewhere sensible to feed it otherwise you have wasted a whole lot of silage. So a feed pad is good common sense. If you have a feed pad the feed does not get there on its own, you have to have feed-out equipment and a person on this equipment; the silage has to be loaded into the feed-out equipment and that takes longer than you think and it costs more than you think and usually this extra labour comes in at a time when you have no time for extra jobs, so it changes the requirement for people.

I used to make grass silage with a sickle bar mower and a buck-rake in Northern Ireland about 150 years ago!! Now, watching these hoovers going around the paddocks, I just like admiring them. But I do realise they are very expensive. That is usually a contractor of course, but I was just looking at baleage and I will bet that is not worth making it for milk solids at the current price, because baleage is expensive, as is silage. Also, as soon as forage is conserved, there is an enormous risk of wastage. Harvesting 100 tonnes efficiently probably means getting only 90 tonnes down the cow's throat; if done badly getting only 50 tonnes down the cow's throat has a big effect on the cost of that forage. Now, some people are even advocating cow barns - a brilliant building in Northern Ireland but in New Zealand a good

reason for doing so is needed as the system carries other costs with it.

One of these costs is heavy metal disease. I first heard the term heavy metal disease in England about 20 years ago on a dairy farm. Heavy metal disease is alive and well in New Zealand and it is a very expensive disease to get into.

Milking systems and developments in the milking process

Now for most of you milking systems are dead boring, but in a grazing system the need to milk twice a day, in the morning and again at night, dominates the day's work routine so anything you can do in milking system to make it more efficient, has a big effect, not just on the milking but on the whole farm system. So we have got a discussion group of OAD farmers and they have proven without any doubt that eliminating one milking for the whole day can be profitable and successful.

Hand milking - each person could manage about 10 cows, taking about 10 to 12 minutes to milk each one. In New Zealand the milking machine came in between 1910 and 1915 and by 1920 was well established. The machine was removing the milk but still people were doing a lot of manual work; washing and massaging the udders, squirting milk from the teats before the cups went on and then doing some squirting afterwards. Even so, this doubled the cows that a person could manage at milking.

Shed materials have improved, concrete and steel, internal walk through so now (by the 1950s) the cow does not have to walk out through the back wall, it can go through the internal race and come out the back of the shed. But still there was a lot of massage and stimulation of udders going on in the 1950s and still, only milking one cow at a time.

The next revolution was the herringbone which introduced batch milking of 8, 10 or 15 cows and offered the potential for fast milking. It started in the late 1950s and progressed rapidly through the 1960s. However, moving to a herringbone, did not lead to fast milking if massaging the cow and spending a minute stimulating the cow before you put the cups on was required. So, what happened? Seventy cows/person could be milked in the herringbone shed, a big improvement in output/person. In the 1950s most cows needed stimulation, because they had always had it. Doug Phillips did an experiment in 1955/1956 and found that cows that were not stimulated decreased production by 30% in terms of kilograms of milkfat/cow. Nevertheless, farmers having gone into herringbone shed, stopped stimulation. They stopped stimulating even though the research showed that they could get 30% more/cow by stimulating, because they knew that they could not milk enough cows.

So the cows that needed stimulation didn't produce enough milk, because they were not getting stimulation, and were culled. Doug Phillips did another experiment in 1974 and found that the response to stimulation, the same as done in 1956 was 0-6%, so there was almost no response. The national herd had changed genetically in terms of whether it needed stimulation or not. The same thing has happened in OAD herds in New Zealand and in Argentina. On changing to OAD, some cows do not suit it and are culled or sold to twice a day farmers. We do not know why some cows are unsuitable for OAD milking.

In future, presuming that herds will get bigger as they have done over many years, and if milking twice a day is continued, then investment in large more automated milking systems will increase along with costs.

Twice a day milking

- Need larger, automated rotary sheds
- Robotic milkers?
- More capital and maintenance

OAD milking

- Uncomplicated herringbones
- 40 a side can easily milk 600 cows
- 60 bale rotary can milk 2500 cows
- Less capital
- Less maintenance

OAD milking provides the opportunity to milk many cows through a relatively simple system. Within the discussion group, there are herds of 600+ cows milking in 40 bale herringbones. I met a man in June (2015) at our OAD conference who milked 2500 cows through a 60 bale rotary, running the rotary for about 12 hours; very efficient use of an expensive piece of capital equipment. This year he was planning to milk 3000 cows.

I think I have convinced myself, and some sensible farmers agree which makes me think I am not a complete lunatic, and OAD is a perfect fit with grazing systems for a number of reasons. At the peak of lactation on grazing systems, modern cows cannot eat enough pasture by grazing to meet their energy demand, so they are in negative energy balance, and lose condition; thin cows probably have lower fertility. On OAD, the peak daily yield is reduced. For example, doing 1.8, 1.9 kg MS/cow/day on OAD, would equal about 2 to 2.4 kg MS/cow/day milking twice a day. So, OAD knocks the milk production down a little bit along with energy demand and loss of body condition. Most cows lose body condition on OAD, but not as fast as on twice a day milking and with better fertility. OAD milking reduces the distances that cows have to walk, and also the amount of time that has to be spent standing on concrete. The fact that the distances walked are reduced means that land that was inaccessible for milking cows could become accessible. So, I think

for all these reasons, OAD milking and New Zealand grazing systems fit perfectly together.

The only properly done survey on OAD farms involved 22 farms from 2003 to 2005. Milk production went down by about 5% (relative to twice a day milking) which is actually not too bad. I could not work out stocking rate because it was difficult with the data that were available. Milk income went down by 5%, but these farmers were able to reduce their expenditure by about 25%, and consequently their cash surplus increased by 15-16%. Now these data do not put a bad light on OAD milking do they?! These data were published in the OAD Proceedings of a conference in 2007, I have never seen them appear in any publicity except what I have done myself.

There is a set of data from DairyBase, for 27 OAD farms and they are probably in their early seasons on OAD and were compared to twice a day milking in 2011/2012. Return on assets for OAD was 7.6% compared with the New Zealand average of 6.3%, an outcome favouring OAD.

Leo and Rebecca Vollebregt, 30 km from here, farm on top class Wairarapa land, flat, irrigated, and probably growing annually 16 or 17 t DM/ha, certainly not marginal. They have been OAD milking for 8 seasons. Their physical performance/hectare and their operating profit puts them in the top 20% of **all** farms, with much less effort, energy and stress. And the real reason I mentioned them is because in 2011/2012 they purchased a dry stock farm and converted that to dairying and installed an OAD system investing between \$5 and \$10 million. So that gave me increased confidence in OAD systems.

Future efficient grazing systems, as started by Dave Clark, has to be our future to play to our natural competitive advantage of grazing. The only thing that Dave missed out, and he probably was not allowed

to include it, was future efficient grazing systems and OAD, all in the same go. We would likely be unbeatably competitive once we had done that. The one proviso is that we have to breed cows that suit OAD milking. And the key points are very simple. High genetic merit cows for whatever system you are working with, moderate (not high) stocking rates, dry cows grazed off and low feed inputs. Excellent management of pastures, cows and staff. High herd fertility, no problem with OAD milking, and a low annual replacement rate, so you do not have to carry too many, relatively unproductive non-milking heifers. Milking OAD, there would be less nitrogen applications and leaching of nitrogen, and the system would be productive, profitable and sustainable and I would expect, unbeatably competitive.

Conclusion

I just have one plea to farmers and advisors. Farmers cannot have targets of physical things only and then expect to make a profit, if they do not have a target of a cost alongside the physical thing. And that "ineradicable" business from McMeekan, I reckon that deserves to be quoted more often than it has been. I hope Sir Bruce would have approved of going back to grass. I have enjoyed talking to you and thanks for your patience.

REFERENCES

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