

NZ GRASSLAND ASSOCIATION

Fuelled by Science, Tempered by Experience

GRASSLAND NEWS

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A note from the President

Jacqueline Rowarth

It is with pleasure that the Executive is supporting four farmer members to attend the International Grassland Congress (IGC) in Sydney, September 15th-19th. IGC happens only every four years, and to have it on our doorstep is too good an opportunity to miss—NZGA will be there in force. Farmers were selected on the basis of their applications indicating engagement with both NZGA and Science. They are: Pat Garden, Millers Flat and past president of NZGA John McKenzie, Middlemarch and farmer-author of IGC Lincoln paper. Murray Jagger, Kikuyu Action Group and recipient of a Farmer Award winner at the Northland Conference Stuart McHardy, Chair of the Bay of Plenty/Waikato Pasture Persistence Project and founding member of the Bay of Plenty Focus on Dairy group. Less pleasurable news is that Ashley Cole has resigned from her position on the NZGA Executive after only 18 months. Ashley feels that her time commitment to her farm has impacted upon her ability to contribute in the way that she had

hoped when first elected 18 months ago. Members of the executive have thanked Ashley for her contribution to discussion and accepted her resignation - the drought has been particularly bad in the Taumarunui area and we commiserate with all that have been affected. Ashley assures us that her interaction with NZGA in general will be ongoing with conference attendance and, we hope, suggestions of what we might do better in future. In Ashley's absence Anders will continue to support the Exec until the AGM in Tauranga. Planning for the Tauranga conference is proceeding and papers for refereeing are flooding in.

NZGA Student travel grants 2013

Students can apply for travel grants to attend the Tauranga conference, just like last year. Please request an application form from Marie at eo@grassland.org.nz. Please note that it is the students who should fill in the forms, rather than supervisors (but please could supervisors alert their students). **Closing date for applications is July 30th**

Facts, evidence and data (NBR 3rd May)

Jacqueline Rowarth, University of Waikato

Facts, evidence and data are the *raison d'être* for scientific research. With the gathering of information, decisions can be made based on interpretation. Increasingly, however, interpretation is being challenged. The latest paper from Professor Sir Peter Gluckman, the Chief Science Adviser to the Prime Minister, makes the problems clear. 'Interpreting science - implications for public understanding, advocacy and policy formation' was published last month, is available on the pmcsa (Prime Minister's Chief Science Advisor) website, and should be compulsory reading for anybody as part of current day living.

The point is that society uses science in many ways for its benefit. Sir Peter goes on to explain that sometimes individuals and groups within society misuse science either accidentally or intentionally. "However, the proper use of science and technology is essential to our economic, social, and environmental health."

The problem is that as science and technology become increasingly complex, in parallel with the increasingly complex issues of modern day global living, the potential for different interpretations increases. In addition, policy makers are facing challenges in reaching trade-offs between contrasting views and inputs. In this science should have reached greater importance by providing a relatively value-free knowledge base on which the public and policy-makers can make decisions, after having considered the information, and integrated their own values and priorities. The current state of play, however, is that opinion features as highly in media as data, and emotion has stronger impact than evidence. Sir Peter uses the examples of the measles, mumps and rubella (MMR) vaccine; the Science Media Centre website currently has articles on the Press Council's ruling on an article debating the value of homeopathy; the latest Good magazine contains two sides of the organic



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food debate. In all three examples, the weight of evidence from science was or is challenged by belief.

The problem for the policy-maker and approver, whose positions are frequently the result of society vote, is making a decision that includes the evidence as well as the values. This point appears in another paper on the pmcsa website, The Value of Science, which considers the issue of the perceived value of public funding of science to both society and the taxpayer. Sir Peter's address to the 2013 conference of the New Zealand Association of Scientists suggests that the science community has a role to play in advancing the case, by enabling other parts of the community to be advocates for science. Sir Peter has considerable experience of working with politicians and knows that politicians like to be able to own initiatives that are seen to be of value to society and so have public support. This means that policy formation is almost always strongly influenced by political dynamics and public opinion.

The National Science Challenges, announced last month, are a case in point. The Honourable Steven Joyce, Minister of Science and Innovation, owns the multi-million venture which was based on public submission and scientific evaluation.

Also important were the budget announcements on 16th May and the increases in science funding, particularly for industry. It is still government investment that drives the perception of the importance of science: countries with good science funding also have good participation and recruitment.

New Zealand's funding remains low by developed country standards. Sir Peter suggests that because we are a small country, there are many reasons why we should be spending disproportionately more on scientific research, rather than less, if we want to compete in 'a world moving towards knowledge as the commodity of exchange'.

When our dependence on agriculture is added into the mix,

with considerable research by OECD indicating that government funding is vital to support on-farm efficiency gains (both environmental and economic), it is clear that big increases in funding are required led by government.

Data released by StatisticsNZ indicates that private sector funding of R&D has increased in recent years, with agriculture providing the biggest increase - but the target for private sector research is generally close to market. Basic research, which is generally far from market, provides the platform for innovation. It is vital. Sir Peter's research indicates that at a public sector spend of 0.8% GDP on R&D, private sector spending takes off. He argues that because of New Zealand's history and geographical position, plus dearth of multi-national companies, 'we might have to go even higher'.

It is difficult for scientists, particularly those in agriculture, to keep making this point without seeming self-serving. In closing his address at the Association of Scientists' conference, Sir Peter said "funding decisions determine both careers and what and how science will contribute to our nation". The funding for the National Science Challenges should allow some careers to be strengthened, and new ones encouraged. The challenges chosen will also serve to indicate areas of priorities for the future. But the greatest priority remains the establishment of a science system that percolates education. Only then will young people feel that gaining scientific understanding is worthwhile - and know that science can lead to rewarding and satisfying careers. Competing successfully in a knowledge-exchange global economy will be very difficult to achieve without it; papers written by the Prime Minister's Chief Science Advisor give the facts.

www.pmcsa.org.nz

www.sciencemediacentre.co.nz

www.oecd.com

Monitor, plan, monitor

Graham Kerr, Agriseeds

The mantra of winter pasture management.

Most people can provide a 'target pasture cover' for where they want to be at lambing or calving. But how do we make sure we get there, or as close as we can? This is particularly challenging in a season like this one, which has been dominated by the summer dry in most areas, with everything from great pasture growth (particularly in the upper North Island) to below average growth in the last few months. The key thing, as always, is attending to the basics. First, have a robust plan for the farm(s) you are involved with to maintain good animal condition and reach target pasture covers in spring. And second, because the only certainty is that things never quite go to plan, monitor and adjust your plan accordingly.

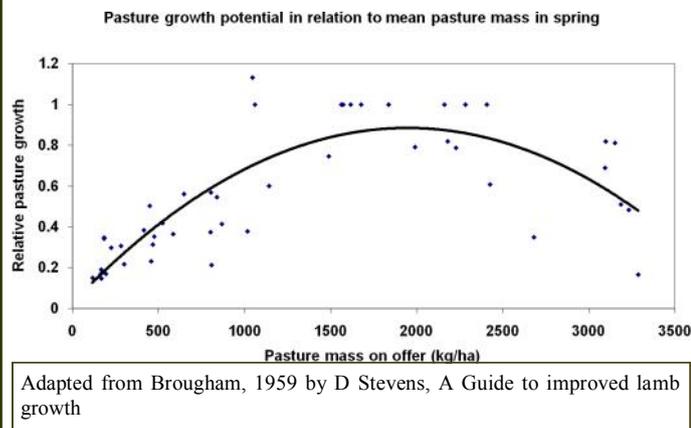
Not enough pasture

Unfortunately many farms are short of pasture, and you

need to know about this now - rather than two weeks before lambing/calving! Possible strategies include (if possible) dropping stock numbers, finding off-farm grazing, or feeding/buying more supplement or crop.

Accurate feed rationing during winter will be critical. Break sizes for winter crops must be calculated correctly, and to allow this, if you haven't accurately measured crop yields do so now. Also consider if gains can be made in utilisation, for example feeding crops with long narrow faces and shifting stock twice a day.

The good news is that pasture quality is generally above average, due to the fresh regrowth after the dry which contains little dead matter. Whereas 1kgDM typically contains 10-11MJ of ME at this time of year, at present it's more likely to be 12MJME. Where this is the case pasture allowances for maintenance feeding of stock will be 10-20%



lower.

Getting through winter to achieve the right pasture cover at lambing/calving is important because 'grass grows grass', as shown in the graph above.

Simply put, a higher cover means more leaf intercepting light, driving photosynthesis and greater pasture growth. Cover at 1200kgDM/ha versus 1500kg means losing 20% of potential production, at a time when it is critical to feed lactating animals well, and to set up the season ahead.

Too much pasture

Those in warmer regions with pasture growth well above average are lucky - but unless plans are adjusted accordingly this situation is going to cause some headaches in the coming months. During the past week we've been on Waikato dairy farms that have already exceeded their target pasture cover at calving. The good thing is these farmers knew this, had cut out supplements, increased cow intakes, and in one case brought cows back to the farm - all to get their pasture cover back on track.

This problem will be more widespread than normal in northern areas this year due to the large amount of cool season-active ryegrasses (annuals, Italians and hybrids) that

were sown after the drought.

Having a very high pasture cover at calving/lambing might not seem like a problem, but it can be a significant one. Some paddocks will lose quality in the base of the pasture, will be less palatable, difficult to graze and animals won't do well on them. But the biggest issue is their poor re-growth, which can create a lack of feed in the second grazing round, coinciding with a key time for lactating animals.

Summary

A winter feed management plan is an absolute must this year to reach the start of lambing or calving with the right amount and shape of pasture cover on your farm. Several strategies can be used to mitigate the risks associated with either a shortage of winter pasture growth or a surplus, but in either case, monitoring is essential, so you can respond



Tauranga 2013

Warwick Catto and his local team are right in the midst of field day logistics in planning this year's conference. Anyone who has been involved in a local field day will appreciate the amount of organisation to produce a smoothly run event. The organisers are promising field day attendees the opportunity to 'kick the grass' and assess different approaches to pasture renewal.

The favourable climatic and growing conditions around the bay's coast make this area a major fruit and vegetable-growing region, with major crops including kiwifruit, avocados and citrus. There is also productive pastoral land along the coast utilised for sheep and dairy farming. Hence the conference theme of 'Bay of Diversity'.

NZGA last held a conference in the region in Rotorua in 1979. At that time there were 3000 farmers, 300,000 dairy cows, 300,000 beef cattle, 10,000 deer and 2 million sheep. In 2007 there were 300,000 dairy cows, 119,750 beef

cattle, 54,000 deer and 385,300 sheep. The latest production statistics (Agricultural Census 2012) released May 2013 show that since 2007 sheep numbers are down 16%, beef cattle down 22%, deer down 22.4% and dairy cows up 4.5%. This signals that there have been significant changes in the region with only dairying being relatively stable since 1979.

The statistics for NZ are also of interest as since 2007 sheep numbers are down 18.7%; beef down 15%; deer down 24% and dairy up 22.5% (9.5% increase in North Island, 51% increase in South Island).

All of this points to some interesting discussions at this year's conference. In a changing industry the focus has to be on productivity and profitability. As part of this we will be having an Agribusiness session.

The planned venue is the Trinity Wharf Hotel, a harbour-side venue.

“Importance of routine monitoring systems”

Much is talked about benchmarking and monitoring for improving on farm performance and industry productivity. There is a growing range of tools available to assist farmers make decisions from the simple sward stick to the more complex Farmax model, livestock scales and EID, animal health programmes, financial monitoring and KPIs and this is just a sample.

“Measurement is the first step that leads to control and eventually to improvement. If you can’t measure something, you can’t understand it. If you can’t understand it, you can’t control it. If you can’t control it, you can’t improve it.” [H. James Harrington](#)

After 30 years of involvement in both science and technology transfer I have gathered my thoughts on the importance and value of monitoring and collecting data on farm, including some of the traps to watch out for.

1. Don’t measure what you can. Measure what you should.

Plan your monitoring programme because as access to monitoring tools increases it will be easier to measure, collect and store data. Productivity is not the result of farmers being swamped by data.

2. If you don’t use the data, don’t collect it!

Collecting data just to have some numbers doesn’t improve decision making on its own. Farmers must have a plan, know what numbers they want to make a better decision and collect those. Data must be used to make better decisions.

3. Monitoring is not the same as measuring

- Sometimes you don’t need numbers

We all monitor what is going on around us. Farmers are constantly observing what is happening. We can take information from routine observations when we apply some analysis to what we hear and see. Often we benchmark the state of the farm against previous seasons or experiences and this is enough to ensure we are on track or need to make a change.

4. Are you listening to your livestock?

- They will let you know faster than the feed budget if you are not feeding enough in winter

Observing and listening to your stock will tell you something about the state of your feed budget. Observing how stock use tracks and yards will also give you valuable information that will improve labour efficiency.

5. Simple data can be really powerful

- However, this may be good or bad

It is important to recognise that the conclusions you may draw from data may not always be right. Once you have data then getting a professional to help interpret it can make sure you move in the right direction.

6. Beware of N=1

- You have a single data point, be wary of what it means
- Observations accumulated over several years are better

Because you have only one example of what might be happening, there is a risk of drawing the wrong conclusions. Again getting a second opinion on the numbers you have collected will help to improve the decisions you make.

7. We always change more than one thing at a time

- Beware of false outcomes

When we make changes it is rare that only one thing is altered. This makes it hard to determine the true cause of any improvement. Recording what we do and what the outcomes are can help improve our analysis of the change. Some of the changes we make have a long term time frame before true effects are felt, so we need to understand this and factor in those time frames before drawing a final conclusion.

8. When we change something we want it to work

- Beware of false optimism

Again, we make changes because we think that what we try will make a difference. Therefore we are already primed to think that the result will be positive. Often we may have invested significantly in the change and don’t want to be wrong. It is important to measure the inputs and outputs, and the previous outputs effectively so that we can identify whether the changes have true value.

9 Don’t extrapolate beyond the data!!

Just because $1 + 1 = 2$, we shouldn’t assume anything beyond that. Two classic examples come to mind. The first is the use of Molybdenum to improve clover growth. Some farmers assumed that if it worked in one year then we should repeat it again the next year. They promptly ran into induced copper deficiency in stock. Selenium is another classic where limited supplementation is good but excessive supplementation will kill livestock.

10. Understand the importance of variability

- It is the tail that kills you

While monitoring the average will tell you something about your farm, there is often more information in understanding the variation. For example understanding the variation in year to year pasture production is important in setting up the whole farm system, while understanding the live weight variation in your ewe flock may provide different insights into the requirements of day to day management.

11. Perfect data isn’t perfect

- Fast decisions trump perfect data

A farmer’s decision is based on what the data shows plus experience and objective evidence.

- All data has variations and so can produce some strange results

When we monitor we can take samples (e.g., 50 ewes in the flock) or measure every animal. These techniques are used

for different purposes.

Samples provide us with the average, plus an idea of the variation, and might be used to set a feed budget or monitor whether we are approaching a target that we have set. Knowing the weight of every animal in the mob might be required for decisions about whether they are ready to go to the works.

However, there are flaws in both methods. Even when every weight is measured, there are still variables that affect the accuracy of that weight. You must have protocols to ensure that weights are comparable between weighings, but again there may still be some unexplainable variation.

Occasionally farmers will report live weight gains in lambs that are beyond the theoretical maximum for true growth, and so the live weight gain must be described by something other than true body weight gain. Factors might include water intake, variations in gut fill and wet or dry fleeces. Sometimes it can be as simple as scale error, as these 'wander' during weighing events.

12. Weigh livestock for feed budgeting, use condition to monitor progress

You must know the weight of your livestock when feed budgeting. If you feed a 500kg cow as if she weighed 450kg, then she will prove you right eventually by losing weight until she gets there.

Once you have determined the right amount of feed, then condition scoring can help you test whether you are meeting the feed budget. During pregnancy it is hard to know exactly what weight a ewe or cow should be at any given time. However, if you are feeding at maintenance then the animals' condition should remain constant. Often the feeding conditions during winter may mean that the animals may not get the appropriate intake, regardless of allowance, and therefore monitoring condition provides a tool to check the feed budget and alter allowances easily.

13. You must have protocols for measurement and you must stick to them for interpretable results

Making sure you have protocols for measurement mean that results can be compared between situations. This applies to weighing, but also to soil testing, measuring pasture and Body Condition Score. Using standard pasture assessments techniques, on the same parts of the paddock or farm each time means that the numbers can be used across any time frame, so week to week or year to year. Livestock weighing protocols are similar, i.e., weigh at the same time of the day and same time 'off feed', weigh a random sample (not the first through the yards, and weigh enough animals to be a representative sample (e.g., a minimum of 50 or 10%, whichever is the greater).

14. Work out what data you actually need

Often we decide to monitor because something has changed. For example, we may have bought a set of scales. We need to first determine what decisions we are going to influence and develop a plan to capture data that is appropriate for that decision. If we are trying to meet supply specifications better then we need to monitor the weight of

our prime stock in a timely manner to achieve that.

15. Do you have a plan – based on monitoring?

Monitoring provides information that can be part of a plan. Once we decide what data we need then we can collect that data to inform the progress of the plan toward our targets, and make decisions to alter the plan if we aren't meeting those targets.

16. Benchmarking is of limited use without context

- Be wary of using the wrong benchmarks for YOUR farm

Often the most appropriate information is what we have done on our farm in the past. However, we must ensure that we don't fall into pitfalls of the previous points when we look to the future. Occasionally we need to look outside to see what the potential might be.

17. Set targets, monitor for triggers and take action

The power of monitoring is at its greatest when we combine it with our plan and the cycle of setting targets, monitoring for triggers and then taking action to alter the plan depending on circumstances. This means that triggers must be set with enough time to ensure that action taken can meet the targets set. Often this means that triggers are well in advance of the targets. For example condition score of ewes at weaning is an important trigger to ensure future reproductive targets are met.

18. Looks for change points, rather than increments

When setting targets and triggers it is important to identify change points that are meaningful. As in the previous example, condition score can be used at weaning as a potential change point, by ensuring that feeding plans are set well in advance of winter. Condition scoring during winter is a monitoring technique, rather than change point detector. Other change points will include specific pasture cover targets, lambing and calving dates and mean slaughter dates for prime stock. Knowing how these affect your farm can improve farm productivity and profitability.

19. When you collect data, use it to make a decision

Data will help you make better decisions. That is why we collect it. However, it is important to make sure that we make good decisions based on the appropriate interpretation. Often using a professional to aid with interpreting farm data can help avoid some of the traps outlined above.

"True genius resides in the capacity for evaluation of uncertain, hazardous, and conflicting information." Winston Churchill

