NZ GRASSLAND ASSOCIATION
Fuelled by Science, Tempered by Experience

GRASSLAND NEWS www.grassland.org.nz

Dec 2022

ISSN 1179-4216

Presidents Update

Laurie Copland, Northland farmer

Season Greetings

Going on the weather it's hard to tell which season it is. After over 40 years of farming, I can't recall a November with so many wet days. So, it was great that at the other end of the country the weather at the Conference Field days were fine.

After 2 years, 3 postponements, we were able to have our Annual Conference. This year it was held with not only the Agronomy Society, as usual, but the Society of Animal Production. We had around 300 attendees. Again, we had the PhD students there that the NZGA supports with a travel scholarship to attend.

Talking to some of the attendees, they seemed to enjoy the variety of papers that was enabled by having a joint conference. Hopefully this will be reflected in the post conference survey of attendees.

This year Dr David Stevens, AgResearch, was honoured with Honorary Life Membership. The citation was presented by the Immediate Past President Warren King. The citation is reported below. We had co-opted David on the Executive to be the Programme Co-ordinator for the joint Conference. With the postponements and withdrawal of papers he said he stopped counting after his 13th iteration. Thanks David.

Not having a Conference last year has negatively impacted our finances but having a strong balance sheet has enabled us to manage this. It was great that our family of sponsors were on board for this Conference. Big thanks to them.

I would like to express my thanks to the Invercargill LOC, led by Chris Smith, for their perseverance in delivering a great Conference, definitely the longest serving LOC ever.

Chris Smith was elected Vice President at the AGM. Also, we welcome on board to the Executive a new member to replace Laura Keenan, Fraser Harrison. Fraser is a forage specialist with Agricom. The LOC chair for Rotorua has been accepted by Mark Brown, Australasian Brand Manager for Agricom.

I would like to express my thanks to the Executive and Executive Officer Marie Casey for bringing this conference together. The rest of the Executive this last year was Vice President Jo Kerslake (Massey) who retired this year, Alister Black (Lincoln), Jane Chrystal (Beef+LambNZ), Dawn Dalley (DairyNZ), Mike Dodd, David Stevens and Warren King (AgResearch), and Laura Keenan (Agricom) who also retired this year.

Have a great holiday season and we'll see you at Rotorua next year.

Life member - Dr David Stevens, AgResearch

Warren King

It is my privilege to announce an Honorary Life member. These are not awarded every year and so really do reflect an outstanding contribution to NZGA over an entire career. There are a number of current LAA recipients present tonight. These are our taonga!

Tonight I get to add someone to this illustrious group. Someone whose contribution to the NZGA is unparalleled. They first attended a Grasslands conference in 1983 as a student and their first paper was published in 1984. Over the last 38 years, they have attended all but 2 or 3 conferences (due to overseas travel) and achieved 77 publications - an average of more than 2 per year. There are 5 papers that are authored or co-authored this year alone. They served on the NZGA Executive Committee for 11 years, including two as President.

Of course, their contribution to NZGA cannot be overestimated. But it is important to note that their contribution to the industry has also been widely recognised. They were recently awarded the B+LNZ Significant Sector Contribution Award. These awards - both the Industry Award and the Grasslands Lifetime Achievement Award - do not happen by accident: they reflect a lifetime of commitment to create positive impact for an industry that is mission-critical to the way that NZ operates - and the way that we think of ourselves as NZers. It gives me great pleasure to award the NZGA LAA to Dr David Robert Stevens. Tena koe Dave

New-Generative Agriculture: based on science, informed by research and honed by New Zealand farmers…an update on the update for 2022

Jacqueline Rowarth[1], Ants Roberts[2], Warren King[3] and Mike Manning[2]
[1]Lincoln University, [2]Ravensdown, [3]AgResearch

Regeneration is the process of renewing or restoring something, especially after it has been damaged or lost (https://www.dictionary.com/browse/regeneration).

Since development (deforestation) New Zealand pastoral agriculture has increased organic matter in soils (Schipper et al. 2017 https://doi.org/10.1080/00288233.2017.1284134), mostly reflecting application of major and trace nutrient mineral fertilisers e.g., superphosphate which then allowed legume growth and increased available soil nitrogen which in turn enabled improved grass growth. Oversowing with improved pasture species (the result of plant breeding) then enabled improved animal management and productivity gains.

Despite the ongoing improvements and clear evidence of advances, regenerative agriculture enthusiasts have stated: "RA is much more than a system of farming: it is a mindset that questions the *status quo*, and instead of becoming defeatist sees opportunities for different ways of living, working and farming" (Grelet et al. 2021 https://ourlandandwater.nz/regenag).

It is beginning to emerge, however, that not all people embracing the opportunities offered find that it is 'better' for their farm, income or wellbeing (Herron 2022 'Green dream pushes farmers into the red') This aligns with the results of analysis of graziers in Australia (Francis 2020 Regenerative agriculture—counting the cost) where income increase was presented as per ewe, not per hectare, but low stock numbers was associated with a A$2.42 million decrease in potential earnings over a decade. In the original research (Ogilvy et al. 2019 Graziers with better profitability, biodiversity and wellbeing) regenerative graziers reported more financial stress than conventional graziers, but were more optimistic in their outlook because they were being supported through education and coaching, and felt confident about their abilities for the future.

In New Zealand, the Keens were part of a local *Red Meat Profit Partnership* (that started as a Primary Growth Partnership programme) and were working with 'expert advice', but the system collapsed by the second season.

The Northland Dairy Development Trust also has support (from consultants and scientists from levy bodies) and is making results of its trials freely available. Changing from a 'current' farm (3.0 cows per hectare; the average for New Zealand was 2.9 in the 2020/2021 season) to a low emissions farm (2.1 cows per hectare and no nitrogen or imported feed) decreased milk produced by 38% in the first year. The current farm produced 1284 kg MS/ha; the low emissions farm produced 794.

The decrease in production was associated with a decrease in greenhouse gases per hectare (a 33% reduction in methane and 47% reduction in nitrous oxides) but per kilogram of milk solids the difference was small – from 10.3 kg carbon dioxide equivalents per kg milk solids to 9.2 (less than 11% decrease).

Further, at a milk price of $9.30/kg MS, the low emissions farm was 40% down in operating profit. Modelling indicated that only at $5.00/kg MS would the low emissions and current farming operations be equal – and both would be losing money (https://nddt.nz/current-trials/future-farm-systems-financial-results-yr-1/).

On the Canterbury Plains, the results of a comparison between conventional (3.7 cows per hectare) and regenerative farming (3.2 cows per hectare), are again publicly available (Align farms: Financial findings). Again, fertiliser inputs were reduced on the regenerative farm, which ended 22% down in milk production and 24% down in earnings before interest and tax.

By pointing out the accessibility of research results already available from decades of grassland research, New Zealand agricultural scientists have been trying to prevent farms collapsing as experienced in Southland. Much of the research is available on the NZ Grassland website (Journal of NZ Grasslands).

Reducing 'dependence' on agrichemicals, a major goal for RA, is fraught with problems in what is already a low chemical input system. The withholding of superphosphate trials of the mid 1980s (which were started when subsidies were removed) showed the decline depended on initial soil fertility status (particularly both phosphate and sulphur) at the start of the trials. In the Keen's case, low reserves meant that the collapse occurred rapidly. A summary of results and economic analysis (https://www.grassland.org.nz/publications/nzgrassland_publication_960.pdf). was published in 1990. In 1999 Dodd and Ledgard showed that productivity was still deteriorating (https://www.grassland.org.nz/publications/nzgrassland_publication_494.pdf). The lesson – exporting nutrients in what becomes food depletes the soil nutrient status. Exporting only that which is mineralised and fixed biologically requires a considerable premium for economic survival, and will ultimately result in resource depletion through the mineralisation of non-renewable soil components.

Other RA goals include building soil carbon with long pasture grazing (eat a third, trample a third and leave a third) but New Zealand already has relatively high soil organic matter and the long pasture results in decreased pasture quality which means animals don't grow as fast /produce as much as when on high quality pasture – which means an increase in GHG per kg of product. Arguably, much of the trampled plant residue will be mineralised to carbon dioxide, water and nutrients by soil biology and not form part of the recalcitrant soil organic matter. This, and other aspects such as the lack of evidence that plant and animal nutritive value are affected by production system, the fact that New Zealand's Animal Protection Index for farm animals is higher (C) than that of any of our trading partners (UK is D, Australia and USA are E and China is G) have been discussed in previous papers (https://www.grassland.org.nz/newsdetails.php?newsnum=143; https://www.grassland.org.nz/newsdetails.php?newsnum=155).

When the Government launched Fit for a Better World in 2020 regenerative agriculture was proposed as a focus, "with the expectation that regenerative farming systems will improve the profitability of farming while leaving behind a smaller environmental footprint".

Millions of dollars have been invested in establishing regenerative agriculture research comparisons involving conventional and regenerative paired farms around the country (MPI: SFF Futures Projects: Regenerative farming practices). While results are awaited from these new comparisons (much of the latest research is a 7-year contract), it is possible that a change in direction might occur.

At the beginning of November, the Government signed the OECD, *Declaration on Transformative Solutions for Sustainable Agriculture and Food Systems*. The declaration committed countries "to increase climate change mitigation efforts by reducing emissions from agriculture and food systems and effectively increase carbon sequestration…".

New Zealand produces lower carbon impact meat (https://doi.org/10.1016/j.eiar.2022.106946) and milk (https://doi.org/10.3168/jds.2022-22117) than other countries can achieve. Our soils already contain large quantities of soil carbon. That leaves, at this stage, only trees to assist with carbon sequestration – and afforestation is against the new declaration which recognised as its number one priority "ensuring food security and nutrition for a growing global population".

As regenerative and low emissions farms are also reporting reduced production per hectare, it is time for a serious rethink.

Further reading – previous papers on New Generative agriculture are available on the NZGA website: https://www.grassland.org.nz/userfiles/files/NZGA_RA_science%20May%202022.pdf

And https://www.grassland.org.nz/userfiles/files/New-gen%20Rowarth%20et%20al%202020.pdf

International Grassland Congress 2023

The theme for next years IGC in Kentucky is ***"Grassland for Soil, Animal & Human Health"*** which is very topical as the debates around food production, diet, green house gases and the impact of agricultural production systems continues.

The conference has a hugely varied programme as well as a number of significant pre-congress tours. These are an ideal way to see more of the USA and meet attendees before the congress.

So if you have been thinking about it now is a good time to check out the details on their website.

Travel Award winners

Once again NZGA have worked with the NZ Grassland Trust to provide financial support for some of our members to attend the Congress. We thank all those who applied for the Travel Grant and congratulate the following successful candidates Sarah McKenzie, Agricom; Lucella Jordan, Lincoln University (student); Bia Anchao Oliviera, Massey University (student); Matt Iremonger, Willesden Farms Ltd, General Manager.

Call for Papers Rotorua 2023

In case you missed the first call - we are asking for papers for the next NZGA conference, to be held in Rotorua (14th - 16th November), and for inclusion in the Journal of New Zealand Grasslands.

Land use change in the region will be a key focus, including the challenge of farming with changing environmental regulation, and realising the potential of Māori land.

The scope for inclusion in both the conference and the Journal is wide and welcomes submissions on many topics related to NZ grasslands.

For full details and links to the submission form go to the NZGA website.

Abstracts are to be submitted to the editor at jnzgeditor@outlook.com. The closing date for abstracts is **Friday, February 17, 2023.** Authors will be notified in early March whether or not their paper offer has been accepted. The deadline for submission of full manuscripts is **Monday 15 May 2023.**

NZGA Executive Office Update

A short administrative update at the end of the year. After finally managing to hold the Invercargill conference after so long it was good to hold a face to face event.

However after over 2 years of disruptions we are noticing many members have changed roles and contact details need updating. If you need to update your postal address please email nzgrassland@gmail.com.

Also, a reminder when paying by bank deposit to clearly advise who the payment is for (invoice number or surname)

NZGA History

If you have ever wondered how the NZGA started, or what happened to some of the colourful characters of the past then the starting point is the story presented in the 14 chapters on the NZGA website.

NZGA is in its 91st year and in time to honour the occasion Dr Deric Charlton (past president and secretary NZGA, life member and DSIR plant breeder) has compiled our history in 14 short chapters that are available on our website.

Wishing everyone a safe and happy Christmas

Marie and Glenis