



# Finding harmony through regenerating people, place, and profit

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James Alexander, Nuffield 2020 Scholar  
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## Executive summary

The aim of my study was to investigate the world of regenerative agriculture (RA). In particular, to find examples of farmers who have made changes to their behaviour, language, decision-making, choice of inputs and practices that have enabled harmony between people, place and profit in their farming business. I learned that **people, place, and profit are inextricably linked**. Making change in one of these areas is likely to affect the other two. I found that farmers have successfully approached this from different angles, and there is not one set approach for success – context is key.

It has become clear to me that everything comes back to the people. By this, I mean **people are the most important part of a business**. What I found in common among the people I visited is they were curious. They never stopped asking questions, adapting, growing, and challenging themselves and their beliefs. I found that with this personal growth, people were happy and motivated, and seemed to operate from a place of love and abundance. I feel there is a link between happy and thriving humans, a happy and thriving environment, and farm profitability.

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## Foreword

I have been involved with agriculture my entire life. I grew up on a mixed farming property near Cootamundra that my father managed – running sheep and cattle, and growing crops. I spent many days by his side in my younger years. After school, I got a job working on a large merino stud at Hay, NSW, called Uardry. A desire to continue my learning led me to complete a Bachelor of Agricultural Science in 2013 at Charles Sturt University in Wagga Wagga, NSW.

I have travelled to Canada after university with my now wife, Emily. We spent one year working on a cattle and cropping ranch in Saskatchewan. This provided us with further practical experience in agriculture, and we keenly returned home to pursue careers in the industry. Emily gained a job with an agricultural consulting company, and I started my agronomy career in Tamworth, NSW. My inquisitive nature and searching for understanding led me to question strongly both the advice I was giving people, and the farming practices that were being implemented.

I completed a permaculture design certificate and ended up leaving my agronomy job to travel through NSW and Victoria. I spent time with farmers who were doing things differently. These people had a renewed focus and understanding of themselves and the environment they managed and lived in. I spent time with permaculturalists, organic apple and berry growers, free-range organic pig farmers, and sheep and cattle graziers, all trained in holistic management. Here the world of regenerative agriculture was opened to me, and my life was forever changed. This led me to getting a job with Charlie Arnott, an award-winning, biodynamic grazer from Boorowa, NSW. My mind was further opened to the worlds of biodynamics, planned grazing, livestock marketing and paddock to plate, to name a few.

My interest over this time focused particularly on soil health. I was hearing a lot about declining soil organic matter, increasing rates of topsoil loss, reduction in pasture diversity, and increases in crop and livestock management costs. At this time, farmer suicide was also in the media due to drought, as were many studies relating human health issues to how food was grown. I was reading about how many common farming inputs were allegedly driving some of these processes, and people were calling for alternatives to ensure a prosperous future for life on Earth.

From here I started to branch my thinking into areas other than soil health, including the financial and human aspects of running a farming business. I was curious to learn how these aspects could be viewed in a new light, encouraging positive change in people, environment and farm profitability. I wanted to find and learn from people that were successfully implementing practice changes on their farms with this triple bottom line approach.

Being awarded a Nuffield Farming Scholarship in September 2019 enabled me to continue my journey seeking knowledge and a greater understanding of our amazing industry. This journey pushed me to adapt quickly, become OK with feeling uncomfortable, and ultimately to question my own beliefs and paradigms. On my Global Focus Program (GFP) I travelled to Singapore, Japan, Denmark, Israel, and the USA with a fantastic cohort of scholars that I am fortunate to call my friends. In my pursuit of knowledge, wisdom and answers, I have learned two very important things. The first being that there are rarely answers, only more questions, and it is up to me to ask the right questions. The second is that all the questions and answers are within

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me, and that it is up to me to learn how to find them, draw them out and adapt them to my context.

**Table 1. Travel itinerary**

<b>Travel date</b>	<b>Location</b>	<b>Visits/contacts</b>
<b>Week 1-5, October 23 – December 1, 2022</b>	Mollerin, Western Australia	Di & Ian Haggerty
<b>Week 6-9, January 20 – February 10, 2023</b>	USA. Texas, Oklahoma, Kansas and Nebraska	Keith Berns, Michael Thompson, Doug Palen, Dale Hudspeth
<b>Week 10-12, March 22 – April 4, 2023</b>	New Zealand. Canterbury and Otago	Hamish & Amy Bielski, Rick Cameron, Jono Frew, Nigel Greenwood, Andrew Hart, Canaan Ahu, John King

## Acknowledgments

There are many people that I would like to acknowledge over the course of my scholarship. First, I would like to thank my wife Emily for supporting me and our beautiful daughter Sophia during the time I was travelling away from home, and while I was in the office writing this report. A big thanks also to my parents David and Susie Alexander for looking after our dogs and chooks at home while we travelled.

I would like to acknowledge the generous support of my sponsor the NSW Department of Primary Industries. Without their support, my scholarship would not have been possible. I look forward to continued communication with them on completing this report and sharing what I learned through their networks.

I would like to thank Charlie Arnott of Margan Pastoral Company, Boorowa. Charlie was my employer at the time I applied for a Nuffield Scholarship. Charlie supported me through the application process, and while I was travelling on my GFP. Thank you, Charlie.

I would like to say thank you to all the amazing people that I met and visited throughout my travels. I greatly appreciate your hospitality in providing a bed for me to sleep and sharing meals together, as well as opening your businesses. I will never forget it. I feel so much gratitude for the relationships that I have developed, and look forward to keeping in touch with my new friends around the world.

A big thanks to the Nuffield Australia team and community. The huge effort over the last four years to keep the show on the road amidst a world of COVID lockdowns has been exceptional. Your unwavering dedication and commitment to helping me and my contemporaries complete our scholarships in testing circumstances is much appreciated. A warm thank you to Jodie Redcliffe, Nicola Raymond, Rob Bradley and Carol Millar. Also, thanks to Chontell Giannini and her fabulous team at itravel, Griffith for their work on flight itineraries. I would like to extend this thank you to each of our country hosts during our GFP, and to the nine other scholars who travelled with me. Those scholars were Jarrod Amery, Antonio Bunster, Tracy Brown, Bernie Byrnes, Johnny Gardner, Albertus Hanekom, Harry Kelly, Gareth Lamberton and Hannah Senior.

## Abbreviations

DSE	Dry sheep equivalents
EBIT	Earnings before interest and tax
GFI	Gross farm income
GFP	Global focus program
Ha	Hectare
HM	Holistic management
MAFF	Ministry of Agriculture, Fishing and Forestry
MeaDRI	Measures for achievement of decarbonisation and resilience with innovation
MSCC	Multi-species cover crops
NIF	Natural intelligence farming
NZ	New Zealand
RA	Regenerative agriculture
UK	United Kingdom
USA	United States of America



## **Objectives**

- Distinguish linkages within the farm business regarding change between people, place and profit.
- Identify how people are creating positive trends regarding people, environment, and profitability.
- Investigate how people are successfully changing their farm inputs, and achieving harmony between people, place, and profit.

## Introduction

The agriculture industry worldwide plays a key role in the economy, environmental management, and society. Our farmers are stewards and caretakers of a huge part of the world's landmass, and have the noble role of producing food and fibre. My study aims to explore how farmers in the UK, Australia, USA, and New Zealand are successfully changing their farm inputs to find greater harmony between the metrics of people, place, and profitability. I hope to find businesses that feel they have achieved a good balance between the three.

My study investigated how farmers are creating positive environmental impact, such as improvements in soil carbon and biodiversity, as well as crop, pasture, and livestock health. I also focused on profitability. In particular, looking at whether there was potential for farmers to increase profitability through changing inputs and management. I also explored the human element. That is, identifying if there are links between farmers making changes regarding themselves, the farm environment and profitability, and if change in one area may influence outcomes in another. For example, I was eager to understand whether a farmer making changes in their own lifestyle, behaviour or health, had a flow-on effect to other areas of the business.

## Chapter 1: United Kingdom

### Tim Parton

At the Vic No-Till Conference in Moama, July 2023 I had the pleasure of meeting and hearing from Tim Parton from the UK. Tim is the manager of Brewood Park Farm – a 300ha cropping property in Staffordshire that grows milling wheat, canola, spring barley, spring beans, wildflowers for seed and other crops. Tim was awarded the 2019 Arable Farmer of the Year at the British Farming Awards, and was named Farm Innovator of the Year in 2020. From a soil pit one afternoon and at the conference the next, I heard Tim speak about how he managed his farm's transition to a more biological and regenerative approach, with his own health at the centre.



**Figure 1. Tim Parton, talking healthy roots, Rochester, Victoria, July 2023 (source: author)**

The journey started with Tim's anxiety and burnout, resulting in depression. His wife Gill was keen to explore treatments that didn't involve chemicals going into his body. Their approach of changing lifestyle and nutrition to treat this illness created a lightbulb moment for Tim. He wondered if this worked for him, could it be replicated in the field with his crops?

Tim's new approach to dealing with his mental health issues led him to contact Patrick Hulford of 'The Brain Bio Centre' in Putney, Southwest London. This centre 'specialises in nutritional approaches to mental health problems' with 'staff including psychiatrists and nutritional therapists' (patrickhulford.com, 2023). Here, Tim had hair and fingernail samples taken, just like you would take soil, tissue or sap tests in the field, and tests run on them that came back showing nutritional deficiency. From here on, Patrick was able to help Tim adjust his lifestyle and diet to address the deficiencies, which began improving his mental health. Noticing improvement in himself, Tim began to look at implementing similar changes on the farm, growing more and more interested in treating the presence of disease as a nutritional deficiency.

In 2009 he began using strip tillage as the first step away from full tillage. Around this time, he also bought microbes to try as a seed coating, as opposed to fungicide-based treatments, reducing the nitrogen budget per hectare to pay for it. Interestingly, the crop yielded the same as it previously had. This showed Tim there was something worth pursuing in this approach. The question was, could synthetic nitrogen be reduced, while simultaneously building and feeding the soil microbes, to achieve the same yield at a lower cost? He then got involved with brewing his own microbes on-farm. This acted as a two-fold cost saver – saving on nitrogen, while being cheaper than purchasing pre-brewed microbes.

He stopped applying phosphorus and potassium fertiliser in 2012, and his soil tests show potassium levels are still rising. In 2015, he introduced no-till across the whole property, as he was pleased with the results from strip tillage. The focus on nutrition now sees Tim using nutrients such as silica, in particular potassium silicates, along with calcium, nitrogen, sulphur, and molybdenum. Tim's typical liquid fertilizer – applied down the tube at sowing – includes micronized diatomaceous earth, humic acid, salicylic acid, Bioplus T (a brew of beneficial microbes) and a compost extract.

Most nutrition is now applied in liquid form, and is guided by plant sap tests (akin to a blood test for humans). Plant samples of old and young leaves are taken and sent to NovaCropControl in the Netherlands. Tim receives the results five days later. He can then start mixing up a tailored foliar brew for that crop, usually consisting of both minerals and microbes. He uses tools such as a nitrate meter, calcium meter, refractometer, micro-biometer and a redox meter which measures electrons. All of these tools, along with the sap tests, help inform his decision-making around crop health. They help him tailor-make brews, and allow management of nutrient-deficient crops (which attract disease) via nutrition, rather than fungicides and insecticides.

No insecticides have been applied for seven years, and no pre-emergent herbicides or chemical seed dressings are used. Nitrogen applications are down by 75%, and overall farm cost savings are around £70,000 per year. Tim feels it is difficult to compare yield unless you have a conventional system to act as a control. However, last year he had his highest ever wheat yield. Overall yields seem to be trending upwards. His micro-biometer shows most soils on the farm now have a fungi:bacteria ratio of 1.5:1 and some fields up to 2:1. This is a big turnaround from the bacteria-dominant soils under his previous conventional crop farming. This highlights how his focus on nutrition has allowed fungi numbers to grow. This increase in fungi is related to Tim being able to avoid phosphorus and potassium fertilisers.

Tim has monitored water quality in drains leaving the farm, and has found zero glyphosate residue in the water. This compared with neighbouring, conventionally managed fields, which have detectable glyphosate residue leaving the property. Tim attributes this to the whole-system approach of promoting biology. In particular, the importance of using humic and fulvic acids as a part of his nutrition management. 'Humic acid is a group of molecules that bind to, and help plant roots receive, water and nutrients' (Meléndrez, 2009). These organic compounds aid in rapidly breaking down chemical residue in the soil, and aid foliar uptake of nutrition and even herbicides.

Tim spoke about epigenetics and the importance of allowing crops to senesce naturally for the microbial population on the seed to mature properly. This allows microbes to be at the next season's planting, to deliver the correct messages to the soil biology. This also illustrates the damage fungicide seed treatments do by killing these microbes

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– reducing the seeds' ability to communicate with soil biology in return for nutrients. Tim said there is the potential for up to 9 million microbes to be present on the surface of each seed. I think this links to the quorum sensing ability of the cover crops I had learned about at the Haggerty's (see below). Increased microbial activity and diversity can all aid in growing healthier crops, livestock, and pastures.

Profit has been the number one consideration. Remaining profitable through the transition was vital to Tim's success in continuing to farm, and also being able to do the environmental work he loves. Again, a number of these decisions and techniques go hand-in-hand. Tim has started brewing a bacterial species called bacillus subtilis, which he uses as a biofungicide. It is a bacterium that can produce a variety of antibiotics, affecting fungi and bacteria, and can also stimulate the plant to activate its own defence mechanisms. Tim can brew this on-farm for a cost of £0.8/ha. This compares favourably with most fungicides in the UK, which cost around £50/ha.

Tim's environmental work includes receiving a subsidy for growing wildflowers in field margins. He mentioned that he probably receives more subsidies now with the way he has chosen to farm, compared with when farming conventionally.

Tim explains further on the Green Farm Collective website:

'Half the farm's acreage has cover crops growing over winter, providing an abundant food source and cover for overwintering birds. And because the soil is alive, as it should, it becomes the best restaurant in town for visiting birds. These include English partridge, skylarks, snipe, jack snipe, golden plover, woodcock, field fare, meadow pipit to name a few.'

'We also have a moth trap on the farm where samples are collected for Rothamsted Research Institute, who informed us that we collected more moths in three months than their previous trap (situated on another farm about 10 miles away) obtained in ten years.' (Parton, 2022)

Tim is a co-founder of 'Green Farm Collective' which is a group of farmers who all believe in RA, and the benefits of reducing use of pesticides, increased carbon capture, and improved biodiversity, water, air, and soil. Being a farmer member of the collective allows people to:

- Access and share knowledge.
- Trade carbon at a premium price.
- Trade biodiversity.
- Market regeneratively farmed produce.

Tim has recently sold wheat he has grown that has been regeneratively certified through the collective, receiving a premium on the price he would normally receive. Members have also traded carbon through the collective for above-market rates.

## Chapter 2: Australia

### Di & Ian Haggerty

In October 2022, with my wife Emily and our daughter Sophia, I visited Di and Ian Haggerty at Mollerin, in the Northern Wheatbelt of Western Australia. This was a very special visit for us. We had known about the Haggerty family for some years. We had heard about their alternate methods of growing crops and raising livestock, and were keen to see it for ourselves. We arrived at their farm the day before they were to host a Nutrisoil field day called 'Tapping into Natural Intelligence'. The field day was a brilliant way to start our visit. We were able to hear a lot about the Haggerty's farming journey over the years, and how they themselves got involved with natural intelligence farming (NIF).



**Figure 2. Nutrisoil field day at the Haggerty property, WA, October 2022 (source: author)**

The Haggerty cropping and sheep business operates on some 25,000ha of land, across a couple of different holdings at Mollerin and Wyalkatchem, WA. Annually they crop around 10,000ha of cash crops – predominantly wheat, barley, oats, and lupins, with smaller areas of cereal rye, triticale, field peas and vetch. They also grow multi-species cover crops (MSCC), and for the first time last year, they grew canola (with vetch as a companion). The program also involves some hay production. Most recently some of the MSCC were cut and baled for hay.

The sheep enterprise is a self-replacing merino flock. Di uses predominantly their own genetics, which are adapted to their local environment. The sheep graze a combination of MSCC, stubbles, and native pastures and shrubs. The sheep do not receive any grain supplementation, and are shorn every 8 months, producing a 17-20 micron fleece and cutting 8-9kg of wool annualised. The ewes lamb between 90-150%, which is critical to having ample replacement ewe lambs each year.

My biggest interest in visiting the Haggerty property was to learn more about how they put 'natural intelligence farming' into practice. I have been familiar with this term and what it means since early in 2022, when I met Jane Slattery. Along with Di and Ian, Jane is the co-founder of NIF. I learnt that NIF has a large focus on people. It involved opening your heart and calming your head to connect with your true, unconditional self, to be an intuitive caretaker of the land. NIF also makes links between what's going on within the farmer, and what is being reflected in the environment and farm business.

I have learned that through a process of asking questions, Di and Ian are able to practice NIF across their farm. They ask questions to determine the most appropriate crop for each paddock, sowing rates, dates, and the most appropriate biological liquid

fertilisers. For example, in one paddock of wheat I was in with Ian, he mentioned it was its sixth straight year having a cereal crop. Each year they ask themselves if what is appropriate to sow in the paddock, and for six years the answer has been cereal (wheat and barley). Ian said year-on-year the crops in this paddock are getting better and better. Like much of the surrounding landscape, the paddock was initially badly affected by salinity. However, Ian & Di found that by getting themselves in tune with the landscape, and using biological inputs, the soil community had been stimulated, and was coming back to life. Their usual liquid fertiliser applied at sowing is a brew of Johnson-Su compost extract, worm castings, fulvic, humics, kelp and silica.



**Figure 3. Johnson-Su compost set up at the Haggerty property, WA, October 2022 (source: author)**

My interpretation is that as the soil was getting healthier, and microbial activity increased, salinity reduced. This made me question things I have been taught about multiple cereal crops in a row leading to disease pressure. Reflecting on this observation, I feel understanding context is very important. In a conventional farming system using artificial inputs, growing several cereal crops in a row in the same field will most likely drive an increase in disease pressure. However, the Haggerty method demonstrates that taking a heart-based rather than head-based approach, and switching to biological inputs, changes the dynamic and opens new possibilities. This challenges the paradigms of crop production.

The above links to an observation Di made regarding sheep and salinity. There are several salt lakes across their farms. One day, Di noticed the sheep digging a hole in the soil on the edge of a salt lake, then drinking from it. It is not usual for sheep to drink salt water. But on further inspection Di discovered there was fresh water coming up in the hole the sheep had dug. She wondered how this was possible in a salt affected landscape. Through asking further questions and conversation, they have come to understand this is possible through their cropping and grazing management practices, which include no-till, biological seed dressings, using foliar fertilisers, and minimising pesticides. This has stimulated the soil biology, leading to restoration of the soil water cycle. Fresh water can be held in the soil at the top of the profile, thus replenishing the fresh water lens over the top of salt-affected water, reducing leaching of fertility. The restoration of this fresh water lens has been a key contribution to allowing life to flourish on otherwise salt-affected country.

I think this is an awesome example of how their business works as a whole. The cropping and grazing enterprises are able to deliver large-scale ecological improvements, and relate these directly back to improving the farm enterprises



themselves. It also highlights the importance of keen observation on-farm, trusting what we see and experience, and remembering it is not only data we need to record.

I had my first experience of harvesting an MSCC while with Di and Ian. They have primarily been using MSCC to aid the rehabilitation of paddocks that were degraded. These are paddocks with minimal groundcover, which are prone to wind erosion and sand blasting, small numbers of native species, low soil microbe activity, salinity issues, and low organic matter. They came across these MSCC from working with people such as Dr Christine Jones. Dr Jones is a prominent Australian soil scientist with international experience. A lot of Dr Jones' work has investigated cover crops, particularly the quorum sensing that occurs when multiple species are sown together. The research shows the greater diversity of species in a mix, the greater the quorum sensing will be. This has several benefits, including increases in potential biomass production.



**Figure 4. Multi-species cover crop harvested at the Haggerty property, WA, November 2022 (source: author)**

Quorum Sensing can be defined as 'density dependent coordinated behaviour that occurs in bacteria, archaea, fungi and viruses' (Frew, 2020). During a presentation in 2019 at 'No-Till on the Plains' winter conference in Wichita, Kansas Dr Jones mentioned:

'For a long time, we've been attempting to select plants or animals for traits that we find desirable. What we didn't realise, is that if we change the soil microbiome around plant roots, we can switch on a whole lot of genes that we didn't even know existed, and make quantum leaps in the resilience, productivity, and nutrient density of those plants, and therefore in the health, growth, and productivity of animals we are raising on those plants' (Jones, 2019).

This research helps to understand the amazing results Di and Ian are experiencing when using cover crops, combined with biological fertilisers and guided by NIF. It illustrates to me the potential to regenerate soils by feeding the microbes, which in turn support healthier plants and animals.





**Figure 5. Me pictured in a multi-species cover crop at the Haggerty's, WA, November 2022 (source: author)**

The Haggerty's cover crop mixes have included species such as cereal rye, triticale, oats, wheat, field pea, vetch, lupins, and radish. These crops are usually grazed with sheep, then cut and baled for hay, or harvested to retain seed. Harvesting a cover crop provides an opportunity to retain seed for use the following year. Epigenetics is important. Every year seed grown on the property gets better adapted to that particular environment. This makes it more valuable to Di and Ian than commercially-purchased seed. I think harvesting cover crops opens the door to further value-adding or alternate income streams for a business such as:

- Selling to farmers as livestock feed (possibly sheep, chickens and fish).
- Marketing to mills that make livestock pellets.
- Selling as cover crop seed to other farmers.
- Investing in a grader or colour sorting machine to sell as clean seed.



**Figure 6. Harvesting lupins at the Haggerty property, WA, October 2022 (source: author)**



**Figure 7. My wife Emily and daughter Sophia riding in the header, WA, October 2022 (source: author)**

I learned it is possible to harvest an MSCC. Importantly, it must be something you want to do, which is in line with your goals and vision. This also places importance on the fact that everyone's context is different, and that is OK.

## David Marsh

David Marsh of Allendale, Boorowa has demonstrated an effective way to reduce costs and realign production methods with his goals. David's property had been run rather conventionally since his family purchased it in 1966. Winter cropping of cereals and livestock formed the farm's enterprises. David described how the relationship with the land was largely economic. He was motivated to change this management style, as he wanted to leave the landscape in a better way, and the then-current management style was incrementally increasing the business' debt.

Critical analysis showed cropping would not be profitable long-term. So he discontinued cropping to reduce costs. He then chose to start managing his livestock differently, after becoming aware of Allan Savory's holistic management (HM) approach. This approach looks at grazing as a function of time, and aims to bunch livestock into larger mobs, in smaller paddocks, for short periods of time. This approach tries to avoid repeatedly grazing recovering plants. For David, this means 12 mobs of cattle and 26 paddocks have turned into one mob of cattle and 104 paddocks. Each paddock is only grazed for about 10 days per year, giving ample time for recovery of native perennial grass species, in line with David's goals.

In making this transition to one hundred percent grazing, David invested \$85/ha in additional fencing and water infrastructure. This included a combination of both conventional hinge-joint fencing, and semi-permanent electric fencing. Water works involved piping water to each of the new paddocks. David uses a portable water trough that he moves with the mob. David noted this investment in wire and water compared favourably with his fertiliser and pesticide bill when he was cropping.

Along with this investment in wire and water, David also restructured his entire livestock operation, moving from a breeding enterprise to an agistment enterprise. This move brought about changes to the cost structure of the business – mainly direct costs – and positively impacted cash flow. It also met labour and lifestyle goals for David. David jokes there is less time spent moving cattle, and more time to enjoy a coffee and reading good books!

There have been noticeable increases in groundcover, which has been backed up by satellite imagery from Cibolabs. This information has shown one hundred percent groundcover on David's property for many years now, with increases in the percentage of native grass cover. David has conducted extensive mapping of native grasses on his property. In 1999, native grasses were found in only 1ha of the 814ha of the property, restricted to rocky outcrops that couldn't be ploughed. Mapping in 2004/5 showed around 86ha of native grass cover. By 2010 this was up to 189ha, followed by 440ha in 2020. He also noted vast reductions in weeds. Species as thistles, Patterson's curse and capeweed have been mostly eliminated by focusing on maintaining groundcover with grazing management.

## Chapter 3: United States of America

### Keith Berns

Keith Berns is an outstanding gentleman I was fortunate to meet at the 'No-Till on the Plains' winter conference in Wichita, Kansas in January 2023. I was then privileged to be invited to his annual farmer conference the 'RegenOrganic Summit', which has recently been renamed 'Regenerative Nexus'. The summit is hosted by Keith's business Green Cover, which was developed off the back of positivity around practice change on his family farm. Keith and his brother Brian farm at Bladen in Webster County, Southern Central Nebraska. They grow crops on approximately 2,000 acres. They have predominantly a corn and soybean rotation, using cover crops of cereal rye or triticale, and buckwheat or sunflower as a double crop.

Keith and Brian adopted no-till across some of their acres in the late 1980s, and by the late 1990s were 100% no-till. They first grew cover crops in 2008. Cover crops were introduced for erosion control, and to grow supplemental forage for livestock. They found a cereal rye cover crop planted in autumn, behind the main season crop of corn or soybeans, had a significant effect on suppressing 'mares' tail' (known as fleabane in Australia) in early spring. Due to having great groundcover from the cover crop, soil erosion reduced, and mare's tail wasn't signaled to germinate by bare soil. This, in turn, led to saving the need for herbicide application prior to planting.

When they first started no-till, their fields had up to 3-4 years' worth of crop residue/stubble on the surface. As the fields weren't being cultivated, the stubble was sitting on the surface and not breaking down. Keith says we now know this was because soil microbial life was depleted from years of tillage. Now, with cover crops aiding improved soil microbial health, very active microbes break down the crop residue halfway through the next summer.



Figure 8. Me pictured with Chad Simmelink, Kansas, January 2023 (source: J. Simmelink)



Figure 9. Michael Thompson, Kansas with Tom Robinson, South Australia, Kansas, January 2023 (source: author)

On the back of success from their first year of cover crops, Keith began a new venture named Green Cover. Green Cover is a seed business specialising in highly diverse custom, cover crop mixes. They have become a leading national source (in the USA) for those seeking to improve soil health and biodiversity through cover cropping. In their first year they sold enough cover crop seed to cover one thousand acres. In 2022 they sold enough seed to cover one million acres. The core focus of Green Cover is to 'help people regenerate god's creation for future generations.'

Keith mentions that it's difficult for him to put a monetary figure on the value of the reduction in soil erosion they have seen on the farm since using cover crops. He also notes difficulty pinpointing exactly where that should be attributed, as it is likely the combination of no-till and cover crops together. Additionally, soil organic matter is trending upward in the realm of 0.2-0.5% per year. This is also likely from the combination of no-till and cover crops.

Most acres receive 1-2 tonnes of compost (made on farm) per year, and receive no synthetic phosphorous. Keith notes they haven't cut back on synthetic nitrogen as much as they would have liked, as it still hurts yield when they do so. We spoke about other ways to overcome this. Keith said that for them, including wheat in the rotation helps build nitrogen. He went on to explain that corn and beans are both longer season crops. This leaves minimal time post-harvest to get a cover crop in the ground to build organic nitrogen. Adding wheat to the rotation enables time for a cover crop to be sown, as wheat can be harvested in early July. Then a cover of hairy vetch can be planted, which can grow for 90 days before winter terminates it. This aids in replenishing soil nitrogen and water for the next cash crop, come springtime.



**Figure 10. Cover crop seed mix at Green Cover, Bladen, Nebraska, January 2023 (source: author).**



**Figure 11. Pictured L-R, Cassi & Tom Robinson of Hoyleton, South Australia, Keith & Audrey Berns of Green Cover, Bladen, Nebraska and myself, Lincoln, Nebraska, February 2023 (source: author)<sup>1</sup>**



## Chapter 4: New Zealand

### Hamish & Amy Bielski

Near Clinton, in the Southern Otago, NZ, we met the Bielskis. They run a sheep breeding operation of 1,800 Poll Dorset x Romney ewes, and use a shedding Coopshire ram (Coopworth x Wiltshire) to breed prime lambs. They do this across 280ha, with some cattle trading and fodder cropping too.

In 2016, they started making changes to their farm by adopting the principles of RA. In 2018 they started making changes to their grazing operation. These changes centered around the way they grazed the animals. This came about through Red Meat Profit Partnerships – an initiative funded by grower levies. Farmers were put into groups of 5-7, facilitated by grazing coach Ian Mitchell-Innes. They reduced their mob number from ten different mobs of livestock to two. This enabled greater periods of recovery for pasture plants between grazings.

Coupled with the reduced mob number, they also changed how long livestock stay in a paddock. The aim was to measure pasture growth more closely, only leaving sheep in the paddock long enough for them to eat the top third to half of the available pasture, then moving them on. From what I learned, this practice seems to have origins in Allan Savory's HM. This approach involves regular movement of livestock. For Hamish, up to four times per day. Lots of portable electric fences are used to divide paddocks into small areas, requiring lots of labour. This ultimately led Hamish to continue looking for improvement in their grazing approach and free up his time, as the increased labour costs were not acceptable.

Hamish and Amy found this initial change produced good results when it rained over summer. However, when they had dry summers, they found they had low quality feed. They learned you cannot ask a sheep to just eat the top one third or top half of a plant. They learned livestock would eat the best-tasting plants to the ground, while leaving those that are less palatable. This created an uneven graze. The sheep, on returning to a certain paddock, would once again graze the best plants, as they were fresh from being stimulated by the last graze. All the while, the less desirable plants are again not grazed. These plants are more mature and have started lignifying, becoming lower in sugar with a higher carbon to nitrogen ratio. The next challenge was to rectify this and improve feed quality.

The Bielskis came across another gentleman called Jim Elizondo, who is also a grazing coach. His approach involved more non-selective grazing; more pasture was eaten out of each paddock, which began improving the pasture quality. They now move sheep every 1-2 days, while maintaining some big paddocks for holidays and time away from the farm. It seems like this non-selective approach is working well for Hamish and Amy. It has transformed the plants that were of low quality into higher quality plants, or has made way for higher quality plants to come through.

Hamish commented they have more clover and better tillered grass come summer, as more sun has been able to penetrate the canopy. This has been a critical gain as they try and sell all their lambs at weaning (around 90 days of age), and this is in late spring to early summer. Matching peak DSE demand with peak grass quality and growth is essential to them. Over summer, Hamish places a high value on the job that his ewes do in 'topping pasture', and emphasises that farm consultants' spreadsheets cannot take this into account. This means the big mob of ewes can be used like a landscaping

tool, keeping the pasture in a high-quality state for as long as possible. This in turn helps set things up again for lambing the following year, when demand increases again.

Another positive outcome is that moving the stock less often has better balanced Hamish's time on the farm with other commitments. As Amy works full time off-farm, Hamish aims to get all his farmwork done between 9:00am-3:00pm. This allows him to fit around the kids' school schedule, including drop offs and pickups, and being able to help the school by driving kids to sport or fieldtrip days.

Their change in grazing management has seen a reduction in the area planted to winter grazing crops each year, as more pasture is being grown. Some kale is still grazed by the ewe hoggets. However less crop and less fertiliser has reduced business costs. Improved grazing management has also seen improved animal health, and a reduction in drenching costs by approximately 50%. This is especially important because 33% of New Zealand's sheep flock are resistant to three drench families.

The Bielskis have been able to reduce their farm working expenses to around 35% of gross farm income (GFI). This compares favourably to a higher input, conventional farm in their local farmer group, whose costs sit at 55% of GFI. To compare, the conventional farm's gross income and costs are both higher per hectare than the Bielskis'. However, when the two farms' EBIT/ha is compared, the Bielskis come out more favourably. This was a great example for me to break the paradigm that just because you are low input or low cost, that doesn't necessarily mean you will be low income, or have low profitability.

Hamish and Amy now aim to lift their GFI. An approach they have identified is to utilise genetics and focus on growth, aiming for a bigger lamb at weaning. For this, they have decided to use Poll Dorset genetics in their flock to help produce prime lambs that will grow faster and reach a heavier weight at weaning, resulting in having more kilos of lamb to sell.

## **Rick Cameron**

Rick Cameron is a gentleman we had the pleasure of visiting in Southern Otago, near Milton, NZ. There, he and his son Ben run a sheep grazing operation. They run 4,200 composite ewes and 1,000 replacement ewe hoggets on 470ha. It is a fully grass-based system. Therefore, grass measurement and monitoring are key to its success. Rick uses tools such as a pasture plate meter to measure grass growth, which helps inform his grazing plan. Another piece of his favourite kit is an open sided soil corer. This allows him to take and view soil cores himself, and analyse the soil beneath his pastures.

Rick explains that being a grass-based system, it is paramount he always knows how much grass he has in front of his sheep. This can then be used, in combination with livestock numbers and rainfall, as a forecasting tool to inform livestock marketing decisions.



**Figure 12. Rick Cameron, talking sheep, NZ, April 2023 (source: author)**



**Figure 13. Emily and Sophia at Ricks farm, NZ, April 2023 (source: author)**

Over the years Rick has employed many different approaches to his grazing methodology. In true Rick fashion, he kept recording and observing the changes that occurred on his farm. He has made graze plans based on residual pasture height and rest periods. His preferred method, which he is using at present and continually adapting, he calls planned recovery grazing. Rick says this method is adapted from Allan Savory's grazing charts. All paddocks are rated based on their pasture growth, and livestock are also rated as stock units, similar to DSE in Australia.

The number of grazing days per stock unit in each paddock is recorded, along with rainfall data. Over the course of a year, this shows each paddock's performance. An on-farm trial he ran showed one trial plot of pasture grew 20% more than the plot next to it. It had 36 days' recovery compared to 26 days. Rick stressed the importance of also recording the timing of when graze events occur, as seasonality can play a big role in grass recovery periods.

One observation Rick made regarding grazing management was with his open-sided soil core. He noted that on short, green grass, he was able to push the corer in 2-3 inches further than in the taller grass that was drying off, which had a longer recovery period. This is a great observation. Conventional thinking tells us short green grass that's growing quickly and being grazed off would be utilising more soil water and drying out the profile more than a pasture with longer recovery periods allowed to grow taller.

Rick mentions some of the biggest changes he has had on farm have come from changing his language. For example, he said that changing the word 'fertiliser' to the word 'fertilising' saved him \$60,000 per year. He explained that by making that change, he was able to see his sheep as a fertilising tool, and could manage their grazing around the property to redistribute nutrients where they were needed most. The result was better pasture growth across the property, and reduced synthetic fertiliser costs. This was another example that demonstrated to me how making a change in one area of your business can positively affect other areas. I thought this was a very powerful lesson, and wondered how this can be taken further in rebuilding or shining light on the human aspect of agriculture. Rick mentioned the immense ability of grazing to

## Finding harmony through regenerating people, place, and profit

regenerate a landscape, and pondered what would happen if livestock 'farmers' changed their name to 'herdsmen'. Would this lead them to spend less time and money on machinery, and more time with their livestock?

Rick is a co-founder of Agwool New Zealand. Agwool NZ was:

'Started in 2017 as the returns that farmers were receiving for their wool were barely covering their shearing expenses. With wool being such an amazing, natural, sustainable, commodity that is fire resistant, moisture absorbing, odour resistant and biodegradable, this seemed criminal. And so, Ken Algie and Rick Cameron gathered a few courageous farmers who submitted wool into a pilot program to make a great quality product – the windproof lined jerseys. This fulfilment used 31-32 micron lambswool and the farmers received more than \$25 a kilo for their wool. The farmers fund the program and own the wool throughout the whole process and receive a fair and decent return for their wool. It is totally transparent to any members who engage in processing their wool through us. The ethos of Agwool New Zealand is for fair trade throughout the process and so all businesses associated with the completion of the garment or item receives a fair return for their work carried out and consequently does their best work and takes pride in the result' (Agwool NZ).



**Figure 14. A gift! A pair of socks made by Agwool NZ, April 2023 (source: author)**

Market returns at the time were around \$4/kg for 32 micron wool. So the value Agwool was able to produce for its farmer members is amazing. For me, this is a terrific example of regenerating the whole supply chain from farm to consumer. It demonstrates what is possible when people with knowledge and experience put their heads and hearts together in an open, sharing context.



## Chapter 5: Japan, Global Focus Program

While on our GFP tour of Japan in June 2022, we had a meeting with the Japanese Ministry of Agriculture, Fishing and Forestry (MAFF). This was an amazing visit, meeting with MAFF Director Mitsuaki Shindou and Director General for Policy Coordination, Atsushi Suginaka.

Suginaka San shared with us key issues in recent Japanese Agricultural Policy development. We were briefed on significant strategies, such as their medium-long term strategy 'Measures for achievement of decarbonisation and resilience with innovation (MeaDRI)'. By 2050 this strategy aims to help MAFF achieve:

- Zero Co<sup>2</sup> emissions from the sector.
- 50% reduction in risk-weighted use of chemical pesticides.
- 30% reduction in chemical fertiliser use.
- Increase in organic farming to 1 million ha (25% of farmland).
- Minimum 30% enhancement in productivity of food manufacturers by 2030.
- Sustainable sourcing for import materials by 2030.
- 90% of forestry seedling to be of superior varieties and F1 plus trees.
- 100% artificial seedling rates in aquaculture of Japanese eel and pacific blue fin tuna.

I felt this visit aligned strongly with my study topic as MAFF were endeavoring to accomplish the triple win of:

- Economic sustainability; ensuring a robust and resilient food industry.
- Social sustainability; improving livelihood and promoting a balanced diet.
- Environmental sustainability; saving the global environment for future generations.

I thought this was a terrific lead for MAFF to take, and felt inspired that positive change considering the triple bottom line could be aided by appropriate policy development and implementation from government. I was pleased to hear MAFF believe behavioural changes among stakeholders is key to the success of this strategy. Japanese agriculture faces many challenges to achieve these new targets. But with those challenges comes opportunity. Opportunity to create new networks, markets, and behaviours.

## Conclusions

Tim Parton was successful in demonstrating that he was able to improve his own mental health with a focus on nutrition. He was then able to replicate this with his crops in the field, by transitioning to biological inputs. To me, this shows linkage between people and place.

This shows the power of changing the thoughts and language of the human, which creates another link to profitability. This approach is working well for Tim, whose costs are now down more than 50%, and profitability is up 50%. I draw the conclusion that the change in Tim's behaviour and language has led to both positive change in the environment, and his profitability.

I think there is also a link between a change in mindset and language to the development of additional businesses such as Tim's Green Farm Collective, Keith's Green Cover, and Rick's Agwool NZ. To me it shows a thriving human can caretake a thriving farm, which then creates further opportunities for value-adding and business development.

With Di and Ian Haggerty in WA, I saw a high degree of synergy between people, place and profit. This example is the combination of the people doing work on themselves (NIF), and using biological fertilisers. The work on self has removed human imprints from the landscape, and the biological fertiliser has stimulated soil biology, leading to healthier plant and root systems. In turn, this has led to a fresh water lens reappearing in the top of the soil profile, holding the salt water beneath it. These benefits also flow to the livestock enterprise, with sheep having natural fresh water sources from which to drink. All this has been achieved at a greatly reduced cost per hectare compared with farming conventionally. It shows you can be farming, doing environmental work, and working on yourself, at the same time as making improved profit margins.

David Marsh's willingness to realign his relationship with the land to reflect his personal goals of leaving the environment in a better way again showed me the three areas of people, place and profit are strongly linked.

From Keith's example in Nebraska, the biggest lesson for me is the impact changing practices can have on the cost structure of a business. Keith chose to sow a cover crop as opposed to cultivating his fields. This has transformed a tillage pass into a sowing pass, and saved a herbicide application in early spring. This cost saving can be utilised to pay for the cover crop seed. Importantly, this shows potential redistribution of costs when making changes.

Over my travels I have seen people reference the principles of soil health many times as they adopted principles of RA. For me, these principles of RA lack both the human and profitability aspects. And on further research, I think they were originally developed with a cropping context in mind. Given what I have learned on my travels, I believe developing more accurate principles of RA would require them to make mention of people and profit alongside environmental and livestock benefits.

I learned from the Bielskis that placing significant emphasis on one aspect of your business may unbalance other areas. When Hamish changed his grazing plan in attempt to increase pasture growth and improve soil health, this negatively impacted labour costs, and reduced his work/life balance. This shows me the importance of considering all aspects of people, place and profit when negotiating change.

## Finding harmony through regenerating people, place, and profit

Rick Cameron demonstrated to me that focusing on people and language is a powerful way to begin regenerating agriculture, and as Rick says, 'the culture that is agri'. Switching the language from 'regenerative' to 'regenerating' implies a continual adaptation, creativity, and improvement, as opposed to the set box of practices or actions that regenerative can imply. Rick also highlighted the value of new business systems in which transparency and adding value are key to success, and the importance of this being felt at every step in the supply chain.

Regarding Japan's MAFF, there are so many good examples of farmers successfully implementing change they could draw upon to help them initiate and achieve their goals. My advice to the MAFF would be to keep farmers involved in policy development, and support and learn from farmers who are making changes that will bring their goals to life. For Japan, this presents an opportunity to show themselves and the world their goals are achievable, and it is possible to accomplish a triple win of economic, social, and environmental sustainability.

In drawing my conclusion together, I have learned that the aspects of people, place and profit are inextricably linked. I have learned that change in one area is going to impact one of the other two, if not both. Farmers have demonstrated success in improving these metrics from an initial focus on people, place or profit, or a combination of these. I have learned from NIF that a focus on working on self can reap huge rewards in unlocking new potential for oneself, as well as place and profit.

I have discovered there is value in considering people, place and profit together when developing your farm business and personal goals. Such a framework could be used to help guide decision-making both 'in' and 'on' the business, to aid smooth transition. Another big takeaway for me is context. Every person and business is on their own journey, and at different stages along those journeys. As I heard many times on my travels one must 'earn the right' to drop or switch inputs.

I discovered that farmers are successfully changing their farm inputs from synthetic to biological, and seeing improvements in all aspects of people, place and profit.

## **Recommendations**

- Be curious, question everything.
- Keep in mind that everything comes back to the people.
- Remember that context is key.
- Change slowly and stay profitable throughout transition.
- Get clear on your goals.
- Surround yourself with people that will support you through your transition.
- Learn to ask the right questions.
- Remember anything is possible when operating from your heart.

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