It is indeed a great honour and a privilege to be recognised by my peers with the prestigious Levy Oration award. There are so many people that have supported me throughout my career, many of whom are in this room today. I have always tried to just get on with things and do my bit for the industry, often through connecting people and ideas. Receiving an award like this is very humbling, particularly when considering how many people make a difference in their own way to our great pastoral industry.

Given that I am only half way through my career, I thought I would use about half my time to reflect on and share my thoughts on what I think needs to happen to realise the potential of our Agri-food industry.

So what have I learnt over the first half of my career? I consider the key difference between New Zealand farming and agricultural research, and the rest of the world (other than a lack of subsidies), is our “systems” approach. Our agricultural universities have always had methods and approaches to teaching that produces generalists or integrators who can fit technologies into farm systems. Moving down the path of more specialised, the “systems approach” to farming must be built on and enhanced.

It is absolutely clear that “science discovery” and farmer adoption and innovation is the engine that powers New Zealand agriculture. The underlying mission and role of the New Zealand Grassland Association (NZGA) “Fuelled by Science and Tempered by Experience” is just as appropriate today as it was when it was developed 10+ years ago. To me this means connecting the farmers and industry with science with all the feedback loops that drive innovation. Innovation has always underpinned New Zealand farming and will continue to do so in the future.

I have learnt that “soft skills” or interpersonal skills and emotional intelligence are just as important as “hard skills” or technical knowledge. Soft skills were never even talked about when I started my career. I often think back to how much more I could have achieved as an agricultural consultant if I had understood that the way a message is delivered is more important than the message itself. I have been far more effective as a communicator since I have understood my own communication and behavioural style and been able to better understand others.

It has become obvious to me that the best investments that I have ever made have been into my own personal development. I remember when I joined The Ministry of Agriculture and Fisheries (MAF) we were allocated $5 000/consultant/year for training and using every dollar plus some. Annually, I still invest a considerable sum in personal development and believe there is at least a $10 return on every $1 invested in this area. I have also been fortunate to have travelled both in our seed business and recently with our honey business. I spent 100 nights overseas/year for 10 years so got to understand some key markets. One of my key learnings over this time was that the consumer actually controls the value chain, not supermarkets or farmers, as we often think. We might not always agree with our targeted customer’s views on our farming practices, but must appreciate that over time their perception needs to become a reality.

I have observed and learnt first-hand how critical it is for a business to have a clear purpose and vision and then a plan for success. I remember as a MAF consultant running field day or discussion groups about some new innovation or business practice that would lead to greater profits, and being extremely frustrated when no one would pick up the new idea. I soon discovered, however, that spinning the idea around so new innovations were demanded within a farm systems context was effective, rather than having to be pushed in isolation. I started focusing my efforts on helping farming businesses develop a clear plan. I found that once business owners had a plan for success with defined goals and targets then they become highly motivated and driven to identify their current limitations and constraints, and change farming practices to improve performance. Clarity of vision and clear goals are absolutely critical in any business.

I have also learnt that the first 15 years of a career are the most important and set you up for the next 25. In farming and agribusiness these are the “grant years” - the time when the platform for a successful career is set. I am a strong advocate of making sure individuals can be trained and mentored in their 20’s, receiving as many experiences as possible, so they can be at the “top of their game” in their 30’s. Succession is not planned well enough within agricultural businesses or within farming families. I have been involved as a chair of
I have learnt in my own businesses, the large returns that can be created through the development of Intellectual Property. Most farming business understand about the returns possible from investing in tangible assets such as land, stock, machinery and buildings, but have a poor understanding about the potential return and value from investing in intangible assets. These intangible assets could include brands and stories, patents or trademarks, as well as unique systems and skills development in staff. For the Agri-food sector to develop “unique points of difference” from our competitors, there is an urgent need to invest in and develop intangible assets.

One thing that I have observed time and time again is that businesses that pride themselves on repeatable core business at heart. These businesses often look boring but consistently produce high levels of performance with a real focus on cash-flow. The management team within these businesses know and understand their business intimately, including all the levers that drive profitability. The businesses are well systematised and have key non-negotiable targets or decision points in place. A problem for many business owners is that they often do not like the discipline around monitoring and reporting that goes with success, so these models are often not replicated throughout New Zealand or abroad. Business discipline has not been a part of our national psyche. This needs to change, and is starting to with the All Blacks being an example. The All Blacks won the first world cup in 1987 because of good skills; they won the last two because of disciplined systems and processes.

I have learnt over the first half of my career that magic does happen and opportunities do come along regularly over the business life-cycle. What defines an individual or a business’s success long-term is whether or not they capitalise on these opportunities. Only a few unique individuals are constantly scanning the market looking for opportunities so they recognise them when they come along. These successful individuals move quickly when they see an opportunity and “grab them with both hands” before many others have even woken up. Probably the key learnings for me from watching the All Blacks is how long it took to win the world cup and the mental horizon looking for opportunities so they recognise them when they come along. These successful individuals move quickly when they see an opportunity and “grab them with both hands” before many others have even woken up. Probably the key learnings for me from watching the All Blacks is how long it took to win the world cup and the mental horizon looking for opportunities so they recognise them when they come along. These successful individuals move quickly when they see an opportunity and “grab them with both hands” before many others have even woken up. Probably the key learnings for me from watching the All Blacks is how long it took to win the world cup and the mental horizon looking for opportunities so they recognise them when they come along. These successful individuals move quickly when they see an opportunity and “grab them with both hands” before many others have even woken up. Probably the key learnings for me from watching the All Blacks is how long it took to win the world cup and the mental horizon looking for opportunities so they recognise them when they come along. These successful individuals move quickly when they see an opportunity and “grab them with both hands” before many others have even woken up. Probably the key learnings for me from watching the All Blacks is how long it took to win the world cup and the mental horizon looking for opportunities so they recognise them when they come along. These successful individuals move quickly when they see an opportunity and “grab them with both hands” before many others have even woken up. Probably the key learnings for me from watching the All Blacks is how long it took to win the world cup and the mental horizon looking for opportunities so they recognise them when they come along.
will provide managers with the information to reduce the variability in performance across animals and land, and reduce their impact on the environment. With these data available in the future, there is a huge need for system integrators who can pull it together, interpret and turn it into practical recommendations. Farmers will require all IT providers to collaborate and work together so the information can be provided on a common IT platform, removing current problems and constraints in this area.

I amimagining a world where both farmers and other value chain partners will have realised the value of R&D investment, and New Zealand will be investing 2-3x more in R&D, with new innovations rolling out to support agriculture. Investment in collective marketing and branding must have not just doubled over the next 20 years, but will have grown by a factor of at least 4-fold from today’s levels. While there will be a cost in getting this going the long-term return will be large and this will be the only way farmers will ever break out of supplying commodities. We cannot sit and wait for Government to drive this. Farmers and industry bodies need to stand up and develop a clear and compelling vision for government to invest in.

Tourism is a sector that agriculture must work far closer with as both industries need to leverage off each other to realise their potential, and make the New Zealand narrative one that excites and sells. We have recently had an international chef (whom I met on the top of a mountain) tell me that during her 3 week stay in New Zealand, she had experienced the freshest and tastiest food ingredients that she had ever had in all her travels around the world. How do we allow global customers bitten by their Kiwi experience to continue directly around the world. How do we allow global customers buying premium food ingredients, daily, when they are well prepared for climate change, but in New Zealand we seem slow to recognise and accept what is warming. Climate change will shape all our thinking in the future. How do we allow global customers to be part of over the next 20 years of my career. Those that are starting their careers are fortunate that they have joined this fantastic industry at a critical time when some key strategic decisions need to be made. I encourage you to step up and ask lots of questions and challenge the status quo, providing leadership not just observers in this industry, as it is your future that is at stake more so than for the existing players.

Finally, I would like to sincerely thank the NZGA Executive Committee for presenting me with this award. I would also like to acknowledge and honour those award winners who have gone before me, including last year’s winner, the late Colin Holmes.

Farm systems research has a long history of success in New Zealand. Recent reviews have highlighted the progress made through the traditional and pragmatic approaches that have been used (Clark 2013; Stevens et al. 2016). However, as the world and technologies change ever more rapidly around us, is it time to change from the pragmatic problem solving approach to one of deeper understanding?

Professor Shaun Hendy defined the need for new thinking at the launch of the recently formed Te Puna Matatini, the Centre of Research Excellence for Complex Systems and Networks. He said “by understanding the networks that underlie each of these complex systems we will get insights into how to influence them and how to develop better strategies for managing them”. The power of systems research provides the opportunity for farmers to redefine their own path and make their own decisions. These opportunities come through understanding how systems will respond, or how they can be reconfigured, to capture benefits specifically to meet our needs, rather than the needs of others.

A science critic and past research director suggested in a recent article that a focus on farm systems research (or application) was in the realm of primary industry farm advisory professionals, not the science effort (Allison 2016). He based his view on the notion that farmers will take up and incorporate technologies into their farming systems if and when the technology offers an improvement in value to the farmer. This belies the common belief that farm systems research is about demonstrating the value of technologies at a farmlet scale. Unfortunately this belief is flawed. The argument presented is that farm systems research is about demonstrating the fit of technology into current systems. While this may be one vision, the more fundamental reason for farming systems research is to understand what drives the system and alters the value of the system, and then begin to develop new systems that may return greater value. The concept of just re-tuning technologies into a current system has a tendency to rely on incremental gain. While this has some merit, it locks us into the current paradigm, rather than imagining new futures.

The key to understanding systems research is to understand the holistic nature of the approach. Traditional research is reductionist in approach (catabolic), breaking the system into its constituent parts and examining these in isolation, in the attempt to understand the base function of each component. This requires tight control to reduce internal variables and external influences. Systems research embraces this variation and examines the system in reference to the variables around the system that drive its performance. It is about synthesis (metabolism) of processes into functioning systems.

Systems science uses a holistic approach to study the system as a whole to understand the outcomes and properties of the system rather than the component parts. To demonstrate the nature of the difference between reductionist and holistic approaches we can use the bicycle as an analogy.

Do you own a bicycle? Most of the population of the world has ridden a bicycle. Is yours an old faithful for riding around town on a city street or a state of the road bike or mountain bike? Do you ride it for pleasure, necessity, exercise, competition or thrills? How much did your bicycle cost, and how much technology is embodied in your bicycle?

When disassembled into its component parts a reductionist approach would examine the gears, chains, levers, wheels etc. Each component may be high or low tech, made of steel or carbon fibre, precision made or roughly hewn.

When assembled the bicycle can do something that not any one of the parts cannot. It exhibits emergent properties – it evolves into a mode of transport. That outcome cannot be readily seen from examining the components in isolation. Even when assembled, it is not finished. It needs a rider to complete a function – have meaning or purpose. Then we have an operating system.

The system has a boundary that sits around the bicycle and the rider. The system sits within other systems, the road network or the track, for example, and so exhibits nesting. The system interacts with its surroundings; the friction of the road, the drag of the air, and the motorists around it. And so it interprets its environment and learns from feedback. The gears need to change, the effort of the rider has to increase, the brakes need to be applied, the car dodged. The system evolves. The penny farthing was replaced by the chain-driven cycle, the 10-speed with the 18-speed, and the mountain bike

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