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The logic behind irrational decisions

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An improved understanding of basic human psychology will assist those working in the farm advisory sector to help farm businesses to achieve their goals more effectively. Through an examination of the human factors that drive decision making processes, farm advisors can gain insights that will enable them to work more effectively with their clients, and to extend their understanding of an individual farm business as a whole.

Maximising profit is clearly not the only motivation for farmers. Farmers farm because they want to farm. They enjoy the lifestyle and they hold deep seated values and beliefs around living and working on a property that has often been in the family for generations. These personal goals, ambitions, values and, beliefs often surpass rational business management -based economic decision-making processes. Regardless of the quality of the land resource, technical experience, finance availability and equity levels, a successful farm business can only operate effectively if the people running the business communicate well and have clearly defined business and personal goals. Often, decisions that seem illogical and irrational to those not directly involved in farming family operations – for example, to purchase more land or over-capitalise on machinery – make perfect sense to those making the decision.

There is no doubt that good science and sound logical reasoning are essential in good decision making processes. However, within this equation it is essential to note that for many, the drive and passion to achieve something at a personal and family level is often more powerful than reasoned logic that is based on financial optimisation.

This paper attempts to describe some of the human behavioural factors that influence human decision-making process and describes the influence of personality type on decision making. It also provides a view from a third party consultant working in the dairy industry on good farmer decision making process. The paper concludes with suggestions on ways to improve decision making at the farm level.

Does level of education affect analytical thinking process?

The level of tertiary education amongst the agricultural sector relative to the general Australian community is low. While education levels overall have improved over the last generation, it is clear tertiary education levels within the agricultural sector are lagging behind other sectors in Australia. An assumption might be that within the agricultural sector, the farm support industries (science, education, advisory) contain a larger proportion of tertiary educated personnel than those engaged in actual farming pursuits.

Does this mean farmers and advisors actually think differently? If so, it may be argued that the development of skills in analytical thinking processes by farmers who have not undertaken university level training may take longer than for those who have undertaken training. The science training undertaken by scientists and advisors to reduce impact of bias and emotion in decision making cannot be assumed to be at the forefront of thinking processes for those who have not undertaken such training. Instead, there is emphasis on experiential learning in preference to science based approaches entailing more complete analysis of options through intensive data gathering and analysis.

IN THIS ISSUE

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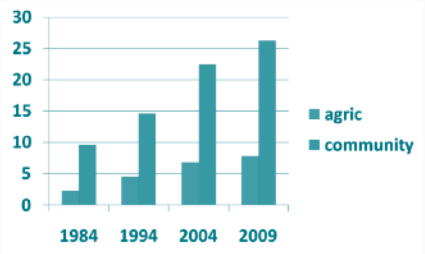

Table 1. Relative proportions of the agricultural sector and the Australian community with tertiary qualifications, 1984-2009 *(source Australian Bureau of Statistics, 2011)*

Decision making processes

The model shown below describes factors involved in decision making processes. McCown (2010) describes how analysis 'feeds' the intuitive thinking systems used by humans and also describes the preference of farmers to make decisions in response to certain stimulus based on experiential learning. This is described as an 'if-then' response – i.e. if it rains in late April, then I'll sow a crop.

Developers of Decision Support Systems (DSS) often lament the fact their DSS are rarely used for decision making in the way in which they would like and describe the frustration of poor adoption and then dis-adoption of DSS by the farming sector. A common expectation of developers of DSS is that their models will be used by farmers (who, it is assumed, think the same way as they do) to simplify the decision process by processing all of the inputs required to make a decision, based on sound logic and reason. There is an expectation that once the analysis is complete and a number arrived at, then the decision is made. The assumption is that the 'answer' or 'number' as a result of the analysis bypasses the intuitive step in the decision process, thereby eliminating all the bias and human 'emotional' element of the decision. That is after all, the basis of rational, logical, scientific thinking. When relating this model to education levels, perhaps non tertiary trained farmers with little experience do in fact 'think differently' to scientists or their advisors. The reality is very different, with most farm decisions being made in other ways and without the intervention of DSS. The model above identifies other considerations involved in making decisions, many of which are not based on rational economic theory.

Advisors report that they are more likely to use the decision tools to learn about a topic. In a survey of twenty-seven consultants across South Australia and Victoria in 2010, discussion took place around who would use DSS. Statements like, 'some (farmers) might play with them (DSS) when they have time, but are more likely to ring their consultant for an answer, 'and 'the use of DSS is the advisor's job, that is what we are paid for' along with statements such as 'we shouldn't be concerned that farmers aren't using them as long as industry uses them' were typical comments summarising consultant views on the use of DSS.

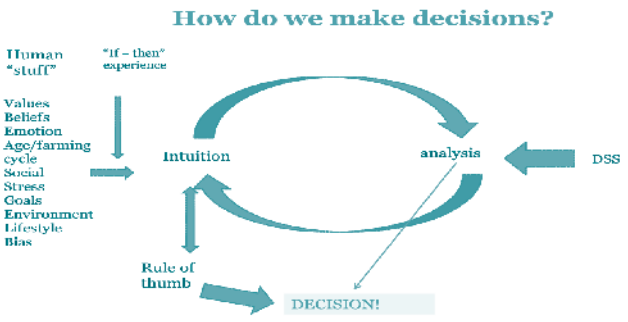

Figure 1. How we make decisions model *(Long 2011, adapted from McCown)*

Furthermore, it is apparent that once the learning is complete, there is no longer a need to use the tool, hence dis-adoption of the tool occurs. Knowledge derived from the DSS is then transferred in general discussion between the advisors to the farmer in the context of the farming practices employed in the region.

Therefore, while many farm decisions are made under the influence of a DSS which provide learning on a topic, they are not necessarily used every time a decision is made.

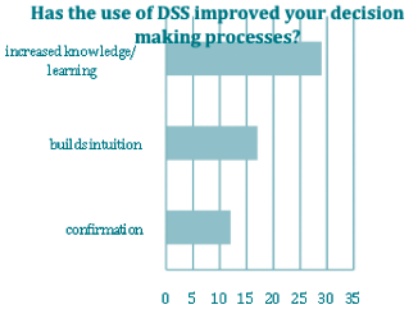

Figure 2. Consultant response to the question, 'Has the use of DSS improved your decision making process?'

Intuitive ('gut feel') decision making processes

So what is intuition?

Farmers frequently use intuitive decision-making processes in managing the farm business. Rickards (2009) describes 'intuitive thinking' as 'a process by which our subconscious finds links between current situations and past experience and knowledge.' Intuition allows us to make quicker decisions because it bypasses rational processes, but for decisions to be good, intuition depends on the quality of past experience and knowledge. Therefore, the more people (farmers/ advisors) experience, read, discuss and think about a particular subject, the better their intuition. Despite having gaps in information, intuition enables a decision to be made.

Intuition is sometimes treated with scepticism as often the basis of the intuitive decision is difficult to substantiate or identify. Yet, in the agricultural domain at least, there is growing acceptance that intuitive thought processes are commonly

Call for nominations for the 2013 APEN Awards

Your work could be worthy of the award – give it a try!

The APEN Award for Excellence in Extension is open to APEN members, either individuals or groups, who have demonstrated excellence in extension through a work program completed within the last five years.

Awards are presented in the Open or Experienced and Young Professional (under 35 years of age) categories. In 2009 the Young professional award was renamed the ***Amabel Fulton Award for Excellence in Extension for a Young Professional*** *in memory of the late Amabel Fulton who was a major contributor to APEN and the development of extension in Australia.*

The 2013 award includes a plaque, travel to the 2013 APEN International conference, registration and accommodation at the conference and the opportunity to give a presentation about the extension work for which the prize has been awarded. (Individual or one person from within a group.) The award is not transferable.

Conditions of the award

The winner will be required to give a presentation of their work at the 2013 Conference, and to take part in publicity associated with their success.

2011 Award winners David Hickey and Kate Sargeant with APEN President Austin McLennan.

Nominations

Nominations are now called and will be due in on 26 April, 2013 four months prior to the 2013 APEN International Conference in Christchurch, NZ on 26 – 28 August.

Nominations can be received direct from the nominee(s), or from other persons or organisations on behalf of the nominee(s).

Nominations should include a summary of the work addressing the selection criteria, a copy of any written material or reports produced, and the names of two independent referees able to comment upon the work. An electronic version as well as four hard copies would be preferred.

Selection criteria

- *The use or development of extension principles in the work.*
- *Evidence of the effectiveness and efficiency of the work.*
- *The applicability of the work in the broader practice of extension.*

The APEN Management Committee will judge entries and their decision will be final.

Nominations to be sent to:

APEN Secretariat
PO Box 1239
WODONGA VIC 3689
AUSTRALIA
Ph 61 (0)2 6024 5349
info@apen.org.au

2009 Award winner Neil Guise with members of his team, Nancye Gannaway and Heidi Blackburn and APEN President Tracey Gianatti

For more information visit www.apen.org.au

used as the primary decision-making process by farmers. While the decisions made might not result in the optimal outcome, intuitive decisions are usually right if they 'feel' right. The term 'feel right' relates to the emotional component in the decision and if a decision 'feels' right, it not only satisfies the experiential learning but also satisfies the emotional drivers – the passion that lies within us to make the decision we make.

Lehrer (2009) suggests that there is no universally correct solution to decision making. In comparing intuitive versus logical analytical reasoning he suggests the either/or approach to the dichotomies is destructive. He continues, 'natural selection has given us a brain that is enthusiastically pluralist' and that sometimes we need to reason through our options and carefully analyse the possibilities and at other times listen to our emotions.

Lehrer (2009) says:

'[i]t turns out we weren't designed to be rational creatures. Instead, the mind is composed of a messy framework of different areas, many of which are involved in the production of emotion. Whenever someone makes a decision, the brain is awash in feeling, driven by inexplicable passions. Even when a person tries to be reasonable and restrained, these emotional impulses secretly influence judgement.'

Figure 3. Consultant responses to the question, 'How did you make decisions without DSS?'

In the consultant survey conducted in 2010, intuition (or gut feel) was mentioned most often as an important method used by advisors to make decisions. For those with many years experience, confidence in being able to draw on that knowledge from 'somewhere in the subconscious' is higher than for those starting out in industry.

Rules of thumb (heuristics) in decision making processes

The development and use of rules of thumb is very important within the decision making process. Rules of thumb are essential in decision making processes in that they simplify everyday decisions and thereby avoid sometimes complicated and time consuming analysis and information gathering. They guide everyday actions and are used in all aspects of business and personal decision making. However, they are not always right and can sometimes constrain and limit outcomes.

Simon (1957) proposed the theory of bounded rationality, stating that people are not always able to obtain all the information they would need to make the best possible decision. People experience limitations in formulating and solving complex problems and, in processing information.

Rules of thumb provide very powerful platforms from which farmers and advisors are able to make decisions. Generalisations about an issue related to agronomy or financial management have

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served growers and their advisors well for years. Indeed, any researcher who hopes to communicate a message about their research outcome attempts to do so by drilling down to a few key messages from their research program, quite often as an abstract at the beginning of the paper. This kind of simplification is necessary in order to transfer findings into useable forms.

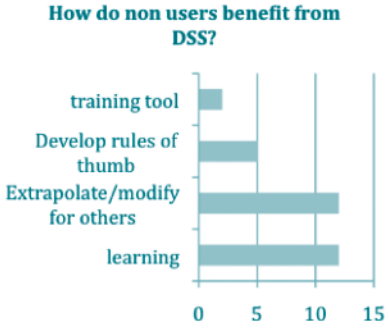

Figure 4. Consultant response to the question 'How do non users (of DSS) benefit from DSS?'

In the consultant survey conducted by the author of this paper, the development of rules of thumb as a result of using DSS was mentioned directly five times. Survey comments on extrapolation or modification might also be interpreted as some form of 'rule of thumb' development.

Stage of life (farming lifecycle) influence on decision making processes

People have different needs at different times in their lives. Howard (2009) reports that the needs of farming businesses are driven by the farmers' own needs and goals in their lives. The following stages of a business/career lifecycle emerged from a series of interviews of Victorian farmers as part of a scoping study looking at the role of government service providers in farm business management. The phases and key goals, features and issues identified during these phases were:

- starting out—gearing up
- expanding income—young family
- expanding income—succession of next generation
- cruising along and
- winding down

These phases of farming life reflect the different needs and desires of the people involved and their subsequent demands of the farm. Farmers at each stage have particular motivations that make them more/less inclined to focus on business management as an important aspect of their business operations. Therefore an understanding of these life stage needs is critical to understanding farmers' business management needs. Clearly, the needs and timeframes of a farmer starting his career are different to those who are nearing the end of their career; subsequently, decisions made will differ.

Emotions in decision making processes

Studies of decision making processes emphasise rationality as the major function in the process. Mostly, the effects of anxiety, fear, frustration, doubt, happiness, excitement or similar emotions are downplayed or ignored. Decisions, however, are influenced by these emotions at a particular moment. Given the same objective data, people will make different choices when they are angry or stressed compared with when they are relaxed and calm (Robbins et al, 2001).

Robbins goes on to say that negative emotions can result in a limited search for new alternatives and a less vigilant use of information. Positive emotions, on the other hand, can increase problem solving abilities and result in a better extraction and use of information. People use emotions as well as rational and intuitive processes in making decisions. Failure to incorporate emotions into the study of decision making processes will result in an incomplete (and often inaccurate) view of the process.

Kahneman and Tversky's prospect theory (1979) challenged traditional thinking that all investors make rational decisions. Their research was summarised in the simple statement, '[t]he pain of loss is twice as great as the pleasure of gain'. This was one of the first studies showing how much people disliked losses and, by extension, how much they would pay to avoid a loss. Furthermore, the research suggests investors hated the way a loss 'makes them feel' even more than the fear of loss itself. It seems the emotional impact of a loss, in particular the sense of regret that may accompany it, may have an equal or greater effect than the financial loss itself.

Examples of loss aversion theory being put into practice abound in cropping systems, manifesting in approaches to grain marketing and overuse of pesticides such as fungicides.

Stress effects in decision making processes

When people are affected by stress, their ability to think and rationalise is reduced. Psychologists tell us that the human brain is divided into two parts, the 'ancestral' mind and the 'thinking' mind. Abey and Ford (2008) report that the 'ancestral mind governs basic emotions that prepare us to act.' Emotions are there for a reason: they move us to make decisions. The 'thinking' mind is a rational, conscious mind that processes information into complex, abstract thoughts. It is involved in advanced cognitive activities such as reasoning, anticipation and planning as well as organising actions towards a goal.'

Under stress, people revert to using the ancestral mind to cope with basic functions. We tend to do things the way we have always done them. We tend not to want to take on board new information, or to think deeply about a topic or problem. Subsequently, we avoid attending meetings, field days and information sessions – essentially learning opportunities – and seemingly lose interest in making change occur. Therefore, when farmers are given advice when they are under stress of some sort, either financially or personally, they may ignore advice given and become more conservative in their approach to change. That is, they do things the way they have always done them and are unlikely to be persuaded to change practices regardless of the rational or economic justification. Change under these circumstances is likely to be very difficult and farmers will take a more traditional and conservative approach to farming operations during stressful periods.

Bias in decision making processes

Decisional bias is a common fault in decision making processes. Analytical approaches assist in limiting decisional bias, however, many biases are commonly overlooked in a range of decision making approaches. Nuthall (2011) lists a range of biasing types, to which agricultural examples have been added for the purpose of this paper. These include:

1. Anchoring – conclusions are altered or differ because of a different starting point (a discussion on previous high wheat prices influencing the price at

which you are prepared to sell wheat in a 'soft' market).

2. Selective abstraction – picking out evidence that suits (presentation of selected agricultural trial data to farmers is common).
3. Conclusions without evidence (global warming will destroy farming in this area).
4. Overgeneralisation – creating a hypothesis on limited information (the crop needs 100 kg of nitrogen every year based on results in the last two years alone).
5. Dichotomous thinking – putting observations in two extreme categories rather than recognising what lies between (disease needs to be completely controlled or crop will be lost – when it may only result in a 5% yield loss).
6. Availability effect (accessing easily obtainable information from the World Wide Web rather than researching through quality peer reviewed science papers).
7. Primacy effect – remembering the first of the information provided.
8. Recency effect – remembering the last of the information provided (last year's yields are remembered but difficulty is experienced remembering the previous year).
9. Halo effect – where something good is assumed to have several good attributes (eg. high yielding wheat also has good quality).
10. Framing effect – where information is presented in a 'positive' fashion (95 % fat free versus 5% fat).

So far, this paper has touched on a number of factors that might influence decision making in some way. The previous points identify a range of factors influencing any individual at any time. The following section deals with the use of personality types as a way of generalising and grouping individuals.

Influence of personality types on decision making processes

Creating frameworks to describe human behavioural patterns can be a useful way to anticipate individuals' responses to situations. Understanding personality 'types' can help our understanding of likely behaviour and assist us in understanding our own and others' strengths and weaknesses. Once some of these behavioural patterns are understood, we can tailor our approach to supplying and using information with particular individuals. There are many examples of personality type frameworks being used today to assist businesses in getting the most out of teams of people. Many frameworks are reasonably simple to understand with limited training and experience. An examination of personality traits as they exist amongst the farming community provides some guidelines that might help advisors deliver messages in a way that will influence decision making and fast-track adoption of new technology.

Strachan (2011) reports on one of the few attempts in Australia to define the rural culture using the Myers Briggs type indicator. The data source of this study came from 3000 farm managers and employees working in six major agricultural industries across Australia over a fifteen year period. During this study, the profiles of people working in the beef industry, cropping industries (including horticulture) and intensive industries (dairy, pig, and feedlot) were developed and compared with the Australian standard sample.

	SJ	SP	NT	NF
Beef	57%	25%	13%	5%
Cropping	52%	25%	17%	6%
Intensive	57%	22%	15%	5%
Australian sample	42%	13%	26%	18%

Table 2. Distribution of 'temperaments' in selected rural industries. *Strachan (2011)*

FROM THE **EDITOR**

This edition has a focus on the processes and available tools for farmers to improve their farm management practices and decision-making processes.

A thought provoking paper by APEN member and commercial consultant, Bill Long, based on his own post-graduate research on farmers' decision-making processes, leads this edition of ExtensionNet. The paper analyses these processes and the interaction with adviser's and other specialist sources. Bill provides guidelines on how farmers can improve their business processes through farm advisory boards.

Bill's paper also provides insights into the challenges of the reduction in government funded extension service, particularly on how the needed commercial farm level consultants can acquire the needed technical and business experience to provide guidance to experienced farm business managers. Structured decision support systems (DSS) may be a valuable tool to provide new consultants with structured experience they can build their business on.

Jessica Connor Kennedy's article takes a micro-look at individual decision-making processes and how building the capacity to better utilise different parts of the brain can assist extension workers (and their clients). Thanks to Jessica for adapting her planned APEN presentation into this paper.

Carole Hollier provides an outline of the BetterBeef program in Victoria which has combined farmer needs identified through market research with ABS data on the structure of the Victorian beef industry to target and deliver programs more effectively to the target clients.

For those who missed the webinar before the APEN annual meeting in December 2012, Heather Watson, Executive Director (Directrice générale), Farm Management Canada (FMC), has adapted her presentation into a paper. The paper includes recommendations on best practice in farm business management skills development. The work of the FMC provides an interesting contrast on how it has been able to prosper, unlike the Farm Management Society in Australia. Are there lessons in the paper for APEN?

This edition closes with an article from Denise Bewsell and the organising committee of the APEN conference in New Zealand providing some context on the conference theme of Transformative Change and how it is seen as a new direction in development of the agricultural sector in New Zealand.

I would like to welcome Jane Orbell-Smith who is working with me to edit ExtensionNet. Her experience in the health (and agricultural) sectors plus her editing knowledge and skills are greatly appreciated. A short biographical note is provided later in the newsletter (see page 16).

Ian Teese

The logic behind irrational decisions

The **'SJ'** temperament (52% proportion in the cropping industry) describes a culture that is less likely to adopt new ideas and will resist change. Decision makers within 'SJ' temperament need to be convinced of the need to change. As a group, 'SJ' adults tend to define themselves by their experience and they have a deeper investment in its value. Unless there is a clear and desperate need to change 'SJ' types prefer to stick to set procedures, established routines and historic precedents to guide them and prefer practical, concrete problems rather than theoretical or abstract concepts involved in adoption of new ideas. The ideas need to be complete, packaged well, have the relative advantage for change clearly evident, be compatible with current practices and thinking, simple to adopt and with a short term return on investment obvious. They are the most risk adverse personality type.

The 'SP' types (25%) are impatient with abstraction and theories, often have a 'do it now and fix the details later' approach to problems and take a flexible and adaptable approach to organising their time. They don't mind taking risks and like the 'SJ' group, like concrete problems and prefer guidelines, taking a step by step approach to problem solving and learning.

The 'NT' (17%) type strengths include problem solving and understanding complex systems. They enjoy pioneering almost anything and like to start new projects and may have trouble sustaining interest after the design phase. They value logic and knowledge. Intuitive (N) types are more likely to tackle new ideas –they are willing to 'have a try' at new technology without having the fine detail 'packaged'for them. Often, attention to detail is simply overlooked. This may not be the most successful approach to long term business success as the 'cost' of new learning in farming can be extremely high. Being the 'first' to try new technology often results in mistakes being made along the journey resulting in crop damage and lower yields

The 'NF' (6%) type value authenticity, integrity and harmony – may see their life as one long search for meaning. They are great participatory decision makers – focusing on the people in the organisation. They have energy and enthusiasm for the things they believe in and can have a tendency to ignore problems in the hope they will go away. These types could be approached to organise group events and collaboration on new ideas. They engage well with others.

Recognising that we don't all think the same way is the first important step in delivery of information. Just because we might like information presented one way, that doesn't mean others have the same preference. We can modify our message delivery techniques to include all personality types and get our message across more quickly and effectively.

With approximately 80% of the farming population being 'S' types, it is of little surprise that new and innovative technology that might excite an 'N' type could take a while to be broadly adopted.

Strachan (2011) goes on to say that

'[a] common strategy has been for extension operators to collect and analyse data on, for example, farm production, costs and profit, and to extend this information to clients. The strategy assumes that farmers have identified the problems and needs. It also assumes that learning is a passive process of information transferred. Such a 'directive' approach to extension would be generally inappropriate for the rural 'culture' described above. This would be especially true for those engaged in animal industries, where traditional methods of animal management are too often part of a deeply held values system.'

Although these frameworks tend to categorise individuals as having certain behavioural traits, it is important to recognise that these traits or types are really 'preferences' to type. It does not mean that individuals can't behave differently. By creating awareness of one's preference to automatically react or behave in a particular way, we can train ourselves to deliver and respond in a different manner if desirable.

So how do farmers make decisions?

Farmers work in an environment where multiple variables with different risk profiles and complex interactions impact on their businesses (Gibb, 2009). Gibb reports that:

'[g]ood farm managers appear to have a mysterious capacity to make 'best bet' decisions and implement them in a timely way. On closer analysis, they actually follow rules to achieve their success.' Gibb's rules include:

- Identify the critical variables and don't be distracted by non-critical variables. Experience, observation and a comprehensive 'world view' contribute to identifying the key items quickly. Smart farmers listen to 'experts' but don't follow them blindly because they know experts only ever see part of the 'big picture'.
- Act quickly and decisively. More often than not, the good options disappear quickly.
- Make near ideal decisions rather than analyse a situation 'to death' and as a result, miss an opportunity that depended on getting the timing right.
- Recognise that luck and timing are important to good outcomes that are largely outside of individual control.
- Being passionate about what they do provides resilience in adverse conditions.

Gibb argues that management skill comes down to the ability to make good decisions in a timely manner.

'Due to the unpredictable nature of the environment in which farmers work, it is impossible to make the best/most profitable decisions all the time. A decision that turns out as such is therefore a 'best-bet' decision with the wisdom of hindsight, and cannot be planned for with such a high degree of accuracy owing to the unknowns.'

Farm Advisory Boards - A way forward?

Most large businesses across the world use a regular formal meeting process to assist in strategic business management

and development. Few family farms do this. Businesses set up as companies have directors who, by law, are required to formally meet to manage the business. Small farm businesses operate under many legal structures and have regular production discussions with a cropping advisor or a financial advisor such as an accountant. These meetings are often separate and may involve different members of the farming family business.

Often, meetings involving all members of the business are only held in times of crisis, such as a looming succession issue or financial pressure caused by drought or a major purchase decision such as the farm next door coming on the market. Making decisions under such pressures can be stressful.

Board meetings provide a structured, disciplined platform to deal with the myriad of production, financial and personal factors that need to be considered in running any business. They provide a regular opportunity for communication between all business partners and for sharing of visions and goals as well as planning for the future.

Successful (farm business advisory) boards utilise independent chairpersons with the skills to facilitate discussion in a way that includes all parties in discussion. An effective chair should have a good understanding of decision making processes and be able to minimise the influence of bias and prejudice in decision making processes. They might also bring other skills that are important to the business such as finance, production or human resource management skills that will assist in driving the business forward. An understanding of the personality types of the people involved in the board (mostly family members in farm business) is also useful as this provides an opportunity to recognise differences in the behaviour of individuals, thereby creating an opening to both recognise and exploit each others' strengths in order to move forward. Facilitation and interpersonal skills are more important than good accounting or agronomy skills for this task. These are skills that can be learned relatively quickly and developed with practice.

Just as farmers invest in the hardware (machinery) to grow the crops and service the equipment well before busy periods, it is equally important to invest in and service the human resources that actually run the business. Faulty decision making is as damaging to a farm business as faulty and dysfunctional equipment. Investment in personality type profiling for family and business support members is a fulfilling and enlightening experience and can improve communications considerably.

Building skills in, or employing those with the skills, to use decision support systems to assist in analytical thinking can provide opportunities to explore a range of 'what –if' scenarios. Exploring the financial impact of a run of dry seasons, or a run of good seasons provides an opportunity to plan response strategies in advance and without the stress. This allows participants time to think through possible reactions if that situation was to occur in real life outside of stressful times. In this way, when such a situation occurs in reality, the response is considered and more automatic (and hence less stressful.)

Summary

Understanding human decision making process is important if we want to assist our and farmer clients in achieving goals. There is no one 'right' recipe, 'right' delivery style or 'right' formula for every farm business. Individuals within farm businesses (father and son, siblings, husband and wife teams) have different ambitions which may at times, be in conflict. Stage of life in the farming lifecycle, personality type, stress levels, entrenched values and beliefs, and, emotions are just some of the fundamental human elements that influence decision making processes on-farm. Consideration of these factors is essential if farm businesses are to progress.

Failure to account for these factors will most likely result in personal conflict which can lead to significant change and in some cases, business failure. Understanding these human elements will help us understand the reasons behind some of the decisions that are made that might occasionally contradict the advice given by industry support personnel.

A better understanding of the decision making process will help deliver information in a more effective manner; it will speed adoption processes and improve communication. Ultimately, an understanding of factors involved in decision making processes will result in better outcomes for agricultural business owners.

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References:

Abey A, Ford A 2008, *How Much is Enough?* Dennis Jones and Associates, Victoria

Briggs Myers, I 1980, *Gifts Differing, Understanding Personality Type*, Davies –Black Publishing, Mountain View, California

Gibb, I 2009, *How do some farm managers always seem to make the right decision?* in Flanagan-Smith, C, Making it practical, Discussion paper for Birchip Cropping Group.

Howard, K,2009 (pers. com)

Kahneman, D. and A. Tversky 1979. *Prospect Theory: An Analysis of Decision Making under Risk*, Econometrica 47: 263-91.

Lehrer, J 2009, *How We Decide*, Mariner Books Houghton Mifflin Hardcourt, New York

Long, W 2009, *People Factors Driving Farm Decisions or A Bit of Bush Psychology*, Grains Research Update, Adelaide, GRDC and Jon Lamb Communications, St Peters, South Australia

Long, W. and Cooper, I 2011, *Farmer Decision Making in Rainfed Farming systems – The role of Consultants, Farming systems Groups and Decision Support Systems in Australia*. Chapter 37, In: Tow, P., Cooper, I., Partridge, I., Birch, C. (eds) Rainfed Farming Systems, Springer

Long, W. 2012, The Logic behind Irrational Decisions, Grains Research and Development Corporation – Farm Business Update, Adelaide , ORM Communications, Bendigo, Vic.

McCown, R. (2010) Reinventing model based decision support with Australian dryland farmers: 5. Cognitive and social theory to inform analytical intervention in intuitive practice

Nuthall, P.L., The Psychology of Decision Making in Farm Management., Farm Management Group, Lincoln University, Canterbury (unpublished)

Rickards, L 2009, *Uncertainty, Complex Risk, Vulnerability, Resilience and Adaptation*. GRDC adaptive management forum Melbourne,

Robbins, S, Millet, B, Cacioppe, R and Waters Marsh, T, 2001 *Organisational Behaviour, Leading and Managing in Australia and New Zealand*, (3rd Edition), Pearson Education Australia Pty Ltd.

Simon, H.A 1955, *A behavioral model of rational choice,* Quarterly Journal of Economics 69: 99-118.

Strachan, R, 2011, Meyers Briggs Type Indicator Preferences by Industry and Implications for Extension. Pgs171-174 In Jennings, J., Packham.R.,Woodside.D., (eds) Shaping Change: Natural Resource Management, Agriculture and the Role of Extension

The Left and Right Hemispheres of Change

Jessica Connor Kennedy
J L Connor Consulting

Jessica Connor Kennedy is a graduate in Agricultural Science from the University of Melbourne. Since 2008, Jessica has managed her own Victoria-based consulting business, J L Connor Consulting, specialising in facilitating professional and personal growth with themes including career/life planning for rural women, making sense of complex information for farmers, mindfulness & innovation. She has collaborated with Dr Natalie McDonagh for 8 years, facilitating art-based thinking programs in courageous, forward thinking organizations and performing as Thinkers in Residence at conferences and other learning events.

Prior to her consultancy in 2008, Jessica enjoyed a range of extension, school education, social research and event management roles (Jessica was one of the organisers of the APEN Conference 2006) including with the Victorian Department of Primary Industries and Edmund Rice Camps.

Jessica is a practitioner who is as committed to her own continuous professional and personal development as she is in supporting others to do the same.

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This article was originally prepared as a presentation for a Victorian APEN Chapter function in February 2013 that did not proceed. The author kindly modified her presentation into this article for ExtensionNet.

Using both the left and right hemispheres of the brain more effectively is essential in change programs. Climate change adaptation is an excellent example where uncertainty and complexity is rife and many key stakeholders feel overwhelmed, including those who won't engage or change.

It is vital that change is facilitated in a way that enables stakeholders to work with the inherent uncertainty and complexity rather than to hide under a rock. To do this, we can turn to neuroscience research that shows us the way the brain is engaged determines how well we can learn and make decisions in complex and changing environments. It also shows us that the brain's right hemisphere plays a crucial role in this.

First, some myth busting. The idea that language is based in the left hemisphere of the brain, and creativity and visualization in the right became very popular due to 1960 and 70's patient studies. The work of eminent psychiatrist Iain McGilchrist (2011) demonstrates this is entirely false: both hemispheres are involved in language and in visual processing. We also use both hemispheres for imagination and for reason. 'The reduction of the two sides of the brain to mere seats of certain skills or qualities and the application of this to education, are based on oversimplifications of tendencies that the brain exhibits' (OECD, 2010).

It is true that the left and right hemispheres of the brain offer different versions of the world. And over time, particularly in the Western world, the two hemispheres have become more and more divided. This is due in part to the role of the corpus callosum that connects the hemispheres, conveys information and enables one hemisphere to inhibit the other when active.

In brief, McGilchrist characterises 'the divided brain' (2011) in the following way:

Left hemisphere

The left hemisphere of the human brain pays attention with narrow, sharply focused, attention to detail. It simplifies reality into abstract mental models. It categorises, groups, and perceives things as known, fixed, separate and general in nature. It tends to look for what it already knows and fit that data into its existing frameworks. It also has a highly developed capacity to ignore what doesn't fit its preconceived models.

Right hemisphere

The right hemisphere offers broad, open, vigilant alertness and understands metaphor, implicit meaning and body language. It is concerned with embodied, felt experience; lived reality (not mental models of reality). It is adept at engaging with complexity, able to accommodate contradictory ideas, and is comfortable with ambiguity and uncertainty; acknowledging that some things are never fully graspable. The right hemisphere sees the whole and its ability to see and make tenuous connections is vital in facilitating creative, original ideas and innovations.

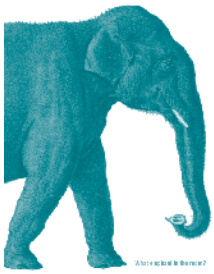
McGilchrist's research shows the left hemisphere is more effective at inhibiting the right than vice versa. Unattended this perpetuates the left hemisphere's dominant way, with effects that will be of interest to anyone concerned with facilitating change. Bureaucracy results from a left hemisphere dominant approach; people experience greater anxiety and stress in a left hemisphere dominant state. This is likely due to a reduced ability to be comfortable with uncertainty, a personal quality described by the English poet, John Keats, as "negative capability", the ability to remain in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason (Claxton, 2006).

No human with a normally functioning brain uses only their right or left hemisphere, but there is an increasing imbalance and division between the two with the way of left hemisphere prevailing. Redressing this growing imbalance by more actively using the right hemisphere has a vital role to play in developing and delivering more effective change programs.

So, where to start? Start with your own brain by practicing ways of engaging the right hemisphere. For example engage your senses, create a collage, take time to pay close attention to your surroundings, sketch what you see. Singing, Brain Gym and games are also effective for engaging the right

hemisphere and are known to be wonderful for wellbeing and productivity. The limitations of these types of approaches include that they are ordinarily done in addition to everyday work rather than being an integral part of the project development and implementation process.

Time-pressured work environments need processes that engage the right hemisphere quickly and effectively whilst dealing with real-life situations and the task at hand. Dr Natalie McDonagh's art-based thinking tools are designed for just this purpose (adaptivemind.net). Take a moment to try this simple activity using a card from a set called Think.



Bring a pressing work (or life) issue to mind.

Take a few centered breaths and then allow your mind to engage with the image, take your time. Allow different meanings and metaphors to arise. It may help to note these down.

What, if any, fresh insight does the Think card offer in relation to your issue? If nothing comes right now, that is perfectly ok. Practice being unattached to an outcome, this is another effective way to activate your right hemisphere.

In relation to long-term programs focused on bringing the hemispheres (more) into balance in the workplace the most effective I have seen are those involving art-based thinking. As an agricultural scientist in the Victorian Department of Primary Industries Graduate Program of 2002-3, my thinking shifted significantly during the 'Creative Futures' three-month art-based inquiry programme and subsequent courses. The intention of the Creative Futures course (designed and delivered by Natalie McDonagh) was to develop inner world capabilities for dealing with complexity and change. This learning enabled DPI staff to be more effective within the organization and in their work with external stakeholders. The changes in thinking brought about by greater engagement of the right hemisphere has positively influenced my extension and facilitation work for over a decade.

At work, strive towards embedding processes into project development and implementation that are known to engage the right hemisphere. You and your stakeholders will not only make better decisions during uncertain and complex times you will encounter more effective innovation and reduced anxiety. Try creating methods yourself; this will surely help engage your right hemisphere!

References:

Claxton, G. (2006). *Wayward mind: an intimate history of the unconscious*, Abacus,U.K.

McGilchrist, I. (2011). *Divided brain*. (Source: www.ted.com/talks/iain_mcgilchrist_the_divided_brain.html, retrieved 19/2/2013.)

OECD. Centre for Educational Research and Innovation. (2010). *Myth 6: the left brain/ right brain myth.* (Source: http://www.oecd.org/edu/ceri/neuromyth6.htm, retrieved 19/2/2013.)

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We can't solve problems by using the same kind of thinking we used when we created them.

Einstein

Market Research Hits the Target

Carole Hollier, Victorian Department of Primary Industries

Understanding your target market or farm segment is an important prerequisite in the design and delivery of contemporary extension programs focusing on farmer needs and the adoption of new technologies and innovation.

The Victorian Department of Primary Industries (DPI), BetterBeef Network, is an exciting new extension model for practice change in the beef industry. It provides a route-to-market for industry research and development outcomes. It is a co-delivery service model working with private service providers. The program is based on a collaborative approach with the private sector, building a partnership of private and public service providers addressing industry and government priorities.

Since its launch, the program has developed a network of more than 1,850 stakeholders associated with the Victorian beef industry. The network includes more than 1500 individual beef businesses and, 60 DPI and private service providers.

A driving factor behind the success of the BetterBeef Network model is the use of market research to understand the target client base.

The market research focused on segmentation of the different types of beef farmers. The segmentation used is based on research by the Australian Bureau of Statistics (ABS) which showed that of the 15,900 establishments running beef cattle in Victoria, only 35% or 5500 manage over 100 head of cattle. The market research is aimed at enabling an understanding of beef farmers' productivity aspirations, information needs and preferred

Carole Hollier is a senior officer working in service innovation and project management with the Victorian Department of Primary Industries, based in Rutherglen. Her interests focus on the development of novel engagement approaches to increase stakeholder and private sector partnerships in service delivery. Carole also leads market analysis research to improve understanding of farmer segments to inform extension program design and delivery.

Market Research Hits the Target

The market research is aimed at enabling an understanding of beef farmers

methods of engagement. This approach has been very effective in assisting the project team identify and engage medium to large scale producers and private service providers within the industry.

BetterBeef is focussed on equipping the medium to large scale segment of beef producers with the latest technologies to improve their profitability and sustainability and, provide an environment to facilitate adoption.

Combining the industry segmentation data from ABS and market research data has allowed BetterBeef to define its target market as 3500 Victorian beef producers managing over 100 cattle who are receptive to productivity messages. Of the beef producers who attend skill and knowledge activities, 43% interact with DPI with the balance (57%) working with private service providers highlighting the importance of BetterBeef's collaboration with the private service provider sector.

Additional market research to better understand beef producers with large herd sizes in conjunction with additional stakeholder engagement has assisted BetterBeef to further develop the most appropriate suite of products and services to target different market segments.

Pasture improvement, increasing stocking rate, herd health and reproductive efficiency were key areas identified by the target segments to achieve increased on-farm productivity (and profitability). As a result, a suite of existing and new short courses have been developed and delivered to address these key disciplines.

Escalating costs, the less favourable cost price ratio and, access to appropriate finance are other issues farmers identified as limiting them achieving their desired productivity increase. New skill and knowledge modules and/or courses are being developed and piloted to address these issues.

Another change has been recognising that time constraints are a major reason large scale beef producers do not attend skill and knowledge development activities. To address this issue, BetterBeef have moved to telephone seminars and from afternoon to evening activities. This has resulted in a four-fold increase in average participation rates. Increasing the online provision of technical information and a fortnightly Technical Note in the Newsflash electronic newsletter also assists these times constrained farmers.

Producers in the Network are encouraged to benchmark their own farm performance with other participating farmers and to use whole-farm planning as an additional tool to improve productivity and natural resource management. This aims to assist producers gain a thorough understanding of the strengths and weaknesses in their businesses.

Jointly funded by DPI and the beef industry, the BetterBeef Network is an example of DPI's new direction in action. It involves working collaboratively with the private sector to build public private partnerships that deliver on industry and government priorities. The project plans to engage up to 3,000 producers in Victoria.

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Whilst many of his philosophies were off centre the following quote from Machiavelli is concise;

"I'm not interested in preserving the status quo; I want to overthrow it."

Where 'Best Practice' meets the 'Unknown Unknowns':

Changing Behaviour When You Don't Know What You Don't Know

Heather Watson, Executive Director, Farm Management Canada

Originally presented to the Australasia Pacific Extension Network 18th Annual Meeting. December 2012

Farm Management Canada is the only national organization dedicated exclusively to the development and distribution of business management information to Canadian farmers.

In fulfilling its mandate to increase farmers' awareness and adoption of beneficial management practices towards realization of business goals, *FMC* must be in tune with both the learning preferences and practices of farmers; to meet their learning needs with not only the information they want, when they want it, and how they want it, but also the information they *need*.

While serving as the United States Secretary of Defense, Donald Rumsfeld famously remarked:

There are known knowns; there are things we know that we know.

There are known unknowns; that is to say there are things that, we now know we don't know.

But there are also unknown unknowns – there are things we do not know, we don't know.

Since its inception in 1992, Farm Management Canada has derived its success from the realization that the "unknown unknowns" apply at both the organizational level and just as well, to farmers.

In the first instance, we simply don't know what we don't know. We endeavour to ask farmers "What do you want? What do you need? How do you need it?" Enter the second instance, whereby we may wish to ask ourselves – do the farmers know what they need and how they need it?

Learning Preferences vs. Practices

There is a distinct difference between one's learning preferences and learning practices. For the former, you may say "I prefer reading instructional manuals," however, in practice, you do not implement change or adopt new practices until you are personally led through the exercise. Therefore, when asking "What do you need?" the 'unknown unknowns' become the discrepancy between what one thinks they do versus what actually happens. This translates into a discrepancy between what they may want versus what they need.

2020: Planning for the Business Management Needs of Canadian Farmers

In June 2012, FMC released 2020: Planning for the Business Management Needs of Canadian Farmers : a summary report of farm business management needs and opportunities based upon a compilation and analysis of needs assessments and consultations conducted over the past five years.

Key findings from the report indicate farmers desire skills related to acquiring, organizing and accessing information to make confident business decisions. Thusly, skills development not only relates to the content (for example, learning how to create a business plan), but further, to effectively acquiring and using knowledge.

We look at the acquisition of knowledge in terms of three key factors:

1. Content
2. Delivery
3. Access

The report finds that there is no shortage of content, but rather a lack of, awareness of and access to, information and resources. Since current knowledge transfer systems only work well for farm managers who are self-motivated or skilled self-learners, we must take a look at our information delivery systems including learning format.

The "unknown unknowns" become increasingly important in extension education and skills development as extension must evolve beyond the "one-size-fits-all" format to the provision of highly specialized farm business management expertise.

Best Practices for Farm Business Management Skills Development

The 2020 Report points to a handful of recommendations concerning farm business management skills development. These include:

- Communicate tangible benefits reaching beyond economic to environmental and social goals;
- Start small, but get started – simplify skills

Heather Watson is Executive Director of Farm Management Canada (FMC).

Heather obtained her Bachelor's from the University of Guelph, and went on to obtain her Master's degree from the University of Warwick in Coventry, England.

Heather's passionate about education and committed to enhancing efforts to encourage better business management practices for a sustainable and truly remarkable agriculture industry in Canada.

Heather lives in Arnprior, just outside of Ottawa, Ontario.
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FARM MANAGEMENT CANADA
GESTION AGRICOLE DU CANADA
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development into bite-size pieces for easier digestion and comprehension;
- Forget a one-size-fits-all approach – the sector is too variable (farm size, type, region, etc.)
- Provide targeted information and delivery that the audience can relate to (ex. farmer to farmer)
- Incentify through accreditation and industry recognition;
- Embrace communication technology and innovation to reach new audiences in new ways (ex. social media)
- Ensure an element of implementation and follow-up providing continuance and commitment;
- Encourage group activity and benchmarking for collective intelligence and healthy competitiveness through benchmarking and comparison, and,
- Incorporate a learning program for ongoing, multi-stage involvement.

Something for Everyone

If our ultimate goal is to change behaviour at the farm level (ie enhance farm management skills) we must embrace the "Barnum Principle" (something for everyone) ; not only recognizing the farmer, but also those who train, educate and advise farmers through "train the trainer" techniques.

Given the breadth and scope of farm business management, farmers often feel over-whelmed, do not know where to start, where they are going, where they will end up, and,..if it is where they want to be!

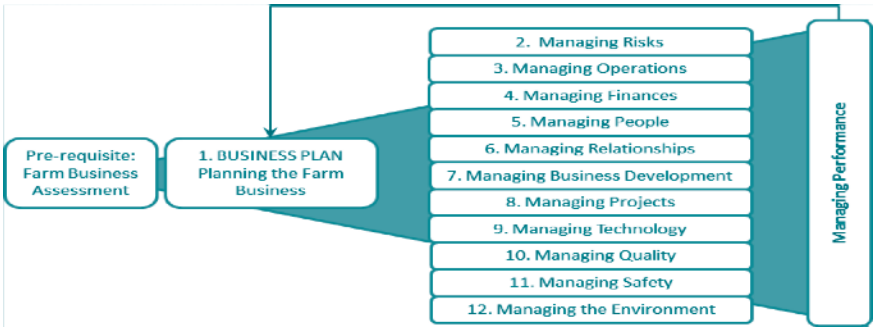
Using a comprehensive approach to learning coupled with diverse learning formats provides a specialized, navigated path to skills development.

A Coordinated, Comprehensive Effort

Over the past year, FMC has adopted a Learning Architecture framework to identify the skill areas required by farm managers and to map those requirements to existing resources. FMC strives to help farmers navigate through the various learning opportunities to fulfill skill and lifelong learning needs.

FMC is on a steady path to updating existing and creating new resources in new formats to meet the learning preferences, practices and needs of Canada's farmers and, those who provide knowledge transfer to farmers.

In fulfilling the Farm Business Management Learning Architecture, FMC will:



- Actively seek out and provide access to available materials and resources to provide the best scope of products for Canadian farmers.
- Create entirely new resources and management tools.
- Create complementary learning using multi-medium learning resources (ex. Agriwebinar®)
- Carve out a navigated path in learning within business management (content and delivery)
- Promote whole-farm planning to integrate all aspects of business management into a single management program – farm safety plan, environmental farm plan, traceability, etc.
- Investigate needs and opportunities of region, commodity and other demographic-specific stakeholders.

To provide a stable foundation for business skills development, and in response to industry needs, FMC is currently getting ready to launch two new resources: Business Planning Guide, Comprehensive Guide to Risk Management.

FMC will begin with print and electronic manuals catered to extension officers, workshop leaders, academia and advisors (whom tend to prefer this format). They will then proceed to build complementary formats and delivery channels to meet the learning preferences and practices of farmers. Alternative formats and delivery may include webinars, mentorship programs, facilitated online courses and, Twitter chats, to name a few options.

Online learning in agriculture has successfully increased farmers' access to expert, timely information; however, there is still a strong desire for face-to-face opportunities. Thus, programming is positioned as complementary to enhance reach and impact by meeting the diverse learning preferences and practices of stakeholders.

FMC'S INTEGRATED, MULTI-MEDIUM/ MEDIA LEARNING PROGRAM

FMC manages a multitude of learning platforms that allow for complementary learning extending beyond a single initiative. Any topic can be run through these channels, creating a multi-medium learning experience that meets the learning preferences and practices of the diverse stakeholders.

FMC's knowledge management and transfer mechanisms use multimedia, including but not limited to:

- Social Media: Twitter, Facebook, YouTube;
- Smartphone, Mobile Technology;
- Online Repositories/Databases;
- Webinars from Industry Experts;
- Bi-Monthly Magazine sharing Farmer Success Stories;
- Online Weekly Newsletter including Announcements, Events, Opportunities;
- Resources/Publications/Tools;
- Mentorship Program;
- Scholarships;
- Speaking Engagements/Industry Presentations, and,
- Research, Reports, Analysis.

FMC makes an ongoing effort to identify gaps in farm business management information and resources, working with industry groups to fulfill identified needs. FMC is creating new resources in new formats to meet the learning preferences, practices and needs of Canada's farmers and those who provide key business services to farmers.

As a national umbrella for farm business management in Canada, Farm Management Canada (FMC) is the only organization dedicated to the coordination, development and delivery of business management information, resources and tools to position Canada's farmers for success.

Transformative Change

Prepared by Denise Bewsell, chair of the 2013 APEN conference committee to provide context and background for the 2013 conference theme.

"… the transformative approach builds on an understanding of agriculture as a complex socio-ecological system. Transformative change looks to whole-system redesign rather than single technological improvements." (Reganold et al. 2011, p. 670)

This year, the APEN International Conference is in New Zealand, with 'transformative change' as the theme. This was chosen because it is timely to showcase what is happening in New Zealand, Australia and further afield in extension and the changing work environment. The idea of transformative change is to seize opportunities; whether these occur because we chose to change or because there seems to be no other option. We will be encouraging delegates to share their experiences and learnings and, about dealing with opportunities and threats in the field. We hope this discussion will extend beyond the formal conference sessions, to breaks, over meals and, as you explore the area.

We are convinced that increasing uptake of practices and technologies needs systemic change beyond our current thinking, as highlighted by Reganold et al. (2011). Many of the powerful drivers behind the challenges involved in working with people in industries and communities to achieve change are beyond the farm (orchard, forest, mine, boat?) gate. These wider social, economic, environmental and, regulatory drivers influencing change must be considered. True innovation therefore, requires changing the right parts of the whole system to ensure desired impacts are realised. In New Zealand, a newly funded project, Primary Innovation, is embracing this co-innovation approach. Funded by Government (through the Ministry of Business, Innovation and Employment), Primary Innovation is a five-year project which aims to bring about change, with an overall goal of gaining greater economic benefit and more sustainable future from the performance of New Zealand's primary industries. The project is a fresh approach to achieve co-learning and co-innovation.

The project will involve "webs" of participants in the NZ biological primary industries; forming innovation networks to co-develop solutions to the primary industry's most pressing problems. This approach is embodied in co-innovation and is underpinned by four key assumptions:

1. Complex problems are systemic in nature and located across farm, environmental, social and economic systems, leading to solutions that often result in unintended consequences;
2. Solutions to complex problems involve (i) trade-offs across competing interests in society, (ii) are located in wider systems, and (iii) are multi-faceted, involving alternative ways of organising social, economic and regulatory systems to provide an enabling environment that increases the fit of technologies;
3. Innovation emerges from interactions among multiple actors; and,
4. Knowledge is partial (no one individual holds all of the knowledge on an issue), situated (knowledge on an issue is context specific) and, socially constructed (knowledge is developed through interactions with others).

We will be providing an opportunity to hear more about this work during the conference through exploring the move from AKIS (Agricultural Knowledge and Information System) to AIS (Agricultural Innovation Systems), hearing about the NZ Agricultural Innovation System (see the following outline) and from participants involved in case studies from this work. Key questions to be asked (and discussed) are:

- Who are the relevant individuals and organisations?
- What are their perspectives on the problem?
- Are the causes of persistent problems clear?
- Is their sufficient cooperation?
- Are solutions converted into action?
- Is there a clear picture of progress?

Conference registration information will be available soon. We look forward to seeing you and showing you a bit of New Zealand in August this year!

Reference:
Reganold, J. P., et al. (2011) Transforming U.S. Agriculture. *Science* 332(6030): 670-671.

Denise's background is in agricultural extension having worked for an number of years as an extension officer with the Department of Primary Industries in Victoria, Australia. Her interest in understanding the adoption of innovations in agriculture prompted a move into research, working at the University of New England, New South Wales, Australia, before joining AgResearch, New Zealand in 2002.

Denise works on projects exploring the adoption of new technology, particularly environmental practices, in farming. Denise is a member of APEN and is a member of the editorial board of the Extension Farm Systems Journal.

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True innovation therefore, requires changing the right parts of the whole system to ensure desired impacts are realised.

APEN 2013 International Conference

Transformative Change: Chosen or Unchosen - Pathways to innovation, resilience and prosperity.

26 - 28 August 2013
Christchurch,
New Zealand

for more information:
www.apen.org.au

PRIMARY INNOVATION

An Outline of the New Zealand Agricultural Innovation System

Denise Bewsell

A collaborative and systemic approach to maximise sustainable economic benefit from research in the primary industries

Project Summary

PRIMARY INNOVATION is a new way for research and the primary industries in New Zealand to work together to ensure the best research is performed and transferred to more profitable growing and farming practice. ***PRIMARY INNOVATION*** encourages and shares ideas to foster co-learning and co-innovation that will ultimately bring greater economic benefit and a more sustainable future for the country.

Key Messages

By making better connections between the primary industries and scientific research there is a better chance of an uptake of ideas for improved growing, farming and forestry performance.

It is becoming more crucial that advances in scientific research and technology are aligned with the needs of the primary industries. It will be increasingly challenging to maintain viable businesses in the face of future challenges. Increasing challenges around land use, environmental practices, sustainability and competitiveness mean current and future opportunities need to be seized.

PRIMARY INNOVATION will seek to take key learnings from tangible project case studies to bring about wider change.

Background and Issues

There is concern amongst public and private investors in research, science and technology (RS&T) for New Zealand's primary industries – forestry, horticulture and pastoral – are not capturing the full potential gains from research investment.

With increasing pressure on the global economy and environmental quality, it is becoming more important that scientific research and technology development and the primary industries collaborate more closely to ensure maximum alignment. This needs to happen to maintain viable businesses in the face of future challenges. These challenges around land use, environmental practices, sustainability and competitiveness mean current and future opportunities need to be seized.

A change in 'the way that we do things' is being called for.

The New Zealand Government has funded a five year project (through the Ministry of Business, Innovation and Employment) which aims to bring about that change, with the overall goal of gaining greater economic benefit and a more sustainable future from the performance of New Zealand's primary industries and science.

The project is a fresh approach to achieve greater impact from our RS&T investment in the primary industries.

The concept being tested is for the project to have webs of participants in the New Zealand primary industries forming innovation networks to co-develop solutions to the primary industry's most pressing problems.

Case studies have been determined to help focus the research team's observations and interactions.

- Dairy herd reproductive performance
- Managing the Tomato Potato Psyllid in potato crops
- Forestry products links to market
- Water management in Canterbury.

To enable the project and case studies to be successful it will require an innovation system that can provide learning and dissemination of knowledge among networks of organisations.

Issues that may need to be overcome include:

- Different innovation policies of various stakeholder groups
- Conflicting business and research cultures
- Innovation network failures
- Capability gaps.

Through this analysis and the testing of the co-innovation concept the team will recommend opportunities to enhance the functioning of innovation networks. The aim is to have the findings from the case studies accelerate learning, the dissemination of knowledge and the adoption of new products, services and technologies.

" . . . the idea of the future being different from the present is so repugnant to our conventional modes of thought and behavior that we, most of us, offer a great resistance to acting on it in practice."

John Maynard Keynes, 1937

New APEN members

If you've recently joined APEN, welcome! You'll reap plenty of professional and personal rewards. If you've been in APEN for a few seasons now, be sure to say hello to the new members.

Daniel Casement

Executive Director, Rural Solutions SA

Email: Daniel.casement@sa.gov.au

Daniel Casement was appointed Executive Director of Rural Solutions SA in early 2012.

As Executive Director, Daniel will continue Rural Solutions SA's success as a viable government owned business, with the support and input of an independently-chaired board.

Daniel has been with Rural Solutions SA since 2001 and has fulfilled leadership roles in primary industries development and extension, agribusiness, regional development and social sciences. Prior to this, he worked in research roles for the Australian seafood industry.

As a leader of a small Executive Team, Daniel brings high-level innovation, strategic and operational planning and management, leadership and human resource management skills.

Daniel has experience in working in culturally sensitive areas through work with Indigenous communities across Australia, and with clients from the Philippines, Christmas Island and Cocos (Keeling Islands) Papua New Guinea and the Pacific Islands.

Within the last few years Daniel has applied his knowledge and experience into growing the business of Rural Solutions SA and leading his teams through difficult economic challenges, while ensuring strategic direction and growth.

Future success will see Rural Solutions SA become a globally recognised consultancy business delivering projects locally and internationally for tangible economic, social and environmental outcomes. Rural Solutions SA will provide a responsive and reliable service to government and other clients, drawing on its strong background in technical excellence, rural sociology and working with regional businesses and communities. The Rural Solutions SA business will provide highly skilled consultancy project teams in areas as diverse as international development programs, food demand chains, mining and environmental restoration, Aboriginal community engagement and climate adaptation.

Daniel holds a Masters in Business Administration (MBA) and a Bachelor of Applied Science (Fisheries). With 16+ years working across Australia in primary industries, Daniel continues to deliver high level technical consultancies, and builds the organisation profile of Rural Solutions SA.

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Welcome to these new members who have joined since last edition. We're glad to have you all on board.

Victoria Westbrooke	*NZ*
Neil Cliffe	*Qld*
Jessica Marsh	*NSW*
Debbie Atkins	*NSW*
Hemraj Gunesh	*Mauritius*
Kim Antonio	*WA*
Neil Webster	*Vic*
Jess Horton	*Vic*
Terry Batey	*Vic*
Rebecca Caldwell	*Vic*
Jen Pagon	*Vic*
Greg Martin	*NSW*

David Reid

Before taking the role as the Victorian Nursery and Garden Industry's Nursery Industry Development Officer, David had spent the past four years working in various roles for the Victorian Department of Primary Industries, Biosecurity Victoria Division, Plant Standards Branch (now 'Plant Biosecurity and Product Integrity Branch).

David regularly and actively participated in numerous state wide emergency responses related to plant pests and diseases and have often been involved or led investigations into breaches of the legislation affecting the nursery industry. He also participated or coordinated the planning, delivery and reporting of various field based projects in Victoria, involving the implementation of compliance strategies and regulatory activities so as to facilitate the export and import of various plants and plant products.

Whilst employed by the State Government David was fortunate enough to attain various state wide and national accreditations which complement his Master of Environment from Melbourne University (Plant pathology/biosecurity/risk management) and his Bachelor of Science (Botany) from Monash University.

Prior to time in government David was the ranger at the Royal Botanic Gardens in Melbourne, where in addition to regulatory activities he was able to take on an educative role, informing the community on the flora, fauna and conservation within our world class gardens.

David has a greyhound called Betsy, a cat called Hellion and two chooks that rule them both.

ENET

Jane Orbell-Smith

Jane has had a varied professional career initially training as a library technician with the Northern Territory Arid Zone Research Institute and then qualifying as a librarian with a major in Agricultural Science. Jane also has past experience of working as a Station Hand on a beef cattle property in the Northern Territory.

In recent years, Jane has moved into human health sciences and is currently employed as the Librarian for Subacute & Ambulatory Services, Metro North Hospital and Health Services, with Queensland Health. She has worked at the Arid Zone Research Institute, Institute for Aboriginal Development, Pitjantjantjara Council, James Cook University (Cairns), Mackay Health Service District and now at North Lakes, 30 minutes north of Brisbane.

Jane has a focus on continuing professional development, provision of services to remote clientele, and inter-disciplinary collaboration. She currently sits on the National Health Libraries Australia Executive, National ALIA Careers Advisory Committee, and is also the Editor of the HLA News. Jane is currently studying for her Graduate Diploma in E-Health with the University of Tasmania.

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Guidelines and deadlines

Submissions should be made in MS Word 6.0 with minimal formatting. A portrait photograph of the author is required. All photographs, figures and/or tables ought to be provided as separate files (preferably TIF or JPEG; photos scanned at 300 dpi). Feature articles should be around 1000 words and minor articles 500 words. The editor reserves the right to edit submitted material to meet space restrictions. Letters to the editor or general items of news of interest to the network are welcome. Articles should be submitted at least four weeks prior to publication.

Preference is given to articles that are grounded in some form of project or event.

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