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The role of agricultural consultants in the New Zealand Research, Development and Extension system.

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Summary

This paper discusses the findings from a pilot study of New Zealand agricultural consultants aiming to describe the role of agricultural consultancy within the New Zealand RD&E system with specific reference to their role in environmental management. The study comprised a literature review, interviews with informed persons and case studies. Agricultural consultants generally operate chiefly in the area of farm economics and management, but their positioning makes them well-placed for impacting positively on environmental management on farms. They assist producer decision-making by providing industry intelligence, up-to-date information and analysis of options. Consultants fulfil the role of knowledge broker reasonably effectively, but some were out of the direct RD&E loop.

Key words

Agricultural consultants; environment, RD&E system

Background

In New Zealand there are no RDCs as in Australia, and no direct government funding is made available to any R&D bodies except in very extraordinary cases. Government, through the Ministry of Research, Science and Technology (MORST) sets national research policy and then channels funding through the Foundation for Research Science and Technology (FoRST) to research providers like Crown Research Institutes and others through a contestable process. FoRST has been restructuring its research portfolio to become outcomes focussed. This means that research organisations have to work closely with end-users in order to enhance the adoption of government funded research outputs.

The Foundation for Research, Science & Technology invests in research, science and technology (RS&T) on behalf of the New Zealand Government to enhance the wealth and well-being of New Zealanders. FoRST is a Crown Entity with a board of

directors appointed by the Government. Investing nearly \$400 million annually in a wide range of RS&T initiatives with economic, environmental or social benefits FoRST is the largest single RS&T investor in NZ. FoRST is stimulating both research providers and the users of research (private industries and Government agencies) to innovate and create knowledge. It works closely with other Government agencies.

The Ministry of Research, Science & Technology (MoRST) is a government department, and was established by Cabinet on 1 October 1989, as part of the reforms of the New Zealand science system. A key element of the reforms was the organisational separation of the Government's involvement in: science and technology policy (MoRST's role); science funding (FRST's role); carrying out research and development (Crown Research Institutes, etc). MoRST develops research and innovation policies and manages the publicly funded part of the RS&T system on behalf of the Government. It works at the high level of policies, strategies and statistics. It contracts other agencies such as the Foundation for Research, Science and Technology (FRST) to manage the actual funding of research and innovation projects.

Part of the reforms in the 1980s was the abolishment of all public extension services and a change in emphasis resulting in the extension function being taken over by private extension providers and farmer funded organisations (e.g. Dexcel and Meat and Wool New Zealand) through levies.

The structure and functioning of the NZ RD&E system create gaps between research, development and extension. Agricultural consultants function inside these gaps in particular spaces but little is known of just how they work. For example: Do they actually process new information/research findings to create novel solutions for clients?; From where do they get their information?; Are they re-active or proactive in doing consultancy (i.e. waiting for their paying customers to ask questions and then respond with advice)?

A pilot study was undertaken to get a better understanding of the role of agricultural consultants.

Method

This study was preliminary and provides the conceptual basis, insights and structural base to inform a broader quantitative study. As such the focus was on collation of literature and qualitative data collection and analysis through key informants and in-depth case studies. Conceptually, the study mainly drew on Australian and New Zealand literature. The work of Rölíng (1992) and others like Campbell (2006) in relation to Agricultural Knowledge and Information Systems (AKIS) helped to provide a framework for exploring information exchange linkages and relationships and highlighted scope for strengthening critical information pathways.

A literature review was undertaken to gather information on: Scoping the number and type of agricultural consultants in New Zealand and the industries and regions within which they operate; studies researching the type and nature of the agricultural consultant-farmer relationship; consultancy and its relationship to extension theory;

and extension/consultancy as a driver of effective environmental management. In this paper we don't report on the literature review findings and conclusions.

Informed persons interviews were undertaken to scope the place, role and issues of agricultural consultants in New Zealand and to inform gaps from the literature review. A total of 18 informed persons were drawn from three groups: R&D generators like Crown Research Institutes, R&D companies and Universities; the pastoral and horticultural sectors; and agricultural consultants. A shadow web survey was used to collate and analyse interviews as they were completed.

Two case studies were also undertaken to: gain grounded insight into the relationship between consultants and their farmers; document the type of advice/service provided; explore the links made between technology and environmental issues; and to understand the nature of the learning pathways about advances in knowledge (technology and environmental). The case studies were chosen based on an environmental issue surrounding agriculture or horticulture and where consultants are actively working with farmers in the affected area. These were: agriculture (pastoral) case study in the Lake Taupo and Rotorua areas focusing on issues of nitrogen and phosphorus run off into the lakes; horticulture (fruit and vegetables) case study in the Hastings area focusing on issues of spray drift. In-depth semi-structured interviews were held with 6 consultants and 15 producers who engage consultants in the pastoral case study and 6 consultants and 7 producers in the horticultural case study.

Participants were asked several key questions that are shown in table 1.

Table 1: Key questions for research participants.

Participating group	Key questions
R&D generators	How does the R&D information generated get communicated or integrated into the wider AKIS?; How they view and engage with consultants?; How do they view the technology-environmental link in relation to their R&D? Key questions to the farming sector were: How do growers access information?; What role do they see for consultants?; What is limiting this role?; How do they view the technology-environmental linkage in relation to cut-offs?
Consultant employers	How do "their" consultants get "updated"?; How they view the role of consultants in extension?; How do they see the responsibility/ability of consultants in terms of the technology-environmental link?
Agricultural consultants	What type of consulting do you undertake?; How would you describe the way you work with farmers?; What factors maximise the effectiveness of your relationship with farmers?; What limits you in keeping up with what you need to - how could this be addressed?; How do you deal with trade off issues between economic, environmental and social?; How do you keep on top of information/skills in your consulting areas (with some concrete examples and their triggers and outcomes)? – prompting them to talk about environmental issues too.

Farmers	Why do you use a consultant?; What are your expectations from a consultant?; How do you work/interact with the consultant?; What factors help you to get the most out of consultant input?; How do you satisfy yourself that the information from the consultant is fully up-to-date? What other information sources do you use?; What role do you think the consultant should play in helping you understand and think about trade offs between economic, environmental and social?
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Data were analysed with a software program called Leximancer which identifies themes and relationships between key concepts – as well as through standard grouping of common and variant responses. Differences between case study areas and between consultants and farmers were sought.

Findings

Informed persons interview findings

In general the respondents said the New Zealand RD&E system was above average in integrating research into commercial farming activities. On a 10 point scale where 1 is totally ineffective/inefficient and 10 is as effective/efficient as possible, the average rating was 5.9. The opinion varied little between sectors with respondents from RD&E rating it as 5.9, respondents from farming rating it 5.8 and the consultants rating it the highest at 6.2.

Respondents did not agree on who is the primary client of research: 44% said it is agricultural consultants, agricultural suppliers and leading farmers; 39% said it is farmers in general; 33% said it is government; 22% said it is staff in government/semi-government agencies and departments; 6% said it is the public.

The RD&E sector was divided in terms of their views of the importance of agricultural consultants in New Zealand's RD&E chain. Fifty percent said consultants are important and 50% said they are unimportant or even absolutely unimportant. Those who rated them as important mentioned that: extension staff are "all virtually gone except for the ones in Dexcel extension"; consultants were important in linking the uptake of research to the farmers; consultants fill in a gap left by the 'demise of our extension service'; farmers rely on consultants to help them work through 'teething problems'. Farmers agreed with the last statement. Farmers and consultants agreed that consultants play an important role in the RD&E system. There were many opinions about the effectiveness of agricultural consultants in the RD&E sector and the factors that influence their effectiveness, and only two respondents indicated that consultants are not effective. One of them linked his poor score to employment and human resource advice where non-specialists sometimes provide advice which confuses farmers. Two farmers said that ineffective consultants get "weeded out".

RD&E respondents and consultants were divided on the issue of the importance of consultants in addressing environmental issues on-farm, but all the farmer respondents agreed that they are important. The consultants who rated the importance poorly said that there are other providers who could fulfil that role, while the others said that they should play a larger role in addressing environmental issues or at least need to be informed about environmental issues.

Six of the eight RD&E respondents said that agricultural consultants were not interested in addressing environmental issues on farms, were not up to date or saw it as a constraint – only responding if regulation legislation required a response. One consultant also said that legislation prompted responses from farmers. Consultants were divided on the issue, while farmers did not rate consultants as highly effective.

All respondents indicated that consultants are moderately to highly up to date in terms of their knowledge and understanding of the latest research findings and industry best practice. They all agreed that consultants could be linked better into the RD&E system and made several suggestions in this regard: annual forums (which used to happen) and workshops; newsletters/updates; funding extension positions; having consultants on research projects advisory boards and steering committees; involving them in research; registration as rural professionals.

Consultants said that they mainly give advice to farmers on good farming practice (technical advice) and finances (better managing money). Eight respondents said that finances are the most important driver, but that it may incorporate environmental issues: either through compliance with good agricultural practice through certification by supermarkets or compliance specifications for farming practices; planning for long-term sustainability; following best practice for pest and disease management; or just the farmers' strong environmental focus.

Case study findings (pastoral)

Pastoral consultants were three types: employed by a large company that were also into sales (although separated from the sales component); small independent companies; and individual, self-employed consultants.

Most of the work of the pastoral case study consultants lay in the strategic area – financially or related to longer term management decisions. The comparative levels of activities across this group are shown in table 2.

Table 2: Comparative levels of pastoral consultant activities	
Role or activity	Level undertaken (*)
Strategic financial advice – including feasibility studies; business planning and review	5
Strategic management planning – including stocking rates; feed budgeting; fertiliser management;	4
HR – including finding staff; succession planning; relationship management between share milkers and owners;	4
Soil and nutrient tests	3
Financial management – including monitoring and tax payments	2
Management Supervision (e.g. for Incorporations and Trusts)	2
On-farm technical assistance	2
Marketing	2
Animal management	1
(*) 5 = mostly; 4 = very often; 3 = often; 2 = seldom; 1 = very seldom	

Primarily, pastoral producers and managers viewed consultants as an outside source of expertise and knowledge that could provide new insights and knowledge, constructive criticism and advice. Their key expectation was for consultants to impact upon profitability but they said that potentially, consultants could play an important role in managing environmental issues. Currently consultants are not involved in environmental decision-making, and some saw this more as the role of Regional Councils or organisations such as Dexcel and that the main responsibility for the balancing of economic and environmental/social was the province of the producers/managers and/or boards.

Consultants, producers and managers all were very aware of the problems with nitrogen and phosphorus and water quality in Lakes Taupo and Rotorua, especially those in the catchment areas. The capping of nitrogen application (so-called Rule 11) was seen to potentially have a big impact on farm productivity. Consultants said that not a large part of their business was in the environmental advisory or management areas. But they recognised that this would increase as they saw future demands for consultancy in the area of compliance and also in undertaking advocacy on behalf of land owners.

A number of the consultants in the case study were involved in fertiliser planning and nutrient budgeting and they said that they were mindful of pasture needs and environmental restraints. They indicated that they have a role in awareness raising and looking to the future.

Pastoral case study farmers and managers had strong confidence in the effectiveness of consultants in terms of giving technical or financial advice. There were differences in opinions of managers based on whether they saw the consultant as checking on them – or being a buffer between them and their management board. Generally, there was a lower level of confidence in consultants' effectiveness in the area of environmental management.

Pastoral case study producers and managers generally saw themselves as medium to reasonably up-to-date in their knowledge about farming practices and saw their consultants as generally more informed than themselves – and generally quite up-to-date on the latest technical information. Most case study producers, managers and consultants said that lack of time was the main limiting factor to keep updated. There is tension between “earning and learning” as a consultant called it.

Pastoral case study producers, managers and consultants had a range of views about the effectiveness of the NZ RD&E system, while generally consultants were seen by producers and managers as very important to the RD&E process. There were a variety of thoughts on how consultants could be better integrated into the RD&E system, e.g. by having more workshops and training opportunities for consultants; through stronger linkages with researchers; by being in collectives to ensure that representatives could attend various training opportunities and share the information.

Case study findings (horticultural)

Three types of consultancies were described by the horticultural case study consultants: independent consultants (either linked to a large company but not

directly associated with products) (called independent); consultants employed by processing contractors (called processing contractor); and consultants directly linked to sale of products (seeds or chemicals) (called company reps). The different roles undertaken by these groups are illustrated in table 3.

Table 3: Comparative levels of horticultural consultant activities

Role or activity	Level undertaken (*) by type of consultant		
	Independent	Processing contractor	Company rep
Strategic financial advice – including enterprise analysis	3		
Business management	2		
HR – including finding staff; succession planning	2	1	
Soil and nutrient tests/fertiliser	1	1	3
Crop and paddock management	1	3	3
On-farm technical advice	2	3	3
Marketing	2		

(*) 3 = mostly; 2 = often; 1 = seldom

The independent horticultural consultants had more of a business and strategic role than having to do with day-to-day farm management or technical issues.

There was a general expectation by growers that consultants would be experienced, have a high level of skills and would be up-to-date in the latest R&D technologies with the ability to make improvements. Benchmarking was a key contribution that a consultant was seen to be able to make.

Most of the horticultural case study growers were mainly focused on the economics of production, followed by technical aspects while the environmental side of production came last. Growers did not agree on the role of consultants' involvement in environmental decision-making and it ranged from important to none at all. Growers mentioned that some environmental issues have been highlighted by their regional council and have instigated procedures to reduce environmental problems like soil and water agrichemical contamination because of sprayer filler areas and the use of sprayer filler pads. Consultants got involved in setting up some research with a CRI to help solve the problem when environmental concerns resulted in the withdrawal of a particular pesticide.

Spray drift was seen as a key environmental issue by most fruit growers and consultants. Independent consultants got involved in this issue at a strategic level. Vegetable growers said that nitrogen leaching was an issue, while soil sustainability (wind erosion, poor soil structure) was an issue for vegetable and berry growers. Some consultants also play an advocacy role.

When asked about the effectiveness of consultants, case study growers pointed out that there was a range of consultants and hence a range of effectiveness. The better ones were seen as very effective. The effectiveness of consultants was linked to their accessibility and willingness to find solutions for on-farm problems. Growers rated

consultants as medium to high in terms of their effectiveness in addressing environmental issues.

Growers in the horticultural case study rated themselves as reasonably up to date with the latest technology and practice, and they believed that consultants were generally more up to date with developments than growers. Some growers said that they (growers) could be more up to date but are limited by time and the sheer bulk of information to go through.

When asked about how they perceived the effectiveness of the New Zealand RD&E system, growers and consultants gave variable responses – from very low to very high. Growers and consultants believe that consultants play a critical role in the RD&E system. The processing company consultants emphasized their self-sufficiency in RD&E while still recognising the wider system.

Most growers had little idea about how to better integrate consultants into the RD&E system, while consultants had some suggestions for example: linking consultants into a technology transfer contract with research; and by raising the profile and acceptance of the role of 'spray' consultants by government, regional councils and industry organisations.

Discussion and conclusions

The New Zealand RD&E system has gone through several changes since the 1980s and has been well described by Hercus (1991), Journeaux and Stephens (1997), and Hall and Kuiper (1998). In Australia Stone (2005) has concluded that there is a discontinuity between research and development providers and the front line private consultants. We found that individual, self-employed consultants in the pastoral sector are very poorly linked into the New Zealand RD&E system and that some other consultants are not properly linked into the system either. Consultants play a big role in bringing new knowledge and innovations to farmers, as scientist often lack the skills for implementing their innovations among the farming fraternity (Guerin 2000).

Consultants in general function satisfactory according to the informed persons, but the others were divided in terms of their views. Respondents did not agree on who is the primary client of research. Perhaps some guidance towards making a distinction between FoRST funded and commercially funded research would have brought more clarity for them.

The primary objective of farm consultants is to increase economic value and net present value of the farming business of their clients by helping them to set realistic business targets and successfully achieve them (Butcher 1998; Farnsworth and Cathcart 2000). Additionally, according to Blackett (2004) and Crook (2002), the role of the farm consultants involves a broad spectrum of activities and they are engaged by farmers in various problem-solving and decision-making capacities. But the role of consultants is becoming more intense. Rather than concentrating on individual component outputs, the farm consultant is said to require a thorough understanding of their clients' businesses and personal priorities, and where they fit into the bigger picture of increasing production (Timms 1992), as well as an

understanding of the skills and knowledge they apply to operate their farms (Girard & Hubert 1999; Guerin 2000), integrating and assessing the impact of all farming inputs into the whole business (Butcher 1998; Wallace 2003). Also, technologically the farmer of the future will need to be able to interpret the chemical requirements of their crops, and make instant comparisons of feed availability, while from a marketing and price forecasting viewpoint, they will need to ensure that their rations combine the right ingredients at the right price, which in turn will enable the production of produce at a predetermined constituent quality in a timely manner (Chamberlain 1997). We found that there was general agreement that consultants are effective in terms of advice and support with financial/economic and technical matters. These are the areas in which consultants have the right knowledge and skill sets and experience and in which they traditionally work.

Farmers rated themselves as reasonably up to date with current knowledge, and they said that agricultural consultants have more knowledge than themselves. Knowledge obviously is a main attribute of and driver for using consultants, but other requirements that are similar to those required for a mentor play a role as well, like trust, the ability to motivate, challenge and encourage (Cohen 1995). Coutts et al (2005) said that successful consultancy is “all about relationships”.

Consultants and farmers are busy people, too busy to stay updated in terms of new knowledge and the tension between “earning and learning” is real. Consultants could be better integrated into the New Zealand RD&E system, which could also help them stay abreast of new knowledge and skills. There were several ideas from participants on how to better integrate them into the system, but it is an open question as to who is responsible for taking action in this regard: the agricultural and horticultural industries at large, because the industry at large will benefit?; consultants, because it is their profession and responsibility?; or companies who employ consultants because they want and/or require staff with current knowledge sets?. According to Penno & McLeish (2002) New Zealand’s RD&E system has already witnessed a growing trend among organisations like Dexcel to establish closer relationships between themselves, rural professionals and land users.

There was a consistent and clear message that environmental advice and servicing by consultants play a secondary role. But as the problem domain in which farm consultants operate has become significantly complex, interpretation and integration of knowledge from a wide range of disciplines have become even more pronounced (Ryan 1996). Farm consultants are increasingly faced with difficult decisions involving high stakes (i.e., the continuing performance of their clients’ business as well as their own reputation as a farm consultant), which require a considerable level of technological knowledge and skills and form the basis for establishing a trusting relationship with their clients (Kuiper et al. 1996).

Respondents were divided in terms of the potential role of agricultural consultants in servicing clients in the environmental area but they are all aware of environmental issues. Land users and farmers specifically will come under pressure to comply with an increasing number of environmental rules and regulations. Agricultural consultancy in its current shape and form is unlikely to cope with this, because consultants are not well equipped to give advice on solving environmental problems.

There are several possible but not mutually exclusive possibilities: the status quo remains, agricultural consultancy as it is stays unchanged and farmers cope by themselves; agricultural consultants become more pro-active in terms of helping their clients to address environmental concerns and issues; regional councils become more involved in assisting land users and farmers in particular; new forms of environmental consultancy for farmers evolve as farmers increased their willingness to pay for this type of service. Hall and Kuiper (1998) indicated that access to consultants was dictated by farmers' ability to pay.

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