

Private-public advisory networks: A case study of Australian dairy pasture seed

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Abstract. There is an increasingly complex mix of private and public advisory and extension services operating in Australia however there is limited understanding about how this mix of organisations and individuals influence farmers' decision making. This paper reports on a research project that considered implications of the current private-public advisory network for pasture seed selection decisions by dairy farmers. Data for the study was generated by semi-structured interviews with representatives of seed companies, seed resellers, public and private advisers during 2012-2013. Data was analysed using social network analysis (SNA) and qualitative data analysis (NVivo). Participants were asked about who influences dairy farmers' seed selection decisions, particularly with respect to their selection of superior pasture seed genetics. Findings suggest that both formal and informal relationships are important for knowledge sharing between researchers, advisers, seed companies and farmers who comprise the dairy pasture seed network. Farm systems advisers, both public and private, tend to refer farmers to seed specialists for advice about specific varieties, highlighting how specialised pasture seed knowledge has become.

Key words: pasture seed selection, advisers, knowledge sharing networks

Introduction

Feedbase management underpins the current and future profitability and sustainability of individual farms and the viability of the dairy industry as a whole. Advisers, both public and private are at the interface between farmers and the research and commercial interests that provide pasture seed products. To effectively support dairy farmers' feedbase management decisions advisers need to be able to share knowledge about how pasture species and varieties can be managed efficiently and flexibly within the farm system as a whole (Dairy Moving Forward DMF 2010). Delivery of effective extension by advisory service providers also requires understanding what motivates farmers at both annual and seasonal timescales to change their feedbase management (strategic and tactical).

When making feedbase decisions, farmers need to take account of dynamic influences due to market and seasonal volatility as well as a complex range of feedbase options (such as forage choices and superior plant genetics). They require advice about feedbase implications at a farm systems level as well as specialist advice about specific species and varieties. Farmers need access to and confidence in advisers with both generalist and specialist feedbase knowledge. Productivity and profitability of the Australian dairy industry feedbase is very dependent on the persistence and nutritive quality of home grown forages (Dairy Australia 2010). An estimated 6,000 tonnes of pasture seed, covering 300,000 hectares is sold each year to Australian dairy farmers.

Improvement in pasture performance is achieved through renovation and establishment of superior pasture varieties. However, the potential to improve productivity and profitability of dairying from the availability of superior pasture varieties is lower than expected. This is due firstly to many dairy farmers not necessarily choosing superior varieties in their pasture mixes or appreciating the value of proprietary varieties (varieties that have extensive R&D and quality measures associated with their commercial production) above common generic varieties. Secondly, unlike the animal genetics domain, there is no independent pasture evaluation system to underpin farmer decision-making in relation to pasture varieties. Therefore farmers have to rely on company derived field-test information or performance information from overseas, because varietal evaluations have shifted from the public to private sector over the last 20-30 years. Thirdly, there are a large number of possible pasture varieties to choose from with different traits of different importance to dairy farmers (e.g. heading dates, aftermath heading, pasture growth curve and nutritive characteristics throughout the season and endophyte availability) and pasture variety information is available to dairy farmers from a range of different sources. This creates confusion as well as 'margin-led' advice by those marketing and retailing pasture seed and increases the complexity of information that farmers must filter for their individual farm systems. Seed supply is a highly competitive commercial environment with eight main source companies and a large number of both 'tied' and 'independent retail groups'. Further, different retail groups stock and market a range of seeds. The ability of companies to provide tailored customer advice varies with commercial realities.

Farmers are therefore required to make pasture seed decisions within a complex technical and business context. Hence, it is important for the dairy industry and others with an interest in improved feedbase production to better understand how advisers can help farmers make profitable pasture variety choices that take advantage of superior pasture genetics. To date there is very little research into how farmers work with advisers from all spheres (public extension, independent advisers and seed retail companies) to assess or evaluate performance information of pasture varieties. The study in this paper was initiated by Dairy Australia (DA) to better understand farmers' decision making with respect to superior pasture seed genetics.

The first stage of the DA study, reported here, has focused on advisers, researchers (public and private), seed company managers and resellers. The second and third stages focus on farmers perspectives and will be reported at a later date. This paper addresses the following research questions: How do pasture seed wholesalers, seed retailers and advisory services influence dairy farmers' pasture variety selection and seed purchase decisions? Who are these advisers and how do they support dairy farmers' seed purchase decisions?

The conceptual background of the paper is discussed next. It begins by considering the sectoral scale implications of privatisation of extension, or advisory services and then the actor level, relational, role of advisers as knowledge-sharing brokers. The two scales are then united through a social network framework to make sense of an increasingly pluralistic seed industry advisory sector in Australia.

Background

Public and private advisory services

Farm advisers, both public and private, facilitate knowledge sharing and farmer learning within and between farm systems and therefore provide a link between on-farm and off farm 'domains' (Jennings 2011). From the mid 1980's a global trend towards privatisation of advisory services created increasingly diverse advisory service arrangements (Rivera 1996). Australia has retained its public agriculture extension services longer than most other developed nations but this is now significantly downsized and reconfigured, opening up greater opportunities for privatisation (Marsh and Pannell 1998; Hunt 2012). The process of privatisation has not simply involved a transfer of public assets, processes and expertise to the private sector but rather it has facilitated a mix of commercial activities that serve a range of business interests in which the farmer is a client. A fundamental shift brought about by the commercialisation of extension services means that business interests rather than political or bureaucratic interests prevail and there is a more complex mix of advisory services and 'institutional' pluralism (Rivera 1996). This is evident in the current Australian seed supply network where private capability has increased at the expense of public capability across pasture seed advisory and research organisations. There is also greater complexity in institutional arrangements and diverse options farmers may choose to support their decision making (Nettle et al. 2010).

Private sector farm consultancy, as practiced by professional farm advisors, fills much of the extension gap across Australia created by government withdrawal of provision of public extension services. It has also opened up commercial opportunities for agribusinesses. For the 'top 20%' of farmers, this market transformation has become an opportunity because these farmers understand the importance of professional advice to their businesses and are willing and able to pay for it (Stone 2005). However, he adds this leaves many farmers with limited access to information because they are unwilling or unable to pay for it. This gap has created an opportunity for agribusinesses that provide advice and information tied to other products and services.

Public and private advisers use a range of strategies when working with farmers including face-to-face interaction, phone calls and discussion groups. As generalists or specialists they provide information and advice about all aspects of farm management, business management as well as more personal issues such as succession planning (Stone 2005). Farmers rely on these professionals to monitor and sift large quantities of information. They also appreciate the knowledge advisers develop by having access to many different farming contexts and management styles. This enables them to broker information between farmers that is a less visible than providing information or products, but is a vital conduit by which knowledge is shared between farms.

Farmers distinguish between full fee-for-service private farm consultants and agribusiness service providers who offset their advice fees with product sales (Stone 2005; 2011). The former are perceived as being 'independent' or 'honest brokers' who provide 'unbiased advice free of pecuniary interests' and many farmers prefer advice that is not conditional on generating sales. Decisions about seed selection are described by Drysdale et al. (2010) as 'Level 1.

Product Choice decisions made in relation to product choice recommendations. They suggest support for these decisions is now dominated by the private commercial sector due to the privatised nature of product development and commercialized one-to-one advice, published brochures and field day demonstrations.

Advisors as brokers in rural networks and trust

Advisers are structurally positioned in rural networks to act as knowledge brokers or 'bridges'. This is an intermediary network role that underpins social learning, collaboration and innovation by enabling individuals and groups who may otherwise be unconnected to access and share knowledge (Hargadon 2002; Cross and Parker 2004; Winch and Courtney 2007; Klerkx and Proctor 2013). Within networks, brokers contribute significantly to network integration by facilitating resource distribution and the building of rapport and credibility across disparate social participants within a network (Parise et al. 2006, King et al. 2009). Brokers develop and use relationships to create bridging social capital (Lin. 2001; High et al. 2005) or 'weak' ties that are social connections providing access to resources outside those normally available to an individual or social group (Granovetter 2002). Relationships between farmers and public and private advisers therefore underpin the sharing of farming knowledge. Over time, the development of trust and confidence may strengthen relationships and produce strong social bonds based on a shared sense of welfare and interests (Hardin 2006).

Social networks, institutional pluralism and relationships

A social network perspective is useful for considering broader social structure and relational connections between individuals within social settings (Wasserman and Faust 1994). Analysis of relational patterns can help to address questions about how the flow of resources between social groups may be enabled or constrained. Privatisation of extension has brought about greater institutional pluralism and a more complex advisory services environment resulting in more complex extension networks and relationship patterns (Rivera 1996). Ison and Russell (2000) suggest that extension services can be more effective if there is a change in thinking from a 'first order' tradition in which advisory services are located in a linear chain for the purpose of transferring knowledge between research and farmers, to a 'second order' tradition that highlights 'relationships, particularly their nature and quality'. It is proposed in this paper that a relational, social network framework can help to make sense of differences in advisory support available to dairy farmers within the increasingly pluralistic public-private advisory services of the pasture seed industry.

Methodology

This paper reports on the first stage of a three-part research project intended to better understand influences on seed selection decisions by dairy farmers. The methodology used combined semi-structured interviews with social network analysis. Interviews were focused on advisers, researchers (public and private), seed company managers and resellers. Participants from the public (extension and research) and private sector (consultants, resellers and seed company staff) were initially identified in consultation with Dairy Australia personnel and subsequently through snowball sampling. Private sector participants were employed or self-employed in large and medium sized seed companies, distributors and consulting businesses. In all, 23 semi-structure structured interviews were undertaken between August and December 2012. A semi-structured interview schedule was prepared and validated by Dairy Australia personnel.

For the purpose of this study, five main position categories were identified for analysis including researcher, manager, reseller/distributor, 'aligned' (with a commercial seed organisation) or 'unaligned' adviser. Some participants also identified as farmers in addition to their advisory roles. The scope of the study meant that the sample size of participants was limited therefore the data provides the basis for descriptive rather than generalizable analysis.

Semi-structured interviews were conducted either face-to-face or over the telephone and lasted between 20 minutes to 1 hour and 15 minutes. Each interview was recorded, transcribed and returned to participants for them to review and revise as they considered appropriate. Of the 23 participants interviewed, 21 were employed in private businesses and 2 were employed in public organisations. Seven private seed companies were represented. For three seed companies there were two or more interviewees from different positions (for example: researcher, manager and adviser).

Interview respondents were asked to talk about their experiences in supporting seed selection decisions by dairy farmers and about what changes they thought were needed to improve farmers' access to genetically superior pasture seed varieties. Other questions not so directly

relevant for the focus of this paper included the relevance of pasture seed research trials, plant breeders' rights, endophytes and genetically modified, seed-breeding techniques. A question about who participants talk to about pasture seed decisions was also asked for the social network analysis model discussed in the next section. Transcribed data was thematically coded using qualitative software (NVivo 10™) and eleven general themes were identified including: who influences farmers' decisions, perceptions of independent advice, independently operated seed variety trials, decision strategies, business issues, knowledge and training, Plant Breeders' Rights, endophytes, use of GM technology in pasture seed breeding, motivations for change and innovation, social networks and relationships.

Social network analysis

Social network analysis is a method used to graphically and stochastically represent, or model, patterns of interactions between participants and their contacts in relation to a specified relational question (Scott 2000; Wasserman and Faust 2004). A visual network graph, or sociogram, represents a network structure at a particular point in time (a 'snapshot') and is based on relationships between people (or other subjects of interest) who contribute information about resources they share with others, for example knowledge. The data produces a relational model, however this cannot be generalised beyond the specific social network.

Two main components form the basis for interpreting a sociogram - nodes (dots) and edges (lines) that connect the nodes. An edge (also referred to as a tie) indicates the presence of a relationship between nodes. Nodes may represent individuals, groups, resources or activities within the network.

In the case of the pasture seed network the specified relational question was 'Who do you talk to about dairy farmers pasture seed decisions'? The social network software 'Pajek' was used to process and analyse the relational data provided by the respondents. This included contacts named by them (alters) as individuals, organisations and a range of general categories (see Figure 1).

The purpose of using semi-structured interviews in combination with social network analysis was to source rich explanatory data with the power to explore and describe the relationships indicated in the SNA models.

Findings

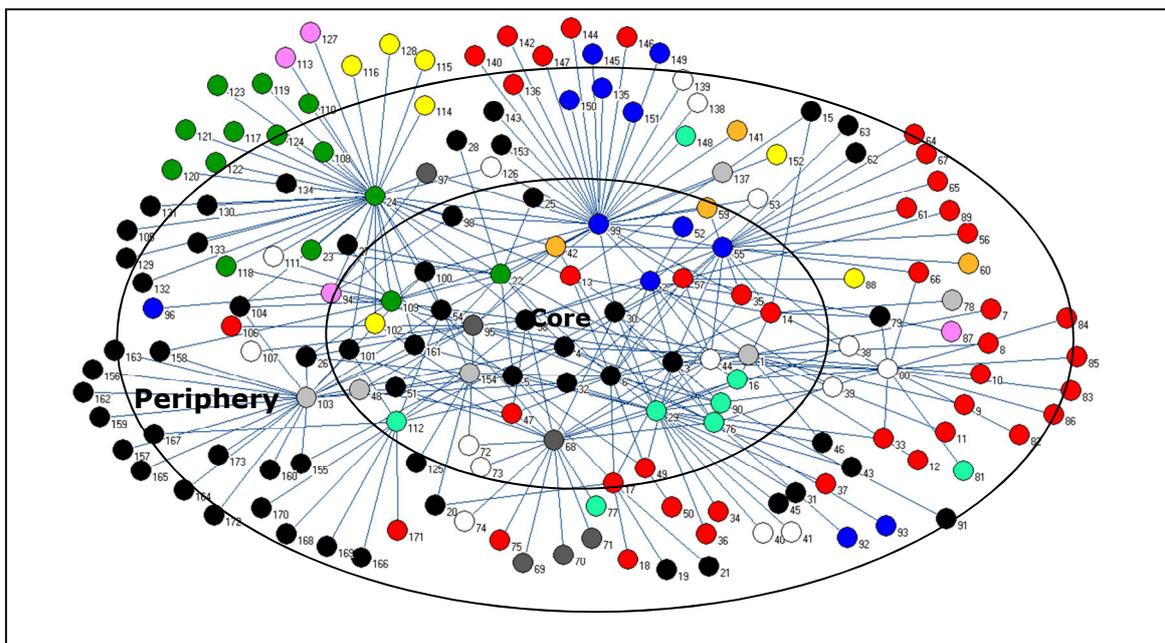
Social network analysis

The social network model of the dairy pasture seed network developed in this study collectively represents the connections (alters) named by 23 research project respondents (see Figure 1: 'Model of dairy pasture seed network showing core and periphery with nodes coloured according to organisational affiliation') who answered the question 'Who do you talk to about dairy farmers pasture seed decisions'? The network model (Figure 1) depicts a core-periphery structure. The nodes within the inner core are the most connected in this network, in other words they have multiple relationships with others in the network and these are not necessarily limited to others within their own organisation. By virtue of their numbers of ties within the core and periphery, nodes 24 (researcher) and node 99 (product manager) can be described as network 'stars'. These are network participants who are highly connected in the network and are sought after for advice. This finding is supported by qualitative data generated by the semi-structured interviews.

Brokers within the network model are located close to interface of the core and periphery because this enables them to connect individuals or social groups that could otherwise be unconnected. Key organisations in the network include the two largest seed companies in Australia (Wrightsons Seeds and Heritage Seeds) and the government agency, Department of Primary Industries (who employs both researchers and extension advisers).

Australian research organisations are also represented, with multiple relational interactions between researchers within and across the public and private research sectors. This is shown in Figure 1 particularly by the connections of node 24, a private sector researcher who is highly connected to other researchers within his organisation and outside it. Most service providers and advisers in the network also have network interactions with researchers. The social network model provides insight about the structural connection of researchers with agronomists, advisers and farmers. They are highly important providers of seed information based on their knowledge and experience. The social network also shows that researchers are well connected (all overseas nodes represent researchers) to their overseas peers. This suggests that researchers in the network are well positioned to draw on overseas research findings that may be applicable or useful in an Australian context.

Figure 1. Model of dairy pasture seed network showing core and periphery with nodes coloured according to organisational affiliation



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|--|---|
| ● Australian research/government organisations | ● Wrightsons Seeds |
| ○ DPI | ● Self employed (consultants and farmers) |
| ● Heritage Seeds | ● Medium sized seed companies |
| ● Small sized seed companies | ● Retailers/resellers |
| ● Overseas research organisations | ● Other |

Throughout the social network there is a mix of formal and informal relationships and while there are some highly connected individuals, no hierarchical leadership structure is evident. Rather, the network structure appears to support interaction among participants who may or may not share industry or commercial objectives. Possible conflicts between private business interests or public-private interests may however compromise the strategic interests of the seed industry and in turn may have a detrimental impact on end users of seeds, farmers.

Semi structured interviews

1. Who influences farmers’ seed selection decisions? Advisers who are not aligned with commercial products or services, both public and private, indicate that they focus their pasture related advice at a farm systems management level and that they have limited, if any, influence on farmers seed selection decisions.

Farmers probably pick my brains to know why they should use prairie grass rather than ryegrass. That is where I probably have more influence, rather than saying you should grow Banquet II or Matrix and so on (*Farm Consultant*).

Advisers also suggest that dairy farmers’ seed decisions are influenced by a range of businesses in the private sector including resellers, seed company agronomists and some independent agronomists. They also recognise that farmers are influenced by other farmers through informal but significant interactions that may create rigid perceptions about seed varieties that are hard to change. Further, advisers suggest that farmers are influenced by a ‘body of evidence’ from a range of sources that may include resellers and other farmers who can make a ‘good story’ about a variety. Farmers whose seed choices are primarily price driven are more likely to be influenced by resellers than the farmers who work with consultants. The Internet is a growing influence, particularly on younger farmers’ seed decisions. In contrast, relational connections are a significant source of influence on older farmers.

The younger farmers don't tend to want to build their relationships like the older generations do. They are more savvy. They don't worry so much about building a relationship. They are on the computers and until you can show them that it is a marketing side of things they will go with the computers (*Seed company manager*).

Public and private forage researchers influence both advisers and farmers capacity to make seed selection decisions through facilitating opportunities to visit and observe seed trial sites and publishing 'robust' scientific trial results.

2. Is the perception of and preference for 'independent' advice changing? As private business interests relating to provision of agronomic advice become increasingly pluralistic, the notion of 'independent' advice, previously associated with public extension advisers, is changing. Advisers participating in this study suggest that farmers are now likely to differentiate between those who provide 'credible' advice, or not, regardless of whether or not they are aligned or unaligned with a commercial seed sales business. The point here is that private seed company agronomists are likely to provide the most informed, or credible advice available about pasture varieties

I think the better information comes from seed companies themselves because they know more about the product. So they can give credible information and can tell you the bad news about it as well because they know their products better than anybody else – although it depends whether or not they give you the full story and that depends on the individual and the company (*Consultant - unaligned*).

Nevertheless advisers with broad farm systems knowledge and established networks may also be described as credible:

Credible technical knowledge combined with an understanding of people and context and ability to work through and utilise existing networks and arrangements to improve the situation. Not just as facilitators, it's more than that. To me it's about addressing problems and having the skill-set to do that (*Farm consultant*).

Credibility can be an issue between commercial seed advisers. In the example below a farm adviser expresses frustration about a situation where a reseller had persuaded a farmer to change the variety he had recommended because it was cheaper. By ignoring the advice of the adviser, the reseller recommended that the farmer use pasture seed that ended up significantly compromising his productivity.

They go into the distributors and get told to buy a certain grass but it may not be what he needs on-farm. I've got an example at the moment of a farmer who has a grass that is only going to get 10% of what he needs. Our independence is important because we don't have that sales agenda attached to it. That reseller has cost that farmer 12 months worth of pasture. And that is 12 months worth of milk (*Consultant - unaligned*).

The emerging significance of credibility rather than independence is articulated by an adviser who says:

Yes I do value independent advice. But interestingly I am thinking some of the people I trust are not necessarily independent...I can talk to a company rep to find out what they are happy with in their suite of things on offer and be reasonably confident that the better ones will stack up well against the better ones of other companies (*Public extension adviser*).

3. Is the seed supply industry becoming more crowded and pluralistic? The dairy pasture seed industry has become a 'crowded marketplace' with multiple seed company's offering a large number of seed products. This stimulates low-cost, margin driven pricing strategies by resellers and also impacts on the nature of relationships between farmers and advisers. Advisers, both aligned and unaligned, perceive that farmers' preference for receiving service from those with whom they have had long-term service and support is changing, particularly as dairy farmers are forced to make price related decisions in the wake of low milk prices.

The marketplace of the Australian seed industry is also complicated because market entry regulations have limited impact in preventing new businesses entering with varietal germplasm re-labeled as a new product. This enables some companies to drive low seed prices without providing advice and support at the expense of seed businesses that charge higher margins but provide advice and support.

I understand that the likes of Reseller M are now trying to make a supermarket type scenario. But margin allows people to survive doesn't it. If farmers are not making margin they don't expect anyone else to. I think over the next six months a lot of businesses will close their doors (*Aligned agronomist adviser*).

Nevertheless seed industry advisers are likely to insist that dairy farmers are more likely to respect advice that they need to pay for more than if it is available freely:

There is a big difference between a public adviser and a private consultant. If you are paying someone and he tells you to put on 300 kg superphosphate you will do it because you are paying him to tell you (*Reseller*).

Throughout the study there were indications of disconnects within the private sector. Commercially aligned seed advisers tend not to work with independent agronomists based on perceived conflict of business interests and preference for different business models (relational driven or margin driven). The effect of margin-driven seed pricing by some resellers is threatening the viability of some advisory businesses with a relationship focus and may drive out some highly respected and experienced agronomists:

Maybe because everybody is trying to grow their business all the time and so they're cutting prices to win business (*Consultant*).

Resellers and seed companies may also have different business interests. Some specialist resellers, even long experienced in the industry, expressed surprise that some seed companies prioritise marketing and making money ahead of serving farmers' best interests:

It's about making money. That has been the biggest eye opener for me in the time I have been in this business, it's the marketing side of things. But you just keep doing your job and keep going, it's fine (*Seed company manager*).

Intergenerational differences are also evident within the sector of unaligned private advisers. Younger advisers talk more about helping farmers manage business risk compared to older advisers who talk about helping farmers understand and manage their farm business as a system. Younger agronomic advisers recognise that introducing innovation to farm practice is part of their 'value proposition', or tactical advantage and that they need to work closely with nutritionists and other specialists to help farmers plan feed strategies.

Discussion

Advisory provision relating to the Australian seed industry is pluralistic and commercialised. The social network model of seed industry participants suggests that there is significant connectivity between researchers, advisers and product managers within and across public and private organisations. Some highly connected individuals ('stars') are located within the core of the network model and by virtue of their multiple relational ties across the industry are structurally well positioned to both share knowledge and exert influence.

Researcher 'stars' include individuals who have been working in the seed industry for many years and have developed relationships through making information and trial sites accessible to other industry professionals and farmers. Adviser 'stars' have also had many years of involvement with the dairy industry and demonstrate commitment to not only their own business interests but those of their farmer clients. Through time and style of interaction they have become 'trustworthy' within a range of relationships. Industry longevity and trustworthiness form the basis of the credibility of researchers and advisers, in addition to technical expertise.

The individual and collective leadership represented by 'stars' is a critical network asset that exists alongside the imperatives of business interests and branding. However, the crowded market place of seed providers and the ease by which new entrants can create opportunities to trade is making some network stars vulnerable – as price-driven seed supply strategies compete with relational service strategies. If 'stars' become a casualty of such strategies and are forced to drop out of the industry, as some anticipate, this is likely to create short to medium term expertise and relational gaps.

To capture the sought after productivity benefits at both dairy farm and industry levels through adoption of superior seed genetics requires understanding of how decision-making processes in relation to adoption are influenced (or not) by both pluralism and a crowded marketplace. Structural and relational implications of the pasture seed industry, made evident by the social network approach, can support industry stakeholders consider and manage short and long-term issues in addition to commercial perspectives.

Throughout the study, several participants referred to the 'silver bullet' mindset they encounter working with farmers and some resellers. The term is used to describe those who are looking for simple solutions to farming problems including access to 'ideal' seed varieties. Advisers however are generally wary of seemingly simple answers to issues of farm productivity and profitability and prefer to consider the impact of new technologies on the farm system as a whole.

Much of the knowledge about pasture seed varieties is now held by the private sector. However, better professional relationships need to be developed between resellers and independent consultants to ensure farmers receive consistent and appropriate advice about seed varieties for their farms. This may involve developing strategies to align private business goals.

Privatisation of advisory services has created a diverse and complex range of business structures and roles. Nevertheless informal relationships continue to underpin knowledge

sharing among researchers, advisers, seed companies and farmers. These informal networks include highly connected, respected, 'go-to' individuals who have very significant influence across the pasture varieties industry network.

Conclusions

The conclusions are firstly, that as a result of privatisation there are now multiple sources of advisory services available to the Australian dairy industry with potential to influence seed selection decisions by dairy farmers. However, public extension advisers and private advisers unaligned with seed companies are more likely to restrict their advice to the farm systems level (for example, recommendations about the feedbase mix of forage crops and ryegrasses) compared to advisers and agronomists aligned with seed companies who offer advice about specific seed varieties. Secondly, the dairy pasture seed industry is currently a crowded, pluralistic, marketplace with multiple seed companies offering a large number of seed products. This creates a business context favouring low-cost, margin-driven pricing strategies by seed companies and resellers. Some advisers whose businesses are based on sustaining long-term relationships with farmers perceive that farmers' seed purchase decisions are now more likely to be based on cost rather than trusted advice, particularly as dairy farmers are currently experiencing low milk prices. Thirdly, advisers who farmers regard as 'credible' rather than 'independent' are likely to influence farmers' seed selection decisions regardless of whether or not they work for an organisation with a commercial seed sales interest.

A key implication for the dairy industry and for individual dairy farmers is that pasture seed selection decisions are currently being made within a complex network of seed suppliers and multiple seed products. This may compromise the decisions of dairy farmers who do not have search time available to identify optimum seed choices. From an extension perspective there are already indications that some highly experienced and knowledgeable private advisers may be forced out of business if farmers' seed decisions are influenced by price and special deals rather than specialist advice. The implication of 'a crowded marketplace' for private seed companies is that competition results in price cutting strategies that may undermine the viability of their businesses. There is evidence that the overall balance between public and private interests in the pasture seed industry has swung towards the private sector, leaving the dairy industry with plenty of seed varieties to choose from but without coordinated advisory leadership that ensures that farmers can make optimal decisions and avoid making decisions that could have a negative consequence for their farms.

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