

# Farm Management - Bugger the roots, where is the future?

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## ABSTRACT

The Farm Management discipline has long been closely aligned with agricultural economics. The question we raise is not where either discipline came from but where is Farm Management going. The impact of globalisation, the rising tide of deregulation and chain reversal mean that farm management professionals who have traditionally focused on optimisation of activities at a farm level are now commonly expected to use sociology and management science to explain economic organisation and performance on farms. They also are required to look at relationships in the value chain(s) in which the farm sits. This paper will analyse the implications of such change for Farm Management professionals.

**Keywords:** Farm Management, value chains

## Preamble

This paper came about after a call for papers for the 47<sup>th</sup> Annual Conference of the AARES was announced. In particular the title of a paper in Concurrent Session A caught our eye. The paper to be presented by Sandra Martin and Nicola Shadbolt from Massey University and Keith Woodford from Lincoln University entitled "The farm management profession: Where are our roots?" was the focus of a tearoom discussion and hence the topic of our submission.

It is perhaps right to ask the question that these three presenters ask i.e. *Where are our roots?* However, the question that we ask is are the roots important in determining where the farm management profession moves in the future. For now we will leave this as a rhetorical question and come back to it in the conclusions.

## So Where Are Our Roots?

If one was to think about such a question, then the roots for the farm management profession as we know it today were when mankind (including ladies) first domesticated plants and animals. From this point forward we have managed a set of biological resources to produce the food and fibre that sustain us. The underlying principles that drive this process have changed little with time as the following extracts suggest (Wright, 1912):

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*The management of farms depends in large measure on the point of view from which the farmer looks at his work. If he farms simply and solely to make money, he will study economy at every turn, and carefully calculate all the chances before making any investment or undertaking a new venture. The man who farms to make a comfortable home for himself and his family will allow something of sentiment to enter into his calculations, asking not only will such and such an operation pay, but also will it tend to greater comfort and convenience...*

*In general farm management the main objects are: (1) to grow or rear farm produce, and (2) to dispose of such produce to the best advantage... If the practical side of farm management is to produce what is wanted at the right time, and sell goods in the best way at the best market, the economic side is to make the receipts surpass the expenses. The problem is to cheapen the process of production without diminishing the value of the goods produced. This is the problem of problems to the farmer...*

*Farming is, or ought to be, a business. Many seem to forget this. Accounts are often carelessly kept, if kept at all... There is no doubt that the want of business habits is the cause of many farmer's lack of success from a moneymaking point of view. As time goes on, this state of matters is improving...*

*If the farmer brings attention and business aptitude to his work, even in difficult times and trying situations he can make a living, possibly more, but everything depends on his personal energy. Times have changed, and much has come and gone, since the old couplet was written, but it is still true:*

*'He that would thrive must rise at five;  
He that has thriven may lie till seven'*

This extract from the turn of last century illustrates that the fundamental nature of farming has not changed much with time. The key points that come from the extract are that farming involves a multitude of tasks from growing a crop or raising livestock to marketing the produce with profit in mind. While the manner by which decisions are made on the farm is much influenced by the goals of the farmer or the decision-maker, farming is a business. In today's competitive, dynamic and complex environment, sound farm management, cognisant of the needs of the market, is indeed critical at the farm level if the farm business is to survive.

### **Who are the Farm Management Professionals?**

The previous discussion focuses on farm-level management but not the role of farm management professionals. Farm management professionals operate in a wide spectrum of occupations. They are not simply managers of farming businesses, but include educators, researchers, consultants and specialists within government and corporate businesses. But in the end their role is to support the on-farm production process although this role is increasingly broadening to include steps up and down the supply chain.

From the academic viewpoint there have been significant changes in the profession through time. We would recommend that readers take the time to look at the paper

by Malcolm in 1990 (Malcolm, 1990), which surveyed and reviewed fifty years of farm management in Australia. This paper describes how the major focus of farm management has moved from records and accounts, through production economic thinking, linear programming, decision theory and systems simulation approaches. He also quite correctly points out that the usefulness of much of this development has been questionable because of its "... *'partial farm management' orientation.*" He attributes this lack of relevance to "... *a methodological focus which is too narrowly disciplinary, and insufficiently dynamic, and also from the imperative of specialisation for progress to be made in particular disciplines.*" He goes on to note that "*The human element, the technology, the financial and the taxation aspects, the dynamic, complex and uncertain nature of farming, factors beyond the farm gate, the processes of farm management, and the need for sound judgements about 'the numbers' are more important aspects of farm management than was implied by the emphases on records, production economics, optimal plans, quantitative decision analysis and systems optimisation.*" He concludes that the need for balance is clearly the key to any future developments in farm management and notes that "*The traditional, relatively simple, farm management budgets have stood the test of time because they enable the full dimensions of the problem to be brought into consideration.*"

But is he correct in this judgement? There is no doubt that the budget is the useful integrator when dealing with farm-level decision making but the development of farm-level budgets is increasingly highly informed by the "... *narrowly disciplinary and insufficiently dynamic...*" tools that have been developed through the academic process. Can you imagine doing a farm budget now without an understanding of risk management planning techniques or developing a least-cost feed mix specification without the use of optimisation techniques? It is clear that there has been progress but at times with most disciplines the practice is behind the theory.

What is clear though is that a great deal of farm management decision-making has and still is based on the intuition of the decision maker and that the decision maker is having to integrate across a wide range of information sources as well as relying on their experience in similar previous situations. Some of these intuitions will be of a strategic nature (Murray-Prior & Wright 2001). Others such as rules-of-thumb based on this experience may give a near optimal result. However, when conditions change (e.g. in the wool industry where income from mutton has become an important component of overall income affecting the optimal ratio of ewes to wethers), farmers who rely on old rules of thumb will have lower than optimal returns. The dynamics of the decision process adopted by the individual farm-level decision maker is in the end the crucial factor in determining whether "... *the receipts surpass the expenses ...*"; which was previously referred to as "... *the problem of problems to the farmer...*" At best we currently poorly understand this process although some efforts have been made nationally and internationally to address this shortcoming (see Murray-Prior 1998; Edwards-Jones and McGregor 1994; Willock, et al. 1999a & b) but as a profession we still have a long way to go. Further research in this area is going to require farm management academics to court new partners from the fields of Psychology and in particular the specific area of industrial psychology.

However, the three basic tenets of farm management – "(1) *to grow or rear farm produce, (2) to dispose of such produce to the best advantage, and (3) to make the receipts surpass the expenses*" - have changed little through time. What has changed is that the environment in which these processes are operating has changed considerably and as a consequence the farm management professionals have been required to react.

## Change: Has Anything Changed?

The managers of farm businesses are continually in the midst of periods of change, challenge and opportunity. Inevitably this means other farm management professionals must consider the impacts on their roles and make appropriate adjustments. If we take Bawden's (1990) concept of eras in Australian agriculture we might be able to determine why the response of the academic area occurred. He described the following eras:

- The **production era** – there were a number of significant production technology break-throughs, which also coincided with high demand for agricultural products and good seasons. The farm management focus was therefore on diffusing the scientific knowledge to farmers.
- During the **productivity era** of the 1960-80's a number of factors began to inter-play which had an impact on farm management professionals. This was a period characterized by a push for increased production, consolidation of the technology, rising costs of inputs, protected export markets, normal incidence of drought and the emergence of farm management economics. The pressures on farm businesses meant that there was a growing need for information on the business and the need to determine the efficiency of input-output responses linked to a desire to optimize production.
- The 1980's –1990's saw the rise of interest in **sustainability** along with squeezed margins, droughts and the rise of globalised markets for agricultural produce. Bawden (1990) noted that the farm management professionals now added marketing to their business management and production technology toolkits
- The current era looks to be dominated by **consumer driven agriculture** as well as the factors that characterized the 1980's and 1990's. An additional factor is the final implementation of deregulation in a number of agricultural industries. This period looks also to be linked with increase production risk associated with a changing climate pattern and re-look at our current practices to bring them in line with sustainability and consumer objectives.

## Consumer Driven Agriculture - Surely Not!

At present farmers are caught in a pincer movement, which involves globalisation of the markets their produce is traded in, industry deregulation, increasing concern about the sustainability of farm production systems and the rise of consumer power. Unfortunately for many farmers in Australia this has coincided with a period of unstable climatic conditions. What then are the implications of these changes to farmers and farm management professionals?

### *Globalisation of Markets*

As a trading country, the profitability of farming in Australia has for many decades been influenced by events in global markets.

Globalisation can mean different things to different people, but here it is taken to mean the increasing ability for companies and individuals to do business around the world. This increasing ability to do business stems from a number of developments. The most notorious is the reduction in trade barriers achieved through GATT and

WTO. Their notoriety is confirmed by passionate protests in many parts of the world. But trade barriers are also being significantly reduced through the increasing number of bi- and multi-lateral agreements, with the EU and NAFTA being the most significant.

Tariffs and quotas are only two, sometimes relatively minor, barriers to trade. Reductions in bureaucracy help to increase trade. Thus increased harmonisation of a range of protocols covering labelling, safety and quality standards, packaging, approved agrochemicals and pharmaceutical products allows freer flow of goods.

New developments in other sectors have also increased the flows of goods around the world. The quantum shifts in information and communication technology (ICT) allow interchanges, that used to take weeks, between companies half way round the world can now be achieved at very little cost and incredible speed. Many of these interchanges can be automated. These developments are being applied to information flows about products and their logistical handling.

Developments in ITC and deregulation of financial markets allow easier international transfers of funds, which is obviously as important as the free flow of goods.

Flows of products are also being enhanced through changes in costs of transport, improved logistics and extended life of products.

Typically all these developments mean that a food manufacturer can source ingredients and processing wherever it is most economical to do so. The cheapest ingredients are not always the most economical, so risk, quality, consistency, reliability and logistical integration are important considerations.

These aspects of globalisation have provided increased opportunity for commercial growth and consolidation and the inevitable emergence of trans-national companies with turnovers in excess of many nations' GDP. Consumers, producers and supply-chain intermediaries that can engage in this trade theoretically enjoy the benefits, but there are many consumers and producers who are outside these arrangements and they are disadvantaged. A number of factors can lead to being an "outsider" and these do not only apply to developing countries. Geographically remote, small and dispersed populations are not attractive markets, and this description applies to much of Australasian agriculture. Whilst there will always be entrepreneurs willing to service these niches, these production sectors will be at a comparative disadvantage relative to their mainstream competitors. Similarly the markets they target may well be looking for cheaper products where, say, environmental, animal welfare or labour regulations are slacker and therefore cheaper.

What does this mean for farm management specialists? Whilst many of the decision-making tools do not need significant fundamental change, the context and variables to be considered are greatly enlarged. An awareness of these global trends is imperative, along with an appreciation of where a business or a national sector may have a comparative advantage. Comparative advantage needs to be reconsidered in the context of all the aspects of supplying ingredients (and sourcing inputs) rather than just concentrating on the relative physical input efficiencies. An ability to honestly confront these issues is essential. Producers and sectors that think they are significant and know what they are doing may be irrelevant in this new economy. Failure to adapt will lead to extinction.

Not all the implications of these changes can be negative for the “outsider”. These changes in trading and business relations and processes open up new opportunities in new markets. Carefully assessed and appropriately managed, these may be the saviours of many businesses. However this will require a raft of new skills in marketing, financial management and logistics that will frequently be beyond the individual producer. The re-emergence of co-operation, in whatever form, will also require new skills.

#### *Industry Deregulation*

Industry deregulation has meant rapid and significant change for the industries involved. The emphasis at farm-level has been to continually re-optimize the input and product mix relationship. In some cases this has led to the loss of farmers from the industry and amalgamation of capital (livestock, land and further processing). The necessary analytical tools have been available to the farm management professionals but the fallout from the change has meant that new skills and new professionals have come into the farm management domain. These skills have in the main been related to the need for change counselling but also the increasing need for all in agricultural supply chains to look at building relationships. Relationship building is now an important component of farm management. Relationships between consultants and their clients have always been important but the scope of relationship building has widened to include farmer-farmer, farmer-supplier, farmer-marketer, farmer-retailer and even farmer to final consumer. The importance of developing and maintaining these relationships is increasing as we see the emergence of competition between supply chains.

#### *Sustainable Farming Systems*

Sustainable farming systems have long been a matter of interest to practicing farmers. The long-term productive capacity of their land clearly has an economic value to them. However, some farming problems are hard to resolve even on a long-term basis, and some like salinity are caused by the actions of others, in other parts of the landscape. In addition, the uncertain nature of farming means that, at times and for some farmers, the demands of short-term survival outweigh the needs of the land for long-term sustainability. These conflicting pressures and responses have until recently been left to farmers to resolve as best they can.

However, first world urban populations are becoming increasingly interested in how the world’s non-renewable resources are being managed. Consumers are now demanding products that are supplied from sustainable management systems such as the Marine Stewardship Council’s accreditation of the Western Rock Lobster fishery in Western Australia (Phillips, *et al.* 2002). The use of ‘eco-labelling’ will increase, as consumers demand more knowledge of the products they purchase. In many cases the tagging of products as sustainable is not just linked to the environmental parameters associated with the product, but has been widened to include social concerns such as those developed by OXFAM for products such as coffee sourced from developing countries.

The major consequence of all this is that producers are, and will increasingly, be forced to alter their production processes to meet these new consumer demands (Deere 1999). As a result farmers will soon be required to operate in particular ways even when short-term need or even longer-term profitability may encourage different action. The ‘right-to-farm’ is increasingly being attenuated as we are currently seeing with the debates about land clearing and water use for irrigation in Australia. The lead taken by other industries such as the Marine Stewardship Council (MSC 2001) and the pulp and paper industry (IIED 1996) might provide us with some leads on how an industry might coordinate itself to develop auditable production systems and

supply chains that clearly show the sustainability of the production and subsequent production process.

In terms of the profession there is a need to be able to develop a new way of thinking which is able to balance the production objective with those associated with the wider concept of sustainability. Some current work funded by the GRDC on life cycle analysis of a number of grain supply chains (Narayanaswamy, *et al.* 2002) will help to provide information on the environmental sustainability of farming systems but there is still a need to widen the analysis boundary to investigate trade-offs between what may be the competing objectives of the farmer (maximise profit) and the consumer (minimise environmental footprint).

#### *Consumer Wants and Product Quality*

Consumer driven agriculture embodies many of the factors discussed above. Martinez and Davis (2002) recently noted that increasing pressure from consumers for increased variety, product quality and food safety, are having a significant influence on the food industry. Baines (2002) describes a strong move by retailers and the food service sector to enforce increasingly tighter food quality related standards. The reasons for this are that these sectors are at the interface with the consumer and are hence the target of food safety regulation and secondly they are using such standards as a way of growing market share.

Rising incomes in developed countries, and the rise of food as a fashion good, has meant that consumers are demanding greater variety in the product offer although recent evidence from the US (Harris 2002) found a 46% decrease in new food product introductions between 1995 and 2000. This however does not dampen the power that consumers are increasingly placing on food supply chains. Harris (2002) also noted the rise of smaller specialised firms, rather than the big brands, in new food product introductions. Branded products could be seen to becoming too inward focused indicating that there is a role for new consumer-focused companies which produce niche targeted products.

The improvement in our ability to measure product quality has meant that there is demand now for very specific products with characteristics that define not only the product but also its provenance. This represents both a challenge and an opportunity for farmers. The opportunity is to supply to high-value niche markets. The challenge is to crank up the production system so that, despite the uncertainties of climate, product specifications are met. This new environment demands of farmers, not a change of focus from production to marketing, but a new focus on marketing and an increased focus on production.

Food safety is a huge issue for first world consumers. Scared by, amongst other things, the crossover to humans of BSE, rich western consumers are demanding a lift in food standards. A more recent development (post the 9-11 outrage) has been the need for secure food chains that are secure from terrorist attack (Garren 2002). These factors have driven a proliferation of schemes to assure food production and processing systems minimise the possibilities of contaminated food reaching the final consumers. For the farmer this means strict adherence to recommended chemical usage and detailed recording of all husbandry activities. The reward is continued access to traditional markets often without a compensatory financial return.

Where possible, big retailers want to preserve the identity of product so that if a problem arises responsibility can be sheeted back to an individual farmer. The burden on farmers for meticulous care in production and recording is thus greatly increased. As the availability of IP and QA product increases the vulnerability of

farmers outside the system will increase. Often their fate as sellers will depend upon the performance of others. Where product is blended, contamination caused by one producer may impact on the capacity of other producers to sell their product. This may lead to farmers having greater concern for what their neighbours and other farmers are doing.

Similarly, there is strong pressure in the wealthy economies of the world for farmed livestock to be treated with greater concern for their well-being and comfort. Consumers react to the apparent cruelties of caged egg production by buying free-range eggs. They support animal rights activists when husbandry activities or animal transport processes are shown to cause increased death rates in livestock. For the farmer, the inevitable outcome is that production systems will become more constrained and some markets will close. To ensure changes are reasonable and fair, and are not taken to extremes, farmers must be involved in a process of discussion with their city compatriots that allows both sides to gain an understanding of each others view points. Perhaps this is in part a role for the farmer lobby groups but there is also a role for farm management professionals who can provide information to the decision-makers at the consumer end of the supply chain and those involved with establishing regulatory frameworks.

In terms of the profession there is a need to be able to work with farmers and those in their supply chains to ensure that auditable quality procedures are in place. A pressing need will be to act in a role of moderating the expectations of the supply chains with the reality of the farm production system. There is a need for all involved in the supply chains to have effective communication systems in place to ensure that costs of new quality assurance systems are shared along the chain. Farm management professionals (like farmers) are increasingly required to be able to integrate further along the supply chain and have an increased understanding of the parameters which impact on product quality.

## **The Agricultural Future**

Internationally, agriculture is in a transition phase which will see major changes brought on by the introduction of genetically modified (GM) plants and animals and the advent of a new era - the Agricultural era. This era will be tightly linked to the already major developments in the information technology area, especially e-commerce, which will continue its rapid advance making more information available more cheaply and routinely (Lloyd 2002).

GM cotton was introduced to Australia in 1996 with only minor problems related to the cost of seed but the controversy surrounding the widespread introduction of GM crops in the US and EU has meant that the Australian industry has had to develop a response suitable for Australia. There is no doubt that GM crops will affect the Australian arable industry irrespective of any Australian decision to adopt them (ABARE 2002). The initial reaction has been to adopt the precautionary principle and ensure that any commercial release of GM food crops will account for not only the agronomic and environmental factors, but also the market-based factors such as access and price. Of interest is that the major reaction against GM crop introduction has come, not from consumers, but from farmers who have expressed concerns about the impacts of their introduction on hard fought for markets.

McGregor (2002) noted that Australian agribusiness has also been slow to become involved with GM crop development for two reasons. The first is that high costs of entry have tended to exclude the smaller research and development budgets held by



the state departments of agriculture and our local input businesses<sup>2</sup>, although the Grains Research and Development Corporation (GRDC) has initiated partnerships with major international players. Secondly, the strong (but perhaps misguided) belief by many in the industry that consumer resistance will continue and as a result, non-GM commodities will receive a price premium. While GM commodity markets are still in a price discovery phase this may be a valid response but one fraught with uncertainty.

A recent ABARE report has concluded that if premiums for non-GM grains do not develop then GM grain crops will dominate world production (ABARE 2002). Should premiums develop then there will be a need to develop secure segregation systems to ensure GM grains do not mix with non-GM grains. The Federal Government's allocation of AUD\$3.65 million over four years in the 2000-1 Budget will go a long way towards investigating effective segregation and traceability procedures as a step to ensure the Australian industry is at the forefront of developments in this crucial area. Irrespective of adoption of GM crops, the development of segregation and traceability procedures are necessary to comply with quality and supply chain requirements.

In the scenario that consumer resistance to GM crops dissipates, then Australian agriculture faces a further looming issue. This is that the majority of the intellectual property rights associated with this new technology reside in the private sector and in the US and, to a lesser extent, the European Union. As noted above the Australian agribusiness sector has been slow to move in developing an international capability and/or partnerships with the major international intellectual property right holders. If the scenario developed by Monsanto in their 1997 Annual Report (see Figure 1) eventuates the impact will be a shift in power further away from farmers (and not to consumers as is the case at present). This will mean that for the first time in history the power in the supply chain will be wielded by farm input suppliers. The flow-on effect is likely to be a highly specialised and fragmented production sector controlled by those holding the intellectual property. It is therefore possible that the Australian grains industry could develop in a way not dissimilar to the highly vertically integrated poultry industries we see today.

In this scenario farmers will produce crops with very specific qualities, which will be targeted at a particular processor who will have a target consumer in mind. In the case of functional foods it could be a product to enhance health through say a vitamin or with agriceuticals to provide the customer with a regulated dose of some pharmaceutical. The clear message to take from this scenario is that the power has now significantly shifted back down the chain to the intellectual property (IP) owner who by virtue of ownership of the IP will be able to exert considerable power along the chain. On the negative side this control maybe benign but it could also be used to gain market power.

The influence of market power will need to be monitored by public bodies such as the ACCC and appropriate regulation enacted should inappropriate power relationships develop. Chain realignment however will provide some new opportunities. Because of the specific nature of the end-products of production the processing sector will require an entity to consolidate product in much the same way that consolidators

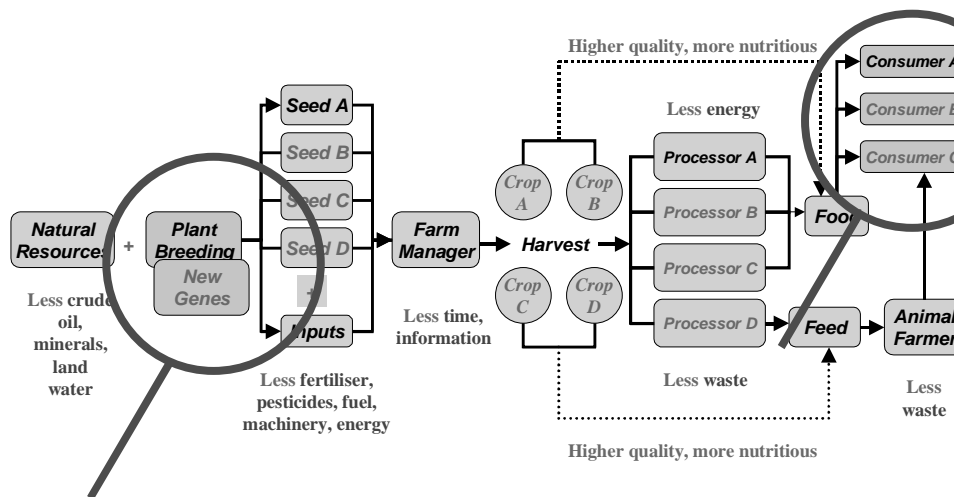
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<sup>2</sup> Perhaps in realisation of this problem a new joint venture – the National Wheat Breeding Program – has been formed to bring together the intellectual property, plant breeding technologies and the germplasm in the Departments of Agriculture in three states (Western Australia, New South Wales and Queensland) with the resources of the farmer-based Grains Research and Development Corporation. Source: Countryman, (2002).

currently work in aggregating fresh produce for supermarkets today. These consolidators could easily be farmer-operated groups established as cooperatives or grower owned companies.

**Figure 1: The De-Commoditised Farming System**

Source: Monsanto Annual Report (1997)



There is no doubt that in this new Agriceutical Era that there will be new demands on farm management professionals in general. The traditional techniques that have stood the profession in good stead over the years will still be needed but the scenario that has been outlined above will mean that there will be a stronger emphasis on relationship management and adherence to very tightly specified production and supply contracts. There will also be a requirement for increased attention to detail, not only in terms of the market environment but detail emanating from such things as remotely sensed production systems, internal (to the supply chain) and external (competitive) supply chain and market information, and monitoring of down-stream processing requirements ensuring processors are getting the product they need at the time they, and the consumer, require it. This will place a greater reliance on IT skills, which will continually need to be updated or alternatively, an increased reliance on ICT professionals.

### What does this all mean for Farm Management Professionals?

#### *Farmers:*

The impacts on farmers of this changing environment are several. First, it is imperative that they extend the boundaries of their operations. It is no longer sufficient to stay on farm and produce a standard product. Farmers must now go out and discover the market; they must find out about demand trends; they must differentiate their products; they must find high price niches, and create strong one-on-one relationships with buyers. They must discuss product qualities with potential buyers and negotiate mutually beneficial trade arrangements. The two way flow of information is vital and the creation of strategic alliances an important response to market complexity.

But farmers face complexity also in production and the pricing of products. To be labourer, planner, production manager, marketer and financial controller is probably beyond the capacity of any single farmer. The alternatives for the farm manager are to:

1. Make more and better use of off farm experts. This may require the farmers to better manage his advisors. Should he rely on one generalist consultant or should he employ several specialist experts? How can he determine who would provide the most valuable input to his business and how can he ensure he gets what he wants from the expert he employs? How can he choose between them when they give conflicting advice?
2. Develop farm family expertise, so that individual family members become expert in particular areas allowing the business as a whole to grow and prosper. Managing a family within the business would be a challenge for any business CEO.
3. Employ staff with specialist skills needed by the business but which are not preferred areas for family members. The size of the business may be a problem. Sharing specialist employees among a group of farmers may be a solution to this.
4. Co-operate with other farmers in a more general way. There will be benefits in increased market power in terms of both inputs and outputs. The new cooperatives concept may offer an alternative for improved coordination and marketing.
5. Simplify farming systems. This suggests a move away from the popular strategic option of diversification and a move toward one of specialisation of intensified effort in a small area. This may even lead to livestock farmers combining operations so that one breeds the cattle, another feeds the dries and another finishes the sale stock. This could see sheep and cattle production moving in the direction of the poultry meat industry.

While increasing complexity will lead to changes in farm management, it will also speed the trend for fewer and larger farm businesses, a long-term trend driven by the cost price squeeze. The effect on the nature of farmers and farm businesses is a Darwinian one. The better farmers will survive as those less able go to the wall. For those servicing farmers in some way this means their clientele are inevitably getting smarter and more demanding.

*Educators:*

The changing nature of farm management means that those helping train and prepare the farmers of the future have to ensure that:

1. Their students get a thorough understanding of the farm business as a whole. How the various elements of the farm business fit together is as important as a detailed understanding of each of those elements. This means teaching within the context of systems may be necessary. Alternatively, any teaching program will require a mix of specialist and integrating units.
2. The students' ability to understand increasingly complex systems is enhanced. Thought should be given to how students' personal constructs can be made more complex and more permeable, so that they are more readily able to absorb and use new ideas and knowledge.

3. The ability of students to communicate and work with others from different backgrounds is improved.
4. That students are instilled or inspired with a desire to keep learning. As the rate of change increases, it is those with enquiring minds and the mental flexibility to accommodate new knowledge who will remain successful.

#### *Farm Management Researchers*

Although farming is becoming more complex, the need for production-based research will remain. The impact on farm profitability of new wheat varieties, for example, illustrates the importance of this basic research and development.

It is important though, that research of this nature is embarked upon with a clear idea of how it fits into particular farming systems. The researcher must know the context of the problems before seeking solutions to it.

As farming gets more complex, it is likely that there will be a need for more whole farm research. This may involve working with groups of farmers, perhaps using techniques such as action research, to make improvements to whole farming systems. While specialist disciplinary researchers will be an important component in this, there will be a need for integrators; researchers who can take a pluralistic view of the problem and manage the input from the specialists. Specialists working in this environment will also need to be able to work in multi-disciplinary teams and accept that results from other disciplines may be equally valid even when they do not produce the same outcomes and implications as their own results.

#### *Farm Consultants:*

Consultants have an important role in guiding and advising farmers in Western Australia. This role will get more challenging as farmers demand more broad ranging and at the same time more specialist advice. To make the situation more difficult, the pool of farmers the consultants are servicing is shrinking and the more capable farmers left in the market will be more demanding.

The challenge for consultants is to determine how to service these changing needs. Sole proprietors may consider creating links with other consultants with specialist skills to ensure they can meet their client's needs.

Alternatively, the larger consulting companies may look at trying to satisfy all their clients needs by hiring or bringing into partnerships consultants with specialist skills in areas they have limited skills.

#### *The Emerging Agribusiness Farm Management Specialists:*

Those working in input and output industries servicing agriculture are likely to find two things. Firstly, it is to their benefit to create links with individual farmers to ensure they remain as customers or suppliers. The personal nature or linkages in the chain may be as important for big companies as it is for small farmers. A good local bank manager who is close to and understands his farming clients may be more important than any other factor in the bank, winning new clients and keeping old ones.

Secondly, the corporations may see it is to their benefit to support and improve the capacity of farmers to run sound businesses. Funding of programs that help lift farmers' business management skills may prove a wise investment.

## Conclusions

Farmers will increasingly become the main group of farm management professionals, assisted by a small band of generalist farm management consultants. Together they will rely on input from a range of other, mainly private sector, specialist consultants, researchers and trainers. Much research and extension will be conducted by farmer groups assisted by or in conjunction with other parts of the agribusiness sector. So that they will be able to manage this process and well as managing their farms, farmers will increasingly have both formal and informal educational qualifications and be continually seeking to upgrade their skills.

Academically the future for farm management is less certain. It will continue to struggle as a research discipline because in essence it is not a discipline but an integrator of disciplines. Much of the input will continue to come from specialists, but there will still be a demand for those, who like the farmers they mirror, will need to be jacks-of-all trades.

The professionals of the future will need to be highly cognisant and sensitive to consumer needs and the needs of the market. They will need to be well-informed and capable of utilising new ICTs to access information in global markets. Information about prices, current demand trends and markets are becoming more available in various media, yet for the large part, are not fully exploited by farmers. Farm management professionals can and should bridge this information gap.

The demand for products are changing globally. Because consumers are increasingly discriminating in their demand for food and agricultural products, flexibility and adaptability will be important. But it is not a simple matter of jumping on the bandwagon of what product to produce, whether to value-add or what degree of value-adding should be done. Careful analysis of various business options is important, therefore sound technical, business and applied economics skills are needed by farm management professionals.

Finally, in the preamble to this paper we asked rhetorically whether the origin of the farm management discipline were important in determining where the farm management profession moves in the future. In conclusion we would like to address the issue directly. There is no doubt that the past has an important part to play in current and future developments within the farm management profession but this paper has shown that the demands of the present and future have always determined the priorities on the agenda. Farm management has evolved based on the changing needs of the time. Continual change in the environment surrounding the agri-food sector is the one factor that the farm management profession can rely on. Successful farm management will therefore involve flexibility and adaptability to the constant changing environment. But one thing remains, farm management will remain multidisciplinary, interdisciplinary and an integrator of disciplines.

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