Strategic planning in grassland farming: Principles and applications

W.J. PARKER, N.M. SHADBOLT and D.I. GRAY
Department of Agribusiness & Resource Management, Massey University, Palmerston North

Abstract

Three levels of planning can be distinguished in grassland farming: strategic, tactical and operational. The purpose of strategic planning is to achieve a sustainable long-term fit of the farm business with its physical, social and financial environment. In pastoral farming, this essentially means developing plans that maximise and best match pasture growth with animal demand, while generating sufficient income to maintain or enhance farm resources and improvements, and attain personal and financial goals. Strategic plans relate to the whole farm business and are focused on the means to achieve future needs. They should be routinely (at least annually) reviewed and monitored for effectiveness through key performance indicators (e.g., Economic Farm Surplus) that enable progress toward goals to be measured in a timely and cost-effective manner. Failure to link strategy with control is likely to result in unfulfilled plans.

Keywords: management, performance indicators, strategic planning, vision

Introduction

New Zealand farmers compete in global and highly competitive markets for food and fibre products without government support and in the presence of a floating exchange rate. They are therefore directly exposed to fluctuations in export market prices and must adjust their farming practices, not only to account for changes in product returns and consumer needs, but also for climatic variability (Martin 1994). In addition, the long-term trend has been for agricultural product prices to decline and for costs to increase (i.e., a cost-price squeeze), despite the increasing proportion of value added products in recent years. Thus, to be successful in the long-term, the modern farm business must be structured to buffer business uncertainity but at the same time, provide flexibility to respond to new opportunities in the market-place and the capacity to generate sufficient funds to support growth in real terms. The appropriate process for determining how a particular farm business might best achieve these outcomes is strategic planning. This type of planning, to position the farm business for the medium to long-term (5+ years), can be distinguished from tactical and operational plans which guide within-year farming activities, and from the implementation and control functions of management (Parker 1996). The purpose of this paper is to present an overview of strategic planning in the context of grassland farming and to clarify the use of associated terminology.

The functions of management

Management at any level, or of any resource, involves three basic functions: planning, implementation and control (Koontz *et al.* 1982). In brief, planning is concerned with "bridging the gap" between the present and the future, implementation involves actioning plans so that they become a reality, and control focuses on measuring and correcting performance so that the outcomes specified in plans are achieved. For management to be effective, all three functions must be closely coordinated as illustrated in Figure 1 for pasture management. They also need to be applied, relative to the stage of life cycle of the farm business, to the fields of marketing and finance, as well as to production factors like pastures (Boehlje & Eidman 1984). This integrated and holistic approach to managing all elements of the farm is necessary if biophysical and socioeconomic sustainability are to be achieved.

The process of management

The dynamic and ongoing process of management is to work through the management cycle of planning, implementation and control at time-steps dictated by the rate and magnitude of change in the factors critical to the success of the business. These "critical success factors" can be identified through planning and should be monitored through Key Performance Indicators (KPIs). For example, milksolids (MS) production and price are both critical to dairy farm profitability, but the farmer can realistically influence only production. Management activity should therefore focus on enhancing MS output. The appropriate KPI for MS production is kg MS/day.

Figure 1 The inter-relationship between the planning, implementation and control functions of grazing management (after Gray *et al.* 1992)

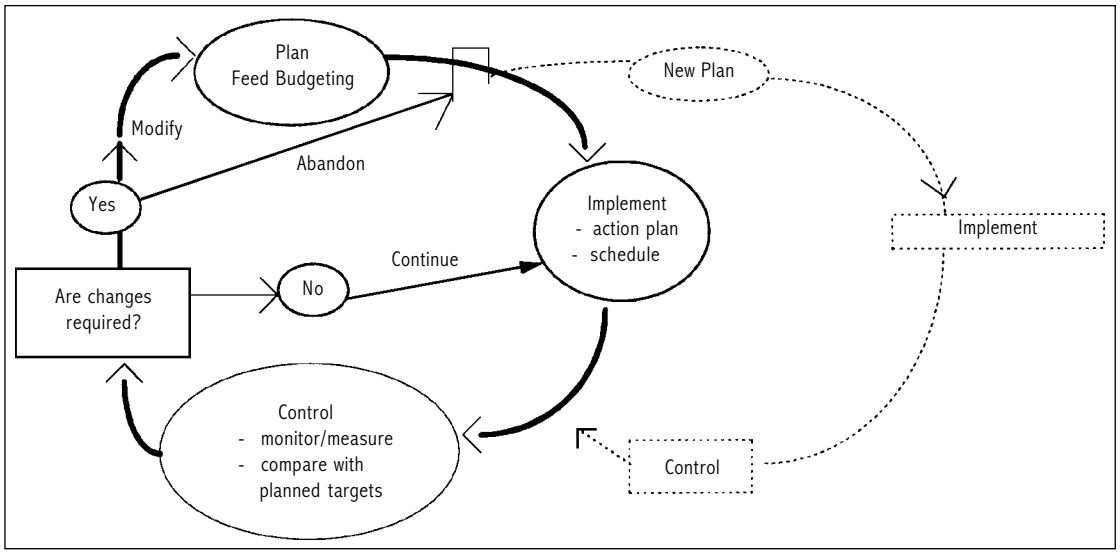


Table 1 Farmer (n=120) assessment of their competence (ability/efficiency) in various aspects of dairy farm management (Source: Stantiall *et al.* 1997).

Task	Median
Monitoring and recording farm production	4
Identifying opportunities to improve milk production	4
Maintaining accurate records of cash transactions	4
Preparing a whole farm feed budget	4
Preparing an annual cash flow budget	3
Planning and costing changes to a dairy farm	3
Interpreting and using information from farm accounts	3
Drawing up a 5- to 10-year strategic plan	3
Forecasting prices and costs 1–5 years ahead	2

[1] Based on a 1 to 5 scale where 1 = "Poor ability, low efficiency, limited understanding"; 5 = "Very good ability, high efficiency, complete understanding".

At one extreme, a farmer's management may be informal and largely based on experience, intuition and visual observation; at the other extreme, a farmer may undertake objective measurement and formal analysis at each step of making, implementing and evaluating a decision. Most surveys of New Zealand farmers suggest the majority apply a subjective–informal management model (Parker *et al.* 1993). While this approach may have been adequate before 1980, when management's predominant concern was the efficient use of limited resources for physical production, it is less able to cope with the dynamic market-led economic environment in which farm businesses now operate. In addition to increased price, financial and political uncertainty (Martin 1994), farmers must also now contend with greater constraints on the use of natural resources and be able to exceed the expectations of increasingly more demanding and discerning consumers of food and fibre products. Consequently, if New Zealand's grassland farmers are to retain their competitive advantage in world markets for animal products, where the comparative advantage from being able to graze "low cost" pasture year round is declining, they must develop and apply a wider repertoire of business skills, including those associated with strategic management, to complement their strengths in production management (Table 1).

Levels of planning

Three levels of planning (and by association, also management) can be distinguished in farming: strategic, tactical and operational (Figure 2). The purpose of strategic planning is to achieve 'a sustainable long-term excellent fit [for the farm business] with its environment' (McNamee 1992). Strategic plans relate to the whole farm business, are focused on means to achieve future needs, and according to Thompson (1990) need not be "highly detailed". They should be routinely (at least annually) reviewed and updated. In contrast, tactical planning involves determining within-year adjustments to a farm strategy (policy) so that it

"fits" with the prevailing circumstances (rather than the average expected values normally assumed for across-year plans). Operational planning concerns further fine-tuning of plans (1–30 day time frame) so that they are actioned efficiently. The overall strategy for the farm business should therefore drive lower levels of planning (Figure 2) – in practice farmers often have no clear strategy and instead react operationally as events unfold. This short-term reactionary approach to farm management compromises farm business growth and success (e.g., Isaacs 1996).

Strategic planning

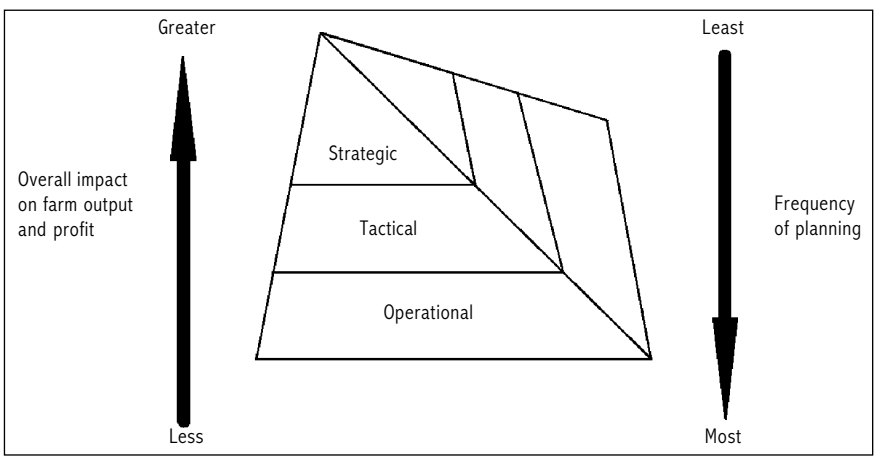
To identify the "best" strategy for a farm, processes and techniques (e.g., life cycle analysis, SWOT, Porter's (1985) 5-Forces model) need to be applied systematically (but not necessarily sequentially) to identify opportunities and potential outcomes relative to different future circumstances (scenarios). The "best" plans can then be formulated (e.g., through a budgeting technique) that have the greatest potential to realise the farm's goals within this context. Mellalieu (1995) suggests the process may begin by assessing the current position of the [farm] by asking: "What do we do?", "How do we do it?", "Who do we do it for?" and "What is happening around us?" (Figure 3). The answers to these questions indicate how the farm is presently coping with competitors, political–legal circumstances and new technologies–practices. A complementary view is that planning should start "with the end in mind" in the form of a vision (preferably written) and associated goals for the farm (i.e., "What would we like to be/achieve?"). This provides a basis for answering the other questions to be addressed during the strategic planning process (Figure 3).

It is also useful, if this has not been completed as part of an earlier strategic plan, to develop a farm mission statement, or a written expression of the farm's overall purpose and the aspirations and values of the people involved in it. The mission has value because it: contains an expression of the goals for the farm and enables progress toward them to be measured; differentiates the farm from others and identifies its uniqueness to the owners; defines the activities that the owners want to be involved in (vs those it may be currently in); has meaning and is relevant to all the stakeholders of the business; and is a source of "inspiration and excitement" (Ackoff 1986). In layperson terms, a mission statement should express the answer to three questions: "Why are we involved in farming?"; "What do we want to achieve?"; and "What values will we adopt to achieve our aims?" Example mission statements developed by New Zealand farmers are shown in Table 2.

Table 2 Mission statements prepared by New Zealand dairy farmers.

"To use equity gained by Ian & Jill to consolidate for their retirement and have on-going business for all members of the family". (Robbs, West Coast)
"To build a sound financial position [through sharemilking for 3–5 years] that will allow Grant and Angela to pursue careers and other interests both individually and as a family, and to provide the best possible environment for raising our children". (Rowans, Manawatu)
"Through efficient farming practices and the [production] of high quality milk, we will use the resources we have to gain farm ownership. Eventually we will commit and fully fund ourselves to full time work for God in the community". (Watershed Farms Ltd., Manawatu)

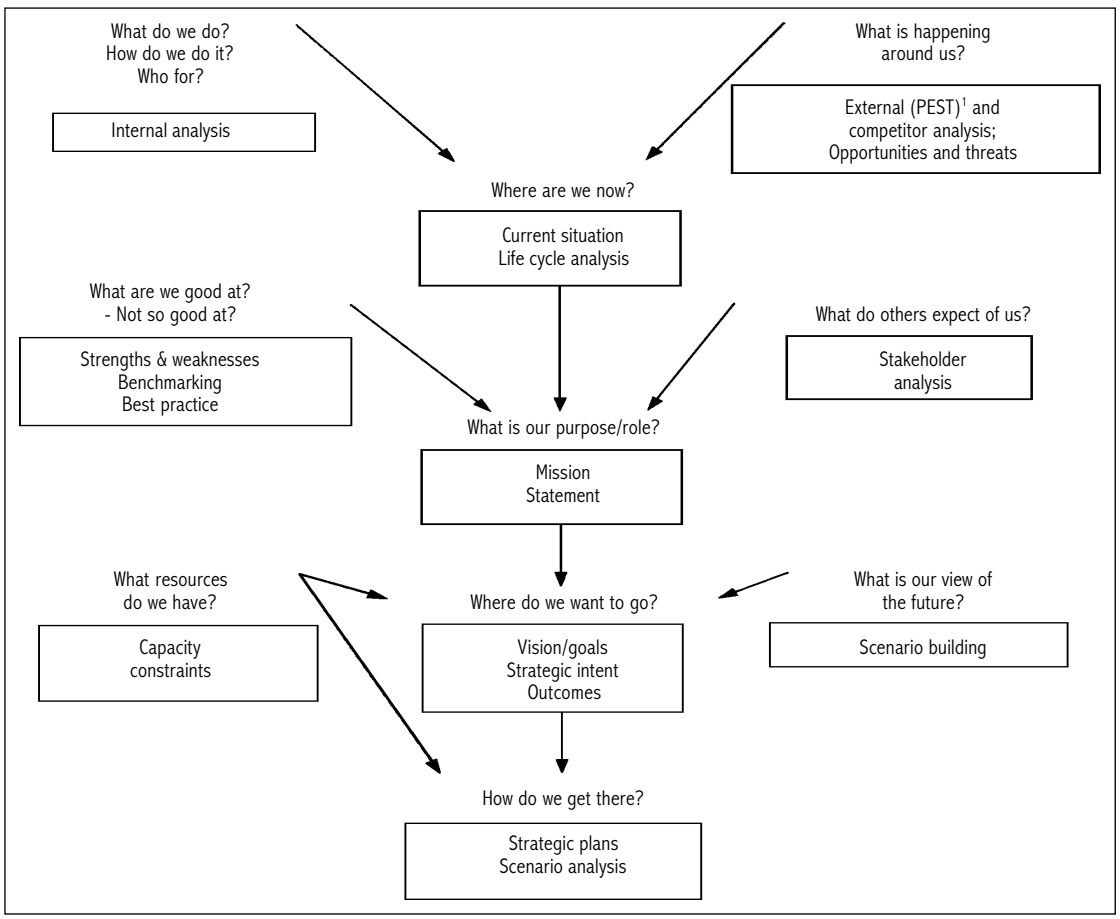
Figure 2 Pyramid showing relative frequency and levels of pasture planning for a dairy farm business. (Source: Parker 1993)



Planning in grassland systems

Strategic planning, in the context of pasture management, concerns developing a plan that maximises and best matches pasture growth with animal demand. Obviously, this must be moderated by the economics of livestock production (e.g., the value of out-of-season premiums) and be consistent with personal goals such as those for lifestyle (e.g., low labour input precludes intensive strip grazing). In broad terms the strategy may involve intensification vs expansion (e.g., more per cow vs more cows) or specialisation vs differentiation (e.g., conventional vs organic production). For pastoral dairy farm systems the key strategic decisions are: stocking rate, calving date, conservation/supplementation policy and drying off date. Together these four variables largely determine the fit between pasture production and herd feed demand. This constitutes the on-farm analysis; for the overall farm strategy, it is also important to account for factors such as market trends, price risk and new technology (Figure 3). On a sheep and beef cattle farm the important strategic decisions concerning the match between pasture growth and animal demand are: base stocking rate, sheep:cattle ratio, prime vs store finishing, breed(s), lambing and calving dates, and replacement policy. Buying and selling policy (within a prime or store option), and weaning and shearing dates are also important, but these can usually be more easily adjusted within-year (tactically) than the other variables listed. Whole-farm feed profiling (Milligan *et al.* 1987) is used in combination with enterprise (e.g., gross margin) or whole farm cash forecast financial analysis to formulate a strategic plan which best meets the farmer's objectives and is consistent with long-term goals for the farm. Computer programs such as STOCKPOL (Marshall *et al.* 1992) and UDDER (Larcombe 1990) can help practitioners cope with the complexity of strategic planning.

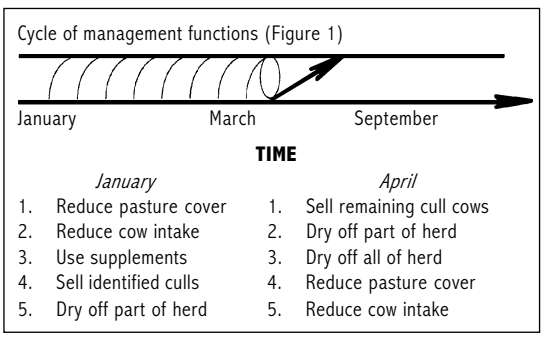
Figure 3 A layperson's view of strategic planning with overlayed technical terminology (Adapted from Mellalieu (1996)). ([1]PEST = *P*olitical/legal, *E*conomic, *S*ocial/Cultural and *T*echnical factors).



Once a strategy is selected, implementation commences and it is here that tactical and operational planning have their role. Tactical planning includes the evaluation of options such as the sale and purchase of livestock, the use of supplements and drying-off date. Tactical adjustments are required to cope with within-year variations in physical, financial and personal factors. For example, pasture growth rates are likely to be different to the average values used in the strategic plan, and this may cause animal (and pasture) performance to be better or worse than planned. Tactical plans are integrated with monitoring, and evaluation and are designed to correct unacceptable deviations from the original plan (Figure 1). A number of options can usually be selected from to minimise the impact of deviations, but these change in value and suitability through time, as illustrated in Figure 4.

Operational plans are normally expressed as daily or paddock grazing plans which determine how long or how many animals should be grazing in a particular situation. The preparation of grazing plans requires consideration to be given to data such as pre- and post-grazing pasture mass, daily feed intake by grazing group and soil conditions. In contrast, at the strategic level the primary pasture variable of interest is the whole farm monthly average pasture cover and average daily intake per month for each animal class rather than "mobs".

Figure 4 A hierarchy of tactical management options used in late-summer-autumn by leading farmers with a seasonal supply dairy system (Source: Gray *et al.* 1992).



Linking strategic planning and control

Strategic management, like other forms of management, is iterative and cyclic. It normally does not occur in a precise order and at any one time a farmer could be involved in several steps of strategy formulation and evaluation. The latter is crucial to the success of plans: recent American research suggests that "strategy was rarely translated into action because it was rarely translated into measures that employees could make sense of in their everyday work" (Leadbetter 1997). Van Zyl & Perkins (1995) similarly expressed the relationship between components of management as follows: "Without clearly defined goals, a business has no direction, and without performance measurement, a business has no control". Developing a set of measures, or KPIs, that are easily collected and analysed and well correlated with the strategic intent of the farm is therefore an essential output from strategic planning. Measurement of outcomes and correction of plans in the light of new information, is the essence of management control.

As noted earlier, the KPIs need to be linked to the factors critical to a plan's success, because variation in these factors, more than any other, determine a plan's outcome. The KPIs may be quantitative (e.g., farm working expenses as a percent of total farm revenue, or ewe liveweight at mating, or pasture cover at calving) or qualitative (e.g., personal relationships) but, above all else, they must enable the performance of the business to be determined in a timely and cost-effective manner relative to targets specified in the strategic plan (Van Zyl & Perkins 1995; Shadbolt 1997). The acceptable values for KPIs (i.e., no corrective action is required if pasture cover is ± 100 kg DM/ha from the set target), and the intervals at which the measurements are made can be defined by the manager.

Case studies

DairyMAP in Pennsylvania

Programmes to help farmers develop strategic planning and business competencies have been delivered to 1200 people from almost 700 dairy farms since 1992 by Pennsylvania State University's College of Agricultural Sciences extension staff (DairyMAP Annual Report 1997). Farmers completed pre- and post-workshop questionnaires concerning aspects of farm business management as summarised in Table 3. The responses indicate a significant shift in the farmers' appreciation of the importance of strategic planning and other business techniques. For example, writing a mission statement was rated "moderately or very important" by only 14% of the farmers before the workshops; after the programme this had increased to 86%. Follow-up surveys of attendees 8–12 months after the 1996 Financial Managment workshops confirmed their ongoing effect on the management practices of Pennsylvanian farmers.

Tararau Sheep and Beef Cattle Farmer of the Year

In 1994 David and Janet McKenzie, who farm near Dannevirke, devised a farm business plan with the

Table 3 Pennsylvanian dairy farmers (%) rating of various aspects of farm business management before and after attending DiaryMAP workshops (Source: DairyMAP Annual Report 1997).

Workshop topic	"Moderate or very important" Before	After
Set goals	21	86
Write a mission statement	14	86
Develop a strategic business plan	44	96
Define critical success factors	44	96
Critically assess SWOT[1]	48	96
Write "To do" lists	35	86

[1] Strengths, Weaknesses, Opportunities and Threats

assistance of their consultant Tony Rhodes (Agriculture New Zealand). The plan included a comprehensive SWOT analysis from which they identified the important characteristics for their business and a "two-prong" vision for the future:

> To be in a position to be able to devote time and energy into the children's growing interests and pursuits and the development of the breeding enterprises.
>
> To further our off farm interests and to focus the farm business through effective planning and management practices.

To realise the vision, three goals were set:

- increasing the level of satisfaction achieved from the Limousin stud;
- improving the productivity and profitability of the sheep flock;
- maintaining a balance between the satisfaction gained from the farming enterprise and the time required to gain satisfaction from other interests.

The goals were translated into specific production objectives and associated on-farm activites in the business plan. Financial and physical performance targets were set and KPIs were identified by which progress could be monitored. The KPIs included: ewe mating weights, pasture cover at lambing and heifer conception rates. Through planning, management effort was focused on "where the business wanted to be" and what the stakeholders wanted to get out of it. Thereafter, farm productivity and financial performance showed steady improvement to the extent that they entered and won the 1997 Richmond Tararua Sheep and Beef Farmer of the Year competition. The McKenzie's stated that, for them, formulating a business plan and setting measurable objectives had been the key to achieving improved farm performance and the satisfaction that goes with it (Dannevirke & Tararua District Evening News 1997).

Conclusions

New Zealand's grassland farmers enjoy a comparative advantage from year-round pasture production and have developed an international competitive advantage through the skilled application of management practices and technology. The world markets in which they compete are becoming more exacting with respect to product quality, resource use and animal welfare, and cost. Product prices quickly reflect international events, and technological advances are learnt about and transferred more rapidly around the world than in the past. In this riskier and more dynamic environment for business than in the past, farmers must have medium- to long-term strategies in place to provide a basis for determining whether today's decisions postively contribute to the farm's long-term viability and to ensure that there is sufficient flexibility to respond to unexpected outcomes. For some farmers this will require a new way of proactive thinking, a reallocation of time from physical work to management planning and control, and the development (or purchase of) new business competencies.

REFERENCES

Ackoff, R.L. 1986. Management in small doses. New York: John Wiley & Sons.

Boehlje, M.D.; Eidman, V.R. 1984. Farm management. New York: John Wiley & Sons.

DairyMAP (1997). Annual report. Cooperative Extension, College of Agricultural Sciences, Pennsylvania State University.

Gray, D.I.; Todd, E.G.,; Lockhart, J.C.; Lynch, G.A.; Parker, W.J. (1992). The potential role of expert systems on seasonal supply dairy farms. *Dairyfarming Annual, Massey University 44*: 66–70.

Isaacs, J. 1996. National Dairies Statewide News (May), Adelaide, South Australia.

Kontz, H.; O'Donnell, C.; Weihrich, H. 1982. Essentials of management. Third Edition. New York: McGraw-Hill.

Larcombe, M. 1990. UDDER: A Desktop Dairy farm for Extension and Research. *Proceedings of the 17th Seminar of the Dairy Cattle Society of the New Zealand Veterinary Association*: 151–152,

Leadbetter, C. 1997. Marking your scorecard crucial when the company sets targets. *The National Business Review (April 24)*: 41.

McNamee, P.B. 1992. Strategic management: a P-C based approach. Oxford: Butterworth Heinemann.

Martin, S.K. 1994. Risk perceptions and managment response to risk in pastoral farming in New Zealand. *Proceedings of the New Zealand Society of Animal Production 54*: 363–368.

Marshall, P.R.; McCall, D.G.; Johns, K.I. 1992. Stockpol: A decision support model for livestock farms. *Proceedings of the New Zealand Grassland Association 53*: 137–140.

Mellalieu, P.J. 1995. Plan to consolidate your business. *InBusiness, Evening Standard* (May).

Mellalieu, P.J. 1996. Strategic management course notes. Department of Management Systems, Massey University.

Milligan, K.E.; Brookes, I.M.; Thompson, K.F. 1987. Feed planning on pasture. pp. 75–88 In: *Occasional Publication, No. 10*, Nicol, A.M. (ed.), New Zealand Society of Animal Production.

Parker, W.J. 1993. Feed planning on the farm. *Proceedings of the Central Districts Sheep & Beef Cattle Conference 2*: 75–84.

Parker, W.J.; Gray, D.I.; Lockhart, C.J.; Lynch, G.A.; Todd, E.A. 1993. Drying off management and the use of management aids on seasonal supply dairy farms. *Proceedings of the New Zealand Society of Animal Production 53*: 127–132.

Parker, W.J. 1996. Identifying opportunities to improve dairy farm profitability. *Current Topics in Dairy Production, Dairy Research Foundation, Sydney University 1*: 13–31.

Porter, M.E. 1985. *Competitive advantage: Creating and sustaining superior performance*. New York: Free Press.

Shadbolt, N.M. 1997. Key performance indicators. *Dairyfarming Annual, Massey University:* 107–111.

Stantiall, J.D.; Parker, W.J.; Kuiper, D. 1997. A self-assessment of dairy farmer management competence provides information for designing extension workshops. *Proceedings of the Rural Australia Toward 2000 Conference*, Wagga Wagga (accepted).

Thompson, J.L. 1990. Strategic management: Awareness and change. London: Chapman & Hall.

Van Zyl, A.; Perkins, J. 1995. Value based management. Wellington: New Zealand Society of Accountants (Module 3).

■