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Dairy extension

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Introduction

Growth has characterised the dairy industry since the 1990s. From 1992 to 2012 the industry doubled its occupation of total grasslands in New Zealand and increased cow numbers to be on par with the national population. Almost half of all stock units in this country are now dairy cows. Positive and negative impacts arise from this type of growth. National prosperity has grown, with 30% of our export receipts derived from dairy. The cost of this growth has been increased pressure on our soil and water resources. Demand for new capital has increased with a rise in farm debt levels. Future dairy growth is now highly sensitised to economic, social and environmental limitations. Dairy extension is charged with managing change in the context of this growth and its associated challenges.

Strategy and investment for dairy extension is set within the overall industry strategy. In July 2013, the dairy industry launched its strategy for sustainable dairy farming. 'Making Dairying Work for Everyone' is a strategy that extends to 2020 with a focus on two outcomes - to build both a competitive and a responsible industry. Each outcome comprises five objectives. Monitoring progress against these objectives is achieved using targets and measures. Investment decisions are made on the basis of progress towards targets. Extension teams can focus on more than one objective, but the profit objective is common to all teams.

Dairy farm profitability must continue to improve as part of an overall effort to strengthen our international competitiveness. An objective to increase on farm profit and resilience through increased efficiency provides the focus for industry extension. A target to increase profit from productivity to \$65/hectare/year represents a 30% increase on the long-run average increase. Profit from productivity is a measure that accounts for the productivity gains achieved under the control of management (i.e., removes the impact of milk price).

Materials and Methods

Achieving change in farm performance through extension depends on farmer engagement. The frequency, duration and quality of the interaction with farmers depend on the structure and expertise of extension teams.

New Zealand now has almost 12,000 dairy farming businesses. The industry has organised eight

regional teams to reach these farms. Each team operates to a regional plan which is updated annually and is the responsibility of the regional leader. Each consulting officer has about 300 dairy farms within their sphere of influence. Group events dominate the extension interaction in regions, as this provides extensionists with a type of personal interaction that accommodates large numbers of businesses. Regional teams are also supported by event coordinators and a national communication team who provide media releases and written material on topical issues.

A series of mergers over the past twenty years has facilitated the coordination of research, development, extension and investment initiatives. Extension is now integral to many industry programmes that involve research and development teams. Improving the reproductive performance of the national herd is an example of a programme requiring contributions from all of these teams. Extensionists acquire leading edge knowledge and skills working with these teams.

After more than 60 years of rationalising and industry restructuring an effective model is emerging that resembles a previous era:

In all this work, the contribution of the training agricultural adviser has been of untold value. Research is useless unless applied. The extension officer in New Zealand has an enviable record of achievement in the way he has carried the results of research to the field, tested new ideas on a pilot scale, and finally guided the intermarriage of research and practice in the complex business of farming. In addition, he has brought back to the researcher, ideas and problems that have kept science on its toes. (McMeekan 1960).

The story of dairy extension is incomplete without some mention of the change process used by extensionists. Many factors influence farmer change. These can be summarised under the three categories of market forces, regulatory pressures and voluntary change. Extension operates in the space of voluntary change with an appreciation of market and regulatory impacts.

Achieving effective voluntary change requires an understanding of farmers' willingness to change, their learning preferences and their capacity to change. Each of these areas has been the subject of extensive extension research over the years. The dairy industry continues to support research that enhances management of the change process. Typically this work is undertaken as action research, or research in practical field settings.

Farmer willingness to change depends on a mix of personal attributes (goals, attitudes and beliefs) and

where the business is located in the business cycle. A question-listen-feedback approach is used to help extensionists determine the most appropriate approach to starting the change process with farm managers and their teams. In some situations farmers take a self-determined approach to change, electing to intensify their farm system or expand their business. In other situations, early warning or growing uncertainty surrounding the availability of options like animal remedies or nutrient management practices will motivate a search for alternatives.

Dairy extension manages change using a systems approach. This starts with a stocktake of business goals, current performance and resources available to achieve these goals. A type of gap analysis (between the current and desired position of the business) provides the basis to formulate action plans that are measurable and amendable to review. Extensionists continuously improve their analytical skills to identify root causes to performance problems. A presenting problem may be animal performance, but the root cause may well be farmer stress that is linked to financial pressures on the business.

A group learning environment is used by extensionists to manage change. This provides a social learning context. Groups meet at six weekly intervals throughout the year. Groups rotate around the farms of members in the group throughout the season. A pre-visit to the farm hosting the group will use the system approach described above to determine the focus for the meeting. Effective extensionists utilise the diverse knowledge and experience in the group to explore the issue and formulate solutions relevant to the host farming business.

Group-based work has its limitations. Achieving sustained change using the action planning process requires regular follow-up and sometimes reformulation of plans when circumstances change. The resources required to perform this follow-up on a one-to-one basis is beyond industry good organisations. Furthermore, extension runs the risk of interfering with the private sector if it routinely delivers services to individual farm businesses. It is therefore essential to build strong partnerships to part of the private sector that is organised to deliver and follow-up with services to individual farm businesses. In this context, extension acts as a broker between research and development and private consultants using group learning.

Results

Bennett's Hierarchy has been used to evaluate extension's impact on strategic targets. This seven step evaluation method maps logically from input to final result (Rockwell & Bennett 2004). Extension has reported against targets for reach, engagement, action planning (using farm systems analysis) and impacts of implementation (from follow-up).

McBeth (2013) reported a reach to 6,000 dairy businesses (52% of all farms) attending farming system discussion groups. Just under 4,000 of these businesses hosted discussion groups, resulting in over 2,000 action plans. A survey method tracked changes on an annual basis from 2011 to 2013, determining over half of all participants implemented some change on farm.

A development project called DairyPush provided additional insight regarding the economic impacts of extension. Over a three year period, 58 participant farmers increased their profit from productivity by \$600/ha (approximately \$50,000/farm/year). The programme tested the complete extension and change management programme outlined in this paper including the use of discussion groups, benchmarking, use of demonstration farms and action plan follow-up using private consultants. The cost per participant farm was \$3,500/year for each of three years (excluding DairyNZ staff time). Bell et al. (2012) calculated a benefit-cost of 2.6 based on the current performance of the extension programme.

Conclusion

Dairy extension has reasserted its role as a core capability, complementing the work of farming, research, development and policy to achieve the strategic targets for the industry. Significant improvements have been achieved in reaching and engaging farmers using a farming systems approach over the past three years. There is a growing body of evidence that implementing action plans that are developed for dairy farming businesses, using systems assessment and benchmark data, achieves profitable outcomes.

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