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Quantifying the effect of the InCalf Farmer Action
Group on seasonal-calving pasture-based dairy
farms in New Zealand

A thesis presented in
partial fulfilment of the requirements
for the degree of Doctor of Philosophy
at Massey University

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Abstract

Dairy herd reproductive performance is purportedly in decline in New Zealand and internationally. The aetiology is multifactorial and complex and a broad range of hypotheses for this decline have been proposed, including cow and herd factors. An effective dairy industry needs optimal reproductive performance to maintain cattle welfare and a competitive advantage in the international marketplace. Six key herd-level management factors were identified as being associated with the reproductive performance in Australian seasonal-calving pasture-based dairy herds. A reproductive extension programme was built around these findings designed to enable farmers to improve reproductive performance on farm (InCalf). In 2008, the New Zealand dairy industry adapted InCalf for New Zealand conditions and made it available to dairy farmers and rural professionals. Coinciding with this programme development, the New Zealand dairy industry also set a national target of a herd-level average of 78% of cows pregnant by day 42 of the seasonal breeding period (6 week in-calf rate) by 2016. The last benchmarking of reproductive performance in the New Zealand dairy herd was undertaken in 1999-2000 and the first aim of this thesis was to estimate the current national-level for reproductive performance. Secondly, the effectiveness of farmer participation in the InCalf extension programme was quantified using a randomised controlled study.

This study found a 67% mean 6 week in-calf rate over both 2009/10 and 2010/11 study years amongst those herds allocated to a control group, reflecting similar findings to the previous benchmarking study. Although this finding suggests that overall reproductive performance has remained similar over the decade, conception to first mating (first service conception rate) has declined by 5% to 48% while the rate of breeding in the first 21 days of mating (3 week submission rate) has remained similar at 81% suggesting that the submission rate in the second 21 days of breeding has improved to account for the decline in first service conception rate. Change in behaviour in key management factors is needed in order to improve 6 week in-calf rate. Baseline interviews with farmers found general satisfaction with reproductive performance. This is a potential barrier to improvement, since dissatisfaction is needed to create the tension for change hypothesised to drive behavioural change.

This randomised controlled study found that farmer participation in regional InCalf extension programmes resulted in an average 2% improvement in reproductive performance during the year

of the intervention over herds where farmers did not participate ($p = 0.05$). The greatest effect was seen in the lowest performing herds and these should become the focus of future extension.

Herds participating in the InCalf extension programme had a significant improvement in heifer live-weight, pre-mating mean body condition score and oestrus detection over herds that did not participate ($p < 0.05$). No significant difference was found in the distribution of calvings, anoestrous cow management or bull management. Improvements in the InCalf programme to achieve behaviour change for those management factors where the current InCalf has not proved effective may lift performance and further work is needed to evaluate the extent of the effect of participation on attitude change.

The industry must now decide if this is sufficient improvement in reproductive performance to invest further in this model of extension and whether to improve it using the recommendations from this thesis.

Acknowledgements

I arrived in New Zealand in 2007 as a dairy veterinarian with the intention to complete the Masters course in epidemiology offered by Massey University to improve my effectiveness as a vet. I did not expect this would lead to completing a doctoral thesis or running a national herd fertility study. On both counts I am very surprised and extraordinarily lucky! It has been a unique opportunity and its completion would have been improbable without the help from a large number of people and I am grateful for the opportunity to thank them!

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Abbreviations

KASA	Knowledge, Attitude, Skills and/or Aspirations
KDM	Key decision maker
LIC	Livestock Improvement corporation
MSD	Mating start date
PSC	Planned start of calving
PSM	Planned start of mating
RCT	Randomised Controlled Trial

List of Publications

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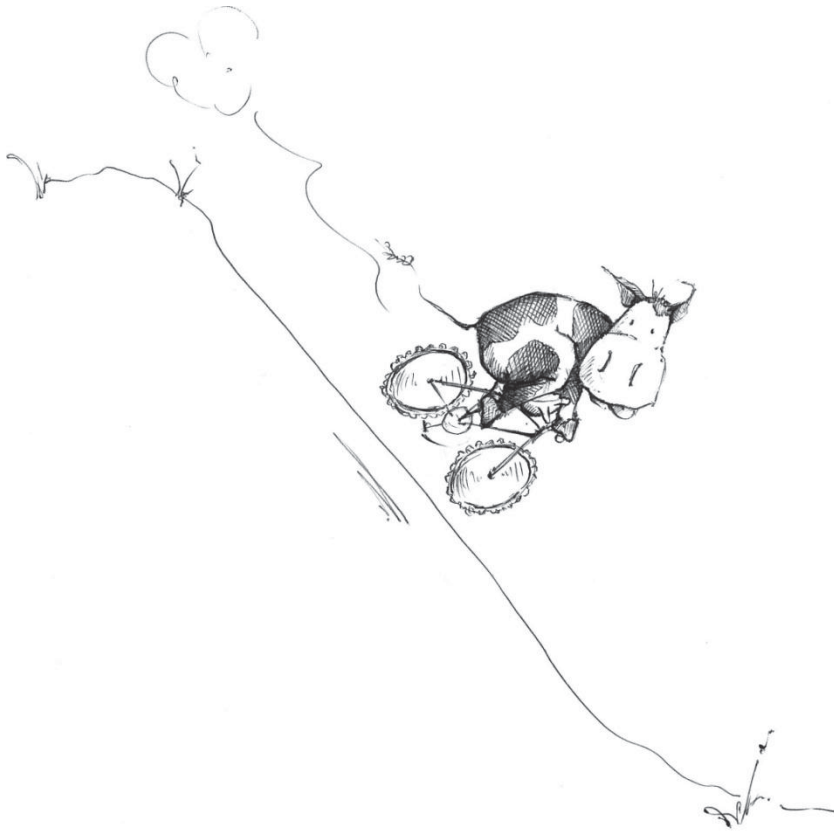
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Getting cows cycling faster...

