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To induce or not to induce?: Insights into important influences on dairy farmer decision making over induced calving

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ABSTRACT

By 2010, the dairy industry wishes to reduce the practice of induced calving in New Zealand to less than 2% of the national herd. For many dairy farmers this has meant rethinking herd reproductive management strategies. In order to better understand how decisions are made and changes implemented on-farm, twelve Waikato dairy farmers who were already part of a larger (n=82 herds) study group on reproductive performance were interviewed.

Overall, personal values were the driving force behind decisions around induction. Induction decisions were made by the farmer, family and farm staff and expressed as a choice between dealing with induced premature calves (to preserve profit, reduce empty rate and retain cows) or culling valuable high Breeding Worth (BW) empty cows. Considerable emphasis was placed on 'empty rate' as both a goal and an indicator of reproductive success. Moreover, many farmers held unrealistic expectations of the empty rates that might actually be achievable through their reproductive management.

Strategies employed to achieve nil-induction farming included reduced mating periods, improved nutrition, and culling of poor reproductive performers. Farmers who had already discontinued induction did not regret their decision but those who were still considering a move towards nil-inductions were most concerned with potentially increasing empty rates.

Keywords: Premature calf induction; Calving spread; Herd reproductive management; Empty rate; farmer values.

INTRODUCTION

New Zealand dairy farmers have commonly used inductions on a small proportion of cows to maintain a condensed calving pattern without reducing the length of the mating period and risking high empty rates (Stevens, 2000). Induction usually involves two injections (of corticosteroid or prostaglandin), administered by a vet, around 6 to 12 days apart and results in either a still born or premature calf depending on what stage of the pregnancy they are administered. In the past, information has been presented showing that advancing calving by up to 12 weeks was considered the most profitable use of induction (Verkerk & Nation, 1997) and actively promoted as a profitable farming practice for managing late calving cows (Verkerk & Nation, 1997; Stevens, 2000). A cow that was induced to calve more than 39 days earlier than her expected calving date was expected to contribute positively to cashflow through increased contribution to milk solids as a result of a longer lactation (Stevens, 2000). However, a change in Dairy Industry policy was signalled to farmers in 2001 by the release of "Market-Focused Programme" An Environmental Management System for New Zealand Dairy (The New Zealand Dairy Research Institute, 2001). The

industry objective relating to induction practices aimed to reduce the number of calving inductions to less than 5% of total dairy cow numbers by 2005, and less than 2% by 2010 (New Zealand Veterinary Association, 2005). During 2005, this target was supported by the introduction of a Code of Practice for the Induction in Calving of Dairy Cattle under the Agricultural Compounds and Veterinary Medicines Act (ACVM), which meant that farmers and their veterinarians could no longer routinely induce cows to calve unless they met the criteria of the code (New Zealand Veterinary Association, 2005). In essence, this meant that future inductions can only be used to manage calving in herds where major reproductive failure, due to unforeseen circumstances, can be demonstrated. Moreover, it requires some farmers to rethink and adjust their herd reproductive management strategies in light of industry changes, economic considerations and their own personal values.

Ultimately, the aim of the change in induction policy was to protect Dairy Industry exports against imposition of non-trade barriers based on animal welfare practices. It was perceived that premature induction of calves could easily become a threat to New Zealand's "clean green image" in the increasingly sensitive markets of

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Europe and America (Ministry for the Environment, 2001; Dairy Exporter, 2002).

The aim of this 12 herd study was to better understand what decisions farmers might make in relation to reproductive performance (and induced calving) and why they make them. In particular, it was intended to explore processes and rationales used by farmers attempting to change their herds' reproductive performance and how those changes might translate to actual reproductive performance in their herds.

METHODS

Farmers (both owner-operators and sharemilkers) were selected from the 82 farmers already participating in the Morrinsville Animal Health Centre study on the impact of changing induction practice on reproductive performance (Compton & McDougall, 2006). Three subsets of farmers were established according to their induction usage:

1. Not induced in the last 3 seasons ("nil" herds)
2. In transition from inducing to not inducing (not induced in current or previous season) ("reducing" herds)
3. Have continued to induce over 5% of herd in each of last 3 seasons ("continuing" herds)

Four participants were selected at random from each of three groups. Two interviewers (a vet and a social researcher) conducted each interview, between January and March 2005, using a semi structured process¹ (Kitchin & Tate, 2000). All contributions were confidential, took between one and two hours and covered questions relating to reproductive management in general, and induction more specifically. The questions related to general farm and farmer details (e.g., size of farm, number of cows, experience, milk solids production), their current reproductive management strategies (e.g., goals, mating management, nutrition, outcomes and problems), farmer's views on induction (its advantages and disadvantages) and their current induction practices as well as the reasons behind these choices. Farmers from "nil" and "reducing" herds were asked about their planning strategies for

¹ This means that the order of the questions and the wording used varied between participants and questions provided a basic framework for the interviews and interesting points were further explored with additional questions – see Kitchin & Tate, (2000) for further information.

reproduction and what the biggest challenges, advantages or disadvantages had been, and the advice they had for other farmers embarking on a similar path. Farmers from "continuing" were asked what their biggest concern (or barrier to change) over reducing induction was.

RESULTS

General farm information

The effective size of farms participating in this study averaged 84 ha. in the 2004-2005 season (range 54 ha. to 185 ha.), however, seven of the properties were less than 70 ha. In the 2004-2005 season the maximum number of cows milked by participants averaged 243 cows (range 140–547). This is close to the mean herd size for the Matamata-Piako County for 2004-2005 which was 260 cows and average farm size 84 ha. (Livestock Improvement Corporation, 2005).

Participants were experienced farmers, most of them were born on farms and helped out from a young age. Seven farmers had worked or managed on their farms for more than 20 years and family-owned and run properties were common (9/12). Nine of the participants employed full time labour units, mostly one additional staff member (5/9).

Knowledge on herd reproductive issues tended to be obtained from hands-on experience, ideas from other farmers, rural professionals², Dexcel discussion groups and seminars, information from the "Dairy Exporter" and other farming newspapers and magazines. New information was assessed on an informal basis, with weight given to the opinions of peers such as neighbours and discussion group members. Agricultural consultants were employed by three participants, however, they primarily focused on feed budgets, fertiliser management and general farm economic performance not on reproductive management.

Decision making and reproductive management goals

Two farmers made decisions over reproductive management using detailed financial analysis (i.e., spreadsheets or forecasting), the remainder used personal experience. This suggests that for many, economic considerations tend to be weighted up with other farmer experiences in decisions over reproductive management rather than dictating practices.

Decisions were usually made by the farmer, the farmer's partner or wife (who often had

² Includes veterinarians, Dexcel Consulting Officers, and agricultural consultants

a large role on the farm herself) and worker(s). Strong views held by any of these people appeared to strongly influence farmers decision making. Strong views on induction and CIDR were expressed during these interviews and many viewed the practices as ‘unnatural’ or ‘unpleasant’.

A reduced herd empty rate was a consistent goal across all participants, however the preferred empty rate varied from less than 10% to between 3% and 4% with a median of 6.5%. Only one farmer was happy with his empty rate of 7% all the other participants felt their empty rate was too high. Actual empty rates for the previous season ranged between 4% and 16%, with a median of 9.5%

Nine of the participants expressed a wish to reduce calving spread. A further goal was nil-inductions (3/12) and no use of controlled intravaginal drug release (CIDR) devices for treatment of anoestrous during the breeding cycle (3/12).

One of the most common concerns was poor cow fertility. Farmers blamed overseas blood lines, and felt that although the cows were high producers, they suit a different farming system where calving didn't need to be so annual. Moreover there were questions over the role of induction and CIDRs in perpetuating fertility problems; *“there will be animals that perhaps have stayed in that system through the use of CIDRS and induction and all sorts of other things and perhaps we don't need them and are not part of the Kiwi cow”* (Farmer 6). One farmer's solution to this problem was to put cows with CIDR heats to Angus bulls so there was no temptation to keep a heifer calf produced from mating these cows.

Overall there was no significant difference ($P < 0.1$) in reproductive performance between the ‘nil’, ‘reducing’ and ‘continuing’ herds, which is not surprising given the sample size ($n=12$)

Inductions usage and attitudes

All the farmers interviewed had induced calves during their farming careers. Farmers reducing induction aimed to phase out the practice within the next few seasons.

Farmers from “continuing” herds induced less than 10% of their herd, primarily to “tidy up the late-calvers”. By inducing late in the pregnancy, calves tend to be born alive but may not survive.

All the farmers did not like inducing calves *“I hate it, they just lie there and mew... they are old enough to be survive but not enough to stay alive”* (Farmer 3), but their decisions appear to involve a tension between preserving the life of the cow and the life of the calf. Induction allows a late-

calving cow more time to get back in calf for the following season increasing the chances of her remaining in the herd. The alternative was culling what might be a high Breeding Worth (BW) cow, but gaining a calf. Farmers who valued the cow over the calf tended to induce and were generally in the ‘continuing’ to induce category. Two farmers avoided this tension by inducing late in pregnancy (ensuring a live calf) and providing special care for induced calves. For example, separating induced from other calves, providing extra shelter and careful feeding *“I don't care how much it takes out of me I will survive every single one of them”* (Farmer 4). Farmers who culled the cow were generally in the ‘reducing’ or ‘nil’ induction groups.

The main disadvantages perceived by farmers revolved around the effects on the cow, calf and staff, including stress and post induction health effects on the cow (*“Once we stopped inducing we saw a noticeable reduction in health problems in the first season”* (Farmer 11)), a distressing job for farmers and staff (particularly if euthanising premature animals was required - *“It's not a good day on the farm having to pick up little induced calves”* (Farmer 9)), costs, and uncertainty over whether induction actually improves future conception.

Several Farmers believed that use of induction was masking other problems in the farming system which needed addressing *“if you have a lot of inductions there is a problem elsewhere...need to fix the actual problem rather than fixing at the other end”* (through inductions)” (Farmer 2).

Barriers to reducing induction were primarily concern over possible high empty rates the following season due to a shortened breeding programme and a reticence to cull high BW cows as late calvers and empty cows.

How farmers approach the process of reducing induction is probably related to their preferred ways of operating, some take the bull out progressively earlier over a number of years, others change everything in a single season. Other strategies employed to alleviate the impact of reducing induction were improved nutrition, more ruthless culling of empty cows and keeping more replacements in preparation for possible increases in empty rates. High empty rates seem to be accepted as an unavoidable outcome in the short term, which farmers hope will decline over time.

Overall, farmers in “nil” and “reducing” herds felt that ceasing induction of early calvers did not change the farming system that much, *“It's hard for a couple of years until the system is fine*

tuned but in the end it didn't make much difference to the way we farmed" (Farmer 5).

The Farmers interviewed generally understood the rationale behind the new code of practice for inductions and acknowledged that the practice was could be a sensitive issue for both urban New Zealanders and overseas customers. Some irritation was expressed at having to change on farm practices to suit customers but it was recognised that "without our markets there is no farming" (Farmer 10).

DISCUSSION

Personal values and preferences of the farmer, family members and staff were probably key drivers of reproductive management decision making, particularly those concerning induction of early calving in dairy herds. Economic considerations were part of this decision making process rather than driving decisions. This was probably because a decision to induce boils down to a personal rationalisation of the choice between life of the cow (i.e., culling high BW non-pregnant cows) and the life of the calf (i.e., dealing with induced premature calves). Some farmers have developed strategies to avoid this tension by inducing late in the pregnancy and taking special care of the calves. However, this will no longer be allowed under the new Code of Practice for Induction in Dairy Cows (New Zealand Veterinary Association, 2005) which restricts induction between 12 and 6 weeks from the due calving date to ensure a still-born calf.

An increase in the milk production from induced cows because of a longer lactation was not offered as an advantage (or even mentioned) in these interviews although it appears as an argument for inductions in the literature (Stevens, 2000; Botha & Verkerk, 2002). The exact reason for this is not clear but it is possible that benefits from condensed calving and lower empty rates are more strongly associated by farmers with induction practices than increased milk production.

Rural professionals must increasingly recognise the contribution of personal values and perceptions in farmer decision-making processes so that they can assist farmers to make reasonable choices within their value system, lifestyle and the individual farming situation. Farmers will probably resist pressure to adopt practices they perceive as unpleasant or that conflict with their value systems, often irrespective of financial outcomes. It is likely that hormonal interventions in reproductive management such as CIDR and inductions are examples of technologies where moral concerns tend to override all other factors in

the decision-making process. At the same time there are farmers who are prepared to do some tasks they find distasteful because they are motivated by anticipated profit or achievement of reproductive goals.

Empty rate is a number commonly quoted by farmers and a low rate is considered by farmers as synonymous with reproductive success. Expectations were often ahead of both the actual performance and what realistically can be achieved from the selected management strategies. Concern over increasing empty rates appears to be the most significant issue for those in the process of, or considering, reducing induction. Burke (2005) believes that a continued focus on empty rate is not helpful and a shift in focus towards a more holistic measure of herd reproductive performance is required. Although, what this measure could be requires further work.

None of the farmers who had stopped inducing regretted the decision. Reduced mating periods, culling of cows with poor reproductive performance and improved nutrition were the main strategies suggested by farmers for other farmers considering a change to nil-induction of calving. They did not believe their decision to induce had altered their farming systems substantially or affected overall productivity and profitability.

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