

# **SUCCESSFUL REPRODUCTIVE PERFORMANCE WITH NIL INDUCTIONS**

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## **Introduction**

Induced parturition has become internationally unacceptable and the New Zealand dairy industry has set a target for less than 2% inductions in the national herd by 2010 (NZVA 2002). With reduction in the use of induced parturition as a tool, farmers require new strategies to manage late conceiving cows.

This paper reports on the findings of a case study analysis completed in 2005/2006 of seasonal supply dairy farms in North Otago and Canterbury. Farms were selected on their reproductive performance (empty rate) and a nil induction policy. The study focused on the management strategies being used by the farmers to achieve satisfactory reproductive performance. Nine farms were studied which gave a range of farm sizes, cow numbers, and management strategies being utilised.

## **Discussion**

### ***Production***

The MS production per cow from eight of the herds was above their district averages in 2004/05, and for all farms production per hectare was above their district averages in 2004/05. Peak milk production ranged from 1.5 to 2.24 kg MS/cow, and total MS production per cow ranged from 256 to 500 kg MS/cow (Table 1). Milksolids production per hectare ranged from 1,180 to 1,600 kg MS/ha. In comparison the South Island average was 341 kg MS/cow and 940 kg MS/ha in 2004/05.

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**Table 1:** Herd milksolids production and stocking rate 2004/05 and South Island averages (LIC. 2005).

Farm No.	Peak Cow No.	Milksolids production			Stocking rate (cows/ha)
		Peak kg MS/cow	Total kg MS/cow	Total kg MS/ha	
1	980	2.15	360	1,250	3.3
2	505	1.90	407	1,600	4.0
3	700	2.20	417	1,350	3.4
4	350	1.80	400	1,350	3.4
5	500	1.85	400	1,470	3.6
6	470	2.18	412	1,180	2.9
7	408	1.94	420	1,550	4.0
8	562	2.24	500	1,600	3.3
9*	1,139	1.50	256	1,206	5.0
Sth Island	(ave) 470	-	341	940	2.7

**\* The herd is in its fourth season on once a day milking.**

### ***Calving spread***

An optimal compact calving spread was defined by Dexcel (2005a) as a 14 day midpoint, with 90% of the herd calved within eight weeks from the planned start of calving (PSC). The midpoint of calving for the farms ranged from 13 to 25 days, with four of the nine farms achieving a 13-14 day midpoint (Table 2). All of the farms estimated 90% of their herds had calved within eight weeks (56 days) of the PSC.

**Table 2:** Calving spread and dates of each herd for 2005/06.

Case Study No.	Calving Date	Heifer Calving Date	Midpoint (days)	90% Calved (days)	Last Cow Calved
1	1 Aug	1 Aug	23	56	16 Oct
2	5 Aug	3 Aug	13-14	50	30 Oct
3	1 Aug	29 July	17	48	5 Oct
4	1 Aug	25 July	14	45-50	25 Oct
5	25 July	25 July	14	45-50	20 Oct
6	1 Aug	29 July	20-25	-	28 Oct
7	29 July	29 July	13	43	2 Nov
8	3 Aug	3 Aug	-	44	6 Nov
9	5 Aug	5 Aug	21	41	15 Oct

Actual PSC dates for all herds were within a 10 day range; five of the farms indicated no change had been made to PSC date for a number of years. Farm 4 had manipulated PSC due to two herds being united. Farms 6 and 8 had moved their PSC dates 3-4 days earlier. Heifer calving dates were earlier than the cow herd on four of the nine farms. The last cow calved prior to the PSM on three of the nine farms, with the remaining having cows calve 1 to 13 days after the PSM.

### ***Reproductive performance***

The empty rate of the nine herds was a criterion on which they were initially selected as an indication of their reproductive performance and strategies around reproduction management were varied. The number of weeks of AB completed ranged from 3.5 to 9 (

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Table 3). The total number of weeks of mating (including natural mating) ranged from 9.5 to 12 weeks with six of the herds completing 12 weeks. Seven of the herds monitored pre-mating heats by tail painting.

**Table 3:** Reproductive management and performance 2004/05, number of weeks of AB, total weeks mating, and empty rate of the cow and heifer herds.

Farm No.	Cow Herd			Heifer Herd	
	AB (wks)	Total Mating (wks)	Empty Rate (%)	Total Mating (wks)	Empty Rate (%)
1	4.0	11.0	9.0	10.0	1.2
2	4.0	12.0	8.0	12.0	5.0
3	6.5	10.5	10.3	10.5	1.76
4	6.0	12.0	10.0	9.5	4.0
5	6.0	12.0	7.0	9.5	4.0
6	5.0	12.0	9.5	9.0	10.0
7	9.0	12.0	8.8	11.0	7.0
8	3.5	9.5	12.0	10.0	6.0
9	4.0	12.0	4.0	12.0	5.0
Average	5.3	11.4	8.7	10.2	4.9

Fifteen month old heifers were typically mated for a shorter period (), and on four of the nine farms, PSM was earlier (Table 2). Farm 2 synchronises and AB's the heifer herd, achieving a 55% in-calf rate. Farm 6 AB'd the heifer herd in 2005/06 for the first time with the remaining farms not using AB for heifers.

Empty rates for the herds ranged from 5 to 12% in 2003/04, and from 4 to 12% in 2004/05 (

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Table 3). Farm 8 reported an empty rate of 12% in 2004/05 but had previously had an empty rate of 7.1% in 2002/03 and 8% in 2003/04. The empty rates of these herds are low, however each farm pregnancy tests at a different stage, therefore these empty rates cannot be standardised.

### ***Feeding***

Both silage and high energy supplements were fed during lactation, including a range of grains, molasses and Proliq. The use of high energy supplements can be expected to have either an immediate effect on the fertility of the herd, or a carry-over effect in the form of increased BCS.

Winter feeding was controlled by the herd owner in all but one farm, and in seven of the nine cases winter grazing was on an owned or leased runoff. Winter feed sources varied, as did intakes from 11 to 15 kg DM/cow.

Young stock from eight of the nine farms were grazed on owned runoffs. The control of young stock feeding was believed to be of importance to later reproductive results. Growth rates of replacement heifers were closely monitored by eye, and smaller 15 month old heifers tend not to be mated until later in the mating season.

### ***Animal Health***

Reproductive failure can be largely influenced by disease, and particularly reproductive tract disorders. Cows afflicted by reproductive tract disorders were proactively treated by veterinarians, or farm staff, with a range of penicillin and metronidazole treatments being used. Anoestrous cows were treated with CIDRs on seven farms in 2004/05, and five farms in 2005/06, with one farm changing in 2005/06 from CIDR use to OAD milking lighter condition heifers (14%) from mid October for 6 weeks.

Metabolic disorders were reported as worse in 2005/06 by two of the farms. Mastitis issues were not considered to be a major problem and BMSCC for the herds ranged from an average of 80,000 to 180,000 cells/ml. The South Island average SCC per cow from herd test statistics in 2004/05 was 244,000 cells/ml.

Eight of the farms blood tested their cows annually, and three of the farms tested their heifers. Liver biopsies were also monitored on five farms. The regular use of blood testing and liver biopsies is consistent with the wide use of mineral supplementation on the farms. Six of the farms used some form of premix minerals to supply minerals to cows in drinking water with further additions being magnesium chloride, selenium, copper and zinc. Lameness was considered to be a minor problem on all but one farm.

### ***Body Condition Score***

Six of the farmers were using farm advisers to monitor body condition between 4 and 12 times a year. There was particular emphasis on the BCS of cows at calving (BCS 5+) and drying off.

Lighter cows and younger cows (rising 3 year olds) were dried off earlier than the remainder of the herd on seven of the farms. This practice allows these cows to increase in body condition prior to calving.

### **Genetics**

There was a range of breeds on the farms with three predominantly Friesian herds with varying degrees of overseas and New Zealand genetics, four crossbred herds, and two Jersey herds.

In comparison to the national averages, two of the farms (1 and 2) are in the top 10% for BW and PW nationally. Farms 1, 2, 3 and 4a are above the median nationally for BW and PW. Farm 6 has a low BW/rel and PW/rel but a very high recorded ancestry, due to selection for pedigrees rather than BW.

### **Conclusions**

- Young stock grazing was a priority and feeding was managed by the herd owners at all times.
- Mineral use was widespread but generally carefully monitored by blood testing and liver biopsies.
- Reproductive tract disorders were minimal with emphasis being placed on early treatment
- Body condition scoring of the herd and young stock was emphasised along with training staff to condition score and employing farm advisers to condition score. Setting and reaching body condition score targets was a necessity.
- Farm advisers were used for feed budgeting, nutrient budgeting and staff training.
- Pasture monitoring was identified as an area where the farmers did not make use of technologies for measuring, however they were following recommended practices with low residual pasture mass maximising pasture and milk production.

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Acceptable reproductive performance with nil inductions was achieved on these farms by placing emphasis on animal health, monitoring body condition of cows and achieving targets set, and by controlling the feeding of all stock classes throughout the year.

## **References**

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