

Dairy herd batch calving

Findings from the “Sustainable dairy farm systems for profit” project

M5 Project Information Series - Studies on Mutdapilly Research Station and subtropical dairy farms 2001 to 2005

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Overview

Batch calving offers some advantages to a dairy production system in the subtropics. It allows herd requirements to be matched with the forage feed supply on the farm. It may allow more milk to be produced in autumn and winter when the milk price is higher.

However, additional skills and good herd management is required to maintain a batch calving system.

The M5 farming system project used batch calving in its farmler herds, but had difficulties in maintaining the program because of poorer reproductive performance in the summer mating months.

INDUSTRY BACKGROUND

Seasonal calving in spring is the normal practice in temperate dairy regions. Seasonal conditions more or less dictate this practice. There is normally no or very little pasture growth in winter, so cows are calved so that their peak nutrient requirements in early lactation occur when pasture is plentiful.

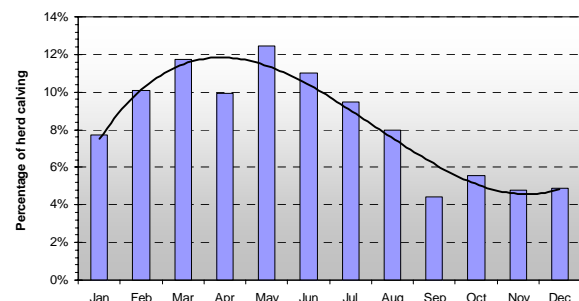
Batch calving is similar to seasonal calving, with two or more calving periods in the year usually fitting in with feed availability, i.e. spring and autumn. With both seasonal and batch calving there are definite start and end dates for matings, which define the calving periods.

Year-round calving is the commonly accepted practice in the traditional market milk and milk quota regions in Queensland and NSW. The higher the percentage of market milk access then

the greater the need to have an even milk production pattern from month to month, so cows were calved in most months of the year. This required a feeding system to be developed that could feed the herd well every month. The resulting feed system generally had both summer and winter crops/pastures, supplements fed year-round and conserved fodder to fill feed gaps between seasons and at other times. Irrigated crops/pastures were often an integral part of the feed system.

Recent herd recording data from Queensland shows that most of the herd calved in autumn (34% of cows), followed by winter (28%), summer (23%) and then spring (15%). Averages can be misleading, as individual herds can vary widely; the highest calving month was May with 12% of cows calving and September the lowest with 4%, *Figure 1*.

Figure 1. Percentage of cows in Queensland calving each month



Milk prices in Nth NSW, SEQld and CQ are higher in autumn and winter. Processors vary their payment schedules, higher milk prices are paid from as early as January and sometimes through to September.

ADVANTAGES OF BATCH CALVING

- Reduced cost of hired labour. It is more efficient to be grouping the calving, mating and the milking of fresh cows.
- Easier to perform a synchronisation program that leads to increased efficiency in reproduction. The increased effort is for a shorter time and there is an associated increase in effectiveness of heat detection, as more cows will be cycling at the same time. This is especially important in small herds.
- Pregnancies that are more concentrated allow more efficient use of Vets for pregnancy diagnosis or calving problems.
- More concentrated and efficient supervision of calving is possible. If there is no mating during calving there will be more time for calving supervision and the calving will be in a shorter period.
- It allows easier and better comparison of young stock. All similar age cattle will be under similar conditions. Heifers can then be mated as a group and selected for fertility with more reliability.
- Allows better use of best pasture/prices by organising calving at certain times.
- It should be easier to plan crops and pastures knowing when cows will be in high production.
- It should be easier to organise the calf milk supply if the calving is grouped.
- It allows better management of cow nutrition if the milking herd, or part of the milking herd, are at the same stage of lactation and pregnancy.
- Allows for more efficient labour utilisation for herd health – vaccinations, branding etc will be done in batches.

DISADVANTAGES OF BATCH CALVING

- Cows missed in one mating period are not mated until the next period (increases loss of production). This loss can be calculated using the InCalf calculators and can be minimised by concentrated and aggressive mating during the mating periods.
- The cows are mating and are calving in concentrated periods – can overload staff or the system if too many calving on one day or in one period.
- Milk production is more variable throughout the year but can be targeted for maximum pasture utilisation or maximum payment.
- Will have times when feed demand is particularly high. Feed storage systems may be needed to compensate.

- It will be difficult to avoid mating or calving during the heat if more than one mating period is used.
- A disease outbreak in the calf area could have a higher impact on replacement stock numbers.

MUTDAPILLY CALVING PATTERN

The mating program for the research station dairy herd was designed so that the dairy staff were either mating cows or calving cows - not both at the same time.

This produced a tight calving pattern that allowed good-sized groups of cows that had similar days in milk and production to be used for different experimental treatments. The calving periods chosen were late autumn - early winter and late winter - early spring. These calving periods suited the feed supply patterns that could be the subject of experiments using winter and summer crops or pastures.

These calving periods meant mating periods started in June and December for about 2 months each year. Starting in June has produced acceptable results, but mating starting in December and carrying through to January always produced disappointing results. On the research station, if there was nothing else wrong with them, cows that failed to go in calf in their first mating period were given a second chance. Therefore, cows in the herd had potentially either a 12 or 18-month inter-calving intervals. Sound, long calving interval cows generally had good levels of daily production and did not need to be “compulsory” reproduction culls.

The Mutdapilly breeding program

1. All cows in the herd are palpated one month prior to the mating season commencing. This is to ensure that no cows have either slipped a pregnancy or had an undetected pregnancy from the last season. Heat detection devices are attached at this time.
2. Cows to be mated are heat detected for a minimum of 21 days prior to the planned start of mating. Records are kept of the date they are seen in heat.

3. Animals not seen on heat in this period receive a veterinary examination and treatment.
4. On day 1 of the mating period, all eligible animals receive a heat detector and a recommended dose of prostaglandin. When cows are inseminated, the heat detector is removed.
5. 7-10 days after the first prostaglandin injection any cow that has not cycled is given a second injection. Heat detectors are replaced on all the cows that have cycled and any that have been rubbed off.
6. After the first 21 days, any animals not inseminated also receive a veterinary examination and treatment.
7. Every 3 weeks heat detectors are replaced on cows that have been inseminated or that have missing detectors. Cows identified by veterinary examination as cycling but not seen on heat are treated.
8. Early pregnancy diagnosis is carried out.

Batch calving in the M5 project

There were 100 cows in the M5 farmlet project and data was collected for 4 years, so that represents 400 cow years of reproductive data. Late winter-spring calving cows are referred to as summer cows and are mated in summer; late summer-autumn calving cows are referred to as winter cows and are mated in winter.

Other documents in the *M5 Info series* describe the project and farmlets in more detail.

Farmlet reproductive results were analysed using the InCalf terminology to compare summer and

winter mating results against industry averages. Results are presented in *Table 1*.

The **Typical** InCalf benchmark in *Table 1* refers to the median herd results from the national InCalf trial. The **Achievable** benchmark is the median results of the top 25% of the herds in the trial.

Submission rate

The 21-day submission rates were 89% in winter and 84% in summer. Low submission rates can be generally attributed to two things - cows actually not cycling (anoestrus), or failure to detect cows that are truly cycling. Mutdapilly dairy staff could achieve industry-best submission rates. The results show only a very slight trend towards better submission rates in the winter mating. The results show that cows are cycling and detected in heat in both seasons.

6-week in calf rate

An examination of the 6-week ICR shows an obvious seasonal effect. The summer mating season (46%) has much lower ICR's than the winter season (69%). The prime indicator of reproduction success (the 6-week ICR) for the winter months was always above "typical" results, but in summer, the results are much lower.

Conception rate

The seasonal differences in ICR were a reflection of conception rate differences. Winter first-service conception rate was 54%, and the summer rate was 33%. The difference between summer and winter conception rates was not due to different inseminators. Two experienced inseminators did more than 85% of the inseminations. These two inseminators had 68% and 69% CR in winter, but 31% and 35% in summer.

Table 1. Mutdapilly farmlet herd reproduction results compared to InCalf seasonal - split calving findings.

Herd reproduction rates	InCalf benchmarks		M5 farmlet results	
	Achievable	Typical	Winter	Summer
21 day submission rate (SR)	86%	75%	89%	84%
6 week in calf rate (ICR)	71%	60%	69%	46%
Conception rate at first service (CR)	53%	49%	54%	33%

Mutdapilly summary

- The farmler reproductive program was essentially the same for each season, with no great changes to management or staff involved in farm work during this period.
- Winter figures show that the dairy staff - and an aggressive reproductive program - can achieve quite acceptable results, similar to, or above, the industry-achievable figures.
- Summer figures are well below even the typical industry figures.
- The obvious differences between mating seasons would appear to be the direct effects of heat, and maybe the effects of heat on feed quantity and quality.

The results highlighted the differences between the seasons in Queensland and reinforce that Queensland has a specific climatic problem.

COMPANION FARMER'S EXPERIENCE

One of the companion farmer's to the M5 farming system project used a batch calving program. The companion farm had a raingrown tropical pasture based farming system in a high rainfall environment. Seven years ago, the companion farm moved to batch calving the herd. They now manage a split herd with 260 cows calving from September to October and the remaining 140 cows calving from very late March to May. The herd includes pure Jersey cows and crosses with Holstein-Friesian and Swedish Red breeds.

Dividing the cows into two batches took 4-5 years. To get them down to a 10-week mating period the companion farmer would drop off one week a year. Calving over 8-9 weeks would probably be too short, so they plan to stay with the 10 weeks.

To manage such a large herd the calving plan needs to be very strict. The dates the companion farmer has set to organise the calving and mating plan are as follows:

Periods of	Start	Stop
Calving 1	28 March	23 May
Mating 1	18 June	13 August
Calving 2	1 September	26 October
Mating 2	22 November	17 January

Cows are inseminated twice and then run with herd bulls. Empty cows are held over to the next herd, but if they are empty the second time then they are sold.

Production benefits

Pasture utilisation has increased with the fresh cows in spring getting good pastures. The herds are fed silage in February, as a lot of the cows are dry at this time it means oversown raingrown ryegrass can be planted sooner.

This has allowed the companion farmer to better manage the pasture and increase pasture utilisation. Each herd receives a flat rate of 6 kg of grain per cow per day.

Social benefits

The companion farmer believes batch calving decreases the workload for most of the year. They only need to look for calves for 20 weeks of the year, and raise calves for about 26 weeks. This then frees up the calf rearer to help milk during the rest of the year. This also means AI is done all at once. Rather than doing five cows a day, 50 to 60 can be done and all semen can be bought at once. This system is more labour intensive for some weeks of the year, but then the workload decreases for the majority of the year.

Last year the spring calving herd had 115 calves, which required two people working 3 hours per day to feed them. September to December is very busy but the end of January to mid March is slower. There are 8 weeks, which are really busy rather than 30 weeks working ½ an hour every day to feed and look for calves.

For batch calving to be beneficial, you really need to fine-tune your labour.

The companion farmer was able to have time off over weekends during certain times of the year because there are no calves to look after and no AI to do. They just needed to get in two relief milkers.

Business benefits

The calving herds were designed so the March - April calving herd receives an increased milk

price, while the September to October calving herd gets the ryegrass flush.

Batch calving means there is a reduction in income during one part of the year when the smaller herd is peaking and the larger herd is dry. However, during November through to March the companion farmer's milk cheque increases with the larger herd calving. The farmer tries to plan for all capital works to be conducted during this time of year when there is a higher cash flow.

Conclusion

The companion farmer believes batch calving has made time and labour management much easier because they are busy for parts of the year and the rest of the year they do not need to worry about calves, AI and heat detection. However, the labour management needs to be very fine-tuned for batch calving to work. Unreliable labour units during these critical times of the year can lead to huge management problems. It is vital to adhere to the dates set for mating to start and stop.

Farmers wanting to move to batch calving need to think about:

- Are facilities such as calf rearing sheds, milk vats and milking machines adequate?
- Some increased costs from the need to have more labour during certain periods of the year.
- Fluctuations to the milk volume and cash flow. The farm has a 3:1 ratio between the peak and the trough in milk production.

However, as the companion farmer has discovered there are benefits of batch calving:

- It is easier to take time off during the year.
- No calf feeding and AI during parts of the year so that frees up a labour unit.
- Timing the batches correctly can lead to increased pasture utilisation.
- Improved management especially of cows in different stages of lactation.



FURTHER READING

Details of the InCalf project can be found on their website www.incalf.com.au. The website includes a number of tools that can be used to assess herd reproductive performance. The site also contains technical reference material.

There are additional documents in the *M5 Info series* that describe the M5 farming systems project; they are available as downloads from www.dairyinfo.biz.

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The *Sustainable Dairy Farm Systems for Profit* project at Mutdapilly Research Station and on associated commercial farms investigated the potential impact of intensification of five subtropical dairy farming systems on business productivity, on the social well being of farming families and on the farm environment.

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