

IN CALF MATING STRATEGIES

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New Zealand farmers are largely operating seasonal or split calving patterns and reproductive efficiency is essential to the success of farm businesses.

This means farmers are working to get as many cows in calf as possible, as quickly as possible so a compact calving is achieved.

A compact calving is important to help deliver the maximum amount of quality days in milk, early calves, and the best opportunity for cows to have a successful subsequent mating.

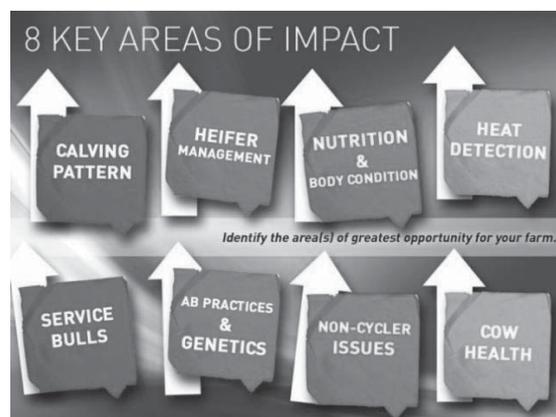
To achieve this it is important to:

- have all the cows cycling and ready to conceive,
- identify them at the right time and make sure they are mated
- make sure enough quality semen gets in the right place (artificially or naturally)
- keep that happening right through until the day you finish.

So what does this mean on your farm?

You'll need to maximise submission rate and conception rate, and to do that you'll need to have best practice management in place.

There are eight key management areas, shown below, that drive 6 week in-calf rate and empty rate, as defined in InCalf. To get top reproductive performance they all need to be up to speed.



Notes:

Using these key management areas.....

1. Assess how you are going, what is going well and what areas are holding you back.
2. Identify the areas that are holding you back the most
3. Develop a strategy to correct them
4. Keep the strategy on track for the areas that are going well.

So Mating Strategies are actually in play all year round!

First things First: to develop the mating strategies you need you'll first need to measure how you are going and where you need to put your effort in planning.

And the best measure of performance is your 6 week in-calf rate...

What is the 6 week in-calf rate?

It's the % of cows that got pregnant in the first six weeks of mating.

It's about how quickly your cows got in calf during the mating period.

To get a high 6 week in-calf rate you'll need to have a great mating strategy.

Why the 6 week In-calf rate is important

The 6 week in-calf rate is a key measure of how well your herd is getting in calf during the mating period and therefore how quickly you can expect the herd to calve down next season. It is a fundamental driver of on-farm profitability.

6 week in-calf rate:

- drives important contributors to farm profitability, including days in milk and numbers of AB replacement calves
- impacts final empty rate, -as a rule of thumb- the higher the 6 week in-calf rate the lower your empty rate should be. (The more cows getting in calf early the fewer you have left to get in calf as time goes by)
- provides choice to leverage your farm business further- lower empty rates provide more room for discretionary culling, more AB calves allows for greater selection pressure and faster genetic gain, shorter mating and calving periods, focussed work periods enhancing staff performance.

A reproductively, efficient high genetic merit herd not only gets more days in milk and more milk per day, there's also more opportunity to lift the contribution of stock sales to the annual budget, shown in Figure 1.

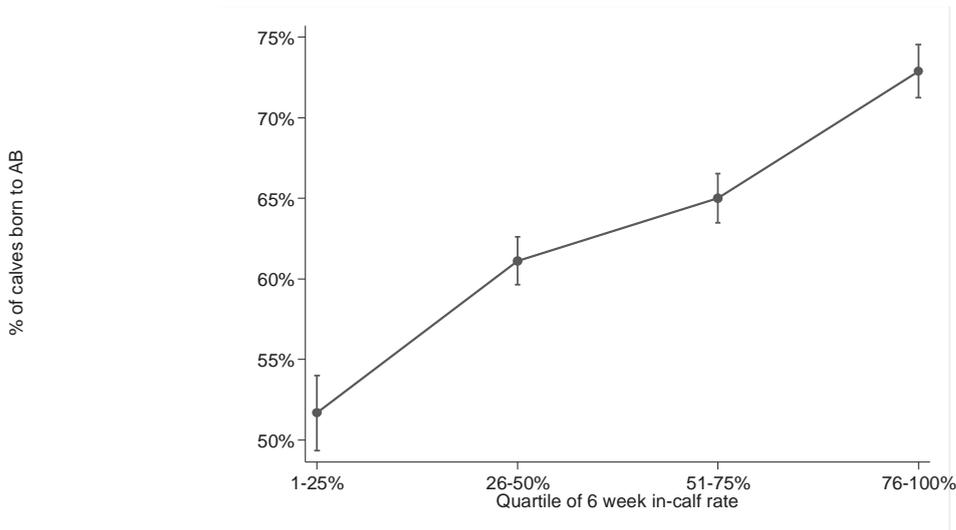


Figure 1. The top quartile of farms in the National Herd Fertility Study data set for LIC (Brownlie and McDougall, Cognosco 2013, unpublished) on 6 week in-calf rate had 20% more calves born to AB than the bottom 25% of farms on 6 week in-calf rate, *Brownlie, 2013, unpublished*.

The list of benefits goes on, as any farmer with a high 6 week in-calf rate will tell you. The 6 week in-calf rate is an important key performance indicator just like average MS per cow/per season, peak milk stats, farm working expenses /kg MS etc. It helps you achieve farm business sustainability- financially, socially and environmentally.

The science backs up the logic. Analysis from the National Herd Fertility Study showed that the top 25% of farmers on 6 week in-calf rate got 15 more additional days in peak milk, than the bottom 25% of farms on 6 week in-calf rate, shown in Figure 2.

Notes:

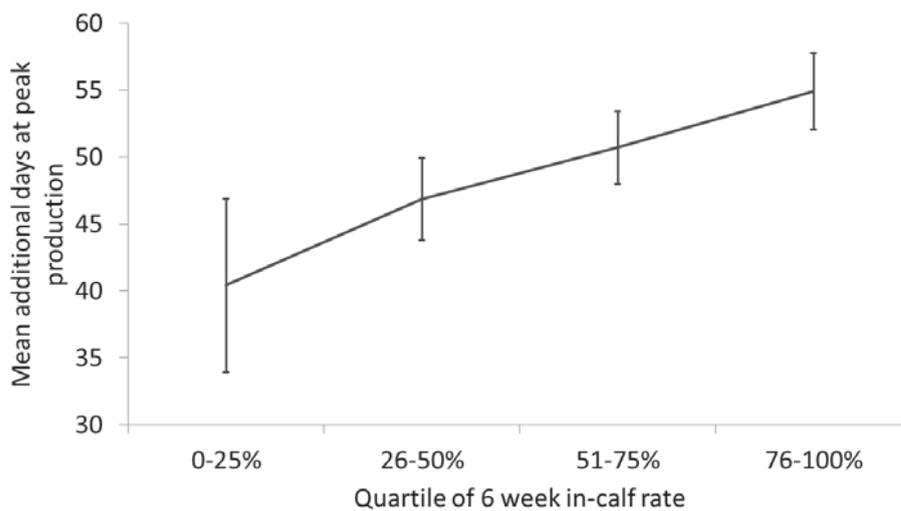


Figure 2. Additional days in milk measured by herd performance on 6 week in-calf rate
There are some technical reasons why the 6 week in-calf rate is the best figure we have to determine the reproductive performance on farm too.

Why 6 weeks? Why not 5 weeks or 7 weeks in-calf rate?

- 6 weeks is a consistent measure between herds, most farms AB from 5-7 weeks in length
- It’s the point of greatest variation between herds in the proportion of the herd pregnant
- Its two cow oestrus cycles (21 days + 21 days)
- It’s a break between early and late calving cows

Why is the 6 week in-calf rate better than empty rate?

Empty rate is important but cannot be easily compared between herds. The duration of mating and culling decisions makes this an impractical measure to compare between herds.

How was the 6 week in-calf rate target set?

The 6-week in-calf rate measure was developed by InCalf Australia and the NZ target of 78% was set using information from the Monitoring Fertility Project (Xu and Burton, 2003). The average performance of the top quartile of farmers in this study of herds, over three seasons from 1998 to 2000, were used to set the 78% target for 6-week in-calf rate and other bench marks and targets for the dairy industry that remain today.

How are we going nationally and regionally?

Nationally

In 2013 the average 6 week in-calf rate using detailed Fertility Focus Reports (FFR) herds (actual, accurate 6 week in-calf rates) was 66% nationally, the median was 67%. As shown below in

Figure 3 the average over the last three seasons has hovered around 66% to 66.5%. The average estimated 6 week in-calf rate for herds that generated intermediate FFR's was 64.3% in the 2013 season.

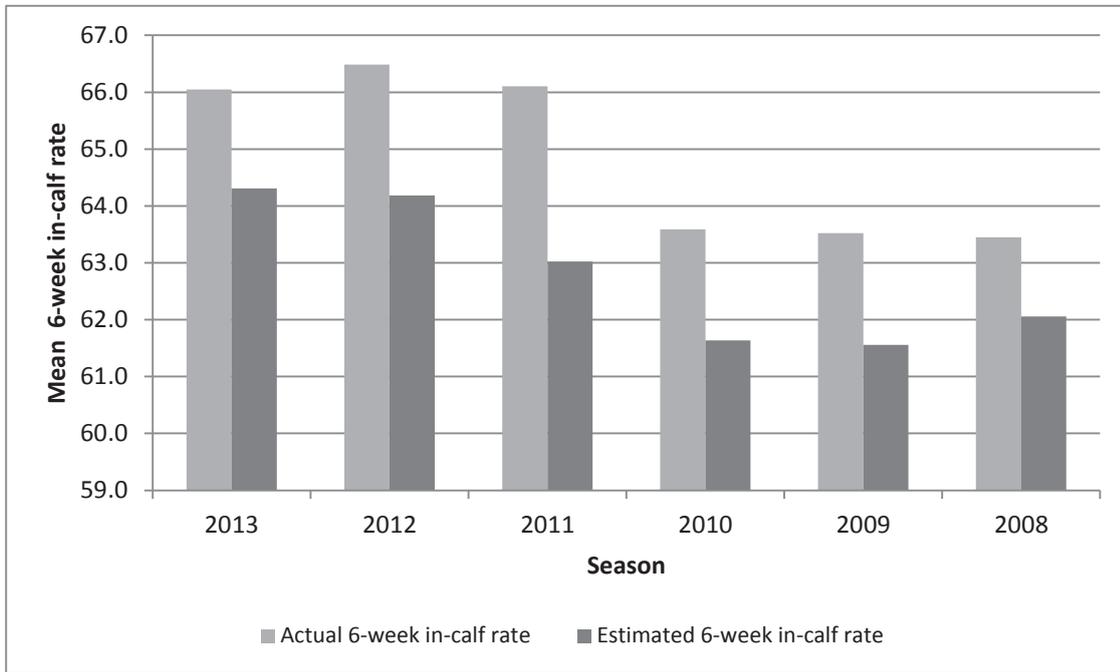


Figure 3. Mean 6 week in-calf rate across the 2008-2013 seasons. *Source- New Zealand Dairy Statistics 2013-14.*

The 6 week in-calf rate industry target of 78%, is shown on all Fertility Focus Reports and was derived from the average performance of the top 25% of herds in the 1998 – 2000 LIC Monitoring Fertility Report (Xu and Burton, 2003). Using the 2013 national in-calf rate average of 66%, we are 12% behind the target. In terms of what drives the 6 week in-calf rate, the average conception rate nationally was 52.4% in the 2013 season, 7.6% below the industry target of 60%. The average 3 week herd submission rate was 80.5%, 9.5% behind the target of 90%.

Notes:

Regionally

The table below shows there is very little difference in reproductive performance between regions across New Zealand in the 2013 season.

Farming region	Actual mean 6 week in-calf rate (%)	Number of herds	Estimated mean 6 week in-calf rate (%)	Number of herds
Bay of Plenty	65.3	88	65.2	225
South Auckland	67.3	719	65.1	1213
Otago	65.5	213	61.8	79
South Canterbury	65.8	150	63.1	56
Central Plateau	63.9	116	65.9	150
Wairarapa	64.9	130	62.1	179
Central Auckland	63.9	39	61.1	132
Southland	66.3	332	64.9	295
Northland	62.3	83	61.1	246
Western Uplands	69.7	21	63.6	25
West Coast	65.6	59	63.7	147
Taranaki	67.6	229	65.3	941
Canterbury	66.0	439	64.6	163
Wellington	63.3	112	61.8	178
Hawkes Bay	64.0	13	63.5	20
Nelson/Marlborough	67.6	27	64.2	122

Figure 4. Mean 6 week in-calf rate by farming region for the 2013 season. *Source- NZ DairyNZ Statistics 2013-14*

How many herds are actually hitting 78% or better?

In the 2013-2014 season, 160 out of 8851 seasonal herds with detailed FFR's achieved 78% or better 6 week-in calf rates.

10% of herds achieved 75% and better and 25% of herds achieved 72% and better.

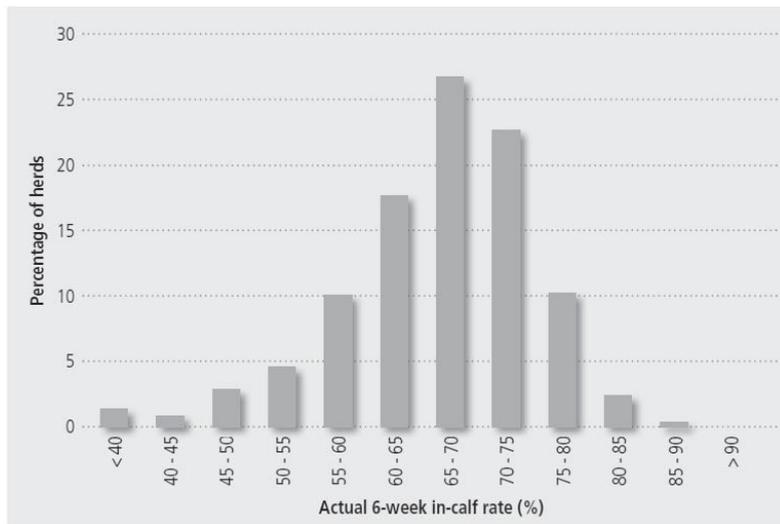


Figure 5. Distribution of actual 6-week in-calf rate in the 2013 season. *Source- NZ DairyNZ Statistics 2013-14*

Does herd size make a difference in achieving 6 week in-calf rate targets?

The answer is no - there is no effect of herd size on reproductive performance, see box and whisker graph below.

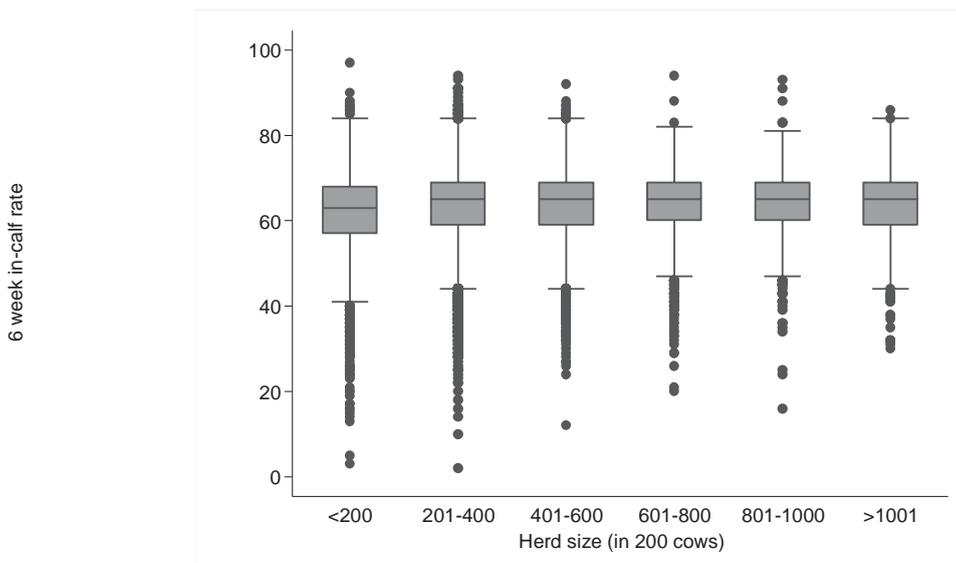


Figure 6. Herd size versus mean 6 week in-calf rate in the 2013 season. *Source- NHFS, Brownlie, 2013, unpublished*

Notes:

What does this mean on your farm? Do you know what your 6 Week in-calf rate is?

The starting point to look at herd fertility is to:

- measure where you are,
- decide where you would like to be,
- estimate the value to your business of closing the gap
- look at the drivers of performance
- identify and focus on the key management areas that will get you there the fastest.

Demonstrate to me how a better 6 week in-calf can make me more money?

The DairyNZ InCalf program has developed a calculator that predicts how much profit can be made by improving your herds 6 week in-calf rate and herds empty rate, each season. The average NZ herds 6 week in-calf rate is 66%, say we want to improve the average by 4% to 70%, the gap is 4 which is multiplied by \$4 (economic derived multiplier for in-calf cows) multiplied by the number of cows in the herd. For empty rate the NZ herd average was 15%, say we want to improve this down to 10%, the gap is 5 which is multiplied by \$10 (economic derived multiplier for empty cows) multiplied by the number of cows in the herd.

6-week in-calf rate gap calculator = 4% gap x \$4 x 630 (average SI cow herd size)= \$10, 080

Empty rate gap calculator = 5% gap x \$10 x 630 = \$31,500

So an estimated profit of \$41, 580 per annum can be made

To New Zealand: Across the national herd of 4.9 million cows the potential national gain is;
 $177,120,000 + 110,700,000 = \text{\$287,820,000 per annum of improved profit!}$

(Calculation: 4.92M x 75% x \$ value for 6-week in-calf rate and empty rate x change in metric).

What can you focus on to lift herd reproductive performance?

The LIC Reproductive Solutions team was established in July 2011 our aim “to see a positive trend in the 6 week in-calf rate by the year 2020”.

We’ve observed many different factors on many different farms, but they will invariably boil down to the drivers of submission rate and conception rate:

Submission rate x conception rate = in calf rate

The In Calf eight key management areas still hold true every time we analyse herd data. It is just a matter of identifying the one or two that are holding you back **the most** on your farm and working on them first.

The areas we see most commonly on farm having the biggest impact are:

1. Body Condition Score and Nutrition

2. Heat detection
3. Heifer management.

Other areas also can impact heavily on individual farms, but are less widespread.

Ask your rural advisors to help you investigate what's going on for your farm. A fresh perspective from a coach, mentor or advisor from time to time can help keep things on track or provide a sounding board to refine your plans.

Top performers do the basics consistently well, critiquing and reviewing themselves.

The NHFS showed that farms that early age pregnancy test were more likely to have a better result reproductively, than farms that did late age scanning or 'yes', 'no' scanning due to the extra information this provides to review reproductive performance and make decisions. Also there are good grounds to say attention to detail and proactive early monitoring can serve to give you and your herd the advantage required to step incrementally up the performance ranking.

As explained previously there are top performers across all herd sizes, across all system types and across all regions of New Zealand.

Work within LIC found the top 25% of herds on 6 week in-calf rate in the 2013 season had the following characteristics:

- Short returns (2-17 days) averaged 18% during mating
- Heat detection efficiency averaged 90%, that is the percentage of mixed age, early calving cows that were submitted for mating in the first three weeks
- Herd submission rate averaged 86%
- Heifer submission rate averaged 87%
- 6 week in-calf rate of first calvers averaged 76%
- Herd conception rate averaged 59%
- Herd three week calving pattern averaged 65%, six week 88%, nine week 98%
- Mating length averaged 11.7 weeks.

Key learnings and take home messages

- 6 week in-calf rate makes you money.
- Assess the size of the prize and what you need to focus on, plan, do, review.

Notes:

- Go home, have a look on MINDA at how you are tracking and get your advisor to work through this with you.

References

Brownlie T and McDougall S, Cognosco. 2013. Unpublished. National Herd Fertility Study.

Xu ZZ and Burton L. 2003. Monitoring Fertility Project.

DairyNZ, 2013. New Zealand Dairy Statistics.