

Economic impacts of herds using the Queen of Calves programme

A report completed for Bell-Booth Ltd

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In a nutshell

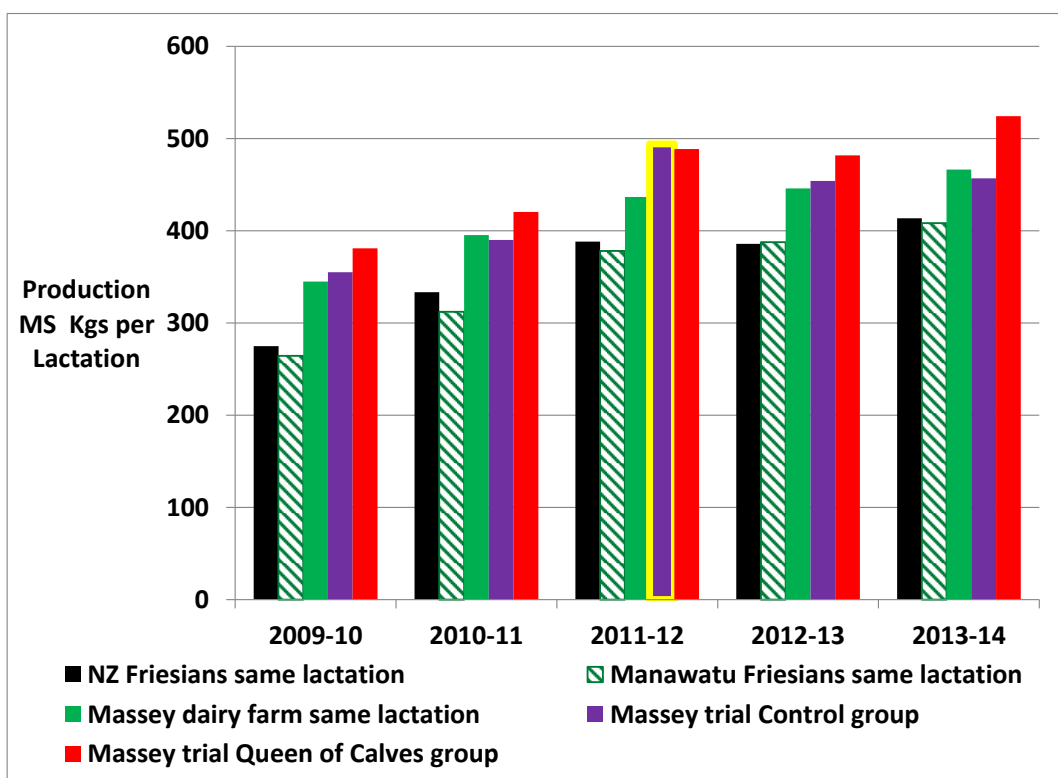
- We studied the production and survivability of a group of cows that were raised on a unique calf nutrition program, Queen of Calves, for the first 11 weeks of their life, and run in the same mob at Massey University's research farm, with a Control group.
- The Control cows were same-breed type, same birthweight and raised on an otherwise identical diet of milk and calf meal, but without Queen of Calves for the first 11 weeks as calves.
- We found that the Queen of Calves cows produced significantly more milk and survived longer than their peers.
- In the report, we have analysed the performance changes and costs of each system. These indicate a potential for substantial financial gain for farmers adopting this calf nutrition program, even in a lower payout environment.
- We contend that the gains from this advanced early growth system extend even to a smaller grazing footprint for the herd.



1 Increased production in the later lactations

The overall conclusion is that the Queen of Calves treatment brings about early lean growth in the calves which is associated with 'enhanced life-time milk yield'. Due to that factor alone, there is an increase of 30kgs of milk solids on average per lactation in the first four lactations, and at least that increase in the fifth lactation.

Figure 1: Massey trial and national production five seasons (MS per cow)



In Figure 1 the Manawatu Friesian heifer production averages were lower than the NZ same-age cohort in the first two lactations. However in the third, fourth and fifth lactations the national and Manawatu averages were nearly the same.

The main observations are:

1. The NZ Friesians same lactation produced consistently less than the Massey dairy farm same lactation in all five lactations, the difference ranging from 48 to 70 kgs, and averaging 64 kgs MS;
2. The production from the Control group was very similar to the average production from heifers of the same-age cohort on the Massey dairy farm across the five lactations except

in the third lactation. In all the other four lactations production from one group was within 10 kgs of production from the other. In the third lactation the production recorded for the Control group was 57 kgs MS higher than the Massey same-age cohort average. We reluctantly conclude that this is a rogue recording, and have marked it with a yellow margin – a yellow card.

3. Except for the 'rogue' Control figure for the third lactation, the production by the Queen of Calves group was consistently higher than that of the same-age Massey farm cohort, and Control cohort. The increase for the Queen of Calves group in the first, second and fourth lactations was around 30 kgs MS per lactation, and the differences fell in the relatively tight range of 25 kgs to 36 kgs.
4. The important fifth lactation shows a very significant margin by the Queen of Calves, over the Massey same-age cohort, and the Control group. The difference is around 60 kgs. Because of the smaller numbers of cows in the trial by that stage, for statistical probity, we suggest that is inadvisable to place emphasis on this increased margin.

The overall conclusion is that the Queen of Calves treatment brings about early lean growth in the calves which is associated with 'enhanced life-time milk yield'. Due to that factor alone, there is an increase of 30kgs of milk solids on average per lactation in the first four lactations, and at least that increase in the fifth lactation.

2 Queen of Calves group survival to third lactation

The trial group of calves raised on Queen of Calves, had 95% of the heifers entering the herd complete a third lactation 'on schedule'. We can compare this rate with the rate for the Control group, taking the Control group as a reflection of the Massey same-age cohort.

The 95% survival figure is higher than may be expected in an ordinary industry herd as this result was achieved under research conditions. The production increases due to the Queen of Calves were significant, and able to be analysed robustly. Unfortunately the same is not true for survival rates.

In average New Zealand dairy farm conditions, we therefore assume that the Queen of Calves cows to have a survival of 85% of the heifer calves which were saved at birth will survive to complete their third lactation.

A Scenario of National Impact

The Queen of Calves system, if adopted by 10% of the national herd (500,000 cows in milk) within, say, ten years' time could:

1. Produce the same amount of milk solids from 46,000 fewer cows on a total grazing footprint for the milking platform and dairy support which is 13% smaller than the present;
2. From the same number of cows in milk, produce a farmgate income 10% greater than at present (an increase by \$100 million per year);
3. If on the other hand a Queen of Calves herd was milked on the same grazing footprint as at present, it would produce 25 million tonnes more milk solids, for the farmgate income increase of \$150 million per year,
4. This is farm gate increase of \$150 million would multiply up to a total value chain increase in GDP of about \$340 million per year.
5. If the share of the New Zealand herd raised on Queen of Calves increased above the 10% level, the benefits would increase pro rata.

The Grazing Footprint for the Queen of Calves herd to produce the same volume

If the herd comprised fully of Queen of Calves-raised cows was to produce the same 165 million tonnes of milk solids, they would need a grazing footprint equivalent to that required by only 507,000 cows in milk, which is a footprint 13% less than that needed by the herd with current NZ average performance characteristics.

Table 1: Performance change with Queen of Calves herd producing same volume MS

	<i>Units</i>	Current performance	Queen of Calves herds	Change
Total MS production	<i>Million tonnes</i>	165	165	0
Milking herd (CIM)	<i>'000</i>	500	454	-46
Replacement herd entry	<i>%</i>	24%	16%	
Grazing Footprint	<i>'000 CIM equivalents</i>	585	507	-13%
Farmgate income	<i>\$ millions</i>	\$991	\$991	\$0

