FARM

beef+lamb new zealand

FACT SHEET

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MANAGING HEIFERS PRIOR TO AND DURING MATING

A beef herd can be 15% more profitable if heifers are successfully mated as yearlings. This fact sheet sets out some guidelines for deciding whether to put yearling heifers to the bull and how to produce a calf without prejudicing the cow's lifetime production.

DECIDING WHETHER TO PUT YEARLINGS TO THE BULL

Depending on the region, between 30% and 80% of yearling heifers are put to the bull in New Zealand. Consider the policy if:

- Replacement heifers are grown out to at least 300 kg LW or 60% of mature cow liveweight by 15 months.
- There is feed available for calving/lactation and re-mating (for 2nd calving). The greatest risk is failing to reach re-mating targets through poor nutrition between the first calving and re-mating.
- The main beef herd is performing well (i.e. in-calf rate of at least 90%).

BENEFITS AND RISKS

A key benefit from heifer mating is 'economic return on feed consumed'. For example, a mated and calving yearling heifer needs around 850 kg of extra dry matter over a two-year period compared with an un-mated yearling. If she produces a 200 kg calf at weaning, this $100 of extra feed investment would return $700 (at $3.50/kg LW).

GROSS MARGIN EXAMPLE

Using a typical New Zealand average, with over 50 heifers mated you could expect an in-calf rate of 84% and 76% calves weaned/cow mated. At $700/calf weaned, this would generate $26,600 of income.

COSTS/INCOME

Extra feed for two years (above dry heifer feed) 850 kg DM @ $0.12 = $100 x 42 heifers	$4,284
10.5 hrs Labour during calving (one 15-minute routine visit/42 days) @ $25	$263
Assisting 5% with dystocia problems (2 heifers x $100)	$200
2% cow death	$1,500
One Bull (cost spread over five years)	$800.00
TOTAL COSTS	**$7,047**
INCOME	**$26,600**
For 50 heifers NET MARGIN	**$19,553**

A less-quantifiable cost is that mixed age cow numbers may need to be reduced to make room for calving heifers, impacting on the number of cows available for pasture control.

Benefits include greater culling power and opportunity for genetic progress. Assuming a typical replacement rate of around 20%, there will be 16-18% more calves (and lactating females) after allowing for calf survival rates. Risks include lower in-calf rates at second mating.

SET TARGETS

To minimise the risk of failure, set and meet liveweight targets. There are no set recipes. However, heifers must be grown to a minimum of 300 kg LW to ensure:

a. They have attained puberty and will be cycling.

b. They are grown out enough to calve and re-breed successfully.

Table A: Average liveweight target weights.

When	Age	Angus /Hereford	Beef x Dairy cross (e.g.Hereford/ Friesian)	Exotic beef (e.g.Charolais, Simmental)
Weaning	6 months	185 kg	220 kg	240 kg
First mating (60% mature LW)	15 months	300 kg	330 kg	360 kg
Pre-calving	24 months	450 kg	470 kg	500 kg
2nd mating	27 months	450 kg	470 kg	510 kg
3rd mating	39 months	500 kg	550 kg	600 kg

Note: farmers may choose to exclude light "tail ender" animals from the mating mob. We do not recommend mating heifers under 300 kg.

Assumed 39 month weight is adult Liveweight although it might be nearer 60 months of age that adult LW is reached

Table B: Typical and top performance for heifers

Parameter	Typical rate	Top performance
Number pregnant in first two cycles	85%	93%
Cow survival %	95%	100%
Calf survival %	90%	98%
Re-breeding rate	90%	97%

Underpinning these targets are some reproductive management targets:

1. An average calving interval of 375 days between first and second calving.
2. 42-day mating period and 93% cows pregnant.
3. 70% of heifers calve in the first 21 days of calving.
4. A ratio of no less than two bulls per 80 cows over joining when using natural mating, depending on experience/age of bull.

To achieve these targets there are four key areas that farmers need to focus on:

- Condition score and feeding levels
- Time of mating/calving
- Cow health
- Bull fertility and performance.

To avoid having late-calving heifers (third cycle), mate 10% to 15% more heifers than required and take the bull out after two cycles (42 days). The other option is to identify heifers conceived in the third cycle, put them in the finishing mob for slaughter or run as once- bred heifers (i.e. calved and slaughtered as prime beef immediately following weaning of their calf).

FEEDING TARGETS

Table C: Feed requirements for heifers

	kgDM/hd/day @ 11 MJME	Pre-grazing cover (kg)	Post-grazing cover (kg)	kg LW gain/day
Weaning to end first winter	3.8	1800 (6-7 cm)	1000 (2-3 cm)	0.5
Spring to end first mating	6.7	2500 (10-12 cm)	1500 (5 cm)	1
Pregnancy to last 6 weeks	6.5	2000 (8-10 cm)	1200 (3-4 cm)	0.5
Pregnancy last 6 weeks	6.5	2000 (8-10 cm)	1200 (3-4 cm)	0.5
Calving, lactation, re-mating	10	2500 (10-12 cm)	1500 (5-6 cm)	0.6

WEANING TO MID WINTER TARGET

Feed as a growing animal (target to grow heifer at 0.5 kg/hd/day).

PRE-CALVING

Aim for condition score of 5 to 6 (scale 1 to 10) with the heifer gaining less than 0.5 kg weight/day (22.5kg) in the last six weeks of pregnancy. This means the heifer is only maintaining but the calf is still growing.

Manipulation of calf weight during mid and late pregnancy is difficult due to the capacity of the heifer to buffer the nutrition of the calf.

CALVING

Ensure the heifer is fit (set stock on hills) and not excessively overweight as excess fat around the birth canal can make calving difficult. Shed-off calved heifers on to 2500 kg DM/ha (about 10-12 cm) of quality pasture.

LACTATION

This is the point where underfeeding results in the greatest re-breeding failure rates. For good fertility a cow should eat in excess of 10 kg DM/day from calving. To ensure cows achieve this, they must have unlimited access to quality pasture (2500 kg DM/ha or 10-12 cm) and pasture covers should not fall below 1500 kgDM (5-6 cm). This will not be a problem if calving coincides with spring growth.

Over calving/lactation, the heifer should be eating 60% more feed than her dry counterpart. This is because she needs to:

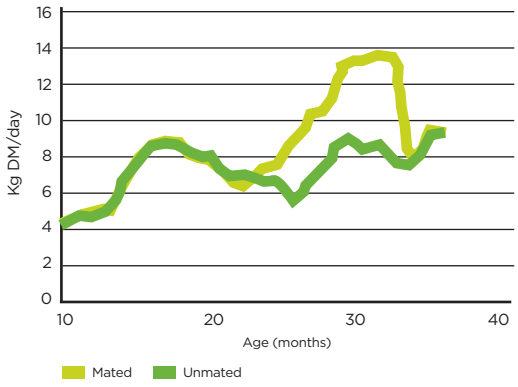
- feed a calf
- grow herself
- put on condition for re-breeding.

Aim to have heifers at condition score 7 (minimum 6 for lightest heifers in the mob) at second mating.

SECOND MATING

Poor nutrition after calving can depress calf weaning weights. A rule of thumb is that cows should be within 5% of their autumn liveweight at the start of mating (around 400 kg for British breeds).

Graph A: Unmated heifer feed requirements vs. mated (from FARMAX).



CALVE AT THE RIGHT TIME

The target of over 85% calves weaned per 100 heifers mated will be most easily and profitably met if cows are calved in mid-spring rather than late winter.

This means that the heifer will:

- Be consuming surplus feed
- Be able to grow a calf at 1.0 kg/day
- Be on a rising plane of nutrition to meet her condition score target for mating
- Not be competing for feed with other higher earning stock (e.g. ewes).

However, calving should still coincide with the spring flush. Mating heifers earlier than cows is an option, but the benefit of doing this will only be obtained if the heifers are well fed after calving.

ANIMAL HEALTH

Ensure adequate magnesium.

Cows that have mastitis or footrot are usually infertile. Bovine Viral Diarrhoea (BVD) is a significant issue affecting beef cow herd performance. A 2005 survey by The Vet Centre, Marlborough, showed that of the fifteen herds tested, 66% of herds had heifers with antibodies to BVD suggesting they had come into contact with the disease. These herds would also have animals infecting each crop of new heifers each year.

Only buy bulls that are confirmed clear of, or vaccinated for Bovine Viral Diarrhoea. Test heifers for presence of BVD antigens. Get veterinarian advice on vaccinating heifers.

BULL SELECTION FOR CALVING EASE

Bull selection and fertility testing is pivotal to success.

USE ESTIMATED BREEDING VALUES (EBVs)

Choose a bull with EBVs that are high (above average) for Calving Ease. Any growth-rate penalties will be off-set by the reduction in calving difficulties. Check the accuracy of the EBVs with your bull breeder. Many stud breeders do not weigh their calves at birth or record calving ease and this will be reflected in the EBV accuracies (e.g. 50% for non-weigh accuracy vs 70% for those that do weigh).

PHYSICAL QUALITIES/AGE

Do not use large continental breeds over British breed heifers as they have a strong tendency to produce large calves.

The two options are: a) select a bull specifically for heifer mating and accept that it will get heavier over the years or b) buy a young (lighter) bull with correct EBVs and then sell it on once it gets too big. The latter would minimise the chance of injuries to heifers during mating.

Purchase bulls from herds where calves are regularly weighed at birth and which are mated as heifers.

To achieve fertile and fit bulls:

- Test bulls for fitness once/year.
- Palpate scrotum/evaluate penis.
- Test semen quality following low pregnancy rates.
- Target condition score 5 to 7 at mating (on scale 1-10).
- Check bulls twice a week during mating. Observe them walking and look for physical abnormalities. If possible watch bulls mating.

The recommended mating rate for heifers is 40 heifers per bull if the bull is experienced (use a higher ratio of bulls to heifers if using yearling bulls). Always keep a spare bull(s) as back-up.

Rotate bulls between herds if single-sire mating.

CALVING ASSISTANCE

If heifers are used to human proximity, they will be calmer under intensive shepherding. Calve close to the cattle yards so assistance can be offered quickly. Be prepared to assist around five percent of heifers with dystocia (calving problems).

Warmed lubrication gel squirted on gloved hands and in to the birth canal will aid delivery. The ideal position is for the calf's front legs and feet to be presented first. Check calf position when in utero before pulling. When pulling, 'rock' downwards rather than straight out.

ACKNOWLEDGEMENTS AND MORE INFORMATION

This fact sheet was produced under contract for Beef + Lamb New Zealand by Jason Archer and Steve Morris.

B+LNZ RESOURCES

www.knowledgehub.co.nz

Further reading to download:

- Beef cow body condition scoring resource book
- Guide to NZ Cattle Farming
- Better Beef Breeding: Bull buying for the commercial breeder.

For hard copies of these publications please email: **resources@beeflambnz.com**