

Breeding Cows on High Performing Sheep Farms

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There are 1.5 million breeding cows in New Zealand primarily run on hill country farms where most are farmed in conjunction with sheep. This is seldom to the short-term benefits of the cattle, but often improves the performance of sheep and the pasture. This should always be considered when evaluating the financial performance of a beef breeding cow enterprise. Indeed some of the high livestock performance on breeding sheep farms may be due in part to a breeding cow herd keeping pasture control. With appropriate management, breeding cows fill an important niche on hill country, particularly when the pasture growth curve has a large summer surplus and a contrasting winter deficit and where paddock sizes are large and there is little finishing type country.

The objectives of most commercial beef breeding cowherds are to:

- rear to weaning a large number of calves (95) per 100 cows mated each year
- wean calves with a heavy liveweight (50% of autumn cow liveweight)
- maintain a low death rate in the herd (2 to 3% per annum)
- make use of the breeding cow in promoting and maintaining improved pastures.

The overall output of the breeding cowherd is dependent on both weaning % and weaning weight of the calf, these are often combined into a term called cow productivity.

$$\text{Productivity} = \frac{\text{no. of calves weaned} \times \text{Av. weaning weight}}{\text{no. of cows joined with bull}}$$

However, the total feed consumed by large cows is greater than that of small cows and to take account of this the weight of calf weaned per cow joined (ie the productivity) can be divided by the cow liveweight and used as a proxy measure of biological efficiency in the beef-breeding cowherd.

$$\text{Efficiency} = \frac{\text{Productivity}}{\text{Cow liveweight}}$$

As a general rule usually small medium sized cows that wean heavy calves (in excess of 50% of their dam autumn liveweight) are more efficient. This is probably easier to achieve with some form of crossbreeding where a larger terminal sire breed is crossed with a smaller dam breed

In Table 1 the annual feed consumption (kg dry matter/head/year) for three different cow liveweight types (small, medium and large) are calculated. The different cows are assumed to wean calves at a liveweight equivalent to 50% of their dam autumn live weight. .

Table 1. Seasonal liveweights and production data for three different beef breeding cows type (note liveweights excludes the weight of conceptus)

	Small	Medium	Large
Weaning (kg)	430	470	550
Mid-winter (kg)	380	420	500
Pre-calving (kg)	380	420	500
Mating (kg)	410	450	530
Calf wean wt (kg)	215	235	275
Feed eaten kgDM	2880	3131	3657
Stock units	5.2	5.7	6.6
\$Return/kg feed	0.186	0.187	0.187
Number of cows	100	92	79

\$GM/Stock unit	105	107	108
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The stock unit comparison of three different sized cows highlights the pitfalls of using a single stock unit conversion factor for different sized beef cows. If each of these cows rears 50% of their own autumn liveweight to sale as weaner calves they are then all are equal in terms of \$return per kg of feed eaten and/or per stock unit. If we considered these three types of cows were run on a farm where there was a fixed amount of feed, then 100 cows of the small type, 92 of the medium and 79 of the large type cows could be farmed. This illustrates that there are a range of cow types that can give similar productivity and returns. The point here is that it is high productivity that makes a beef cow herd profitable just like any other livestock policy. If a beef cow herd is not productive then the other benefits of keeping this class of stock need to be large (ie improved sheep performance), however these benefits are difficult to quantify.

Competition versus complementarity

There is no doubt that the beef cow has historically played a major role in improving and maintaining pasture quality on hill country properties where breeding is the major livestock policy. Beef cows assist the performance of other stock classes because they:

- Have seasonal feed requirements which assist the matching of pasture growth with pasture utilisation
- Are able to utilise poor quality feed in the summer-autumn
- Can maintain pasture quality for sheep

When hill country properties become more developed (increased fencing, better access and water supply, improved soil fertility and improved pastures) these farms can finish more of their livestock and the cows role in maintaining pasture quality may be superseded. Certainly in winter and early spring complementarity between sheep and cattle turns to competition with sheep (ewes) able to graze below cattle grazing heights. Also animal health problems start to develop when cows graze freshly grown grass at herbage masses less than 1500 kg/ha in late pregnancy and early lactation. A well managed beef cow herd requires saved pasture in excess of

1800 Kg DM /ha at calving and early lactation and this is seldom seen under sheep grazing conditions at this time of the year.

Issues to consider for a productive and profitable beef cow herd

- **Breed options**

There are many breed options available but if straightbreeding does not meet a farmers objectives then farmers need to consider the use of crossbreeding eg a specialist terminal sire, a beef x dairy cross cow to increase milk production or a composite breed.

- **Calving date**

Both calving date (dependant on date bull went out) and calving duration (dependent on how long a period the bull is joined with cows) are important determinants of productivity. The calving date in most beef breeding cow herds usually coincides with the onset of the spring flush of pasture growth thus ensuring adequate feeding levels post-calving to encourage cow milk production and the onset of reproductive activity. Calf growth rates should exceed 1.0 kg/head/day while calves are suckling their dams. This requires the provision of a pasture mass greater than 1500 kg DM/ha or 6-8 cm sward surface height. There is a tendency to calve later, however this should be worked out for each farm in relation to pasture growth curves. Aim for restricted mating periods of 50 – 63 days and have 50 – 60% conceived in first cycle

- **Mating Heifers at 15 Months**

This is an option in well-managed herds but a management package needs to be followed carefully. Note that to grow heifers to the appropriate target liveweights requires extra feed that needs to be taken from other livestock enterprises. Minimum liveweights to ensure more than 80% of heifers calve in a defined period need to be identified. Dystocia and low in-calf rates at the next breeding may negate benefits of mating heifers at 15 months of age. Mating periods should be for 42 days and aim for 60% of heifers conceiving in the first 21 days of mating.

- **Feeding Management**

Make use of cows ability to put large amounts of liveweight on in times of plentiful grass supplies and then take liveweight off when pasture growth declines or other classes of stock are a priority. Set some targets for feeding and then monitor feeding levels using condition scoring or weighing, Note cows will not achieve adequate intakes on sheep pastures with herbage masses of 12-1400 kgDM/ha

- **Wintering no replacements**

Most farmers like to breed and rear their own replacements. An option would be to buy-in replacements to allow more pregnant cows to be wintered and hence higher total calf production. It also allows all females to be mated to a terminal sire. The quality of replacements will be an issue but this can be managed by contracting a breeder and specifying the number and weight of heifers at purchase date.

- **Cow Age and replacement rate**

Culling at young age means wintering more replacements. Cows should be kept in herd until 10 years of age. The longer a cow remains in herd the more calves the costs of rearing a heifer to breeding age are offset against.

- **Selection for growth**

Over the last 20 years many of our bull-breeding herds have placed great emphasis on growth, this is justifiable as this is what farmers are paid for. However this may have been detrimental to our hill country beef herds as mature liveweights have increased, age and weight at puberty have increased and cow maintenance feed requirements increased. Large cows may expose farmers to greater risk in extreme environments and climatic years.

- **Weaning Date**

The actual date will depend on the intended use of the calves. If the male calves are to go to sale at weaning then weaning date is usually the sale date. If the calves are to remain on the farm then weaning should be dictated by feed supplies. If pasture supplies are dwindling and cow liveweight and condition score is falling then it is prudent to wean. Remember the cow should be at her greatest liveweight and

condition score at weaning to allow for the cow to be used in pasture control during late autumn early winter period. The target for a suckled calf is 1 kg live weight gain per day and when this is compromised weaning should be considered.

Conclusion

The breeding cow will remain an integral part of hill country farming where breeding as compared to finishing is major component of the livestock policy. As a farm is improved the need for a beef cow herd to maintain or clean up pasture declines and other finishing cattle (and breeding ewes) can be involved in this role. This is the case on some farms but on other farms the cow will continue to play a role and earn her keep. However where high growth rate finishing systems are implemented the feed required by finishing cattle/sheep will mean that feed of lower quality is left behind. Cows are an ideal livestock class to consume this rank pasture.

When farmers expect high performance from their breeding sheep flock then they will need to graze to higher residuals (i.e. leave more grass behind) and therefore may need a class of animal to clean up pastures. Breeding cows can fulfil this role but farmers need to aware that the cow has certain requirements and if pushed to hard at times of the year production will suffer

Establishing the role and what a beef cowherd can earn compared to other classes of livestock is important. But probably more important is the mix of finishing versus breeding stock on hill country properties so that pastures, production and on going profits are maintained no matter what the climate, seasons, exchange rates, or markets bring.