

Are you in control of your herd or just harvesting? -Don Nicol

Thirty-five years working in extensive beef production in the tropics and sub-tropics has led me to hold some firm views on the philosophy necessary to raise profitable cattle in a sustainable system.

They include: -

1. Breed cattle that fit the environment rather than changing the environment to fit the cows.
2. Use time-controlled grazing systems for sustainability, utilising native pasture species where possible.
3. Select for traits that have economic importance in your environment.
4. Use breeds or multi-breeds (composites) that have genes for production traits (fertility and meat quality) as well as for environmental adaptation.
5. Go for hybrid vigour or retained hybrid vigour from planned crossbreeding or composite breeding where possible, because they confer huge benefits when you can use them.
6. Use the inherent parasite resistance of your cattle rather than chemicals.
7. Genetic improvement leads to cumulative and permanent gains. Per head gains are more important when you are stocking at hectares/animal rather than animals/hectare.
8. Last but not least, match the production cycle with the period of high quality and quantity of forage.

It is the latter point that I want to discuss in this article.

Changes

Each cattle farm in the world is unique. The physical, financial, climatic and human resources are specific to that farm. Cattle enterprises have a level of complexity in terms of management that is more complex than the more simple formulas of the soya bean farmer, the wheat farmer or the cane producer, because there are more variables to deal with.

Each farmer is 'king of his dunghill' and may know the property very well, but change is a challenge to people who spend most days on their own land.

That is why benchmarking and group comparison is so important to assist producers make change decisions. A change to the breeding season is one of the most difficult decisions for the farm owner to make.

Cost of production

The terms of trade for all beef producers have been deteriorating over the last few decades. Costs always go up but although beef prices might appear to be going up, when you adjust for the inflation, your returns in real terms are **going down!** In Australia where I live this has been happening at 3% per year over the last 20 years. It means a producer has to raise productivity by that percentage every year just to stay on par. As part of the increasing productivity the producer must constantly

drop the costs of production (CoP) of the beef enterprise to get ahead and achieve profitability.

Lowering the costs of production on a cow-calf operation

There are a number of ways a producer can drop CoP without going into harvesting mode. If you divide the total kilograms produced on your farm by the Rands it costs to produce those kilograms, you have established your cost of production.

One of the key factors is to keep control on cow costs since maintenance of the cowherd is going to be a major part of the beef costs (75 – 80%) on your farm.

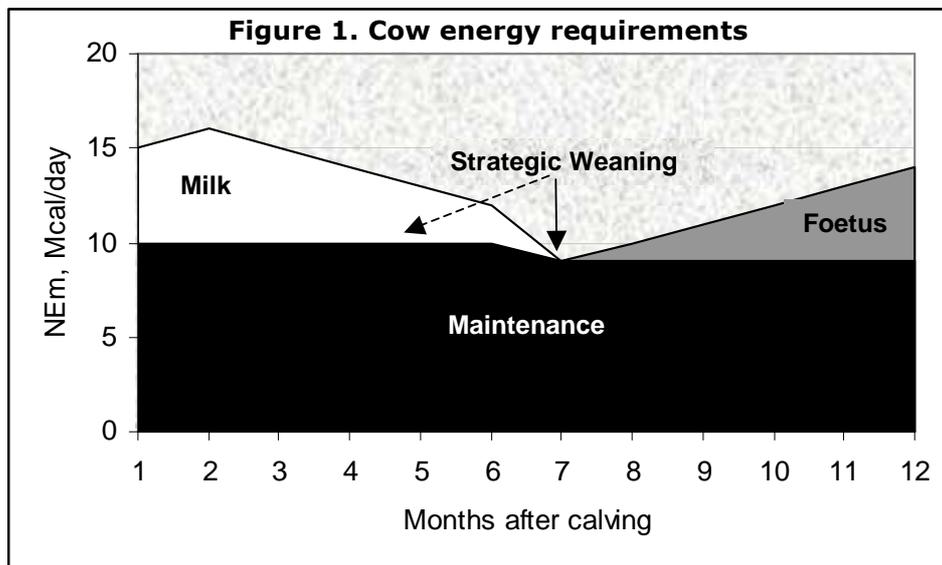
Manage “in synch” with Mother Nature

One of the basic ways to drop cost of production is to match the cow-calf production cycle with the quality and availability of forage. Cost effective management will ensure that high quality and quantity forage supply coincides with the calving date and through to weaning.

Together with strategic weaning it is the best way to keep condition on your cows and minimise supplementary feeding costs.

Cows’ nutritional needs are highest in the last 3 months of pregnancy and in the 3 months after calving. The energy requirements of cows in the months after calving are shown in Figure 1 (after Pruitt 2001).

The chart shows the cows’ additional energy needs above the normal maintenance levels, for milk production and to supply sufficient nutrient to the growing foetus. Any shortage of quantity or quality of feed at this time will affect reproductive performance.



The average date of calving of the herd therefore is a critical factor in cow-calf performance because of the peak demands of the cow for good nutrition.

In the tropics and sub tropics attempts to increase cow and calf productivity have focussed mainly on a calving season in the spring and summer months.

Length of breeding season

It's a truism that long breeding seasons result in long calving seasons.

Where calving season is not controlled i.e. bulls are left in all year, it will result in calvings distributed throughout the year through a range of environmental conditions. The cow that calves outside the 'best' time of year will struggle to raise a good calf and get back in calf.

Producers using this breeding system see advantages in that they do not need bull paddocks and say they need fewer bulls because the cows are coming on heat over a longer period. Replacement heifers need less development because they are mated when they get to the required weight, eventually. Proponents of year-round mating will tell you there are marketing advantages because you will have calves and to sell throughout the year.

Are these producers really aware of the costs of production on their place? The answer is, rarely. It is because they are essentially in a harvesting situation. They harvest calves; they are not really interested in herd improvement.

Gestation length and postpartum anoestrus

Key determinants of reproductive performance are gestation length (GL) and duration of postpartum anoestrus (PA). Gestation length (length of pregnancy from conception to calving) varies between breeds eg Angus 280 days, Brahman 287 days, Simmental 286 days, Belmont Red (Bonsmara) 284 days, Santa Gertrudis 282 days and Simbra 283 days. In *Bos indicus* and *Bos indicus*-derived breeds, the variation in gestation length is generally greater than in *Bos taurus* breeds.

Postpartum anoestrus is a technical term for the period from calving date until the cow exhibits a fertile heat. The calf suckling a cow pulls energy from the cow and she has a period in early lactation when she will not return to the bull.

In average situations cows should be coming on heat 50 – 60 days after calving. However *bos indicus* and *bos indicus* derived breeds are more prone to seasonal effects on lactation anoestrus and this period is recognised as being a major factor in controlling the percentage of cows conceiving. In a poor spring the anoestrus period could blow out to 90 days or more.

It means that for tropical extensive breeding programs with *Bos indicus* and *Bos indicus* -derived cows the worst case scenario combines 287days GL + 90 days PA = 377 days. The breeding season would then have to be at least 90 days to ensure each calving cow had at least one chance to come in heat.

Controlling the breeding season

Shortening the length of the breeding season is not a guarantee of increased calving percentage because in fact reducing the breeding season will usually lower calving percentage slightly.

However if the reduction in breeding time puts calving date in sync with the 'best' time of year it makes possible the kind of management and resource allocation that can increase the kilos of beef produced and profitability. No need to worry about the loss of a small number of out of 'sync' calves when you are getting the whole herd tuned to the best season.

Shorter breeding season advantages

The advantages of a limited breeding season go beyond the putting the cows 'in synch' with the grass-growing season.

Limited breeding seasons allow: -

- ◆ **The ability annually to monitor productivity measures** - an important one being kgs of beef produced per cow exposed to the bull the year before. These measures are especially important if you are benchmarking your CoP with producers in your region. Calving all-year round you can really only measure an annual yield relative to the total number of females you own.
- ◆ **Annual herd health procedures** are more efficiently administered because of the ability to vaccinate on a timelier basis relative to the stage of growth or reproductive status of the animals.
- ◆ **Sexual rest**- taking the bull out will create a period of sexual rest for the female herd that will be useful in minimising the effects of venereal diseases that are transmitted by bulls.
- ◆ Your **culling procedures** will be more effective. **Reproductive success or failure** is more evident. Culling a young cow that lets you down will boost reproductive performance in a number of ways. Firstly a less fertile 'passenger' will be culled. Analysis has shown that a cow that let's you down once when young will tend to let you down again later on in life if left in the herd. By constantly culling less fertile types the repeatability of fertility in the herd will rise over time. Pregnancy test after you take the bulls out and get the passengers out of the herd and lower your herd maintenance costs.
- ◆ Assessment of your **replacement heifer needs** for herd improvement (superior genetics) and maintenance of herd size. A shorter breeding season will allow you to manage your heifers well so that the highest possible percentage obtains sufficient weight and development to be mated at the right time. Don't do too much culling and pre-mating. Overmate as many heifers as you can afford and put selection pressure on their ability firstly to get in calf (pregnancy test), secondly to deliver a live calf without assistance and thirdly to get back into calf.
- ◆ In bull breeding herds you want to select bulls from the **most fertile** females. A short breeding season allows you to compare reproductive performance of females.

And the bull breeder?

The basis of performance recording is that animals should be treated equally and where management treatment is different, that fact be recorded. The best quality data will be where cattle are born at a time that allows them to express their genetic potential. Adjustment factors in the BREEDPLAN evaluation system allows for animals that are born at different times to be analysed (these are automatically sub-grouped).

Where the bulk of calves are born in a tight calving pattern, it will lead to bigger numbers of animals in a 'management group' based on birth date.

As the animals progress through life some animals will be culled or castrated. This will diminish the numbers in the management group (set at birth) eg for 600 day weight or scrotal size. The best quality data will come from herds with large numbers of calves in those birth-date, designated groups.

Adaptation Traits

Breeders looking to select animals for coat type as an indicator of adaptation are better served where the calves are born in tight groups rather than spread throughout the year and the changing environment.

Producers selecting for parasite resistance for instance will get better results if the animals to be compared were born at a similar time because there are age and seasonal effects on parasite that can confound selection.

When to wean calves?

Calves should be weaned according to the season and when the available pasture can no longer support the nutritional needs of a cow with a calf at foot. Once a herd starts in a controlled breeding system, cow condition becomes like money in the bank gaining interest. You want to conserve cow condition because it is hard (and costly) to put back on if you let the cow get down in condition too far. Strategic weaning is therefore important.

The weight of your calves at weaning will make an important impact on your annual production and profits. Calves born early in the calving season tend to have heavier weaning weight than those born later because they are older at weaning time.

This can be seen from the following simple table where I simulate the effects for a herd that mates for a 105 days and weans once when the oldest calves are 7 months old.

Period of Birth (Days)	Weaning Wt (Kgs) when oldest are 7 months	\$/Kg	Value of weaner \$
0 - 20	240	1.0	240
21 - 41	219	1.1	241
42 - 62	198	1.1	218
63 - 83	177	1.2	212
84 - 105	156	1.4	218

You will note that if you produce more kilograms for the same amount of cost or relatively less increase in cost, you have reduced your CoP. It follows therefore that the higher the % of calves born in the first weeks of calving the higher the total weight you will turn off.

In the tropics breeding seasons are rarely shorter than 90 days (3 months). Ideally in that time we would like to see 70% of cows calving in the first 41 days (2 cycles), 20% in the 42 – 62 days period and the balance in the rest of the season.

Bull Power

To achieve tight calving seasons will require adequate % of fertile bulls that are actually working. This requires pre-season conditioning of bulls to forward store condition (not fat) plus annual breeding soundness inspections by capable technicians. The type of country and the number of watering points determines the actual mating %.

In open country where cows are visible on heat from some distance and at a small number of waters, 3% (3 bulls per 100 females) fertile, working bulls will gain adequate conceptions. DNA profiling of calves in multi-sired herds in Northern Australia has shown that 2% bulls will get most of the calves, therefore the 3rd bull (1%) is more for insurance.

In country where there is thick cover and many waterholes or lying water, bull percentage may have to be higher. Attention to detail is important under these systems and regular checking of bulls is crucial and critical.

Best time of calving

Experience in summer dominant rainfall areas has shown that you should breed so that cows start calving about a month before the normal break to the rain season (> 50mm in combined falls). To achieve this the breeding or mating season needs to start about 3 months after calving starts.

Length of breeding season will be determined by predictability of rainfall around the chosen dates. When do the antelopes and other wild grazers calve in your region?

Can I change from year-round mating tomorrow?

You can make a start but it must be done gradually. The only practical way is to make the change over a number of years to minimise losses from those cows that are totally 'out of synch'.

The first step is to take the bulls out of the herd in the 3-4 months preceding the desirable commencement date for breeding.

Recommended dates for start of mating for zones of South Africa

East: 15 October

Central: 1-15 November

West: 1 December

Far West: 1-31 January

(Interestingly those dates are very similar to those for Queensland, in Australia).

Females that are not pregnant when you take the bulls out will readily get in calf 3 months later when you put the bulls back in.

Each year thereafter take the bulls out 1 month earlier to minimise the impact of the change.

Another strategy is to start mate replacement heifers for the first time by introducing them to the bull at the 'best' time as above.

If you have sufficient paddocks that allow you to run two mobs of cows then these cows that calve at the preferred time can be run as a group and those that calve at the wrong time of the year can be run separately and topped up preferentially with a higher ratio of replacement heifers that will be joined at the right time.

Whatever method you use it will usually take about five years to achieve your goal, so start soon. Five years seems a long time but the result will be worthwhile.

Postscript

Change is inevitable in all businesses and the cattle business is no different. A new challenge for the global beef producer is to breed and produce our beef taking the final consumers' needs into consideration. With per capita beef consumption losing out globally to competitive lower cost meats eg chicken, we in beef production must lift our game. We can't afford to be like your 'big bird', the Ostrich, and stick our heads in the sand.

Extensive consumer research in Australia utilising more than 500,000 consumer tastings now clarifies exactly what the consumer requires in order to eat more beef. The factors are many and too many to discuss here (visit www.msagrading.com) but some critical standards of production are needed on the farm as well as pre and post slaughter.

The challenge for the tropical extensive producer is to maintain animals on a rising growth pattern that equals to 0.6 kgs per day whole of life gain. Large weight losses followed by compensatory gains are antagonistic to high yielding, good-eating carcasses. So there will be ongoing challenges to balance in-paddock performance with the quality of beef that will actually raise demand for beef.

You will have to use all the tools to achieve the balance and as we have been describing here, the first is a **controlled breeding season**.