Don’t Fight Nature Again – Modern Cattle Breeding

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Don’t fight nature again

Stop! Before you read this article, I want you to carry out a little exercise. I want you to list all the words you use to describe the various stages of your cows’ year. Done it? OK, read on.

I reckon the words you have listed will be along the lines of high yielders, mid lactation, late lactation, calving cows and dry cows. There may be some reference relating to the seasons - summer grazing and winter feeding. These words are all very well and important definitions of your cows, relating to their function as milk producers. But the words I really want to see relate to the cows’ condition and their reproductive state. I would describe the cycle as; late lactation pregnant, early dry, close to calving, calving, fresh calved, pre-service, early pregnant and mid lactation pregnant.

I know that the management descriptions relating to lactation have evolved around grouping and costing definitions, which are entirely driven by relating performance to milk production. After all, that’s why we keep dairy cows. However, as I said in the first of these articles (*see May 2001 journal*), milk production is, in nature, the final act of reproduction. Cows milk to feed their calves. We have chosen to breed, single mindedly, for increased production so that we can have what the calf does not need, but we are still exploiting an animal that needs to balance its reproductive and milk productive performance against its requirement to survive.

The bison out on the range face the same challenges, and have evolved over thousands of years to manage these challenges without human help. The bison best adapted to getting pregnant, carrying and then feeding calves are the ones that nature selects to go on to dominate their herds. The bison strike a balance we have chosen to ignore when pushing ‘modern dairy cows’ to produce even greater yields of milk.

I want to use the annual cycle of the bison’s life on the range as an example of matching feed requirement with reproductive and survival requirements.

Bison have, like our dairy cows, a nine month gestation period. They have to calve in the spring – to do otherwise would be useless as a calf born in the winter would not live to see summer, while one born in the summer would not be strong enough to survive the next winter. So Mother Nature organises a block calving herd in the spring every year. This requires the period between calving and starting the next pregnancy to be set precisely at three months. In our herds, we do this by not serving with AI or keeping the bull out. We even give the period between calving and first service a name, the voluntary waiting period, and think we are clever and in control.

The inference is that without a voluntary waiting period, all cows would have nine month calving intervals. But let's look at what happens in that period and how it is that bison manage it with no human help, and see if we are so clever. After all, there are more discussions about problems of extended calving intervals than there are about short ones!

Go back to my descriptions of cows and, in the voluntary waiting period, we have fresh calved and second service cows. You may think of them as high yielders – maybe some of you will have an immediately calved 'transition' group – I hope so!

In these periods, a cow has to recover from the last pregnancy and prepare for the next one. Those of you who have seen a caesarean section or a prolapsed uterus will have seen the mass of the uterus at full term, weighing around 20 kg. In the fresh calved cow, that mass reduces to a size that can sit on your hand in around three weeks. While doing so, it undergoes a clean up and rejuvenation of its tissue in a process called involution. T the same time, and related to that process, the ovaries start their process of producing eggs (ova) and going through their phases of progesterone and oestrogen dominance, mid cycle and bulling, and eventually get into their regular three weekly cycle. It takes time, but it doesn't take three months. Many cows are served and hold six weeks after calving, and where bulls run with cows, some get in-calf after only three weeks.

There is a period of weight loss associated with the inability of the cow to take in enough feed to meet the energy demands for maintenance and milk production. There is loads of evidence that the longer and wider the energy gap, the longer it takes to get cows in-calf. There are some marvellous pieces of research going on to investigate the physiological and biochemical mechanisms of that process and to develop metabolic tests to measure the gap. You all have a way of doing it already. Look at your individual cows' protein percent in your milk records. They have a curve which troughs at peak yield and climbs in late lactation. The longer and deeper the protein curve, the greater that cow's energy gap was. I'm getting more convinced that some of our cows have a 'W' shaped protein curve, as a second nutritional challenge comes along just as they are climbing out of the first energy nadir. These cows seem to take an age to get in-calf.

Nature has given cows a ‘negative feedback system’, which switches down reproductive function when energy is short. As I wrote last time, there is logic in preventing pregnancy when the mother can’t feed her calf, as pregnancy may spell death for them both.
The range cattle of arid zones in Australia have a 50% annual calving pattern, because in the year they calve and suckle, they are so short of energy that they don’t cycle. When the calf is weaned, their condition improves and they get pregnant. So when we think we are being clever by controlling the voluntary waiting period, we are probably just interfering with Mother Nature’s compulsory waiting period.

A third string to the bow of delayed pregnancy is in the character and balance of the feed. The bison calve just as spring grass is flushing. That grass is high in protein and stimulates milk production. This sort of diet is usually imbalanced in its ratio of energy to protein available in the rumen. In dairy cows, you see this in your milk analysis as high urea, which is the waste product of utilised rumen degradable protein. Milk urea reflects the blood level of urea and I’m pleased to say that researchers more expert than I believe that periods of high, and fluctuating, urea are detrimental to fertility. We don’t know how, but there is evidence that the chemistry in the uterus is changed and becomes unfavourable to the development of eggs. I can argue that spring grass is a natural contraceptive as, low and behold, as summer comes on, grass goes to seed, energy levels rise and protein levels fall, urea drops and bison get pregnant!

What do we do? We try to feed spring grass all year, because milk production depends on adequate protein intake. Our struggle to provide an excellent production ration is quite counter to the natural variation in the bison’s grass-only diet. Look at your herd’s milk urea profile. Does it relate to periods of good and poor fertility? Look at milk protein curves for monthly groups of calving cows. Do you feed all months as well as you should? Is there a relationship between months with poor milk protein curves and their reproductive performance?

Use this sort of information to pick up areas of nutritional inadequacy. Mother Nature spent tens of thousands of years evolving the system. Don’t fight it!