

## The role of nutrition during pregnancy on heifer lifetime productivity within the herd

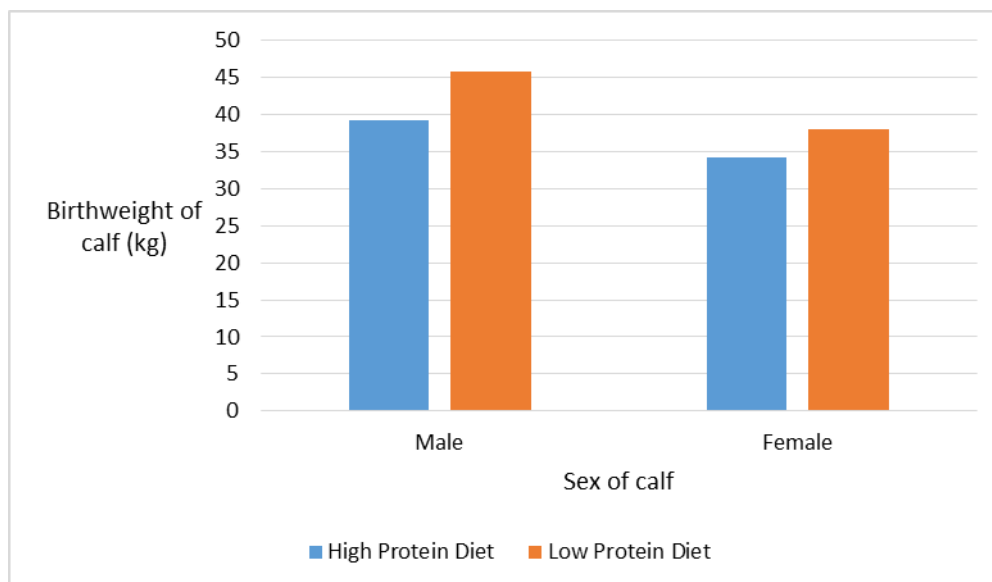
It is now recognised that nutrition during pregnancy can have long-term consequences, not only on the dam but on her progeny as well.

A study funded by AHDB Beef & Lamb focused on the role of nutrition around conception on the lifetime productivity of beef heifers.

### Nutrition during pregnancy

The study found heifers that were fed a low-protein diet (10% crude protein (CP)) two months before conception produced calves with heavier birth weights (Figure 1), which resulted in an increased risk of calving difficulties.

Figure 1: The effect of preconception diet on calf birthweight



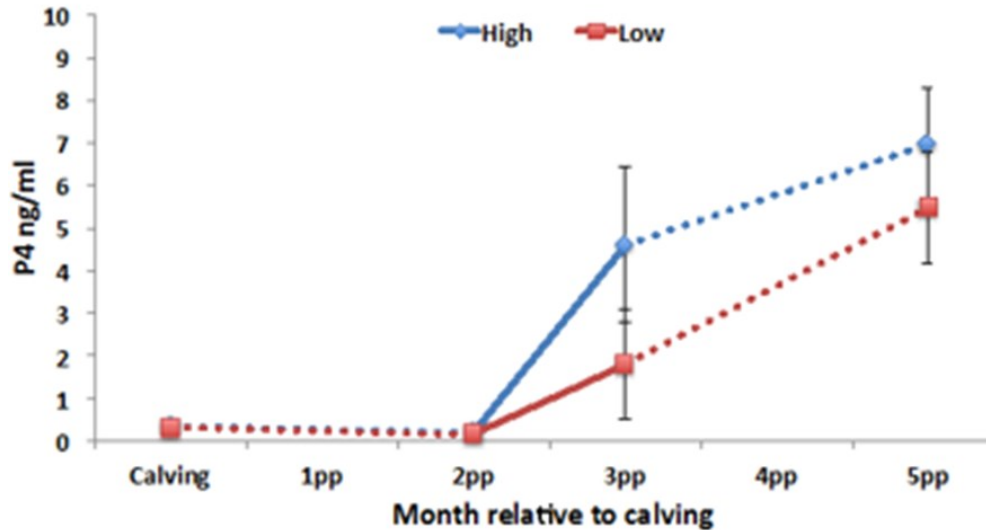
A number of studies have shown that as a response to poor nutrient intake in early pregnancy, the placenta grows substantially to enable sufficient nutrient supply to the foetus. If this period is then followed by increased nutrition in mid to late-pregnancy, the large placenta continues to take up nutrients at the same rate, thereby causing an increase in calf birthweight.

### Nutrition around calving

Attempting to manipulate calf birthweight by reducing dam body condition near to calving is harmful as it can increase the time between calving and rebreeding and reduce calf survival.

Within the study, the diet fed prior to calving had significant effects upon the time taken for the heifer to rebreed. Heifers fed straw during the last three months of pregnancy lost body condition, moving from a body condition score (BCS) 3 to BCS 2. This resulted in low levels of the hormones leptin and progesterone being produced (Figure 2) which are required to enable the cow to restart cycling post-calving. This resulted in an extended post-partum interval and a delay in getting back in calf during the following breeding season.

Figure 2: The change in progesterone levels in the heifers being fed low or high levels of protein



## Nutrition before breeding

In a separate study, cycling maiden heifers fed a 14.5% CP (in dry matter (DM)) ration compared to a 10.4% CP ration had greater numbers of follicles in their ovaries and also higher concentrations of circulating progesterone. Progesterone plays an important role in embryo survival, indicating that protein supplementation may be required to maximise fertility in beef heifers if dietary protein level is below 14% CP.

Overall, protein level fed pre or post-conception had no effect on the performance and future breeding success of the heifer's offspring.

## Conclusions

- ⇒ Nutrient intake prior to conception and during early gestation may increase calving difficulties in beef heifers calving at two years of age when combined with altered diet in mid and late gestation
- ⇒ Heifers must calve at BCS 3 if they are to restart cycling and conceive within 85 days after calving
- ⇒ Protein supplementation may be beneficial in maximising fertility in young beef heifers if the dietary protein intake is below 14% CP
- ⇒ Protein level fed pre or post-conception had no effect on the performance or future breeding success of the heifer's offspring.

For more information see the Better Returns Programme manual, [Managing Replacement Heifers for Better Returns](#)