Starch-based concentrates or sugar impact on hormones such as IGF-1, which can lead to slightly earlier cycling. However research in NZ has shown that 97% of the variation in cycling is related to things other than IGF-1 levels.

Supplementing with starch-based concentrates is unlikely to improve reproduction. If cows have sufficient feed (i.e. target residuals are 1500 - 1600 kg DM/ha with good pasture utilisation).

If a pasture deficit exists, it is most important to increase the energy (MJ ME) available to the cow. The type of supplement used to achieve this is secondary.

When cows are fed a starch-based concentrate or sugar (e.g. molasses), hormones such as insulin and IGF-1 increase. Both hormones have been linked to increased follicular growth and improved ovulation (i.e. earlier cycling).

Research from New Zealand has shown that, if blood IGF-1 concentration increase (by 1 mg/mL), cows will cycle 1 day earlier. However, this change in IGF-1 concentration only explains 3 % of the variation in days to oestrus (or time a cow takes to cycle). This means that 97 % of the variation in cycling is related to other things than the IGF-1 concentration in blood.

If some of the fibre in a TMR-based system was to be replaced with starch, IGF-1 would increase and cows would probably cycle slightly earlier.

In pasture-based systems, research indicates that supplementing cows with a starch-based supplement (3 - 6.5 kg DM/day) did also increase IGF-1 slightly; however, this was not until 3 to 4 weeks post-calving and had no effect on ovulation or pregnancy rates.

Additionally, although IGF-1 seems to positively affect cycling, there are also research results suggesting that it negatively affects embryo development. This can be a problem in systems where supplements are not fed on an individual basis. Cows, which have not cycled, might benefit slightly from additional intake of starch; however, the additional starch might have negative effects on the pregnancy of cows that have already been mated. The same effects apply for molasses.

Even though energy balance and feeding plays a part in reproductive success, cow genetics play a bigger role. Research from Ireland in pasture-based systems indicated that adequately fed dairy cows with superior genetic merit (for fertility traits) always had better reproductive performance, irrespective of the system they are farmed in. In addition, research in New Zealand has shown that North American Holstein Friesians (selected for greater milk production) are genetically predisposed to lower pregnancy rates, and this cannot be reversed by nutrition.

In conclusion, although feeding starch-based feeds or sugar to cows before the planned start of mating has in some experiments improved the post-partum anoestrus interval, there are as many other experiments which have shown negative or no effects of these feeds on ovulation. In addition, in New Zealand pasture-based dairy systems, there is no positive effect of feeding starch-based feeds or sugar on final pregnancy rate.

Reference:

Inside Dairy (October 2011). Myth Busters. Fertility: my nutritionist told me that glucose is important for the development of the cow’s egg. Because of this, I should feed a starch-based concentrate in early lactation. Is this true? Page 21.

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This resource is designed to provide general guidance on particular topics in a timely manner. This DairyNZ information is prepared with due care and based on research to date.