

Regardless of where they are or the management system in place, too many cows are reproductively challenged

Can you conceive it?

A recent study showed that, during a 10-year period, producers are seeing on average 23 days longer between calving and conception. But there are key areas of management available to all producers to help improve reproductive performance.

text **Allison Matthews**

Performance and efficiency are required of all dairy cows, but expectations dictate that both production and reproduction remain maximised throughout their lifetime. As genetics continue to increase the ability to produce milk, the management of this potential has to compliment the

growth of dairy herds. "Nutritional insufficiency clearly has negative effects on the re-establishment of pregnancy in early lactation," warns Zinpro Performance Minerals' Dana Tomlinson. "Often unrecognised are the effects of the immune system on reproductive function and how stress linked to

lameness and mastitis also impacts on immunity and the re-establishment of normal reproductive cycles," he says.

Cows in negative energy balance suffer with poor reproductive performance. But energy levels are not always the sole culprit. Specific nutrients that act independently of energy balance have been reported to directly and/or indirectly alter reproductive efficiency and fertility. Among these are protein, starch, macro and micro minerals, and fats. "It has been demonstrated that the inclusion of dietary starch may shorten the duration of the negative energy balance, reducing the loss of body condition score in early lactation and allowing the cow to return to normal ovarian activity sooner. However, starch supplements are also reported to reduce oocyte quality, so they may negate any potential benefits from an improved energy balance after calving," explains Dr Tomlinson.

Recent research indicates that cows may have an ideal or optimal target body condition score (BCS) in the early postpartum period at which they can achieve optimal health, fertility and lifetime performance. This study suggests that slightly thinner cows, with a BCS of between 2.5 and three in the pre-partum period, go on to lose less weight in early lactation, which impacts on their ability to withstand the challenges of early lactation by achieving higher dry matter intakes.

High-energy ration

Stephen Agnew, Thompsons' dairy nutritionist, explains that moving from highly digestible first-cut silage to the low digestibility of second cut has resulted in reduced milk yields by more than five litres per cow per day. "In order to tackle the negative energy balance, producers need to be feeding increased levels of a high energy ration to compliment poor quality forages, otherwise the damage to fertility, herd health and overall performance will be exacerbated.

"As a consequence of the wet summer, a number of spring calving cows are now in poor body condition. These cows' condition needs to be addressed at least two months before drying off. If no action is taken,

item	lame cows	control
days to first service	99	94
first service conception rate (%)	17.5	42.6
ovarian cysts (%)	25.0	11.1
% pregnant 480 days postpartum	85.0	92.6
% culled before any reproductive event	30.8	5.4

Fertility of 190 cows was evaluated (cows bred under timed insemination were not included in evaluation). Sixty-five cows showed claw lameness within 30 days postpartum. These cows were compared with 130 cows that did not exhibit lameness during the first 150 days of lactation.

Table 1: Effect of lameness during the first 30 days of lactation on reproduction (Melendez et al, 2002)

reproductive parameter	predictive risk of happening for cows scoring > 2 for locomotion
increased days to first service	2.8 x more likely
increased days open	15.6 x more likely
increased services/conception	9.0 x more likely
culled (exit herd)	8.4 x more likely

Table 2: Predictive risk of reduced fertility for cows scoring greater than two on locomotion (Sprecher et al, 1997)

the performance of these cows will be inhibited in the subsequent lactation with poor fertility being a result of this," adds Mr Agnew.

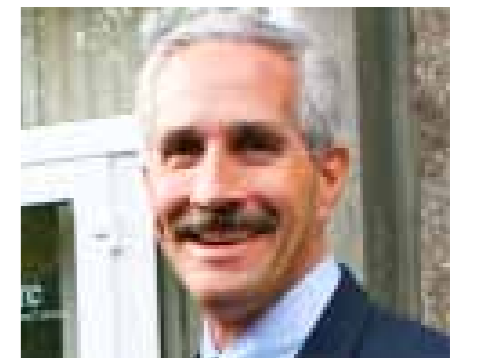
According to a recent UK survey of dairy management practices, 26.3% of cows are culled due to reproductive failure. "Cows that were clinically lame due to a claw disorder in the first 30 days postpartum had a 58.9% decrease in first-service conception rates, a 125% increase in ovarian cysts and 8.2% decrease in pregnancy rate at 480 days postpartum," says Dr Tomlinson.

Locomotion scoring

"Most notable was that 30.8% of cows that were lame during the first 30 days of lactation were culled prior to recording any reproductive event compared to 5.4% of non-lame cows."

Motivating dairy producers to change management, environmental or nutritional practices to reduce lameness in their herds is difficult as the prevalence and severity of lameness is often underestimated. Mr Agnew identifies locomotion scoring as a simple means of assessing the potential for reproductive failure.

"This system categorises cows on a one-to-five scale with one representing normal healthy animals and five as clinically lame," he says. One study found that cows scoring a three (moderately lame) or greater (sub and clinically lame) were more than two and a half times more likely to have increased days to first service, 15.6 times more likely to have increased days open and nine times more likely to have increased services per conception. In addition, cows scoring



Dana Tomlinson: "There's a lot of evidence to link health problems with fertility"

three or greater were 8.4 times more likely to be culled.

Health challenge

Cows with poor feet and legs tend to seek soft, comfortable places to lie down, which in some cases may be wet areas or stalls. When this is combined with the stress of poor locomotion and a compromised immune system, a higher incidence of mastitis can be the end result. As Dr Tomlinson explains, no event is independent and producers must appreciate the interaction of lameness, mastitis and fertility.

"The health challenges of these three factors create a 'cascade of events', which can dictate herd profitability for a producer. A vast body of evidence supports the premise that nutrition and lameness may significantly impact on the fertility of dairy cattle.

"Research has also shown that cows with signs of stress, lameness, mastitis or heat stress have increased days open and reduced reproductive efficiency," adds Dr Tomlinson.