



Sire selection influences fertility

Fertility is a hot topic these days. In April the Netherlands has adjusted its index for fertility to make it an even better tool for breeders to use. The role of non-return figures has become more important.

There are few subjects that receive more attention from dairy farmers than daughter fertility. "How can I get my cows, with as few doses as possible (preferably not more than one) in-calf on time?" With herds expanding, the importance of good fertility is increasing. At these larger operations, the farmers have less time and fewer opportunities to take a good look at every individual cow. They want cows that don't need any special care or attention, also not where fertility is concerned. The genetic potential of a cow does influence her fertility for about 10 percent. 'At first glance this doesn't seem so important, but that is a misconception,' emphasizes Dr. Johan van Arendonk, professor of Animal Breeding and Genetics at Wageningen University. 'You see differences between bulls in terms of daughter fertility. They are differences that really have an impact. With sire selection, daughter fertility really can be improved.'

Management

Various factors influence fertility. Management is the most important one by far, according to professor Van Arendonk. This involves the observations and choices of the farmer. Within that process, he distinguishes different phases:

- Heat detection. Do the cows show a clear heat? Is the farmer observant enough? Environment also plays a role in this. With a slippery floor, cows show a heat less well. On expanding farms there is less and less time available for heat detection of the individual cow.
- The right time for insemination. That is determined by the farmer, but also depends on the availability of the inseminator at the right time. Twelve hours too early or 12 hours too late has an influence on the chances of conception.
- Occurrence of a pregnancy. This is a combined action of cow and embryo. A fertilized egg should not be hindered if it wants to become implanted. The cow's health does play an important role here. This is also closely connected with the right environment or the right feed, which makes the whole picture quite complex.

In all of this the farmer is a significant factor, emphasizes the professor from Wageningen. The farmer does the heat detection, and the farmer decides when the cow is going to be inseminated.

Maintaining fertility level

Increased milk production and fertility are at odds with one another. The basis being an unfavourable genetic correlation. While milk production in general has increased significantly over the past decades, fertility has deteriorated. Not at all what farmers want. At the very least, they need this negative trend to stop. But better still, they would like to see an improvement. Since Dutch breeding also aims at increasing the milk production, and especially components, it is quite a challenge to maintain the fertility level as it is. That shows up in the Dutch breeding goal. Fertility should at least remain at the same level. 'As a prominent breeding country we cannot afford a further decline,' says professor Van Arendonk. Last year this was translated into a heavier weighting on fertility in the breeding goal. The emphasis on fertility in the sire index (NVI) increased. Bulls that score poorly for fertility thus dropped in the ranking.

Non-return and calving interval

Two elements determine the index for fertility: non-return and calving interval. Until recently, calving interval received the heaviest weighting in the calculations. The "breeding value estimation and publication committee", under the leadership of professor Van Arendonk, has advised the NVO - the organization that calculates and publishes indexes - to place a heavier emphasis on non-return. This was implemented with the recent index release in April. The importance of non-return in the fertility index has increased from 15 to 50 percent. At the same time, the weighting for calving interval dropped from 85 percent to 50 percent. Both elements are now weighed equally. Non-return figures indicate that a cow does not come back for a repeat breeding within 56 days after the first insemination. This does not always mean that the cow actually is in-calf. In some cases the farmer gives up on getting the cow pregnant and decides to cull the cow. Non-return can be easily measured for a large number of animals, and for that reason is used in many countries as information to improve the fertility. For the majority of animals, non-return is a good indication of pregnancy. Sixty-five percent of first inseminations result in pregnancies. Said differently, the remaining 35 percent of the cows need to be bred twice or more in order to get them in-calf.

In some cases, the efforts are unsuccessful. Professor Van Arendonk believes that the shift to non-return is a good development for it gives breeders a better feed-back. It says something about the chances of a pregnancy when a farmer decides to inseminate. A higher non-return gives the farmer more opportunities to get cows in-calf at the desired moment. Non-return can also be influenced by the use of bulls with high fertility.

Longer calving interval

Calving interval, too, is an important indicator of fertility. It is dependent on farm type and circumstances in a country. On the pasturing farms in Ireland and New Zealand, for example, the calving interval is fixed at 12 months. In the Netherlands, on the other hand, there is barely any mention of a seasonal calving pattern as cows freshen year around.

Within that calving interval, the dry period should not become too long. When a cow is dry for too long, the average milk production decreases which results in a financial loss. The losses due to longer calving intervals become less when the persistency of the cow increases and the cow is able to produce for a longer period of time. However, professor Van Arendonk also explains that in terms of health, a slightly longer calving interval can be an advantage too. The majority of health problems occur at the beginning of the lactation while at the end there are the fewest. He points out that the length of the lactations continues to increase. Cows are more and more able to maintain their milk production for a longer period of time. Also to be taken into account is the fact that fat and protein components are higher later on in the lactation than at the beginning of the lactation. The professor from Wageningen has no problem justifying a longer calving interval under these circumstances. As far as he is concerned, more attention could be given to persistency and the ability of animals to continue producing, also beyond 305 days. He also thinks that the international norm for a production of 305 days could be changed. Preferably to 360 days, since this better reflects what is taking place in a large number of countries where a significant portion of the animals have a calving interval longer than 365 days. In the breeding goal for dairy cows, more attention should to be given to production beyond 305 days and the length of the dry period.

The current calving interval in the Netherlands averages 410 days. However it varies substantially: from 11 months to 14 or 15 months, with a trend towards 15 months. The 410 days translate into an index of 100 for calving interval. A higher index for calving interval means that the daughters of a bull have a shorter calving interval.



The right time for insemination is crucial for the chances of conception. Twelve hours too late or too early has a great influence

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