Tuesday, 3 December 2019

Dairy breeding policy for 2020 breeding season

Summary

It’s important to start planning now for the 2020 breeding season, and it is important that dairy farmers have a clear breeding policy as it will have a significant influence on their farm profitability, farm sustainability and animal welfare performance. Such a breeding policy should have four main objectives:

1. Use sufficient high EBI AI genetics to generate the required number of replacement heifers and in tandem increase the EBI of your herd.
2. Use the Dairy Beef Index (DBI) to select suitable beef AI sires for the dairy herd.
3. Select high EBI cows and maiden heifers to breed the next generation of replacement heifers, and use beef genetics on low EBI cows.
4. Use sexed semen where possible for breeding dairy replacements (if using Jersey genetics, only use sexed semen) while taking into account the guidelines outlined below and discussing with your advisor.

Background

The Irish dairy industry has benefited enormously from the increase in the EBI of the Irish dairy herd since its establishment in 2001. However, there are still significant benefits to be obtained by further increasing the EBI of the national dairy herd. This is clearly demonstrated in the Teagasc Next Generation Herd. Analysis of farm data across a range of different herds has shown that each €1 increase in herd EBI results in a €2 increase in profit/cow per lactation. Therefore, dairy farmers should select a team of high EBI AI bulls taking cognisance of relatedness, reliability, herd size and suitability to their farm system.

Dairy cow numbers have increased significantly over the last 10 years. This was facilitated by greater use of dairy AI genetics on dairy farms. This rapid increase in dairy cow numbers has now slowed down, and replacement rates on dairy farms have also reduced due to better fertility and longevity in the dairy herd. Rearing additional replacements in excess of requirement is not financially rewarding for most dairy farmers. Therefore dairy farmers that are not focused on expansion will require only 4 to 5 weeks of dairy AI to generate enough dairy replacements. ICBF launched the DBI last year with the objective of identifying beef bulls that are suitable for use on dairy herds. Suitable beef bulls are, in general, easy calving, short gestation and have good beef merit traits. Therefore, while using enough dairy AI to generate sufficient replacement animals, dairy farmers should continue to use suitable high DBI beef AI.

It is necessary to minimise the number of low value dairy calves within the dairy industry. All dairy farmers should first calculate the number of replacement heifers they want, and then calculate the number of dairy AI straws needed to generate that
number of replacements. Dairy beef AI straws and beef stock bulls should be used to sire the remaining calves. Sexed semen can play an important role in reducing the number of low value male dairy calves. Dairy farmers who want to use Jersey genetics should only use sexed Jersey semen. For dairy farmers that wish to use sexed Holstein-Friesian (HF) semen, the number of bulls available and their EBI are increasing. It’s important to note that if you use sexed semen, conception rates will likely be less than with conventional semen (see Appendix 1 Guidelines for sexed semen usage in dairy herds). Many dairy farmers use AI for 8 to 10 weeks, followed by a stock bull for the remaining 2 to 4 weeks. It’s important that the stock bull used is of a beef breed, easy calving and short gestation; ideally the bull should be gnomically tested to provide a higher reliability estimate of his dairy beef genetic merit (next spring DBI will be available for all beef bulls, including beef stock bulls). In recent years, there has been a trend to use less stock bulls and use more AI; this is preferable due to generally greater dairy beef genetic merit, reliability, and reduced biosecurity and safety risks.

In Teagasc herds, the breeding policy in 2020 is as follows:

- In all Teagasc herds, use of high EBI HF genetics will include a combination of sex-sorted and conventional semen.
- In Teagasc herds where Jersey genetics are used, all Jersey AI will be with sex-sorted semen only.
- The number of low value dairy calves will be reduced in the 2021 calving season by using a greater proportion of suitable dairy beef semen. Beef semen will be selected using the DBI with particular emphasis on easy calving, short gestation length bulls with good beef merit.
Appendix 1: Guidelines for sexed semen usage in dairy herds

The current sexed semen product produced by Sexing Technologies and Cogent is marketed under the tradename Sexed ULTRA 4M. This product was evaluated in field trials conducted in Ireland in 2018 (AI after detected heat) and 2019 (fixed-time AI). In both trials, using bulls that were resident in a stud at the sex-sorting laboratory, the mean conception rate for sexed semen was poorer than conventional semen (2018: 50.2% vs. 60.3%; 2019: 50.1 vs. 61.1% for sexed and conventional, respectively). The performance of sexed semen versus conventional is often expressed as the relative conception rate \[(CR \text{ for SS } ÷ CR \text{ for CONV}) × 100\]. In 2018 and 2019, the mean relative conception rate ranged from 82% to 84%. This means that the conception rates achieved with sexed semen, on average, were 82% to 84% of those achieved with conventional semen. Maximising conception rate with sexed semen requires careful animal selection, appropriate timing of AI, and attention to detail regarding straw handling.

**Bull selection**

Identify the bulls with the highest EBI that are available sexed, and within that list, identify the bulls that are suited to the herd’s breeding objectives. At present, it is not possible to predict which bulls will have good field fertility and which bulls will have poor field fertility after the sorting process. To mitigate the risk, use sexed semen from a large team of bulls (≥5).

**Dam selection**

Sexed semen use must be targeted towards the dams with the expected best fertility to maximise the likelihood of conception.

- **Heifers**
  - Have achieved the target live-weight for breed and BCS ≥3.25.
  - Regularly cycling.

- **Cows**
  - Parity 1 to 4.
  - >50 days in milk on day of AI.
  - BCS ≥3.00.
  - Regularly cycling.
  - Free of postpartum disorders and uterine disease.

**Timing of AI**

Sperm cells are damaged during the sorting process, and consequently the viability of the sex-sorted sperm cells in the reproductive tract is shorter (<12 h) than for conventional sperm cells (>24 h). Hence, the timing of AI is more important when using sex-sorted semen straws than conventional semen straws. When heifers/cows are being inseminated after observed heat, AI should be conducted 14 to 20 h after heat onset.
Fixed time AI is costly, but provides some advantages when using sexed semen. It facilitates targeting of sexed semen usage on the dams that it is desirable to get replacements from, and importantly, this can be scheduled to be completed on the farm mating start date. Conducting AI with sex-sorted semen straws on the farm mating start date advances the submission of the targeted heifers/cows, and mitigates the risk of poor conception rates causing a deterioration in the calving pattern.

**Straw Handling**

It is important to be fully aware that the sex-sorting process causes some damage to the sperm cells. Hence, careful handling of the straws from the time of removal from the AI tank to deposition of sperm cells into the uterus is more critical for sexed semen than for conventional semen.

- Organise sexed straws into one goblet on the tank, and minimize the frequency that the goblet is lifted.
- Change water in the thawing unit daily, and clean the thawing unit weekly.
- Check that the temperature in the thawing unit is 35 to 37 °C.
- Thaw a maximum of two sexed semen straws at a time.
- Using a timer, thaw the straws for 45 seconds.
- Load straws into pre-warmed AI guns.
- Keep AI guns warm after loading straws, and ensure that inseminations are promptly completed (<5 mins after loading).
- Deposit semen in the uterine body.