

MythBuster

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Older cows with proven potential, give better heifers

Many farmers appreciate older cows that have produced well over many years with few problems. It is often assumed that a heifer born from such cows must also be superior, as the dam has demonstrated significant potential over time. On the other hand, older cows have in average lower breeding values compared to younger cows.

Cattle breeding is full of myths and the question is are they true or fake. In MythBuster NAV will test with facts if the myths are just myths or if they actually are true.

Large amounts of data

To investigate this myth, all data from purebred dairy calves born in Denmark between the end of 2016 to end of 2018 were analyzed according to the results in the first two lactations. All the cows should have the opportunity to complete the first two lactations, making it necessary to include data from cows born several years earlier.

During the two-year period 179,586 Holstein calves were born, after dams that had milked for one to six lactations. Among these 74,593 cows were born after a dam going into first lactation, while 2,646 cows were born after a dam going into 6th lactation. Calves after dams with more than 6th lactations were excluded from the analysis due to too few animals in each of the groups and they only represented less than one percent of the calves. Table 1 shows the number of cows in each group and the average pedigree NTM (Nordic Total Merit) at birth. As expected, the NTM decreases for cows born by older dams.

Table 1: Number of Holstein cows and average pedigree NTM at birth time according to lactation number their dam was going into.

Lactation number of the dam	Breed	Number of cows according to lactation of the dam when the cow was born	Average pedigree NTM at birth time
1. lactation	HOL	74,593	12.8
2. lactation	HOL	49,045	11.5
3. lactation	HOL	30,253	10.6
4. lactation	HOL	15,989	9.4
5. lactation	HOL	7,060	8.0
6. lactation	HOL	2,646	6.6

How do the cows perform?

In general, the differences between the groups are small. However, there is a clear trend across nearly all traits: cows born by younger dams perform better, just as the higher NTM should indicate. For production traits, the difference is clear. Cows born after dams going into first lactation, produce around 7 kg more fat + protein in their first lactation and 10 kg more fat + protein in their second lactation compared to cows born after dams in 6th lactation. Table 2 presents the production results.

Tabel 2: Average 305-days production of fat + protein according to lactation number their dam was going into.

Lactation number of the dam	Breed	305 days kg fat + protein 1. lactation	305 days kg fat + protein 2. lactation
1. lactation	HOL	717.9	863.8
2. lactation	HOL	718.9	862.0
3. lactation	HOL	717.6	860.0
4. lactation	HOL	713.8	857.2
5. lactation	HOL	708.3	850.7
6. lactation	HOL	710.7	853.4

For the type traits all the groups score 80 for feet and legs. For udders, cows born after dams in their first and second lactations score 80, while those from older dams score 79.

Functional traits and lifetime production

The calving interval serves as a good fertility indicator. Cows born to dams in their first lactation have a calving interval 3–4 days shorter for both the first-to-second and second-to-third lactations compared to other groups, which show similar intervals. For health and calving traits there were no significant differences observed between groups.

Survival rates from the first to the second lactation, as well as from the second to the third lactation, are approximately 1% higher for cows born to dams in their first lactation compared to other groups. Better production, fertility, and survival contribute to higher lifetime production. Cows born to dams entering their first lactation produce an average of 2,661 kg of fat and protein, and outperforming other groups, which range from 2,581 to 2,546 kg. Table 3 provides lifetime production details.

Tabel 3: Average lifetime production according to lactation number their dam was going into.

Lactation number of the dam	Breed	Lifetime production kg fat + protein
1. lactation	HOL	2,661
2. lactation	HOL	2,579
3. lactation	HOL	2,581
4. lactation	HOL	2,572
5. lactation	HOL	2,562
6. lactation	HOL	2,546

What about RDC and Jersey

Since the analysis is based on Danish data there are only 14,074 RDC cows that are born after dams having 1 to 6 lactations. For RDC there is nearly no difference between the groups, and that is also the case with NTM which only decrease with 2.2 units over the six groups while it decreases with 6.2 units for Holstein. This indicates that the Danish farmers with RDC cows select more strictly after NTM when animals are selected for sexed semen and beef semen.

For Jersey, the dataset includes 33,682 cows. The overall trend is the same as for Holstein, meaning that cows after young dams do it better than cows after older dams. The average NTM is 4.3 NTM units higher for cows with younger dams compared to cows whose dams have had 6 lactations. Jersey cows with dams in their first lactation also achieve the highest lifetime production.

Myth is busted

No, cows after older dams are not better.

The best-performing cows are those born to dams entering their first lactation. As the dams get older the performance of their daughters declines. This aligns with the breeding theory, as the genetic level of animals declines over time, resulting in lower average breeding values for daughters of older dams. The most effective breeding strategy is still to use sexed semen on the young animals with the highest NTM and use beef semen on the older cows with lower NTM.