

MythBuster

Part 3

Jakob Lykke Voergaard, Terhi Vahlsten, Ida Hansson
Analyses and figures by **Christian Bengtsson** (VikingGenetics).

Claim: “Big cows can eat more feed, and therefore produce more milk”

The size of the cows is probably the topic with the most myths in cattle breeding. We can only guess why this is the case. One reason may be that frame has no economic value in cattle breeding, and that data for feed efficiency is still rather new. Feed is the main cost in cattle production, so there has been focus on that, but with very little data. Today we have both data on feed efficiency and cow size, which making it possible to start understanding how the size of the cow affects production and efficiency.

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

Some myths claim that large cows can eat more and therefore produce more milk, while other myths claim that cows with large chest width have more space for the heart, the lungs and a large rumen for feed. There is material for many myth busters, but in this myth buster we will look on the weight of the cows compared to their milk production.

CFIT gives the data

The camera technology CFIT makes it possible to measure the feed intake on production cows, and to calculate their body weight. Every time the cow is milked, CFIT take a picture of the cow and connect it with her ear tag number. These pictures can be used to estimate body weight, meaning that CFIT can both give us data for feed intake and weight data on the cows.

Data for the investigation

The data were collected between 2019 and 2024 and includes cows from the three breeds Holstein, Jersey, and RDC. The dataset contains 7,750 complete lactations with 3,536 Holstein, 2,514 RDC and 1,700 Jersey lactations. Production data are based on 305-day yields. For Holstein, the average production in fourth lactation was close to 13,500 kg ECM, while it was a bit over 12.000 kg ECM for Jersey and RDC. In the analysis, the average weight during the first 305 days of lactation is used so weight and production are compared over the same period.

Small tendency for Holstein

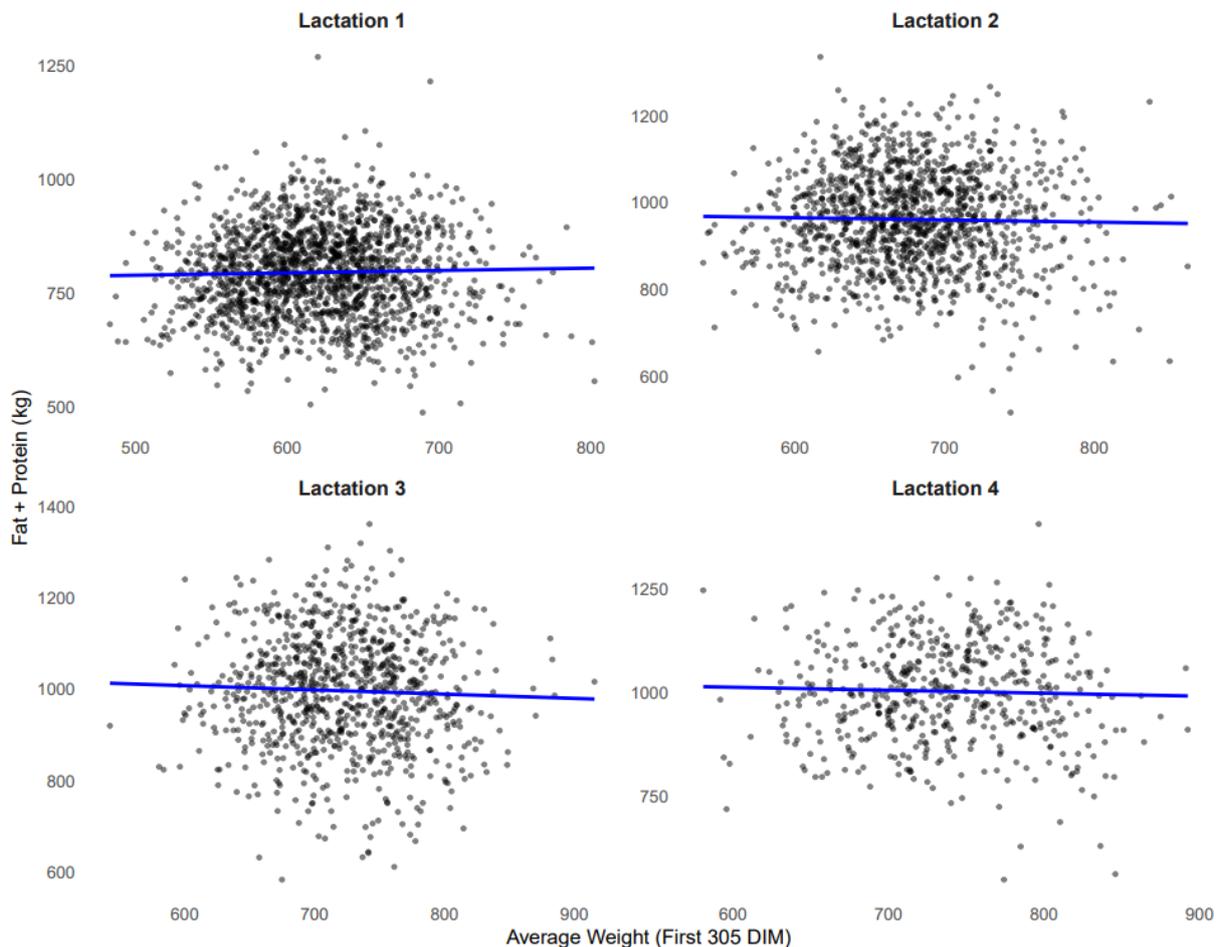
As you know from your own herd, there is a large variation between individual cows. Both small and big cows can have either high or low production. However, even with this large variation between the cows, we can see a tendency that production and body weight are connected, as shown in figure 1. In the figure, all Holstein cows are plotted, and an average trend line is calculated.

For Holstein cows, a small tendency can be seen in first lactation: heavier cows have a higher production, with 5 kg fat + protein more per 100 kg average body weight. The reason for this could be that the lighter cows need more energy for growth in first lactation. This indicates that it is important

for heifers to grow well before calving, so they do not need to spend too much energy on growth instead of producing milk once they become cows.

In second, third and fourth lactation, the trend is reversed. In these lactations, lighter cows, have a higher production. In second lactation, production decreases by 5 kg fat + protein per 100 kg extra average body weight, while the decrease is 9 kg fat + protein in third lactation and 7 kg fat + protein in fourth lactation.

Figure 1: Production in kg fat+protein compared to the average weight of the cow over the lactation for Holstein cows in 1.-4. lactation. The blue line shows the average trend for the relationship between production and weight.

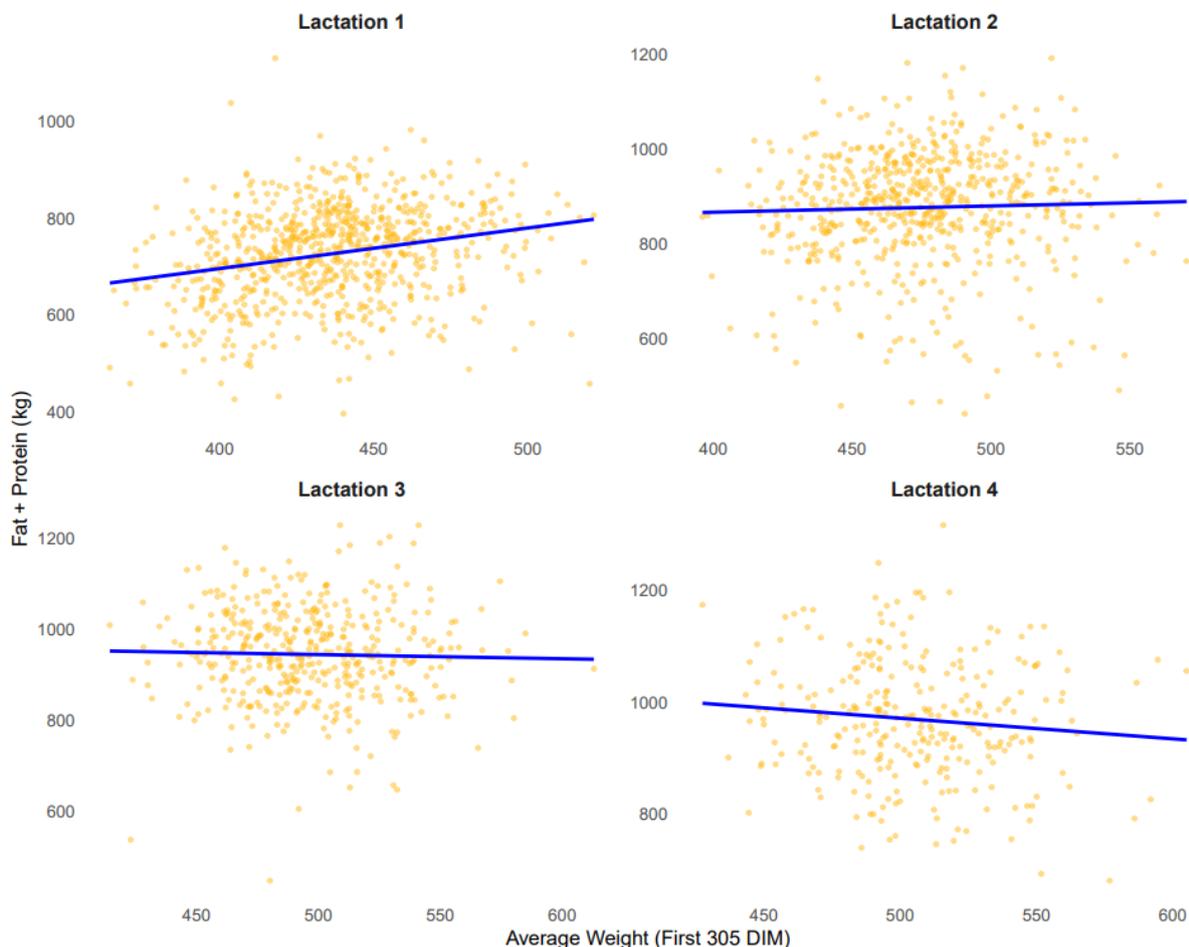


Larger differences for Jersey

As shown in Figure 2, Jersey cows display the largest differences between lactations. In the first lactation, heavier cows perform better, which highlights the importance of Jersey heifers reaching an adequate body size at first calving. In Jersey cows, production in first lactation increases by approximately 84 kg fat + protein per 100 kg higher average body weight.

In the second lactation, there is still a tendency for heavier cows to have higher production, with an increase of about 13 kg fat + protein per 100 kg higher average body weight. In the third and fourth lactations, the trend is reversed and lighter cows show the highest production. In the third lactation, production increases by approximately 9 kg fat + protein per 100 kg lower average body weight, while in the fourth lactation the corresponding increase is about 37 kg fat + protein.

Figure 2: Production in kg fat+protein compared to the average weight of the cow over the lactation for Jersey cows in 1.-4. lactation. The blue line shows the average trend for the relationship between production and weight.

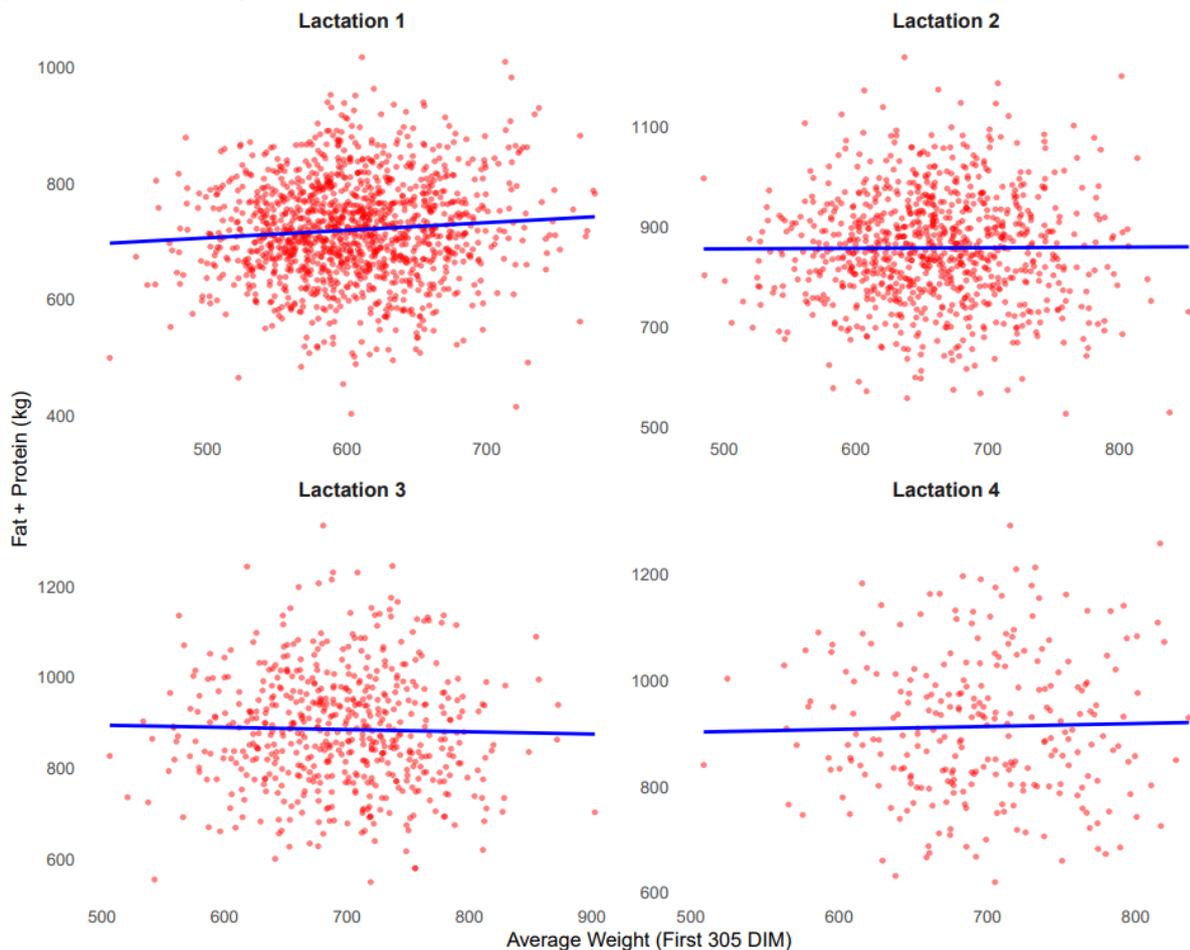


RDC is the stable breed

Figure 3 shows that RDC cows have a weak connection between body weight and production. In first lactation, RDC cows have the same tendency as the two other breeds, with higher production for the heavier cows. Production is 13 kg fat + protein higher per 100 kg average body weight, which indicate that smaller RDC cows also need to grow during the first lactation and therefore have less spare energy for milk production. In second, third and fourth lactations, the relationship between average

body weight and production is very small. In second lactation, production only increases by 1 kg fat + protein per 100 kg extra average body weight. In third lactation, production decreases by 5 kg fat + protein per 100 kg average body weight, while in fourth lactation the trend is reversed again, with an increase of 5 kg fat + protein for 100 kg extra average body weight.

Figure 3: Production in kg fat+protein compared to the average weight of the cow over the lactation for RDC cows in 1.-4. lactation. The blue line shows the average trend for the relationship between production and weight.



Myth partly Busted

If we look at the weight of the cows, it is FAKE that bigger cows produce more fat+protein. The size of the cow can be seen in many ways, so we need more investigations to bust or confirm other myths related to cow size.

For all breeds, heifers should have a good body size at first calving according to production. If the calving age is very low, it may cost some production since it is more difficult to get the heifers heavy enough before calving. For Holstein and Jersey, it looks like the bigger cows have difficulties keeping



February 2026

up in production. This may have several reasons, e.g. they may be too big for the system or, they may require more feed to maintain a larger body, but they do not have enough time to eat this extra feed.

It should also be noted that this analysis only looks at the weight of the cows, not their body condition. If a cow is very fat and therefore heavy, it causes more problems and thereby lowers production. However, smaller cows can also be fat, and they will also affect the results, so the effect of fat cows will also be spread out. Based on the results and consideration for the body condition score, we cannot say that lighter cows give a higher production. More likely, cows produce roughly the same amount regardless of size, except in first lactation where lighter cows need to spend more energy on growth.

For Holstein and Jersey, the tendency also shows that older, lighter cows perform better, so more results on older cows would be interesting to look at. There are still many interesting investigations ahead regarding cow size, production and feed efficiency.