BY THE NUMBERS

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What's Going on "Udder" the Hood?

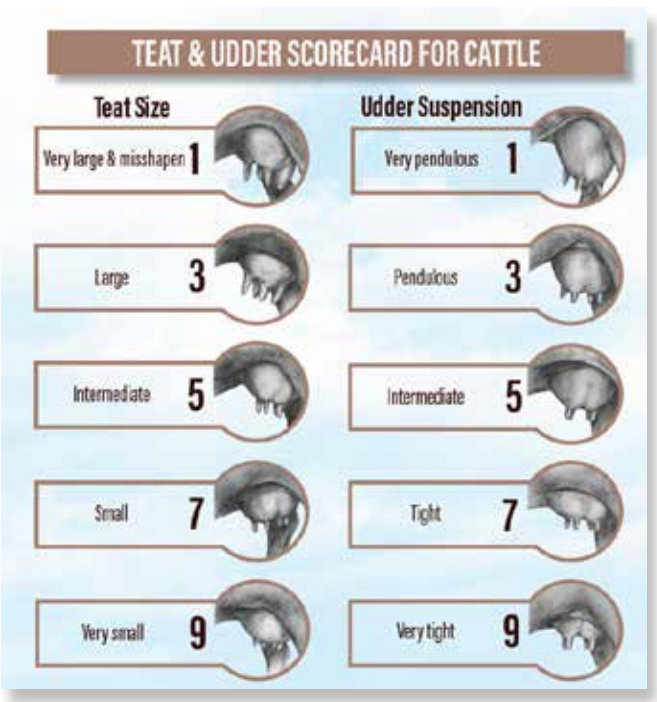
A prototype genetic evaluation for Teat and Udder Score.

Teats and udders are not something you typically associate with beef cattle, yet they are the conduit through which a cow sets her calf up for success. The term "udder" is generally used to describe both the bag and the teats, yet each have different functionality. Udders are responsible for milk production and storage, while teats are responsible for milk delivery.

Teat and udder structure affect calf survival and growth, with shallow udders having associations with reduced milk yield. Extremely short, narrow teats have been shown to inhibit milk flow. In contrast, longer, thicker teats inhibit calf suckling, increasing the risk of preweaning mortality. Teat and udder structure also affect cow health and longevity. Tight udder suspension and smaller teats are associated with greater cow longevity through reduced mastitis infections and reduced early culling of cows from the herd.

How do we score?

Presently, the recommended method for collecting teat and udder structure scores is described by the Beef Improvement Federation (BIF). Teat size and udder suspension score are measured on a scale from 1 to 9, with a score of 1 describing very pendulous udders and very large, bulbous teats; sometimes referred to as "bottle teats". A score of 9 is the opposite, describing udders with very tight suspension and very small teats. The ideal udder and teat structure lays between these two extremes.



Guidelines for measurement

Recording teat and udder scores should be simple to implement alongside other traits like birth weight. The teat structure and udder structure are assessed independently, within 24 hours of the calf's birth.

It is critical the time of measurement is consistent as udder/teat structure scores can fluctuate during different stages of lactation. The worst quarter of the udder should be assessed, and preferably one person should evaluate all cows within a contemporary group. Cows should be assessed for this trait every year they calve. The scores can be submitted alongside calving ease and birth weight data.

What's going on today?

Currently, the Association has received 57,688 teat size scores and 57,647 udder suspension scores inclusive of August 2022. Preliminarily genetic analysis required the data to be cleaned such that 41,914 complete scores recorded on 23,886 cows across 1,540 contemporary groups remained. Both traits were found to have an average score in the recorded population of 7.1.

The full range of scores appears to be present in the Angus breed, though the distribution is heavily

skewed towards higher scores describing small teats and tightly suspended udders (Figure 1a). Records have been submitted by breeders since 2001, with 10,000 records submitted by 2012.

Since 2012, the influx of records has remained steady at approximately 2,000 additional records submitted per year. 2021 saw the greatest influx of records with 12,500 submitted. Records have been submitted on cows ranging from 2 to 18 years of age.

The majority of the 23,886 cows with records only have a single record submitted (16,639), with 2,743 animals having two records, 1,785 having three and 1,126 having four. The remaining 1,573 animals have five to 13 submitted records.

The current distribution of scores is predominately on younger animals, yet the inclusion of repeated records in the preliminary data set available have allowed early determination of the effect of age on the traits. Structural traits are known to degrade with age, teat size and udder suspension are no different.

A statistical regression of cow age on score revealed teat and udder scores decrease by 0.0003 and 0.0005 scores, respectively, per day of age. This may seem miniscule, yet if we look at this change over a larger period of time, a cow can be expected to decrease by half a teat score and approximately a full udder score after 5 years. While this is less of a concern for cows with higher scores, for poorer-udder-conformation cows, this change may be enough to lead to early culling from the herd.

It is also important to consider the data set, where few older cattle were included relative to young cattle. Structural issues can gradually appear, but often can have a sudden onset. Further recording of older-parity cows will add more power to the data set and shed light on these issues.

Of importance to members is how we can best manage this trait if we record it. Heritability for teat size and udder suspension were estimated at 0.34 and 0.31, respectively, indicating a moderately strong genetic component underpinning the trait. This means these traits are excellent candidates for research expected progeny differences (EPDs) to be effective. In addition, the traits have a strong genetic correlation of 0.76 between them. This supports recording these traits separately, however improvements in udder structure will likely seed improved teat structure and vice versa.

How can members get involved?

We are making an official call to all the membership for submission of teat and udder scores on their herds. This preliminary data set has given good insight into what this trait could be like as an EPD within the Association, but work is still needed. The American Angus Association and its members have always been on the forefront of developing traits that are meaningful in the field.

This trait has the potential to increase cow comfort, health and longevity, reduce the need for hands-on intervention and directly improve the bottom line through improved calf survival. Angus Genetics Inc., alongside the Association, are happy to announce a planned release for research EPDs for teat and udder suspension scores during last quarter of 2023.

We look forward to once again collaborating with the membership on developing essential tools for their Angus breeding toolkits.

Happy scoring! AJ

Figure 1: *(a) Distribution of teat size and udder suspension scores reported to the American Angus Association for 41,914 records. (b) The relationship between average measurement age (in years) and average score traits within a 95% confidence interval.*