REDUCING CALVING DIFFICULTY IN SIMMENTAL

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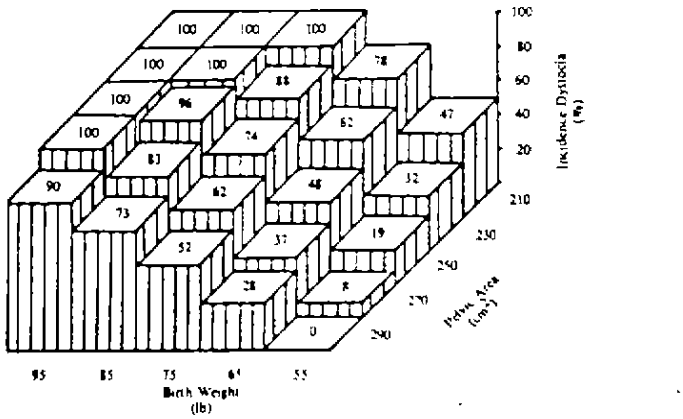
Dystocia, or calving difficulty (CD), is becoming a notable problem in the beef cattle crossbreeding industry mainly since it increases calf mortality and decreases rebreeding rate. (Deutscher, (1988) "CD results in a major economic loss to beef producers.")

In a recent critical analysis of a survey conducted by us amongst hundreds of crossbreeding entreprises who use/used Simmental bulls, CD was rated the number one criticism against our breed. However, this is not at all the case in Simmental X SimmentaL breeding system.

Many factors contributed by calf, dam and sire are associated with CD and many of these are interrelated. Deutscher (1988) came to the conclusion that "the primary cause of CD in young cows is due to a disproportion between size of calf (birth weight) and size of birth canal (pelvic size) of the cow." The relationship of these two factors are presented in the figure below quoted by Deutscher (1988)



Relationship of heifer pelvic area, calf birth weight and incidence of dystocia in 600 two-year-old heifers. (Bellows 1983)

Our national breeding policy, applied by means of the well-known obligatory inspection for registration system,, is aimed at a combination of selecting females with the desirable pelvic size and/or angle (the cow factor) and discriminating against bulls which are too big, coarse with excessive growth (the bull factor).

The bull factor

From the numerous studies cited it is clear that continuous selection for bigger and heavier bulls will result in larger calves at birth which is the main cause of CD. Our policy in this regard is summarised in an additional paper read at this occasion viz. "Go for the middle of the road Simmental".

The cow factor

As far as we are concerned there are two factors viz. pelvic angle or slope of rump and internal Pelvic area. Our views regarding PELVIC ANGLE were given by Massmann (1989) at the last World Federation Council Meeting and are mainly based on the pelvic angle found in antelope and Zebu cattle - all known for their calving ease.

Limited information is available on slope of rump and its relationship with CD. Johnson et al (1986) found that pelvic angles and slope of rump measurements were generally not related to CD but Deutscher (1989) adds that "these results may mean that we lacked variation in slope of rump to show an effect (Herefords) or our measurement error was too great or the slope does not have a great influence on dystocia."

Morrison et al (1989) reports that Brahman(Zebu)-sired cows had a substantially different pelvic shape than the European-sired cows (Chianina, Main Anjou and Simmental) did and that the Brahman crosses had a more vertically oval-shaped pelvis. In this study Brahman -sired cows had the lowest incidence of dystocia.

Averdunk (1990) informed us that Holzer found a low to medium genetic correlation between measurements of slope and CD. The original work is not yet available. We asked one of our Universities to investigate this matter further and study the effect of slope of rump on CD in our Simmental population.

Many research studies have investigated the influence of internal PELVIC SIZE or area on CD. We would like to summarise some of the findings:

· Pelvic area has been known to be the most important cow variable influencing C.D.

· The heritability of Pelvic size is high (50 to 60%) there is therfore a strong probability that selection for increased male pelvic area will result in larger pelvic size of daughters.

· Pelvic size and calf birth weight have a low relationship, therefore selecting for one should not give a corresponding response in the other.

· Effective selection can be applied because a considerable variation in pelvic size exists within the breeds and crosses used in studies cited.

Large heifers tend to have large pelvic areas, but also have proportionately heavier calves at birth, which offsets any advantages of reduced CD. Selecting for heifer size only seems ineffective.

Since all our Simmentals are inspected between the ages of 1 and 3 years with a view to registration, selection of bulls with a large pelvic size in particular will be of great advantage to the breed. However, it is impossible to measure pelvic areas of thousands of bulls under ranching conditions and a study is being conducted to determine whether there are visual rump assesments that are reasonably accurate in the prediction of internal pelvic area. If this reveals negative results, easily measured external pelvic measurements related to internal pelvic area will have to be identified.

According to research work on hand the relationship between external body measurements and internal pelvic area is inconclusive. Bellows et al (1971) and Ward (1971), quoted by Johnsone (1989) found that some external body measurements were correlated with pelvic area. Johnsone (1988) also found that some (hook width and hook-to-pin length) measurements are correlated but that they were not consistantly correlated with C.D. Brown et al (1982) and Deutscher (1989) found no important relationship. Most of the above mentioned was done on Herefords. According to Averdunk (1990), Holzer, who worked on Simmentals, came to the conclusion that theoretically seen, the genetic correlation between external and internal pelvic measurements is such that one could expect a correlated internal effect with selection of certain external pelvic measurements.

As in the case of slope of rump, our Society in conjunction with a University, are investigating the possibility of predicting pelvic area, visually or by measurement.

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