العلاقة بين الشكل التكويني للضرع وبعض الصفات الاقتصادية لدى أبقار الهولشتاين

أطروحة مقدمة إلى
مجلس كلية الزراعة في جامعة بغداد
وهي جزء من متطلبات درجة دكتوراه فلسفة في
علوم الثروة الحيوانية
(تربية و تحسين الحيوان)

من قبل
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Summary

At the Al-Nasr station of the United Company for Animal Resources in Al-Suwairah (45-50 km south of Baghdad) milking rate (MR), daily milk yield (DMY) and some udder traits were investigated in 201 Holstein Friesian cows.

A **statistical** analysis for some udder traits was also carried out, together with a genetic evaluation of the cows for (MR).

General Linear Model within the SAS statistical program was employed to estimate the effects of fixed factors (month of calving, parity, level of milk production, type of udder and teats, body condition, CMT (California Mastitis Test) score and udder texture).

Restricted Maximum Likelihood method was followed to evaluate variance components of random effects.

Animal Model program was applied for genetic evaluation of the cows for MR, and to evaluate their breeding values and production capacity. Genetic trend was computed for milking rate.

Result obtained can be summarized as follows:

1-The circumference of the udder which averaged 109.69 cm was affected by parity ($P<0.01$), texture and shape of udder ($P<0.05$). The effects of the remaining factors lacked significance. Parity and shape of udder effects on height of udder which averaged 62.13 cm, were significant ($P<0.01$).

2-The overall mean of the length of the front and rear teats was 5.35 and 4.42 cm, respectively and the length of the former was affected significantly only by type of udder ($P < 0.01$).

3-The overall mean of the distance between the front teats was 11.24 cm and that between the rear teats was 4.46 cm. Both distances increased among cows calving during November ($P<0.01$). The distance between the front teats was affected by udder texture ($P < 0.05$) , it increased with increased sponginess of the udder .

4- The distance between the right teats was 7.71 cm and that between the left teats was 7.60 cm. Month of calving and parity effects on the distance between the right teats were significant ($P < 0.01$) . Whereas , the distance between the left teats was

affected significantly only by parity and texture of udder ($P < 0.01$).

5-The circumference of the front and rear teats were 7.59 and 7.60 cm, respectively. The former was affected by parity , udder type ($P < 0.01$) , and CMT score ($P < 0.05$) . While type of udder and its texture affected the circumference of the rear ($P < 0.01$).

6. Daily milk yield averaged 20.04 kg. Maximum daily milk yield was recorded among cows with medium textured udders and among those cows in their 4^{th} lactation ($P < 0.01$).

7- Milking eate which averaged 1.58 kg/min was affected significantly by parity and type of udder ($P < 0.01$).

8- Of the total number of the cows 43.28 , 38.30 and 18.40% had dish type , round and pendulous udders , and 41.17 , 52.94 and 5.88% round , cylindrical and flat teats , respectively.

9- The heritability of milking rate , daily milk yield , circumference of front and rear teat was 0.09 , 0.20 , 0.41 and 0.40 , respectively. The repeatability of milking rate was 0.13.

10- Genetic and phenotypic correlation coefficients between daily milk yield and milking rate were 0.01 and 0.05 , respectively .

11- Genetic correlation coefficient was highest (0.48) between the distance between front teats and circumference of udder , and lowest (-0.86) between height of udder and its circumference.

12- The breeding value of milking rate was 0.013 kg/min for sires and 0.040 kg / min for dams. The average production capacity of dams was 0.003 kg/min.

13- There was a positive and significant ($P < 0.01$) genetic trend for milking rate over the birth years of cows (0.42 kg / min. / year). The phenotypic trend for milking rate was positive (0.126 kg / min. / year) and highly significant .

THE RELATIONSHIP BETWEEN UDDER CONFORMATION AND SOME ECONOMIC TRAITS IN HOLSTEIN COWS

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