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LACTATION PERFORMANCE OF RETAINED AND CULLED FRIESIAN COWS IN COMMERCIAL FARMS IN EGYPT

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SUMMARY

A total number of 1775 milk records collected on 816 imported Friesian cows in two commercial dairy farms located at Tamia district, El-Fayoum Governorate, Egypt. The records were used to study the performance of retained cows, which stayed in the herd to produce the next record(s), and those which were culled after completing that particular lactation.

For each lactation, records were classified into two groups: group A (retained cows for at least one further lactation) and group B (culled cows with no subsequent lactations).

The least squares means of actual total milk yield (TMY), lactation length (LL) and daily milk yield (DMY) for the two groups and the differences ($D=X_B - X_A$) in each lactation were studied.

The results showed that animals of group B had higher TMY in the first two lactations. The D values were +705 kg, ($P<0.02$) and +265 kg, ($P<0.20$), respectively. The superiority of group B in TMY was due to both the highly significant ($P<0.005$) longer lactation period (+61 days) and higher DMY (D=+0.3 kg, $P<0.63$) in the first lactation. In the second lactation, the high milk yield of group B was due to only the highly significant ($P<0.017$) longer LL (+34 days). However, in the third lactation, the D values were not significant for all traits studied.

Keywords: Lactation performance, culling, Friesian, commercial farms, Egypt

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INTRODUCTION

The introducing of standard dairy breeds, mainly Friesian, into developing countries is one of the tools to fill the gap in milk production and to face the increasing demand on it. The full expression of such breeds under adverse environments depends on improving feeding standards, management practices and veterinary services. Dairy animals of higher milk yield were found to be rejected earlier, and consequently had shorter longevity compared to those of lower production (Gill and Allaire, 1976, Mostageer et al., 1987, Nigm et al., 1988 and Aboul-Ela et al., 1994). The objective of this study was to compare milk performance of imported Friesian cows, staying in the farm to produce the next record(s), with those discarded after completing that particular lactation under the conditions of commercial dairy farms in Egypt.

DATA AND ANALYSIS

The data utilized in this study comprised a total number of 1775 milk records of 816 imported Friesian cows. Milk records were collected for the first three lactations from two commercial dairy farms during the period from 1981 to 1986. The two farms are located at Tamia district, El-Fayoum Governorate, Egypt. All cows were imported from the Netherlands as pregnant heifers.

The detailed description of these data has been published by Sadek et al. (1994). In the present study, each record in each parity was classified according to: farm, year of calving, season of calving and according to wether or not it was followed by another record or parturition. Thus, in this last classification the records were assigned to one of the following two groups: A: records followed by at least one lactation, B: those with no subsequent records.

Means of TMY, LL and DMY were obtained by the Least Squares technique using the General Linear Models procedure of SAS (1985) for each lactation separately. The statistical model used in the analysis was as follows:

$$Y_{ijklm} = \mu + H_i + F_j + Y_k + S_l + (HF)_{ij} + e_{ijklm}, \text{ where}$$

Y_{ijklm} = the mth observation in ith longevity class, jth farm, kth year of calving and lth season of calving,

μ = the overall mean,

H_i = the effect of ith groups, group A: animals with subsequent record(s) and group B: animals with no subsequent records.

F_j = the effect of jth farm, (j=1,2); 1= El-Tubgy farm and 2= Eskander farm.

Y_k = the effect of kth year of calving; (k= 1981, 1982,.....,1986)

S_l = the effect of season of calving, (l=1,2,3,4); 1=winter (Dec.-Feb.), 2=spring (March-May), 3=summer (June-August) and 4=Autumn (Sept.-Nov.),

$(HF)_{ij}$ = the effect of interaction between group and farm.

e_{ijklm} = the error term.

Least squares means of the two groups and the differences between them, for TMY, LL and DMY in the first three lactations studied, are tabulated and discussed.

RESULTS AND DISCUSSION

Table (1) shows the number of milk records used in each parity distributed between the two groups, group A: has subsequent record(s) and group B: has no subsequent records. The percentage of cows retained to give the second lactation (96%) in the present study is almost similar to that found by Nigm et al. (1988, 95%) on Brown Swiss cows in Egypt. However, Mostageer et al. (1987) reported lower value of 85.5% on Friesian cows in Libya. It seems that commercial dairy farms keep the expensive imported Friesian cows to increase the number of progeny obtained from them regardless of their productive or reproductive performances. So, little or no artificial selection is actually practiced on cows for high milk yield at the end of the first lactation. Relatively higher culling rates were observed at the end of the second (about 14%) and third lactations (about 11%).

Table 1. Number (N) and percentage[1] of records in retained (A) and culled (B) groups[2] in different lactations

	Lactation		
	1	2	3
NA	784 (96.1)	501 (86.1)	337 (89.4)
NB	32 (3.9)	81 (13.9)	40 (10.6)
Total	861 (100)	582 (100)	377 (100)

(1) percentages are between parenthesis.
(2) group A: retained cows which have subsequent record(s).
group B: culled cows which have no subsequent records.

The least squares means of actual TMY, LL and DMY in the two groups of the three lactations and the differences ($D= X_B - X_A$) between the relevant means of each trait are presented in Table (2).

The average first lactation TMY of culled animals (group B) was significantly ($P<0.02$) higher than the corresponding mean of the retained cows (group A). The difference (+705) represents about 17% of the production of group A and was due to the combined effects of the highly significant ($P<0.005$) longer lactation period (+61 days) and the higher daily milk yield (D/day= +0.3 kg, $P<0.63$) in favour of group B.

In the second lactation, animals in group B had higher TMY than those in group A but the difference (+265 kg) was not significant ($P<0.20$). The positive D value in TMY was attributed to the significant ($P<0.017$) longer LL (+34 days). However, in the third lactation the D values were negative and not significant for TMY and LL which may be due to practicing selection after the end of the third lactation. Also, some cows which have been retained in the herd for such period became more regular calvers. The results obtained here agree with the

findings of Mostageer et al. (1987) on Friesian and Jersey cows in Libya, Nigm et al. (1988) on Brown Swiss in Egypt and Aboul-Ela et al. (1994) on Friesian cows in the United Arab Emirates who reported that after each lactation, a group with higher milk yield is rejected in the new environment.

Table 2. Least squares means of total milk yield, lactation length and daily milk yield of the retained (A) and culled (B) groups[1] in different lactations.

	Group A $\bar{X}$ ± SE	Group B $\bar{X}$ ± SE	D=($\bar{X}_B$-$\bar{X}_A$)±SE	P>F
	Total milk yield (kg)			
1st lactation	4160a±112	4865b±304	+ 705±324	0.02
2nd lactation	4400 ±131	4665 ±200	+ 265±239	0.20
3rd lactation	5030 ±110	4780 ±212	- 250±238	0.251
	Lactation length (day)			
1st lactation	361a±7.9	422b±21.6	+ 61±22.9	0.005
2nd lactation	335a±8.9	369b±13.7	+ 34±16.3	0.017
3rd lactation	348 ±7.1	341 ±13.7	- 5±15.4	0.734
	Daily milk yield (kg)			
1st lactation	11.9±0.27	12.2±0.72	+0.30±0.79	0.63
2nd lactation	13.3±0.28	13.1±0.43	-0.20±0.51	0.534
3rd lactation	14.8±0.27	14.8±0.53	0.00	0.991

(1) Group A: retained cows which have subsequent record(s).
Group B: culled cows which have no subsequent records.

In the present study, the longer lactation period in group B seems to be a result of delayed conception, where, animals with higher milk production had longer days open compared to lower producing cows, and fail to conceive in a reasonable interval after calving and consequently are rejected.

Reproductive problems have been reported as a major reason for culling in foreign herds (Ragab & Asker, 1959; Fahmy et al., 1963 and Aboul-Ela et al., 1994) Association between high milk yield and low reproductive performance has been reported by several investigators (Everett et al., 1966; Spadling et al., 1975; El-Keraby

and Aboul-Ela, 1982; Nigm et al., 1988, Khattab and Ashmawy 1988, Ray et al., 1992 and Aboul-Ela et al., 1994)

It could be concluded that, the low reproductive management of the imported dairy breeds, may confuse milk production improvement programs.

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أداء إنتاج اللبن لأبقار الفريزيان المستبقاه والمستبعدة بمزارع القطاع الخاص فى مصر

ربيع رجب صادق

كلية الزراعة – جامعة القاهرة – قسم الإنتاج الحيوانى.

أجرى هذا البحث على ١٧٧٥ سجلا لإنتاج اللبن تمثل أول ثلاثة مواسم لعدد ٨١٦ من أبقار الفريزيان المستوردة من هولندا والمرباة بمزرعتين تابعتين للقطاع الخاص بمركز طامية، محافظة الفيوم.

وقد استهدف البحث مقارنة صفات: إنتاج اللبن، طول موسم الحليب وإنتاج اللبن اليومى (لكل موسم حليب) بين مجموعتين من الأبقار:

المجموعة الأولى : وهى التى تستبقى فى القطيع بعد نهاية موسم الحليب (أى سجلاتها متبوعة بموسم حليب آخر على الأقل).

المجموعة الثانية: وهى التى تستبعد من القطيع بعد نهاية الموسم (أى سجلاتها غير متبوعة بأى مواسم حليب تالية)

وقد تم حساب متوسطات المجموعتين وكذا الفرق بينهما للثلاث صفات سابقة الذكر، وأظهرت النتائج الآتى:

(١) كان للمجموعة الثانية – مقارنة بالمجموعة الأولى – متوسطات أعلى لإنتاج اللبن الكلى وطول موسم الحليب خلال موسمى الحليب الأول والثانى، وكان الفرق معنويا فى إنتاج لبن الموسم الأول (+٧٠٥ كجم) وطول فترة حليب الموسمين الأول والثانى (+٦١ يوم، +٣٤ يوم، على التوالى).

(٢) أظهرت أيضا المجموعة الثانية متوسطا أعلى لصفة إنتاج اللبن اليومى ولكن خلال الموسم الأول فقط وبفرق غير معنوى.

(٣) تبين من الدراسة أن الحيوانات المستوردة التى تدر إنتاجا أعلى عن الحد الذى تسمح به البيئه الجديدة (حيوانات المجموعة الثانية) قد تستبعد مبكرا عن تلك الحيوانات ذات الإنتاجية الأقل.

(٤) يستنتج من الدراسة أن قلة الإهتمام بجميع نواحى الرعاية التناسلية والصحية ومستويات التغذية لماشية اللبن الأصيلة المستوردة والمرباه تحت الظروف المصرية يعرقل برامج تحسين إنتاج اللبن.