MILK PRODUCTION AND REPRODUCTIVE PERFORMANCE OF EGYPTIAN COWS AND BUFFALOES IN SMALL LIVESTOCK[1] HOLDINGS

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SUMMARY

Data used in this work were collected through the livestock field survey of the "Conventional Mixed Farming Systems" in 1981. The Survey covered eight villages in four governorates in the Nile Delta. Total number of surveyed holdings was 152 including 132 and 276 lactating cows and buffaloes, respectively. Three herd types were differentiated according to the types of animals bred: (1) Cows only; (2) Buffaloes only and (3) Cows and buffaloes.

Milk yield of Egyptian cows was 638 kg. (net of suckling) in an average lactation period of 130 days. The average daily milk yield was 4.7 kg./day. The mean dry period was 262 days. The corresponding means for buffaloes were 1246 kg., 173 days, 7.2 kg./day and 243 days.

Cows and buffaloes kept in small holdings seemed to be reasonably regular in their reproductive performance. Mean service period, calving interval and calving rate for Egyptain cows were 143 days,388 days and 65%, respectively. The corresponding estimates for buffaloes were 101 days, 416 days and 70% for the three studied traits, respectively.

INTRODUCTION

Performance records are essentail in making technical and economic decesions for cattle improvement. In Egypt, these records are available only in state farms and in some large commercial herds. Information are also obtained through research work carried out in experimental farms.

A major proportion of the cattle population is kept in small holdings under traditional system of production which also contributes about 82% of the total milk production (Soliman and Abdel Zaher, 1984). It is only the experience of the farmer that can determine whether a certain policy is practical or economic for him. However, it is important to the decision maker to adopt techniques which suit the farmer's purposes . This has to be made on basis of solid information that can help providing regular supply of realistic data under small farm conditions.

Until record-keeping becomes a straight forward routine in small farms, a base line data collected from such farms is needed. Simple analysis of these data may provide valuable information for applied research and planning national breeding programmes.

The main objective of this work is to examine the production and reproduction data collected on Egyptian cows and buffaloes kept in small holdings.

MATERIAL AND METHODS

Data used in the present work were collected in 1981 through the livestock field survey of the "Conventional Mixed Farming Systme"Numbers of animals are shown in table 1.

The study comprised some important characteristics of herds of the native cows and buffaloes.

1- Herd size: Expressed in two ways; (a) as an aggregate number of animals per holding; and (b) as the number of breeding stock (=cows and buffaloes calved at least once).

2- Herd structure: Percentage of each parity and sex group to total number of animals in the herd.

3- Herd composition : Types of animals kept in the same herd (e.g. cows only, buffaloes only, cows and buffaloes).

4- Daily Milk Yield (D.M.Y,Kg.): Actual amount of milk surveyed for each milking head at time of survey.

5- Lactation Period (L.P.,day): Length of lactation from calving date to drying off date .

6- Total Milk Yield (T.M.Y., Kg.) Calculated as D.M.Y. x L.P., for each milking head.

7- Dry Period (D.P., day): Number of days elapsed from date of drying off to the onset of next lactation.

8- Service Period (S.P.,day): Number of days elapsed from calving to the date of postpartum conception.

9- Calving Interval (C.I.,day): Number of days between two successive calvings.

10- Calving Rate (CR,%): Number of live born calves per 100 dam per year.

RESULTS AND DISCUSSION

Herd size:

The estimated averages of herd size per holding in each of the villages included in the field survey are presented in table 2. The overall average of the aggregate number of animals was 4.6 heads per holding. In terms of breeding stock, the average was only 3 heads per holding. The two estimates show that about 67% of the stock are in the milk production stage.

The small herd size is a characteristic of the conventional farming system which comprises about 97% of the population of cows and buffaloes in Egypt. This represent a serious constraint to the improvement of livestock through breeding programmes or providing proper services.

Herd composition:

Three types of herds were differentiated according to composition of herds in the study area; cow-herds, buffalo-herds, and mixed herds which comprised both cows and buffaloes. The distribution of these herds is given in table (3). The majority of herds (62%) were mixed. A minor percentage of only 5% of the herds comprised cows only. It seems from table

4 that most buffaloes were kept in mixed herds which comprised about 60% of the total number of buffaloes. On the other hand, more cows (56%) were kept in cow herds.

Herd structure:

Table (5) indicates that the breeding stock represents about half of the total number of the cattle sample (including male and female categories). A very high percentage (80%)of the total number of buffaloes was classified as breeding stock. This may mean that more buffaloes are kept for breeding and milk production purposes. The percentage of young females was almost equal in both cows and buffaloes. The large percentage of males in cattle sample(about 40%) is a clear indication of the importance of keeping young males for beef production.

Structure and productivity of the milking herd:

Age structure in terms of parities and productivity of the milking animals are shown in table 6. The average age of cows represented in parities is 3.6 lactations and the average age of buffaloes is 4.6 lactation. This seems to be equal to the optimum mean lactation for the two types of animals. However, this does not mean that the surveyed herds constitute a balanced population as the low age classes had lower percentages of animals in both types. This situation does not only affect the herd productivity, but also impairs the process of selection for higher milk yield.

When average milk production is classified by parity, the native cows yield more milk with advance of lactation up to the 6th and yield declined thereafter. This trend is not consistent with buffaloes where the maximum production was scored at the 9th lactation.

Milk Production Characteristics:

Means and standard errors of milk production characteristics of native cows and buffaloes are presented in table 7 in terms of daily milk yiled (D.M.Y.), lactation period (L.P.),total milk yield (T.M.Y.) and dry period (D.P). Esti-

mates for total milk yield reported in this study do not include milk used for suckling. The amount of milk consumed by calves of native cows was estimated by Ragab and Asker(1968) as 285 Kg. per calf in a suckling period of 15 weeks. Considering the daily milk production of the buffaloes, it could be assumed that a buffalo calf consumes about 300 kilograms of milk in its first six weeks of age, i.e. before it is marketed as veal.

Milk production of natvive cows and buffaloes presented in table 7 might be adjusted by compensating for suckling milk. If this logic is accepted, total milk production may be estimated as 925 kg. for native cows and 1550 kg. for buffaloes.

Most of the published estimates on the performance of buffalo and native cattle were derived from state and experiment of farms. It is of interest to compare these estimates with those obtained in the recent reports. Estimates of T.M.Y. published on Egyptian cows ranged from 707 kg. in the first lactation to 1310 kg. for the fourth lactation (A.O.A.D., 1980). The weighted average of all available estimates was 993 kg. over all lactations. When suckling milk is considered, the estimate obtained in this work lies within the range of the estimates published on Egyptian cows and is comparable to most of these estimates.

For buffaloes, published estimates on T.M.Y. ranged from 1227 kg. (Mostageer et al., 1981)to 2159 kg. (Soliman, 1976). Also, the estimate obtained for baffaloes in this report is comparable to most of the available published estimates for which the weighted mean was calculated as 1860 kg. over all lactations. when period of suckling is considered, the estimate obtained in this study for lactation period of native cows is comparable to most of the availabe published estimates. The relatively shorter lactation period in buffaloes under conventional system may be explained by the regularity of calving in small herds.

Reproductive performancecharacteristics:

The mean service period of buffaloes presented in table

8 was found much lower than most of the estimates published on buffaloes in experimental farms (ranged from 100 days reported by Oloufa, 1966 and 283 days reported by Alim and Ahmed, 1954). The difference is probably attributed to the problem of silent heat claimed in most of the farms of large herd size and elimination of low fertile individuals from small holdings.

The same picture can be seen for calving interval in buffaloes. Relatively low estimates were obtained for the conventional system which reflects better regularity of breeding in the surveyed herds. This result is expected since calving interval is a function of the service period and the gestation period. The latter is almost similar in all animals and equals 317 days.

The estimated mean service period of native cows of 113 days is comparable to the published estimates which ranged from 95 days reported by Oloufa, 1968 to 128 days reported by Ragab and Sourour, 1963).

Calving interval of native cows obtained in this study was 388 days (table 8) which is relatively lower than the 420 days cited by Ragab and Asker (1968).

Contrary to the published literature on experimental farms, native cows were less regular breeders than buffaloes (table 8). Buffaloes had a lower estimate of service period and considerably higher calving rate (70 vs. 65%).

CONCLUSIONS

Results obtained in the present work indicate the posibility of calculating basic statistics for important productive and reproductive traits in dairy cattle using data collected by field surveys.

The value of these data lies in its capacity of providing reasonably reliable information on the native cows and buffaloes kept in small holdings under conventional system of production. Most of the estimates in the present paper were comparable to the published estimates which were surveyed and weighted.

Judging by the large percentage of breeding stock in buffalo herds, buffaloes seemed to be the major animal maintained for milk production purposes. The large proportion of males in cattle herds showed the value of these animals for beef production.

The system used in collecting these data could be used for establishing a recording system. Such a system will be of real value for providing essential parameters needed for planning of improvement programmes.

REFERENCES

- Alim, K.A. and Ahmed, I.A.1954. Month of calving, age at first calving and calving interval of buffaloes in a dairy herd in Egypt. Emp. J.Exp. Agric., 22:37-41.

- A.O.A.D. (1984). The evaluation of the indigenous, crossbred and foreign breeds of cattle in the Arab World. Arab Organization for Agricultural Development, Khartoum, Sudan.

- Mostageer, A., Morsy, M.A. and Sadek, R.R. 1981. The production characteristics of a herd of Egyptian buffaloes. Z. Tierzuchtgs zuchtgsbiol. 98(1981):220-23.

- Oloufa, M.M.1966. Reproductive efficiency in Egyptian buffaloes and cattle. Fac.Agric.,Cairo Univ.,Bull. No.21.

- Oloufa, M.M. 1968. Some aspects of reproductive efficiency in Egyptian cattle and buffaloes. Egypt.Vet. Med., J., 15:173.

- Ragab, M.T.and Asker, A.A.1968. Milk Production from Cattle and Buffalo. 3rd. Ed. Ain Shams Univ. Press, Cairo, Egypt.

- Ragab,M.T. and Sourour, M.A. 1963. The effect of some environmental factors on monthly milk yield of buffalo native cows and Friesian in Egypt. Proc. 2nd Anim. Prod. Conf. 1963; 3 NIDOC, Cairo.

- Snedecor, G.W. and Cochran, W.G. 1956. Statistical Methods
    5th ed. The Iowa State Univ. Press Ames, Iowa,
    U.S.A.

- Soliman, A.M.A. 1976. The genetics of the lactation curve.
    M.Sc. Thesis, Fac. Agric., Ain Shams Univ.

- Soliman, I. and Abdel Zaher, T. 1984. The impact of govern-
    ment policies on efficiency of milk production
    systems in Egypt. 9th International congress for
    Statistics, Computer Science, Social and demogra-
    phic research, Cairo , April 1984.

Table (1) Number of holdings and animals by governorate and village

Governorate	Village	No. of holdings	No. of animals*		
			Cows	Buffaloes	Small** ruminants
Gharbia	Seberbay	40	54	157	-
Kaliobia	Gamgrah	16	41	40	32
	Asneet	16	14	38	28
Menofia	Kafr Hourin	10	10	25	3
	Kafr Meet Serag	8	6	10	7
Sharkia	Didamon	15	93	40	57
	Zankalon	25	61	49	39
	Tokh El Karamos	22	26	35	16
Total		152	305	394	182

* Males + females.
** Sheep and goats.

Table (2) Herd size by village

Village	Number of holdings (a)	Total number of cows & buffaloes (b) (head)	Breeding Seech* (c) (head)	av. herd size Agric. breed. No.**	Milk producing breed. ***
Sebarbay	40	211	203	5.2	58
Gamgarah	15	81	25	5.1	31
Asneet	16	52	20	3.3	42
Kafr Hourain	10	35	25	3.5	71
Kafr Meer Serag	8	16	15	2.0	60
Didamon	15	133	51	8.9	44
Zankalon	25	110	57	4.4	52
Tokh El Karamos	22	61	55	2.8	39
Total	152	699	454	---	---
Overall average	---	---	---	4.6	67

* Cows and buffaloes which calved at least once.
** b/a
*** c/a

Table (3) Frequency of different herd types

Type of herd	herds	
	No.	%
Cows	7	5
Buffaloes	51	33
Cows + Buffaloes	94	62
Total	152	100

Table (4) Distribution of animals in different herd types

Type of herd	Cows		Buffaloes	
	No.	%	No.	%
cows in cow herds	170	56	---	---
cows in mixed herds*	135	44	---	---
buffaloes in buffalo herds	---	---	156	39.6
buffaloes in mixed herds*	---	---	238	60.4
Total	305	100	394	100

* Mixed herds = those herds which comprise both cows and buffaloes.

Table (5): Age and Sex structure of the surveyed herds

| Age and Sex class | Type of Animal | | | |
| | Cows | | Buffaloes | |
	No.	%	No.	%
Breeding stock	142	45.9	312	80.6
Young Stock:				
Males	124	40.2	27	6.9
Females	43	13.9	51	13.1
Total	309	100	390	100

Table (8) Structure and productivity of cows and buffaloes in milk classified by parity

Parity	Cows			Buffaloes		
	No. (head)	% of total No. of cows	Average milk prod. (kg.)	No. (head)	% of total No. of buffaloes	Average milk prod. (kg.)
1	15	11.5	568	24	8.7	1008
2	29	22.1	582	29	10.5	966
3	28	21.4	458	57	20.7	1212
4	20	15.3	654	46	16.7	1212
5	15	11.5	854	28	10.1	1300
6	11	8.4	897	24	8.7	1278
7	8	6.1	780	26	9.4	1407
8	5	3.8	615	22	8.0	1392
9	--	--	--	20	7.2	1636

Table (7) Milk production characteristics of Egyptian cows

and buffaloes

Character	Cows			Buffaloes		
	N	X̄	S.E.	N	X̄	S.E.
D.M.Y. (Kg)	132	4.7	0.1	279	7.2	0.1
L.P.(day)	132	130	2.7	279	173	2.0
T.M.Y.(Kg)*	132	638	30	279	1246	2 5
D.P. (day)	100	262	6.8	232	243	5.3

* Net of calf after deducting the amount of milk consumed i
suckling.

Table (8) Reproductive characteristics of Egyptian cows and
buffaloes

Character	Cows			Buffaloes		
	N	X̄	S.E.	N	X̄	S.E.
Service Period (day)	98	113	4.1	232	101	5.1
Calving Interval (day)	100	388	6.9	232	416	5.1
Calving Rate (%)	131	65	2.4'	276	70	1.3

انتاج اللبن و الكفاءة التناسلية للأبقار المصرية و الجاموس
فى الحيازات الحيوانية الصغيرة

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استعملت فى هذه الدراسة بيانات الحصر الحيوانى الحقلى الذى
أجراه مشروع تطوير النظم الزراعية المصرية عام ١٩٨١ فى أربع
محافظات بالدلتا شملت ثمان قرى بها ١٥٢ حيازة حيوانية بها ١٢٢ بقرة
و ٢٧٦ جاموسه حلابة .

شملت الدراسة حجم القطيع ، ونوع القطيع ، وشركيب القطيع
من حيث العمر و الجنس ، و اهتمت الدراسة باشتاج اللبن و الفعاليات
التناسلية ، وتبين أن متوسط انتاج اللبن اليومى للأبقار المصرية
عند الفلاح (بدون حساب لبن الرضاعة) ٤ر٧ كجم / يوم فى فترة حليب
طولها ١٣٠ يوما بينما يدر الجاموس فى المتوسط ٧ر٢ كجم / يوم فى فترة
حليب طولها ١٧٢ يوما .

كانت متوسطات طول فترة التلقيح و الفترة بين الولادتين وعدد
العجول الحية المولودة من كل ١٠٠ بقرة : ١١٣ يوما ، ٢٨٨ يوما و ٦٥/
للأبقار المصرية يقابلها ١٠١ يوما ، ٤١٦ يوما و ٧٠ ر للجاموس
(على الترتيب) .

أظهرت الدراسة أهمية بيانات الحصر الحيوانى الحقلى كمصدر
متاح للبيانات الواقعية عن الأبقار و الجاموس عند الفلاح ، كما
أوضحت امكانة تطوير مثل هذا الحصر لانشاء نظام تسجيل دائم لتوفير
المعلومات الضرورية لتخطيط برامج التحسين الوراثى و المبنى على
المستوى القومى .

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