GENERAL ECONOMICAL STUDY FOR SOME PRODUCTIVE AND PHYSIOLOGICAL CHARACTERISTIC OF EGYPTIAN BUFFALOES IN RESEARCH FARM

HASSAN, HODA Z.[1], KAWTHAR A. MOURAD[1], M. F. SHARAF[2] AND E. A. KOTBY[3]

1 Animal Production Research Institute, Agricultural Research center, ministry of Agriculture, Dokki – Giza- Egypt
2 Agricultural Economic Research Institute, Agricultural Research center, ministry of Agriculture
3 Faculty of Agriculture, Ain - Shams University

(Manuscript received 16 September 2004)

Abstract

Annual buffalo records during a period of 1989-1994 of Mehallet Moussa, Animal Production Experimental farm, Ministry of Agriculture, were used in this study.

Results of general economical study showed that, feed stuffs have the highest relative importance of costs (63.10%), followed by permanent labour (26.4%), net revenue were faced some losses in the last period .

Referring to some productive and reproductive characteristics affecting the general economical status in the research farm, results obtained indicated that there was a lower productive and reproductive performance in Egyptian buffalo research farm, such as longer age to first calving in heifers, longer calving interval and lower milk yield which led to the obtained loss.

INTRODUCTION

General economic status in the experimental farms differ than the commercial farms, this is because livestocks in the first one face some problems due to the different experimental treatments carried out using the animals in the research station in addition to that the first order of experimental farms is to carry out researches in different fields of animal production .

The authors in this investigation were interested to study the economical status in experimental farm and to what extent some productive and reproductive characteristics of the experimental buffaloes affect general economical status of this type of farm animals.

MATERIALS AND METHODS

Experimental Egyptian buffaloes in Mehallet Mousa Research Station belonging to Animal Production Research Institute, were used in this study.

The following criteria were utilized to estimate the general economical status in experimental farm:

1-Costs

Costs were collected (Table1) from the farm records during the period from 1989/90-1993/94.

Table 1. Costs of different yearly items in Mahallt Mousa Exprimental Farm during a period f rom 1989 to 1994.

Cost items	89/90	90/91	91/92	92/93	93/94
	← L.E. →				
Feed stuffs	470922	457477	488741	513927	46531
Transportations	1669	2536	6592	13448	12065
Spare Parts	185	-	11611	13272	3241
Water	343	63	110	274	658
Electricity	32768	26848	23974	16940	26680
Maintenance	593	-	103	-	588
Casual labour	49603	43366	31073	39478	46141
Permanent labour	193646	233217	264164	26847	275949

2- Returns

Returns of Mahallet Mousa Experimental farm during a period from 1989-1994 were shown in Table 2.

Table 2. Returns of different yearly items in Mahallt Mousa Exprimental Farm during a period from 1989 to 1994.

Source of returnsed	Returns (LE.) in different years				
	1989-90	1990-91	1991-92	1992-93	1993-1994
Live and slaughtered animals, manure and skins.	----------	510756	253002	245372	169324
Milk and its products.	----------	128696	153868	186990	135629

Relative importance of costs and net revenue were estimated to indicate the general economical status of Mahallet Mousa Experimental farm.

1- Relative importance of costs

relative importance (%) = Item cost/ total cost X 100

2-Total net revenue, was calculated as following:

total net revenue = total return – total costs

Some reproductive and productive characteristics affecting the general economic status of Egyptian buffaloes in the experimental farm, were, age at first calving (months), calving interval (day) and total milk production (kg).

Livestock structure of Mahallet Mousa Experimental farm during the period of this study was recorded in Table 3.

Table 3 . Structure of buffaloes herd at Mehallet Mousa Experimental farm during a period from 1989 – 94.

Items	1989/90	1990/91	1991/92	1992/93	1993/94	Average
Total No. of animals	1381	1139	1015	829	798	1032
Dams	503	354	322	282	266	354
Male calves	266	239	157	129	150	188
Female calves	540	454	417	365	326	420
Heifers	251		256	203	164	227
Milk production/ year (Kg)	361264	301491	297104	276426	236132	294483
Milk yield /head/ year (Kg).	2163	2374	2455	2536	2315	2356

Data obtained in this study were analyzed using least square means and maximum likelihood program (Harvey,1990) .

RESULTS AND DISCUSSION

1-General economic status of the experimental farm

a - Relative importance of costs (RI)

Results obtained in Table 4 indicated that feed stuffs occupy the highest RI representing about 63.1% of the total costs during the period of the study.

Labour RI comes secondary (32%), the high percentage of this item may be due to an excessive labour than is actually required to care for the raised animals in the commercial farms.

RI electricity cost comes in the third in order, it represents about 3.4% of the total costs.

Table 4. Relative importance of different cost items in the experimental farm .

Cost Item	Relative importance(%)
Feed stuffs	63.10
Transportations	0.96
Spare Parts	0.48
Water	0.03
Electricity	3.39
Maintenance	0.03
Labour	32.0

2-Net Revenue

Table 5. Net Revenue of the experimental farm during a period from 1989-1994.

Items	1989/90	1990/91	1991/92	1992/93	1993/94
	LE.				
Total returns	887948	639352	406870	432362	304953
Total costs	750192	763537	816448	624341	811773
Net Revenue	137756	(124185)	(409578)	(191979)	(506820)

(----): loss

gave full initial kill of the tomato by Verotecto, Dipel 2x and Ecotech characterized by strong initial kills of 98.00, 96.00, 93.75 and 93.75 respectively. The data also indicated that abamectin caused the most pronounced deleterious effect on PTM. It has a long residual effect and is more potent than other tested insecticide with an RL_{50} value of 25.94 days followed by profenofos, pirimiphos-methyl, xentari, Agerin and MVP II with RL_{50}s of 23.92, 21.65, 20.71, 16.82 and 14.39 days, respectively. Verotecto, Dipel 2x and Ecotech were the least effective in this respect, giving RL_{50} values of 9.16, 8.39 and 7.82 days, respectively . The Granulosis virus was found to be effective in the field in Western Australia (Reed, 1964, 1971a and 1971b) . Mathiessen *et al.* (1978) isolated the virus and tested its effectiveness in the field . A baculovirus collected in Peru was also effective in reducing PTM infestation (Raman, 1989). Raman and Alcazar (1988) also used a Granulosis virus for PTM control in Peru. The tomato looper might be effectively controlled with *Bacillus thuringiensis* preliminary bioassays have indicated that *Bacillus thuringiensis ssp.* Kurestaki controlled potato tuber worm larvae despite the fact that they hid in tunnels within the tomato leaves (Broza and Sneh, 1994). Baculoviruses are valuable natural control agents , but their utility in many agricultural applications has been limited by their slow speed of kill, narrow host specificity and instability in the field (Inceoglu *et al.* , 2001) .

It may be concluded that the use of biocides are highly specific for PTM . Field experiments showed that abamectin gave the highest RL_{50} value indicating long presistence and high toxicity against PTM infesting potato and tomato plants followed by xentari . The lowest results were obtained with Agerin, MVP II , Dipel 2x , Ecotech and Verotecto .

*Total milk yield during 1st lactation =178 x 1278 =227484 Kg.

* Price / kg =1.00 L. E.

* Loss of milk return = 227484 x1.00 = 227484 L. E .

3- Forfeited return of weaned calves and heifers

Mortality rate in buffalo calves equals 20% (Askar and El-Itriby,1957).

Number of weaned calves/ year =178 x 0.8 =142.

Males number =71.

Females number = 71.

Price of weaned male calves is L. E. 900 e calf and L. E. 780 for weaned females (APRI prices publication).

Forgone returns are : (71 x 900) + (71 x 780) =L. E. 119280 .

B-Calving Interval

The optimum length of the calving interval (C I) under favourable conditions is 405 days (Hoda ,1997).

Data obtained in this study revealed that the calving interval in Mahallet Mousa Experimental Farm extends to about 496 days, the difference is about three months. The annual cost for raising an animal is L.E.1026 (Hoda,1997), raising cost during 3 months is 256.5 L.E./ head, about 345 dams raised in the farm / year ,this means that there is a loss of L.E.88492.5/ year. This amount of loss which is attributed to the long calving interval means that there are three months carrying cost with no returns.

D- Total milk production

The average of total milk production/ head/ year in this study was 1525 Kg. (T able 6). Average lactation period was 255 days this is shorter than that reported by Mourad *et al.* (1991) and Zeidan(1990) in Egyptian buffaloes.

Improvement animal management together with better care could increase total milk production more than the figure obtained in this study (1525 kg) .

Several studies have indicated that total milk production can be increased by about 10% if milking is increased 3 times instead of 2 times daily (Kotby ,1996). However, following the recommended practices necessitate applying the economic criterion of marginality. Marginal cost must be less than marginal revenue. In this case, the number of milking animals per day could be increased as long as the return of the excess production of milk exceeds the cost of the milking operations.

Table 6. Least squares means (LSM) and standard errors (SE) for some productive and reproductive performance of Egyptian buffaloes.

Item	No.	L.S.M.± SE
Age at first calving (month).	956	39.8 ± 0.3
Calving interval (days)	4204	496.2 ± 2.7

Table 2 . The effect of tested compounds against *p. operculella* infesting tomato plants in greenhouse .

Treatments	Concen-tration per fed.	Percentage mortality at indicated days after application							
		0	1	3	6	9	12	17	20
Profenofos 72% EC	750 ml	100	100	100	100	100	100	92.50	79.4
Pirimiphos – methyl 50% EC	375 ml	100	100	100	100	91.89	86.11	70.00	58.9
Abamectin 1.8% EC	60 ml	100	100	100	100	100	100	97.50	87.1
Verotecto 4% a.i.	300 g	100	100	92.31	77.50	62.16	52.78	40.00	25.0
Xentari 10.3% a.i.	240 g	100	100	100	100	91.89	87.50	78.21	70.0
Agerin 6.5% w/w	200 g	100	100	100	90.00	75.68	66.67	55.00	43.5
Dipel 2x 6.4% a.i.	200 g	100	100	97.44	87.50	75.68	61.11	50.00	35.9
Ecotech 10% a.i.	300 g	100	100	97.44	85.00	70.27	61.11	45.00	33.3
MVP II 20% a.i.	1000 ml	100	100	100	95.00	86.49	77.78	62.50	51.2

RL_{50} = Residual half - life

REFERENCES

1. Askar, A . A. and A. A. El-Itriby. 1957. Calf mortality, abortion , twinning and sex ratio in Egyptian buffaloes . Emp. J. Exp. Agric, 25: 151-155.
2. Harvey, W. R. 1990. MIXMDL Mixed Model Least Squares and Maximum Likelihood Computer Program. PC2. Ohio state Univ. Columbus USA (Memeograph).
3. Hoda, Z. Hassan. 1997. Some environmental and physiological problems affecting Egyptian buffaloes performance. Thesis, Ph. D. .Fac. Agric., Ain –Shams Univ. Cairo, Egypt.
4. Ibrahim, N. 1989. Puberty and associated phenomena in Egyptian buffaloes. Thesis M. Sc., Ain-Shams Univ, Egypt.
5. Kotby, E. A. 1996. Lectures in animal production , Fac. Agric., Ain –Shams Univ. Cairo, Egypt.
6. Mourad, K. A., M. M. Mohamed. and A. S. Khattab. 1991. Genetic parameters for milk produc. traits in a closed herd of Egyptian buffaloes. Egypt. J. Anim. product, 28:11-20.
7. Zeidan, S. M. 1990. Study of production performance of Egyptian buffaloes. Thesis, M. Sc., Zagazig Univ. Banha Branch – Egypt.

دراسه اقتصاديه عامه لبعض الصفات الإنتاجيه والفسيولوجيه للجاموس المصرى فى مزرعه بحثية

هدى زكى حسن[١] ، كوثر عبد المنعم مراد[١] ، محمد فهيم شرف[٢]، السيد عبد الرحيم قطبى[٣]

١- *معهد بحوث الأنتاج الحيوانى- مركز البحوث الزاعية- وزارة الزراعة – دقى- جيزة- مصر*
٢- *معهد بحوث الاقتصاد الزراعى-مركز البحوث الزراعية-وزارة الزراعة -دقى- جيزة-مصر*
٣- *كلية الزراعه -جامعة عين شمس .*

استخدمت فى هذه الدراسه السجلات السنويه لمحطة بحوث الانتاج الحيوانى بمحلة موسى والتابعه لوزارة الزراعه، فى الفتره من ١٩٨٩-١٩٩٤.

وقد اوضحت نتائج الدراسه الاقتصاديه العامه أن تكاليف تغذية الجاموس احتلت اعلى اهميه نسبيه من جملة التكاليف السنويه الكليه يليها فى ذلك الاهميه النسبيه لتكاليف العمالة الدائمه وايضا اوضحت النتائج وجود خساره فى العائد الصافى الكلى فى الاعوام الاربعه الاخيره لهذه الدراسه .

وحيث أن النتائج اوضحت انخفاضاً فى بعض جوانب الأداءالإنتاجى والتناسلى فى قطيع الجاموس للمحطه البحثيه مثل تأخر تاريخ اول ولاده فى العجلات، وطول الفتره بين الولادتين وايضا انخفاض انتاج اللبن فقد ساهم ذلك فى الخسارة الناتجه .