

PERFORMANCE OF LOCAL SHEEP COMPARED TO QUARTER FINN GENOTYPE UNDER FARMERS CONDITION

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SUMMARY

Within a program to enhance prolificacy in local ewes through introducing Finn sheep genes, through collaboration with Finland, the data of 45 small holders who received the new genotype, 1/4 Finn x 3/4 Local ewes, were accumulated.

Ewe-lambs weight of both local and crossbred was measured from 4 to 12 months old to serve an analytical study for factors affecting age at first lambing (AFL), weight at 4 mo old (W4) and daily gain from 4 to 12 month old (DG). Green fodder availability within seasons interfered with reproductive cyclicity of ewes in a manner that could influence age at first lambing. Keeping ram with the flock reduced AFL by 23 days while crossbred ewes were 21 days older at AFL compared to local.

Birth type and season of birth significantly ($P < 0.05$) affected W4. Twin born lambs were 4 kg less in weight than singles while winter born lambs were superior by 4.7 kg at W4 than in other seasons.

Analysis of growth performance up to 12 mo indicates that season of growth and age of lambs were the main factors affecting DG.

Finn crossbred compared to local ewes was 0.6 kg more at W4 and 11.5 % more in DG (from 4 -12 mo old) indicating that its tendency to more litter size does not, at least, affect negatively their body weight.

Early weights of ewe-lambs were of more impact on AFL. Twin burden on lamb weight mostly modified in later

stages, when feeding of the flock is in a good condition.

Keywords: Sheep, local breeds, quarter Finn, productive performance

INTRODUCTION

The absence of precise data on input/output relationship of animals raised by small holders make implementation, among farmers, of interventions built on experiences gained under stations condition some times not valid.

Due to difficulty of measuring input/output relationship under farmers condition, the use of parameters that indicates animal status and factors monitor their performance could help to gain reasonable information in that respect.

One of the recent activity start to be implemented is the introduction of Finn sheep genes to improve prolificacy. Quarter Finn x 3/4 local, the recommended genotype for expansion, was included in this study.

The measurements of age at first lambing, weight at 4 months of age and daily gain from 4 to 12 mo of age were used as criteria to indicate the management and input offered to the herds.

MATERIAL AND METHODS

The management system of sheep herds raised by small holders could be summarized in Table 1.

The study included 45 farmers who had at least 4 local ewes before receiving the new genotype (pregnant ewes of 1/4 Finn X 3/4 Rahmani) at a rate of 4 to 7 ewes per farmer. Those ewes were mated with rams of the same genotype before distribution. The project offered rams, also of the same genotype, for some of the farmers at a rate facilitated siring all distributed ewes. Local ewes are not of a distinguish breed.

Monthly weights of ewe-lambs from 4 months up to one year old were recorded. Two hundred and ninety lambs were recorded. This number was gradually reduced till it became 103 (46 1/4 F and 57 locals) at one year old.

Table 1. Description of management system implemented by small holders in Delta regions

ACTIVITIES	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
REPRODUCTION:												
BREEDING SEASON	--	--	--	--	--	--	--	--	--	--	--	--
LAMBING INCIDENCE	8 %			54 %			23 %			15 %		
FEEDING SYSTEM:												
BERSEEM							--	--	--	--	--	--
CROP RESIDUES & FARM BY PRODUCTS	--	--	--	--	--	--	--	--	--	--	--	--
GREEN MAIZE FODDER				--	--	--						

Least square analysis (SAS, 1987) was applied to manipulate the role of factors affecting chosen criteria of evaluation. Age at first lambing was tested for season, birth type, genotype and ram availability. Weight at 4 mo. old was tested for birth type, season of birth and genotype. Daily gain from 4 to 12 MO. old was tested for birth type, season of growth, age of ewe-lambs and genotype. The possible interactions among these factors were identified.

RESULTS AND DISCUSSION

Age at first lambing.

A presentation of factors affecting age at first lambing (AFL) as Least Square Means plus standard errors are in Table 2, while analysis of variance is in Table 3.

General mean value for AFL was 552.7 days (18.4 mo.). All factors tested, season, birth type, breed and availability of rams had no significant effect on AFL. The insignificant effect of birth type is in accordance with the findings of Aboul-Naga et al. (1982).

It could be recognized that the season of lambing affected the offspring's age at puberty. Lambs born at spring was the eldest at puberty (AFL was 568 days) while those born at autumn were the youngest (AFL was 521 days).

Table 2. Least Square Means and standard errors of age at first lambing as effected by different factors

Factors	LS means \pm SE
Season:	
Dec. - Feb.	547 \pm 21
Mar. - May.	568 \pm 22
Jun. - Aug.	553 \pm 29
Sep. - Nov.	521 \pm 23
Birth type:	
Single	544 \pm 17
Twin	550 \pm 21
Breed:	
local	537 \pm 20
Crossbred	558 \pm 17
Availability of rams¹:	
Within flock	536 \pm 27
Per demand	559 \pm 12

(1) Farmers have small herds (up to 6 heads) usually do not keep a ram while send their ewes to the nearest village-shepherd to be served.

Table 3. Analysis of variance for factors affecting age at first lambing

Source	D.F.	M.Square	Pr>F
Season	3	10447.9	0.41
Birth type	1	691.5	0.8
Breed	1	9169.8	0.36
Availability of rams	1	6380.6	0.44
Season x Breed	3	12088.4	0.34
Error	95	10785.2	

As age at puberty of local ewes averaged 10-12 mo. (Aboul-Naga et al., 1982, Younis et al., 1972 and Hafez, 1953), the possible reason of the delay in puberty for the former group is that lambs came to the 10th to 12th months old during March and April of the next year, a time which known that ewes have poor

reproduction during it (Aboul-Naga & Aboul- Ela, 1984 and El-Nakhla, 1985).

Lambs of the second group (born in autumn) came to the expected puberty age within the active reproduction time of the year. The introduced new genotype (1/4 Finn x 3/4 Local) started lambing 21 days later than locals. Keeping rams with the herds, resulted in shortening AFL. The reduction averaged only 23 days compared with herds free of rams.

Growth performance.

Least square means of ewe-lamb weights at 4 months of age (W4) and daily growth rates (DG) from 4 to 12 months of age are presented in Tables 4 & 6. Analysis of variances is presented in Tables 5 & 7, respectively.

Table 4. Least square means and standard error of ewe-lamb weights (kg) at 4 months of age as affected by type of birth, season and genotype

FACTORS	LS Means±SE
Birth type:	
Single	20.03±0.73
Twins	15.90±0.72
Season of birth:	
Dec.-Feb.	21.57±0.98
Mar.-May	16.6 ±1.13
Jun.-Aug.	16.04±1.69
Sep.-Nov.	17.82±0.62
Breed:	
Local	17.7 ±0.73
Finn cross	18.32±0.75

The overall mean of W4 was estimated by 18.44 kg. Results show that birth type and season of birth affected significantly ($P > 0.01$) the W4. Single born lambs were 4 kg heavier than twin born ones. Data on research farms gave difference of 3 kg only (Al Shennawy, 1993 and Mousa, 1989).

Table 5. Analysis of variance of factors affecting ewe-lambs weight at 4 mo of age

Source	DF	MS	Pr > F
Birth type	1	283.87	0.0001
Season of birth	3	79.17	0.0023
Breed	1	6.04	0.5269
Error	72	14.93	

The lower performance of twin lambs grown under the small holders condition may reflect lower milk intake probably due to low feed intake received by their dams. Ewe-lambs born in winter attained the highest weight (21.6 kg) at 4 months old followed by autumn (17.8 kg), spring (16.6 kg) and summer (16.04 kg).

Under farmers condition, the most favorite time for sheep is time of Berseem availability (Dec. to May). Out of this season farmers are seldom able to supply sheep with their feed requirements. The heaviest lambs weight was attained when berseem was available for both dams and lambs in winter.

When berseem was available only for lambs during suckling (autumn), lambs weights were lower, while the lightest weight were attained for summer- and spring-born lambs when berseem was not available.

The introduction of Finn sheep genes, for larger litter size, from 1.22 for local sheep to 1.43 in 1/4 Finn 3/4 local (Aboul-Naga, 1988) did not reflect reduction in lamb's weight; on the contrary, 1/4 Finn x 3/4 local ewe-lambs of four months of age were slightly better (0.6 kg more). Al Shennawy (1993) estimated W4 for local and crossbred lambs by 18.1 and 18.7 kg, resp.

The general mean of daily gain under small holder condition is estimated by 54 g for all the year round.

Season of growth and age of lambs significantly ($p < 0.01$) affected the daily gain. The role of berseem availability on sheep performance was also noticed. Growth rates in winter and spring months were 53% higher than in summer and autumn (72 vs. 34 g, respectively).

The similarity in daily gain of single and twin born lambs between 4 and 12 mo. of age suggests that twin lambs will not be able to compensate for their inferior weight by attaining faster rate of gain up to one year

of age. Growth rates gradually decreased by advance of age up to 10 months, then increased again between 10 and 12 months of age. Such increase in weight is mostly due to that round 10 to 12 mo. of age lambs achieve puberty (as reported by Aboul Naga et al (1982). So, start gaining weight due to pregnancy is occurred.

Table 6. Least Square Means and standard errors of ewe-lambs daily gain from 4 to 12 mo. old as affected by type of birth, season of growth, age and genotype

FACTORS	LS Mean \pm SE
BIRTH TYPE:	
Single	53.10 \pm 4.60
Twin	53.33 \pm 4.35
TIME OF GROWTH:	
Dec.-Feb.	73.14 \pm 7.11
Mar.-May	71.37 \pm 6.49
Jun.-Aug.	33.87 \pm 9.27
Sep.-Nov.	34.47 \pm 5.81
LAMBS AGE, mo.:	
4- 6	70.86 \pm 5.48
6- 8	54.39 \pm 4.74
8-10	33.79 \pm 6.22
10-12	53.82 \pm 10.69
BREED OF LAMB:	
local	50.30 \pm 4.16
1/4 F x 3/4 L	56.13 \pm 4.69

Table 7: Analysis of variance of factors affecting daily gain from 4 to 12 mo. old.

SOURCES	DF	MS	Pr>F
Birth type (BT)	1	2.19	0.97
GROWTH TIME (GT)	3	12002.27	0.0001
Age of lamb (AG)	3	7936.25	0.0002
Breed 1	1513.18	0.26	
GT x AG	9	3014.99	0.0082
BT x AG	3	2751.74	0.0766
ERROR 209	1186.94		

Finn crossbred ewe-lamb showed better growth rate (11.5 % higher) than local. Though this increment is not significant, but it still have a good indication that the tendency towards larger litter size by crossing with Finn sheep would not be necessarily accompanied with reduction in size or growth performance of the new genotype.

Statistical analysis indicates that growth time interacted significantly ($P= 0.008$) with age of lambs to affect growth rate. Birth type did not show this importance. Again, the factors of relation to the vegetation availability are integrated to exert a major effect on sheep performance.

Table 8. Extended effect of birth type, on daily gain rate up to 12 months of age for ewe-lamps

Birth type	Age per months			
	4-6	6-8	8-10	10-12
Single	75.27	47.50	41.81	47.82
Twin	66.45	61.28	25.77	59.82

Table 8 indicates that twin-born lambs had lower growth rate during the suckling period and up to 6 mo. of age, then they started to compensate it by faster growth during 6 to 8 mo. of age. Unexplainable reduction in growth rate was noticed during age from 8 to 10 mo. for twin lambs. Raw data show that 65 % of animals seized growth during this stage while others kept a reasonable rate of growth, a matter indicates a wide variation among herds in feed intake offered to animals.

Table 9. Regression of ewe-lamb age at first lambing on weight of lambs at different ages

Variables	DF	Parameter estimate	SE	Pr>F
Intercept	1	772.6	105	0.0001
W4	1	- 21.9	14	0.149
W9	1	- 7.2	10	0.501
W12	1	- 4.7	9	0.606

Though regression estimates seemed of non significant values, there was a noticed trend that as ewe-lambs progressed in age (from 4 to 12 mo.), variation in their weights became less dependant on age at first lambing. This indicates that attention to ewe-lambs should start at an early stage of life to allow them to be in better performance at age of puberty.

Generally, it could be concluded that under small holders condition, apart from green fodder availability there was a lack in feed offered to ewes. Introduction of new genotype of better potentiality, should receive proper feed allowances in order to exhibit its better performance, a matter needs active extension.

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مقارنه أداء الأغنام البلديه باغنام خليط الربيع فنلندى تحت ظروف صغار المزارعين

حلمى مطاوع - عصام شحاته

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خلال العمل ببرنامج لتحسين الخصوبه فى الأغنام المصريه بالخلط بأغنام الفنلندى وذلك بالتعاون مع حكومه فنلندا تم تجميع البيانات التى تخص ٤٥ من المربين الصغار اللذين تلقوا الأغنام الخليط. كما تم متابعه وزن الحوليات من عمر أربعه أشهر حتى ١٢ شهر بغرض تحليلها لتتفيد هذه الدراسه.

هدفت الدراسه إلى تحليل العوامل المؤثره على كل من عمر النعجه عند أول ولاده؛ وزن الحوليه عند عمر أربعه أشهر؛ معدل النمو اليومى من عمر ٤ إلى ١٢ شهر كمؤشرات للظروف المتوافره لدى المربين.

تبين أن مدى تواجد الأعلاف الخضراء يتداخل مع الموسميّه فى النشاط التناسلى للنعاج لتحديد العمر اللذى تلد فيه النعجه للمره الأولى. كما وجد أن إستمرار وجود الكباش بين النعاج يقلل من العمر عند أول ولاده ٢٣ يوما.

كما ان الأغنام الخليط تعطى أول مولود لها ٢١ يوما متأخره عن البلديه. الولاده التواميه وموسم الولاده لهما تأثير معنوى على الوزن عند عمر أربعه أشهر. الحوليات التوام تقل ٤ كجم بينما الحوليات التى تولد شتاء تفضل التى تولد فى باقى المواسم ب ٤,٧ كجم.

بينت تحليلات معدلات النمو أن الموسم اللذى تتموا فيه الحملان والعمر هما اهم العوامل المؤثره على سرعه النمو.

وجد أن النعاج خليط الفنلندى تزيد عن البلديه ٠,٦ كجم عند عمر أربعه أشهر وتزيد ١١,٥ ٪ فى معدل نموها (حتى عمر ١٢ شهر) مما يعنى أن خاصيه زياده التواميه التى تميز خلطان الفنلندى لا تؤثر سلبا على نمو الحملان إن لم تكن تحسنها.

وزن الحوليات فى المراحل المبكره له أثر أكبر على العمر عند أول ولاده. كما بينت التحليلات أن صغر وزن الحوليات المولوده توأم يتضائل بتقدم مراحل النمو طالما كانت التغذيه الجيده متاحه للقطيع.