

## **CHARACTERIZATION OF LIVESTOCK PRODUCTION SYSTEM IN SOUTH SINAI, EGYPT**

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### **ABSTRACT**

The target area of this study was the South Sinai region, 200 km North East of Cairo, located at 29°35'30"N 32°42'20"E and extends about 50 km in length with approximately 20 km depth. Data were collected during year 2012-2013 as a part of the improving livestock in Sinai Program funded by Desert Research Center, Ministry of Agriculture, Egypt. A total of 125 owners (25 owners from 5 locations) was involved in a specific questionnaire sheet covering all possible livestock diversity and distribution, their productive and reproductive performance, flock and pasture management, phenotype characterization and internal parasites information. The five studied locations were Wadi-Sudr, Wadi-Abousouria, El-Bagha, El-Rena We El-Nhyat and Sadat. Results of such survey study showed that livestock population in South Sinai is mainly contributed by goats (58%), followed by sheep (38%) and the least was camels (2%), cattle (1%) and buffaloes (1%). One commercial farm of 2000 head of broilers was contributed 60% of poultry in the target studied area, followed by local (Baladi) chicken (25%), ducks (10%) and least was barbeque (5%). Average number of goats, contributing to the flock structure is greater than that of sheep, the ratio being 2.2:1. The amount of goat milk is about 0.2-0.6 kg per day. Chemical analysis of goat milk as % was 12.89 total solid, 4.16 fat and 3.54 protein. Camels are generally used for milk and meat production. It could be concluded that livestock production system of the target area depend on small ruminants and camels production. Grazing area was not sufficient for small ruminants and camels feeding requirements. Sheep had a higher percentage of infection of internal parasites than goats in the studied area.

**Keywords:** Livestock production system, grazing, sheep, goat and camel.

### **INTRODUCTION**

In Egypt, raising livestock is an important component of the agricultural sector. Among livestock types, small ruminants contribute a greater share in numbers and output than they have elsewhere in the world. Small ruminant and camels constitute an important animal resource under arid and semi-arid conditions (MoALR, 2004 and El-Shaer, 1999). Owners, looking for the best possible way for handling and allocating their resources, usually use their experience for maximizing their farm income. However, sometimes, their experience does not guarantee optimal results. Accordingly, characterization of livestock production system could be used as a tool to address the limited production resources among different agricultural activities (cultivation and livestock) to help in providing optimal results to the owners (Alsheikh *et al.*, 2002). Livestock production information in South Sinai is scanty; therefore this study was initiated as a system approach to throw some light on the potentialities of livestock production system as a predevelopment study of the South Sinai of Egypt.

## MATERIALS AND METHODS

### Scope and area of study

The target area of this study was the South Sinai region, 200 km North East of Cairo, located at 29°35'30"N 32°42'20"E and extends about 50 km in length with approximately 20 km depth (Figure 1). The annual rainfall was less than 100 mm (winter season) during October to March (Galal *et al.*, 2002). The questionnaire data were collected during 2012 as a part of the Improving Livestock in Sinai Program funded by Desert Research Center, Ministry of Agriculture, Egypt. A total of 125 owners (25 owners from 5 locations) was involved in a specific questionnaire sheet covering all possible livestock distribution, their productive and reproductive performance, flock and pasture management, phenotype characterization and internal parasites information. The five studied locations were Wadi-Sudr, Wadi-Abousouria, El-Bagha, El-Rena We El-Nhyat and Sadat.

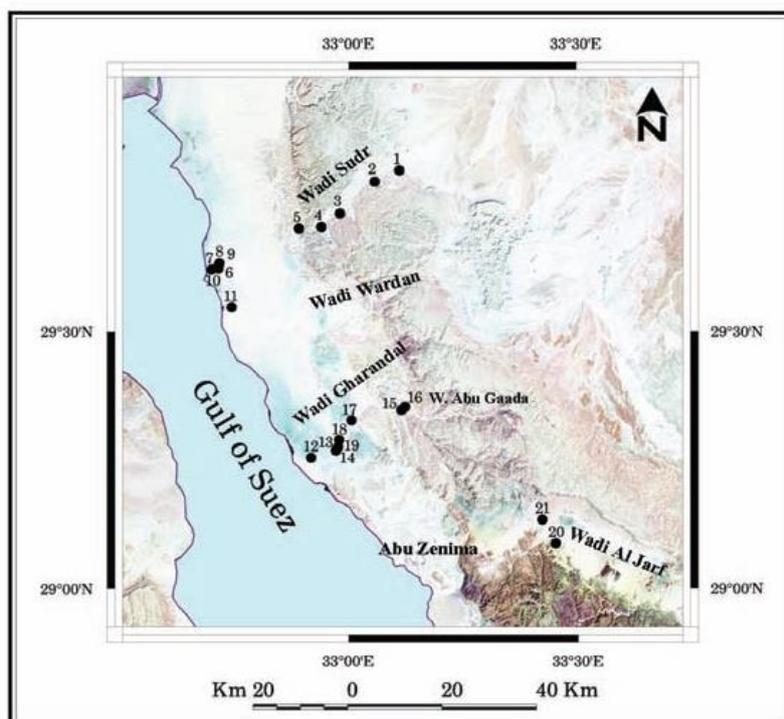


Figure (1): The geographical map of target studied area.

## RESULTS AND DISCUSSION

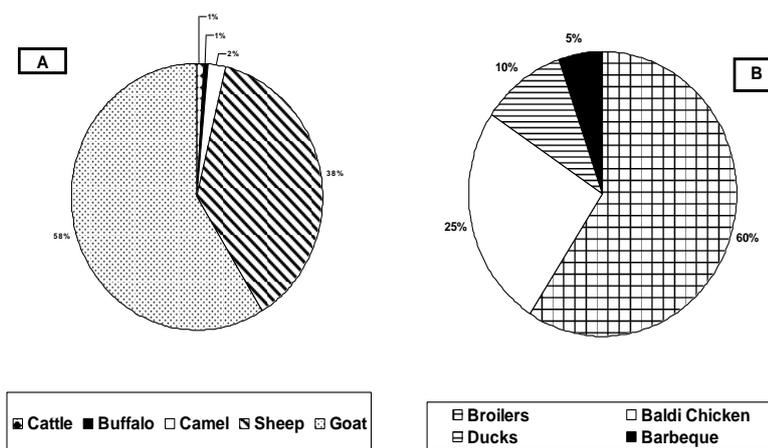
### Livestock distribution:

The total number of different livestock species within representative five locations is presented in Table (1). Results of survey study in the South Sinai showed that livestock is mainly contributed by goats (58%), followed by sheep (38%) and the least was camels (2%), cattle (1%) and buffaloes (1%). These results indicated that South Sinai is mainly a goat region. Lack of grasses in general and the limited availability of pasture during spring time on the top of hills and mountains probably contributes to be the natural preference for goats. Goats are known to have the ability to climb hills, whereas sheep are not as agile as goats in this respect. The contribution of different studied livestock species in South Sinai is illustrated graphically in Figure (2). The survey of poultry shows that one commercial farm of 2000 head of broilers was contributed 60% of poultry in the target area, followed by local (Baladi) chicken (25%), ducks (10%) and least was barbeque (5%).

Sheep and goats flocks are of small holdings. Usually sheep are noticed to be in a less condition than goats within the same flock. Goats are smaller whereas sheep are thin, long legged vary in condition from medium to poor depending on the available pasture. According to the survey, the average number of goats, contributing to the flock structure is greater than that of sheep, the ratio being 2.2:1. This ratio was relatively light than 3:1 who obtained by El-Shaer (1999), indicating that goats are go to decrease in the target area. The number of kids and lambs (mostly 5-6 months old) do not reflect the real numbers of born. For home consumption, these young animals are usually slaughtered at this age. There are one humped camel covered with long hair.

**Table (1): Total number in head of the different livestock species in recorded South Sinai region.**

Species	Location					Total
	Wadi-Sudr	Wadi-Abosoura	El-Bagha	El-Rena We El-Nhyat	Sadat	
<b>Ruminants</b>						
Cattle	30	--	--	--	--	30
Buffaloes	21	--	--	--	--	21
Camel	9	--	23	38	--	70
Sheep	313	208	227	319	210	1277
Goat	438	375	320	447	399	1979
<b>Poultry</b>						
Broilers	2000	--	--	--	--	2000
Baladi chicken	85	100	120	400	150	855
Ducks	120	40	35	--	152	347
Barbeque	150	12	13	--	--	175



**Figure (2): The relative contributions (%) of different studied ruminants (A) and poultry species in south Sinai of Egypt**

**Productive and reproductive performances:**

Productive and reproductive performances of different livestock species at different studied five locations of South Sinai are presented in Table (3). Breeding season of small ruminants usually starts in June-July period. Bucks and rams are used for the first time at an age of 18 months and kept for about five years. Males of kids and lambs are selected as future sires according to their vitality. Rams or bucks are owned they allowed to run with females all the year round. Bedouin, who do not have their own, sires so their females could be served by any sire when they graze in a communal way or they borrow one for 20-30 days; one sire could serve 30-50 females per season. Sires are given extra care during the breeding season, where corn, barley grains or flour mixed with water is offered with some hay and concentrates if possible. Lambing and kidding occur once per year, starting in December-January period. Usually, lambs and kids are born as singles. Weaning usually occurs at the age of three months. After weaning, goats are milked for 2-3 months, twice per day (in the morning and afternoon).

The average amount of goat milk is about 0.2-0.6 kg per day, while the milk from ewes is sufficient only for suckling lamb. Chemical analysis of goat milk as % was 12.89 total solid, 4.16 fat and 3.54 protein. Bedouin drink the raw goat milk and sometimes process it as a very hard type of cheese (Named Gomad). This Gomad was save up to 3-4 months, that Bedouin reused them in their foods by adding some of water on it for ten minutes.

Camels are generally reared for milk and meat production. The young male camels were fattening and slaughtered at 2-3 years old, when sold, could fetch LE 3000-3500. She-camels were used for first breeding at the age of 4 years and could be productive up to the age of 20 years. She-camels was mated every 2-3 years and could give 5 times on the average in their life time. Breeding season is during November-December period. Bedouin could

borrow a bull for 2-3 weeks to mate their own she-camels in estrus. The calving is usually occurred in the pasture. The calf is suckled for 8-9 months. She-camels are hand milked once a day on the average 4 kg. daily milk yield and sold price is LE 20. Bedouin believe that camel row milk could treat many of human diseases.

**Table (2): Productive and reproductive performance of the different livestock species at different studied five locations of South Sinai.**

Species	Location				
	Wadi-Sudr	Wadi-Abosoura	El-Bagha	El-Rena We El-Nhyat	Sadat
<b>Goats</b>					
Breeding season	June-July				
Sexual maturity age (mo):					
Male	18				
Female	12				
Buck-doe ratio	1:30	1:30	1:40	1:50	1:30
Kidding season	December-January				
Weaning age (mo)	2.5	3	3	2	ND
Milk production					
Av. DMY (kg)	0.5	0.4	0.2	0.6	0.6
TS %	13.25	13.11	14.21	11.12	12.75
Fat %	4.2	4.8	4.1	3.9	3.8
Protein %	3.5	3.9	3.6	3.4	3.3
<b>Sheep</b>					
Breeding season	June-July				
Sexual maturity age (mo):					
Male	18				
Female	12				
Ram-ewe ratio	1:40	1:40	1:40	1:50	1:30
Lambing season	December-January				
Weaning age (mo)	3	3	3	3	3
Milk production					
milk is sufficient only for lamb suckling					
<b>Camel</b>					
Breeding season	November-December				
Sexual maturity age (yr):					
Male	5				
Female	4				
TLP (yr)	20				
Calving season	December-February				
Weaning age (mo)	8-9				
Milk production:					
Av. DMY (kg)	4				
Price (kg/LE)	20				
Meat production:					
Slaughter age (yr)	2-3				
Slaughter price/h (LE)	3000-3500				

TS= total solids, DMY = Daily milk yield, yr= Year TLY= Time life productivity, h= Head, LE= Egyptian pound.

**Flock and range management:**

Flocks of goat and sheep are moved to the range at early in the morning (at sun rise) and return at sun set in winter, While in summer (June to September), the flocks are given rest from noon to 4:30 PM. Bedouins usually settle around a well, from which their animals drink once to twice per day, after returning from the range or every other day depending on the season. Usually during spring time while range plants are succulent, at different stages of maturation, Bedouins usually not offer water to their animals. Sheep and goats feed on dates dropped, where palm trees are grown, Lambs and kids usually graze separately closer to the settlement and after weaning they join their dams in the pasture. Animals was fed on some roughages (hay) and/or concentrates depending on the type of pasture they roamed after they back from the range. Animals are herded by small girls or boys. Sometimes a shepherd is hired (LE 50/day) to take animals of the whole area (Bedouin gathering) to pasture. She-camels usually left on natural pasture where they graze, on their own, in groups marked by different marks. Camels could drink every 5 days and could not drink for 2-3 months when kept on good pasture .

**Phenotype characterization:**

According to the survey study, sheep and goat contributed 96%. So, the phenotype characterization of goat and sheep are presented in Table (3). Local goats are multi colored, but mostly black (78%) in color and horned (60%) (Desert Black Goat). While, local (Baladi) sheep have mostly a white coarse wool fleece (80%). the head, legs below the knees and hocks and part of the belly are not covered with wool and they have a fat tail.

**Table 3: Phenotypic description of goats and sheep in south Sinai.**

Item	Goats		Sheep	
	No.	%	No.	%
White completely	80	4	1022	80
Black completely	1544	78	64	5
Brown completely	297	15	191	15
Grey completely	59	3	--	--

**Internal parasites:**

According to the survey done with veterinarian sector of Ras Sudr city, the infection with nematodes in both goats and sheep as internal parasites was detected. There was a higher incidence of Cestodes infection in most of areas in South Sinai, which may be due to the presence of tiny mites in the pasture. Sheep had a higher percentage of infection than goats. Generally, no Coccidia infection was observed in South Sinai. It is of interest, to note that when reviewing the general situation in South Sinai, frequency of Coccidia infection is considered to be high as compared to other parts of Egypt.

## CONCLUSION

The studied livestock production system showed that the target area was small ruminants and camels production area. Grazing area or natural vegetation was not sufficient to cover the feeding requirements of small ruminants and camels. Sheep suffer a higher percentage of infection of internal parasites compared to than goats. Feed supplementation and veterinary services probably is vital for livestock population particularly during the dry season in the target area.

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**توصيف منظومة الثروة الحيوانية فى جنوب سيناء، مصر.**

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اجريت هذه الدراسة فى منطقة جنوب سيناء التى تبعد 200 كم شمال شرق القاهرة. تمتد المنطقة محل الدراسة بين خطى عرض وطول هما 30' 5' 29 شمالا و 20' 42' 32 شرقا. وتمتد حوالى 50 كم طولاً وبعمق 20 كم. جمعت البيانات من خلال برنامج النهوض بالثروة الحيوانية بسييناء والممول من مركز بحوث الصحراء - وزارة الزراعة - مصر. اشتملت الدراسة على استمارة استبيان تعطى معلومات عن توزيع الثروة الحيوانية والانتاج والتناسل ورعاية القطعان والمرعى والتفليبات الداخلية لعدد 125 حائر (25 حائر من 5 مواقع). كانت هذه المواقع الخمسة هى وادى سدر- وادى ابو سويرة - الباغة و الرينه والنوايات والسادات. اظهرت نتائج الحصر فى مناطق محل الدراسة ان الثروة الحيوانية تتكون اساسا من الماعز (58%) ثم الاغنام (38%) ثم الجمال (2%) و الابقار (1%) واخيرا الجاموس (1%). اما نتائج حصر الدواجن فقد اظهرت انه يوجد مزرعه وحيدة من دجاج التسمين تحتوى على 200 طائر تسمين تمثل 60% من الدواجن فى منطقة الدراسة. ثم الدجاج البلدى (25%) ثم البط (10%) واخيرا الحمام (5%). متوسط اعداد الماعز فى تكون القطيع كانت اعلى من الاغنام. وكانت بنسبة 2.2 : 1. وكان متوسط انتاج لبن الماعز حوالى 0.2-0.6 كجم فى اليوم. والتحليل الكيمائى للين الماعز 12.89% للجوامد الكلية و 4.16% للدهن، 3.54% للبروتين. تستخدم الجمال فى انتاج اللحم واللبن. ويمكن استنتاج من دراسة منظومة انتاج الثروة الحيوانية ان المنطقة محل الدراسة هى لتربية المجترات الصغيرة والجمال واماكن الرعى غير كافية للاحتياجات الغذائية للمجترات الصغيرة والجمال. نسبة الاغنام المصابة بالتفليبات الداخلية اعلى من الماعز.

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