REPRODUCTIVE EFFICIENCY OF SHAMI GOATS IN SALT AFFECTED LANDS IN SOUTH SINAI

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B.Sc. Agric. Sc. (Animal Production), Al-Azhar University, ٢٠٠١
M.Sc. Agric. Sc. (Animal Physiology), Ain Shams University, ٢٠٠٧

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ABSTRACT

Ahmed Sobhy Ali Ali El-Hawy: Reproductive Efficiency of Shami Goats in Salt Affected Lands in South Sinai, Ph. D. Thesis, Department of Animal Production, Faculty of Agriculture, Ain Shams University, ٢٠١٣.

The present study aimed to investigate the impact of salinity in both feed and drinking water on the physiological responses and production efficiency of Shami goats under saline conditions of south Sinai, Egypt. Forty eight adult female Shami goats were assigned randomly into equal four groups (١٢ for each). The first group (G١) was served as control fed berseem (Trifolium alexandrnum) hay (BH) and drank fresh water (٢٤٧ ppm), the second group (G٢) fed BH hay and drank saline water (٦٠٠٠ ppm), the third group fed salt-tolerant plant (alfalfa) and drank fresh water (٢٤٧ ppm) and the fourth group fed alfalfa and drank saline water (٦٠٠٠ ppm).

Body weight changes, reproductive and productive traits were concerned. In addition, hematological parameters (PCV, Hb, RBCs, MCV, MCH, MCHC and WBCs) as well as biochemical parameters (TP,A, G, A/G ratio, AST, ALT , urea and creatinine) in addition to some serum minerals (Na, K, P, Ca, CL and Mg) were determined. Hormonal profile of E٢, P٤, T٣, T٤ and aldosterone were measured.

Results indicated that saline water has a higher total dissolved solids (٥٩٨٠ ppm) compared to tape water (٢٧٤ ppm). According to the roughage types, alfalfa contained higher crude protein, ether extract and nitrogen free extract and lower crude fiber and Ash compared to BH. Average DMI was found to be higher in alfalfa groups during early, mid, late pregnancy and lactation period compared to BH groups.

The present study showed that, conception rate was relatively better in alfalfa groups (٨٥٪) than their partners (٨٠٪) although differences were not significant. Likewise, twining rate had improved in alfalfa groups (١,٦٥ %) compared to control (١,٤٥ %) ones. Type of

roughage feeding (hay and/or alfalfa) had non- significant effect on birth weight but significant effect (P≤٠,٠٥) on weaning weight. In the same trend, type of feeding had significant (P≤٠,٠٥) effect on average daily gain of kids from birth to weaning. Milk yield negatively affected by saline water by about ٣٦٪, while type of roughages did not affect milk production.

Plasma E٢ levels were insignificantly higher during pregnancy in alfalfa groups compared to other groups due to that alfalfa contains estrogenically active substance. Our results indicated that, the diets containing salt-tolerant alfalfa did not affect the serum P٤ concentration. Tri-iodothyronine (T٣) was insignificantly higher in BH groups than the other groups while concentration of thyroxine (T٤) was significantly higher in G٣ compared to other groups. Aldosterone concentrations of does fed alfalfa were insignificantly lower than that of does fed berseem hay during pregnancy period.

Total protein (TP), albumin (A), globulin (G) and albumin / globulin ratio (A/G %) as well as ALT and AST of different experimental doe groups were within the normal ranges reported for sheep and goats. On the other hand, serum minerals were higher in alfalfa groups except phosphorus. These results indicated that, feeding salt-tolerant alfalfa and drinking saline well water resulted in insignificant increase in the serum Na and Ca levels and insignificant decrease in P concentration,

Keywords: Salt-Tolerant Plants, Saline water, Productive and Reproductive traits, Sami goats.

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Abbreviation

Abbreviation	Description
STP	Salt-tolerant plants
BH	Berseem hay
At	Atriplex
TP	Total protein
A	Albumin
G	Globulin
A/G%	Albumin/Globulin ratio
RBCs	Erythrocytes cell count
WBCs	Leukocytes cell counts
PCV	Packed cell volume
Hb	Hemoglobin
MCV	Mean corpuscular volume
MCH	Mean corpuscular hemoglobin
MCHC	Mean corpuscular hemoglobin concentration
T٣	Triiodothyronine
T٤	Thyroxine
E٢	Estradiol-١٧β
P٤	Progesterone
A.L.S.	Average litter size
ALT	Alanine transferase
AST	Aspartate transferase
Ec	Electric conductivity
TDS	Total dissolved solids
SNF	Solid not fat
TS	Total solids

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١. INTRODUCTION

Populations in the developing countries are growing so quickly that the arable lands and the available fresh water are unable to sustain them. It was estimated from the various available data that globally the world is losing at least ٣ ha of arable land every minute because of soil salinity **(Anon, ٢٠٠٦)**. In Egypt, about ٩٥٪ of the land is desert, where the soil is sandy and most of the available ground-water is too saline to raise and sustain conventional crops **(Ashour *et al.*, ١٩٩٧)**. On the other hand, shortage of feed resources is a common characteristic in arid and semi-arid regions and is considered the main constraint to improving livestock productivity. Therefore, intensive efforts have been directed to find alternative feed resources from saline-tolerant plants **(El-Shaer, ٢٠٠٦)**.

The vegetative yields of halophytes and other salt-tolerant plants species could have great potentialities particularly as sources of livestock fodders. The fodder quality of these plants depends on a combination of climatic, soil, and plant factors. However, the value of certain salt-tolerant forage crops has been recognized by their incorporation in the rangelands improvement programs in many salt-affected regions throughout the world **(Anon, ٢٠٠٩)**.

Although economic consideration of halophytes and other salt-tolerant plants is just beginning, they are receiving increased attention particularly in arid regions where salinity problems are very crucial. On the other side, the combination of salt in feed and water is of critical importance. When the high salt intake comes from feed alone, and there is an unlimited supply of freshwater, the animal can cope by increasing water intake and therefore increasing the salt excreting capacity of the