

Farmers' perception of sheep production constraints in rural Egypt

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Abstract

This study was conducted on small ruminant production constraints in rural areas of the Nile Delta in Egypt during the period from January 2021 to April 2022. A survey questionnaire was developed and pre-tested to collect quantitative data from one hundred and eight randomly selected families and interviewed separately. The household was asked to identify the most important obstacles facing the production of small ruminants and arrange them according to priority. Microsoft Excel was used to analyze the data. Descriptive statistics such as percentages and frequencies were performed. To examine the profitability of small ruminant production, the internal rate of return (IRR) was measured for each respondent based on actual field records during the period of this study. The results showed that the average productivity of sheep flocks in the Delta region was estimated at 23.80 kg; while the IRR obtained from raising sheep (14.5%) was not a good alternative to whether this money was invested in the bank at the currently available interest rate (16%). The study concluded that small ruminant projects are not economically feasible and this is related to a number of factors, in which animal feeding challenges ranked first (95%) among the problems faced by farmers in the Delta region. Disease challenges came second (62%), followed by low animal productivity (43%), high per-weaning mortality rate (36%). The expected changes in the IRR were estimated as a result of the possible deterioration of the reproductive and productive performance of sheep. A 10% decrease in the number of weaned lambs per ewe would reduce the IRR by 3.8%. Reducing the weaning weight of the lambs by 1 kg leads to a decrease in the IRR by 1.8%. A 10% worse change in feed costs would drop the IRR by 7%. Therefore, national research work supported by an effective extension program to improve small ruminant production in rural Egypt must be implemented.

. Key words: Constraints, sheep, productivity, profitability and rural Egypt.

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Introduction

Small ruminants play an important role in the livelihoods and food security of landless and smallholder farmers in developing countries because of their high fertility, short reproductive period, adaptation to harsh environments, and ability to convert low-quality feed into high-quality food products for human consumption (FAO , 2009, Kabore et al., 2011, Okereke, 2012 and Adams and Ohene-Yankeera, 2015). Despite this important role that ruminants play for the farmer, there are a set of restrictions that have a negative impact on the productive and economic efficiency of his animals, and in most cases the farmer cannot overcome them. Understanding the multiple factors that influence livestock farming is essential to working with livestock owners to improve the productivity of their animals. (Zaw Win et al., 2018). The main objective of this study is to identify obstacles facing small ruminant production in rural Egypt and explore options to overcome them. This information is useful for policy makers and regulators to design appropriate policies to improve the performance of livestock farms in Egypt.

Methodology

Description of the Study Area : The study was conducted in the Nile Delta region, which is one of the oldest intensively cultivated regions on Earth. Its length from north to south is about 160 km. They are temperate and humid areas characterized by clay soil. A mixed crop-livestock production system prevails in the study area, where Egyptian Rehmani sheep are widespread and raised under traditional management practices by most farmers in the region.

Data collection: A survey questionnaire was developed and pre-tested to collect data. One hundred and eight randomly selected households were interviewed and asked to identify the most important constraints facing the production of small ruminants and to rank them in order of priority.

Data analyses: Microsoft Excel was used to analyze the data. Descriptive statistics such as percentages and frequencies were performed. The internal rate of return (IRR) measure was used in financial analysis. It is a discount rate that makes the net present value of all cash flows equal to zero.

Results and discussion

The reproductive performance of sheep under field conditions is presented in Table 1. The results showed that the average litter size was 1.27 lambs, the weaning weight was 17.3 kg, the number of births per year was 1.2 times, and the mortality rate of lambs from birth to weaning was 7.6%. The productivity of sheep flocks expressed as total kg weaned/ewe/year was estimated at 23.8 kg. The internal rate of return from raising sheep was (14.5%) and it was not a good investment compared to the return that would be obtained if this money was invested in the bank at the currently available interest rate (16%).

Table 1: Performance of sheep flock production in the Nile Delta region. **Sheep production performance**

Particulars	Sheep performance
Litter size	1.27±0.16
Weaning weight/kg	17.30±5.11
Lambing frequency	1.18±0.85
Mortality %	7.60
Productivity*/kg	23.80
IRR	14.5

Small ruminant production constrains

The study concluded that there are a number of constraints that reduce the profitability of small ruminant production in rural Egypt (Table 2). Animal feeding challenges ranked first (95%). Disease challenges came second (62%), followed by low animal productivity (43%), and high pre-weaning mortality rate (36%).

Table2: The most important obstacles to the production of small ruminants faced by farmers in the Nile Delta.

Nature of challenge	Ranking	%
Animal feeding	1	95
Disease challenges	2	62
Lower animal productivity	3	43
Pre weaning high mortality	4	36
lack of extension services	5	25
Marketing problems	6	15

1 Multiple responses were possible, so the sum of percentages is not 100

The Food and Agriculture Organization (FAOSTAT,2018) database reported that one of the constraints facing small and large ruminants in Egypt is the lack of concentrated feed, which leads to the production of products with low nutritional value. The World Bank (2019) showed that the main problem facing sheep and goats in Egypt is feed shortage.Regarding the methods used to treat their sick animals, the current study indicated that because of their distance from the veterinary clinic, most of them are forced to practice traditional treatment methods or go to some animal health technicians for diagnosis and to give the necessary treatment.

The effect of changes in sheep production inputs on herd profitability

A 10% reduction in the number of lambs weaned per ewe would reduce the IRR by 3.8% (Table 3). A 1kg decrease in weaning weight will result in a 1.8% lower IRR. A 10% increase in feed costs will result in a 7% decrease in internal rate of return.

Table 3. Expected changes in the internal rate of return as a result of the potential deterioration in sheep production inputs.

Variables	Expected change	Change in IRR
Number of weaned lamb/ewe	10%less	-3.8%
Lambs weaning weight	1kg less	-1.8%
Feed costs	10%more	-7%

Conclusion

In fact, the main problem facing animal production in the study areas is the lack of green fodder, especially in the summer, due to the great competition between cash crops and green fodder over the cultivated areas. In addition, most farmers cannot afford concentrates due to their high prices. Therefore, national research work supported by an effective extension program must be implemented to improve small ruminant production in rural Egypt.

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