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Assessing the growth performance of livestock under two-layer livestock farming in rainfed farming system

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Abstract

System of housing plays a crucial role in small ruminant production. Rearing of ram lambs for fattening is a common practice in scarce rainfall zone of Andhra Pradesh. The usual method of rearing is extensive system and provision of night shelter with mud floor. Accumulation of ammonia resulted respiratory problems in ram lambs affecting growth rate. Elevated floor system has many advantages to eliminate the existing problems with intensive feeding. Rearing of poultry and ram lambs under one shelter with a concept of two-layer livestock system was developed. The present study was conducted to assess the growth performance of ram lambs and Aseel poultry under different systems. Higher body weight gain of Ram lambs and poultry was observed under two-layer system compared to traditional system.

Keywords: Two-layer farming system, elevated floor, growth performance

Introduction

Small ruminants play an important role in provision of sustainable livelihood for small and marginal farmers under rainfed agriculture. Rearing of ram lambs for fattening is a common practice in scarce rainfall zone of Andhra Pradesh. Farmers provide shelter made of roof with thatched material or galvanized sheets. The ram lambs laid on the mud floor throughout the night. It was observed accumulation of ammonia in the shed due to which bronchopneumonia was observed in the lambs. It is evident that Elevated sheep houses offer many advantages in tropical and subtropical areas. It allows manure, urine and debris to drop through the slatted floor, thus eliminating a major source of disease and parasitic infestation. Slatted floor is easy to clean and maintain, and the waste that falls through it is easily collected and used as manure. It allows ventilation to circulate through the slats. Lower mean maximum temperature (°C) and lower average maximum relative humidity (%) values were observed in elevated slatted floor house compared to mud floor with galvanized sheets (Kasala *et al.* 2023) ^[1].

Backyard poultry with improved poultry another common activity in scarce rainfall zone and it is a source of livelihood for rural families. Housing plays as important role in growth and performance. Cannibalism, attack of wild cats and dogs and high temperature are the major problems observed in backyard poultry rearing (Nagarjuna Reddy *et al.* 2020) ^[2]. A combination of ram lambs and backyard poultry under two-tier livestock rearing systems was developed through accommodation of ram lambs on wooden slatted floor and Aseel poultry in lower side of the house on mud floor. The present study on "Assessing the growth performance of livestock under two-layer livestock farming in rainfed farming system" with the following objectives

- To assess the growth rate in ram lambs under two tier system of housing
- To evolve the performance of poultry under two-tier livestock farming
- To analyse the economics of the two-tier livestock rearing

Materials and Methods

The study was carried out at Balapanur village of Panyam mandal during June 23 to May 24. An elevated wooden floor house was constructed with the measurements of 18 feet (length) X 12 feet (width).

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The elevated floor was constructed at 5feet height from the floor. The height of the total shed was 12feet. Entire shed was confined with 1inch mesh to protect the poultry and ram lambs from predators. Feeders and drinkers were placed in the shed. A total of forty male Nellore brown lambs of 3 months age, 12 kg body weights were divided into two groups of twenty animals each. The lambs were fed with black gram crop residue ad.lib and concentrate mixture @ 200 grams per day as per ICAR 2013 standards. The experiment was conducted for a period of 120 days until the lambs reached the age of 7-8 months. A pre-experimental period of 10 days was given to the animals to acclimatize themselves to the local environment.

A total of 60 Aseel birds of five weeks age were divided into two groups. The birds were fed with ground sorghum and maize @ 50 grams per day along with scavenging for 4-6 hours. Deworming and medication were done to the ram lambs and poultry as per recommendation and requirement.

- **Treatment group 1:** Ram lambs and poultry in the two layer system.
- **Treatment Group 2:** Rearing of ram lambs under free

range system.

Data on body weight of ram lambs and poultry were collected at monthly interval and growth rate and economics were calculated.

Results and Discussion

The data on body weights (kg) of Nellore lambs under different types of systems is presented in Table 1. The mean initial body weight before the experiment were 14.28 ± 0.29 and 15.05 ± 0.46 kg in T_1 and T_2 , respectively. The average body weights at 90days in group T_1 and T_2 were 22.83 ± 0.25 and 20.88 ± 0.51 kg, respectively. The average daily gain of Nellore brown lambs during 90days in T_1 and T_2 were 95.12 ± 1.75 and 87.22 ± 1.85 kg, respectively.

The higher body weights in the present study were recorded in lambs housed in elevated slatted floor which might be due to amelioration of thermal stress and ventilation resulted in improved feed efficiency leading to beneficial effect on lambs in terms of better body weight gains. The results are in accordance with Kasala *et al.*, 2023^[1].

Table 1: The body weights (kg) and average daily gain (gm) of Nellore lambs under different types of systems

Period (monthly interval)	Body weights		Average Daily Gain (gm)	
	Treatment 1	Treatment 2	Treatment 1	Treatment 2
Initial Body weight	$14.28 \pm 0.29^*$	15.05 ± 0.46	-	-
I	17.08 ± 0.33	17.15 ± 0.51	93.33 ± 4.75	71.23 ± 3.75
II	20.05 ± 0.32	19.10 ± 0.48	99.17 ± 4.76	65.13 ± 4.51
III	$22.83 \pm 0.25^*$	$20.88 \pm 0.51^*$	92.51 ± 5.61	59.17 ± 3.31
Mean	-	-	$95.12 \pm 1.75^*$	$87.22 \pm 1.85^*$

The data on body weights and average daily gain of Aseel birds at monthly intervals were presented in Table 2. The body weight and Average Daily Gain of Aseel birds at

150days age were 1910.2 ± 48.03 , 15.77 ± 0.53 and 1372.4 ± 28.03 , 10.49 ± 0.25 gm in T_1 and T_2 respectively.

Table 2: The body weights (kg) and average daily gain (gm) of Aseel birds under different types of systems

Period (monthly interval)	Body weights		Average Daily Gain (gm)	
	Treatment 1	Treatment 2	Treatment 1	Treatment 2
Initial Body weight	469.9 ± 18.02	428.8 ± 16.05	-	-
I	1012.5 ± 29.62	722.5 ± 20.02	18.09 ± 1.06	10.15 ± 0.47
II	1522.73 ± 37.19	1064.7 ± 24.87	17.01 ± 0.84	11.41 ± 0.60
III	1910.2 ± 48.03	1372.4 ± 28.03	12.92 ± 0.89	10.26 ± 0.71
Mean	-	-	$15.77 \pm 0.53^*$	$10.49 \pm 0.25^*$

Conclusions

The study conducted to assess the growth performance of ram lambs and Aseel poultry under two-tier livestock systems in rainfed areas indicated that improved body weight and average daily gain was high in two-layer livestock system compared to the farmer practice of free-range system. This system provides ambient environment to livestock and poultry in rainfed areas.

Conflict of Interest

Not available

Financial Support

Not available

Reference

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