

Promotion of Dual-Purpose Koekoek Chicken Breeds in Selected Districts of East Shewa Zone, Oromia, Ethiopia

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ABSTRACT: *Demonstration research was conducted at Lume, Ada'a and Akaki Districts of East Shewa zone Oromia Regional State of Ethiopia. The main objective of the study was to demonstrate koekoek chicken technology. The study went further to improve farmers' income and evaluate the perception of farmers towards the demonstrated technology in the study areas. A total thirty farmers were selected purposively with the support of District Agricultural Office Experts from the three selected Districts of East Shewa Zone based on the willingness of farmers and their poultry farming experiences. Training was provided for the selected farmers and other concerning experts on poultry feed, health and management. A total of 1687 a day old coekoek chicken breeds were distributed to the trained farmers for two consecutive years. The study found that majority 46.7% of the breeds started laying egg at earlier age (26 weeks) compared to local chicken breeds and confirmed that the dual-purpose koekoek chicken breeds are more preferred by their body weight, egg production, egg marketability and age at egg laying compared to local chicken breeds. The participants revealed that the demonstrated chicken breeds are similar to local chicken in terms of disease resistance and non-vulnerability to predators. Based on the results, the researchers recommended that wider scaling up of dual purpose koekoek chicken breeds can contribute to the household income improvement.*

KEYWORDS: Chicken, Dual purpose, East Shewa, Koekoek, Ethiopia

INTRODUCTION

Poultry production has an important economic, social and cultural benefit and plays a significant role in family nutrition in the developing countries. In most tropical countries it is based mainly on scavenging production systems, which makes substantial contributions to household food security throughout the developing world [12]. To improve production and productivity of chicken so as to raise its contribution to the societies, Ministry of Agriculture and Rural Development of

the country have been multiplied and disseminated several exotic chicken breeds to the farmers over the last 50 years in the country [10]. Koekoek chicken breed is one of the exotic breed types which are the composite of White Leghorn, Black Australorp and Bared Plymouth Rock [6], [14]. The extent of agricultural productivity differences between male and female farmers varies across and within countries in sub-Saharan Africa. Empirical evidence shows that the gender differences in agricultural productivity across sub-Saharan African countries are generally around 20 to 30%, with an average of 25% [5],[1],[3],[7].

The productivity difference between male headed households and female headed households from northern to southern Ethiopia ranges from 30 to 65%, respectively [13], [1], [2]. One of the key reasons' women farmers have lower productivity is the difference in the use of inputs such as improved seed, fertilizer, and labor, and access to other resources influencing productivity such as education, extension, and credit. However, it is important to note that de facto female headed households and de jure female headed households are not equally constrained. Indeed, FAO, notes that, while the de facto female headed households who receive remittance from their husbands can mitigate the effects of the absence of male agricultural laborers by increasing investment in farm tools and inputs, remittance does not procure labor itself of efficiency in the use of resources for production; and to measure and compare the productivity gap between male headed households and female headed households [4].

Appreciating the effort made by research institute, Yigzaw and Demeke, brought forward that Research system is currently attempting to alleviate poultry production problem by identifying, introducing and evaluating improved poultry breeds that can adapt and perform under Ethiopian situation [15]. Koekoek breed has a dual purpose, free ranging chicken with laying capabilities as well as a large body size for meat production. In Ethiopia, this breed was demonstrated in different parts of the country including Oromia Region. In these research areas Lume, Ada'a and Akaki Districts of East Shewa Oromia Region, day old dual purpose koek chicken breeds were demonstrated and verified in 2021 and gave promising result in egg production and preferred by different traits of preferences like duration of laying egg, disease resistance, length of broodiness, and non-vulnerability to predators when compared with local chicken.

Objectives

To demonstrate Dual purpose Koekoek chicken breeds in the research area.

To create demand on Dual purpose koekoek chicken breeds

To assess the farmers' perception towards the introduced chicken breeds

RESEARCH METHODOLOGY

Description of the Study Areas

The study was conducted in three selected districts of East Shewa Zone which is one of the Zones of Ethiopian Region of Oromia. East Shewa is located in the middle of Oromia, connecting the western regions to the eastern ones. This zone is bordered on the south by the West Arsi Zone, on the southwest by the Southern Nations, Nationalities and Peoples Region, on the west by South west Shewa and Sheger City, on the northwest by North Shewa, on the north by the Amhara Region, on the northeast by the Afar Region, and on the southeast by Arsi; its westernmost reach is defined by the course of the Bilate River. Ada'a, Lume and Akaki were selected for the study in collaboration with District Agriculture office and kebele development agents. Ada'a district is located about 40 km south-east of Addis Ababa, covering 1,750 km². The district lies between longitudes 38°51' to 39°04' East and latitudes 8°46' to 8°59' North covering a land area of 1750 km² to east of Addis Ababa. Most of the land (90%) is plain highland ranging between 1600 to 2000 meters above sea level. The district is characterized by sub-tropical climate and receives 860 mm rainfall/annum. In general, the main rainy season occurs between mid-June and September, followed by a dry season that might be intercepted by the short rainy season in February and March. Mean annual temperature ranges from about 8– 28°C.

Farmer Selection and Implementation Procedure

Target districts Ada'a, Akaki and Lume were selected for the study and ten farmers were selected from each District in consultation with development agents and experts from District offices of Agriculture. Farmers play an important role in the research and development process, starting from the identification of the problems, through planning activities, conducting on-farm trials, evaluating the trials, and providing feedback to the appropriate stakeholders [8] . Totally thirty farmers were selected for this research purposively based on willingness of farmers, distance from town, experience on poultry farm. Following the selection, training was provided for participants including the district experts and Development agents. According to the findings of Tadesse , women households who have access to training on poultry production are more likely benefit poultry extension service than those who have no access one [11]. Totally 1687- day old Dual purpose koekek chicken were delivered for trained farmers during the study season.

Types and Methods of Data collection and Analysis

Both quantitative and qualitative data was collected using questionnaire and observation checklist respectively. Individual household interview was employed to collect primary data while document review was carried out to obtain secondary data. The collected data was analyzed using Statical Package for Social Sciences (SPSS)version 23. Mean, percentages and frequency were used for analysis.

RESULTS AND DISCUSSIONS

Demographic Features

Majority of the respondents, 86.7% (26) were married while 13.3% (4) were single. Out of the respondents, 64.3% have primary education where as 35.7% of them have secondary and preparatory level of education. The entire participants have poultry production experiences on local chicken breeds.

Performance of Dual purpose koekoek Chicken

Koekoek chicken breeds were demonstrated on farmers' condition providing adequate training concerning the feed management, house construction and health and sanitation by poultry and extension researchers. Following the training day-old koekoek chicken breeds along with vaccination calendar delivered for target groups. These were thirty farmers. Strong follow up were undertaken so as to make the groups successful. Out of the total target farmers, 86.7% were successful where as 13.3% recorded minimum mortality rate. This implies the breeds are adaptable to the environment where the research was conducted. From demonstrated chicken, cocks were sold by leaving one cock for seven hens. The unit price of the cocks ranged from 180- 450 Ethiopian Birr (ETB) based on the time the farmers sold the chicks. The reason of selling the cocks were for income generation and feed cost reduction. Shumuye et al. indicated that the breed has good acceptance in terms of their body weight, egg weight, adaptability to wide climatic conditions, feeding behavior and their color which has a market value [9]. Target farmers responded as koekoek chicken breeds are more preferred by their body weight, egg production, egg marketability and age at egg laying compared to local chicken breeds. Table (1) indicated that majority 46.7% of the breeds started laying egg at earlier age (26 weeks) compared to local chicken breeds. The participant confirmed that koekoek chicken breeds are similar to local chicken in relation to disease resistance and escape from predatory. This implies that koekoek chicken breeds are more productive than local chicken.

Table 1. Maturity stage for egg laying

Week	Frequency	Percentage
25	12	40
26	14	46.7
27	4	13.3

Source: own survey data 2021

Farmers' Perception on Koekoek Chicken Breeds Compared to Local Breeds

The respondents were asked to compare dual- purpose koekoek chicken breeds with local chicken breeds in terms of their resistance to disease, brooding ability, scavenge ability, escape from predators, market preference, early maturity, body weight, egg production and the results indicated that koekoek chicken breeds are more preferred than local chicken breeds in all aspects. Majority

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93.3% of respondents indicated that koekoek chicken breeds started laying eggs at moderately early age. The results showed that the poorest behavior of koekoek chicken breeds was resistance to feed shortage when compared to local chicken breeds. Overall, koekoek chicken breeds are better than local chicken breeds. So, promotion and popularization of the breeds can enhance poultry production and in return can improve household income.

Table 2 Farmers' perception on koekoek chicken breeds compared to local breeds

Indicators	Level of agreement (%)		
	low	Medium	High
Diseases and parasites resistance	13.3	53.3	33.3
Escape from predators	6.7	73.3	26.7
Egg production		80	20
Chicken marketability	13.3	46.7	40
Scavenge ability	26.7	60	13.3
Feed shortage resistance	20	66.7	13.3
Early maturity		93.3	6.7

Source: own survey data 2021

CONCLUSION AND RECOMMENDATION

Poultry production has an important economic, social and cultural benefit and plays a significant role in family nutrition in the developing countries. In most tropical countries it is based mainly on scavenging production systems, which makes substantial contributions to household food security throughout the developing world. To improve production and productivity of chicken so as to raise its contribution to the societies, Ministry of Agriculture and Rural Development of the country have been multiplied and disseminated several exotic chicken breeds to the farmers over the last 50 years in the country. Debre Zeit Agricultural Research Center is currently coordinating the national poultry research and Dual purpose Koekoek chicken breeds are one from the poultry research of the Center. A number of attempts are being done by the Research System in order to improve the production and productivity of the sector so as to enhance the contribution of poultry production to the societies wellbeing. The current study found that dual purpose Koekoek chicken breeds are preferred by farmers because of their better performance and adaptability to the environment. The study recommended that popularization of the breeds can contribute to farm households' income.

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