

Demonstration of Dual Purpose Chicken “Potchefstroom Koekoek” Packages at yeki District south west Ethiopia

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ABSTRACT: *Dual-purpose poultry package demonstration a demonstration took place in Selam Kebele, Yeki districts, Sheka Zone. The aim was to demonstrate the Koekoek chicken breed and technological packages under the supervision of farmers. Participating farmers and kebele were purposefully chosen depending on their areas of interest. Training was provided in data recording, feed preparation, health care, and housing and feeding of chickens. Each farmer received twenty (20) 45-day-old chicks as part of the demonstration. According to the National Veterinary Institute's and the National Poultry Research Program's schedules, chickens were vaccinated against Marek's, Gomboro, and Newcastle diseases from the time they were one-day old. Up until week 20, the average chicken mortality rate was 10.0%. The first egg laid by chickens was discovered around 173 days; their ages range from 173 to 281 days. At 20 weeks of age, the average weight of a male chicken was 1.4 kg, while the average weight of a female chicken was 1.1 kg. 14,295 was the net benefit of raising Koekoek chickens. In summary, this breed has been accustomed to scavenging and partially scavenging producing zones inside the current system, which provide suitable shelter, sustenance, and quality health services. In comparison to native and other exotic chicken breeds, Koekoek chickens are generally in higher demand in the study area.*

KEY WORDS: demonstration, dual-purpose, koekoek chicken

INTRODUCTION

One of Ethiopia's most important livestock subsectors is poultry farming. It is significant for creating job possibilities, enhancing family nutrition, and empowering women. Due to the tiny amount of land required and the inexpensive startup and operating costs, it is an appropriate business for low-income households (FAO, 2019). Furthermore, their production contributes significantly to family nutrition in developing nations and has major positive effects on the economy, society, and culture. By 2020, it is projected that poultry will provide 40% of the world's total animal protein production, with the developing world seeing the largest rise (FAO, 2010). In Ethiopia, raising chickens is mostly done in backyards using a small number of low-yield scavenger birds. The rising demand for eggs and chicken meat in urban areas cannot be supplied by the amount of eggs and meat produced in this manner. Meat and egg prices have been rising gradually, which suggests that local demand is growing (Kumsa et al., 2008). There are various management and production techniques for raising chickens. Based on the breed of chicken, amount of input and output, mortality rate, producer type, production goal, broodiness duration, growth rate, and quantity of chickens raised.

Ethiopia's vast population of poultry and other livestock, along with the country's varied agronomic practices and agro ecological diversity, indicate well for the sector's growth, increased contribution to overall agricultural output, and improvement of the living conditions of the country's impoverished livestock keepers. The finest scavenger chicken breed is the Koekoek, which may produce 180–240 eggs annually, depending on management practices. Under farmer management, "Potchefstroom Koekoek" chickens performed better, suggesting that better husbandry techniques, such as feeding, housing, and health intervention, could boost their output Aman et al. (2016). With the aim to improve the livelihood and nourishment of the people in Yeki District, the demonstration's goal was to promote small-scale poultry production and address appropriate full packages poultry technology.

METHODOLOGY

Study Area Description

The Yeki district, 611 kilometers southwest of Addis Ababa, is where the study was carried out. Yeki district is located in southwest Ethiopia's Sheka Zone. The region experiences monthly variations in temperature between 150°C and 300°C. There are 1591 millimeters of rainfall in the area per year. The region, which is 1200 meters above sea level, is situated in South West Ethiopia, between the geographic coordinates of 703' North Longitude and 3500' East Latitude.

Sample Size and Sampling Methods

Twenty farmers were selected from Selam kebele in the Yeki district. Particular attention was paid to farmers who would construct a chicken house using locally available materials, cover the cost of all related supplies, and enter the required data in a format that has already been created. Training was given to two family members who actively participate in the housing, health, feeding, and feeds of chicken.

Chicken Distribution and Management

Teppi Agricultural Research Center kept day-old dual-purpose chickens from the Debrezeit Agricultural Research Center until they were 45 days old, at which point the farmers who were selected as participants received them. The hens received the Gumboro, Mareks, and NCD vaccinations.

Data Collection

A data collecting form was sent to each participant's household, and it was checked by the research staff at least once a week. The farmers who took part in the program were provided with various types and amounts of feed ingredients that they had collected themselves. There are a number of parameters to take into account, including body weight at 20 weeks, age at first egg, vaccinations type, mode of administration, disease symptom death and cause, socioeconomic statistics, production expenses, and revenue from sales (cocks, non-productive hens). Perceptions of the demonstration technology and packages were obtained from participant households using semi-structured interviews and field observations.

RESULTS AND DISCUSSION

Mortality

Up until week 20, the average chicken mortality rate was 10.0%. Due to differences in management (house cleaning, feeding, watering, etc.) among the participating farms, the mortality rate of chickens varied throughout farmers. Predator attacks claimed most of the chickens, with the remainder dying from illnesses, stress, mechanical damage, and unexpected deaths for unidentified reasons. The study chickens frequently experienced wrinkled, pale, and bloody diarrhea as well as blindness as disease symptoms.

Table 1. Chicken mortality up to 20 weeks

Kebeles	Number of Chicken Provided	Mortality till 20 weeks N (%)

Selam	400	40 (10.0)
Total	400	40 (10.0)

N= sampled HH; =% percent (Source: Survey result)

Age at First Laying

Each farmer's first recorded laying age was 227 days on average. There is a range of 173 to 281 days. This variety shows how participant farmers' management differs significantly from one another. Well-managed poultry by farmers allowed their birds to reach laying age early (173 days). Atsbahaet al. (2018) found a similar finding for the Mehoni districts of Southern Tigray, with an average age of 6.48 months for the first laying. This finding was less than the age at initial egg laying of the same breed reported by Aman et al. (2016) in the southern part of Ethiopia (142 days) and Belay et al. (2018) (153 days). Egg lying may occur late or early depending on a number of factors, including environmental factors, veterinary care, housing, feeding, watering, and housing.

Body Weight Gain

At 20 weeks of age, the weight of the male and female was reported at 1.4 kg and 1.1 kg, respectively. The body weight of the Koekoek breed, assessed under farmer management conditions at 20 weeks of age, demonstrated good performance. The average body weight of the birds in the current study was likewise comparable to that of Yirgu et al. (2019) at 20 weeks of age, which was 1.49 kg for males and 1.23 kg for females. The average body weight obtained in this study was less than the results published by Girma, et al. (2022), who found that at the age of 20 weeks, males weighed 2.07 kg and females 1.75 kg. This discrepancy may result from the care and feeding techniques of participant farmers.

Table 2: Record of chicken body weight at 20 weeks of age

Participants	Number of sampled chickens obtained		The Average body weight in kilograms (at 20 weeks of age)	
	Male	Female	Male	Female
1	3	3	1.36	0.86

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2	3	3	1.28	0.8
3	3	3	1.62	1.3
4	3	3	1.56	1.06
5	3	3	1.52	1.18
6	3	3	1.25	1.04
7	3	3	1.18	0.93
8	3	3	1.66	1.26
9	3	3	1.6	1.18
10	3	3	1.6	0.86
11	3	3	1.66	0.8
12	3	3	1.18	1.3
13	3	3	1.25	1.06
14	3	3	1.52	1.18
15	3	3	1.56	1.04
16	3	3	1.62	0.93
17	3	3	1.28	1.26
18	3	3	1.36	1.18
19	3	3	1.25	1.26
20	3	3	1.56	1.18
Average			1.44	1.1

Feeds and Feeding

In order to better manage feeding and watering, the majority of farmers bought feeding and watering equipment. Based on the instruction provided prior to the chicken being given, the poultry farmers themselves prepare supplemental feed from locally accessible feed sources (maize and sorghum) and limestone. Their main method of obtaining the nutrients they needed was scavenging.

Partial Budget Analysis

Better net benefits were obtained in the research region by producing improved chicken breeds with better management methods, according to the overall partial budget analysis of the Koekoek chicken demonstration in Selam kebele. 14,295 was the net benefit of raising Koekoek chickens. This shown that raising Koekoek breeds with better management techniques allows farmers to get greater benefits. As a result of this, the average net income from chicken sales was 14,295 ET. Birr; however, this income came exclusively from the sales of male chickens and non-productive hens, not from the production of eggs. Overall, the study's findings showed that raising better chicken breeds with better management techniques utilizing supplies and feed that can be found locally is profitable and helps farmers diversify their sources of income and maintain their way of life.

Table 3. Estimated earnings from the Cockok breed's sale

Participants	List of expenses			Items of income			Net income overall,	Profit
	Unit	House construction	Feed Costs	Total Variable Cost	Sale of cock	Sale of hen		
1	birr	860	600	1460	1450	720	2170	710
2	birr	700	460	1160	2100	640	2740	1580
3	birr	800	400	1200	1200	800	2000	800
4	birr	670	520	1190	860	720	1580	390
5	birr	650	590	1140	630	920	1550	410
6	birr	900	850	1750	1100	900	2000	250
7	birr	600	940	1540	1010	690	1700	160
8	birr	890	790	1680	1400	1200	2600	920
9	birr	780	900	1680	1080	1300	2380	700
10	birr	670	470	1140	780	1200	1980	840
11	birr	960	520	1480	1300	750	2050	570
12	birr	780	830	1610	1550	690	2240	630
13	birr	800	680	1480	950	1300	2250	770

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14	birr	650	440	1090	800	1300	2100	1010
15	birr	1050	470	1520	1320	940	2260	740
16	birr	940	900	1840	1740	1200	2940	1100
17	birr	890	820	1710	1530	1420	2950	1240
18	birr	760	330	1090	790	860	1650	560
19	birr	1070	500	1570	1130	755	1885	315
20	birr	900	730	1630	970	1260	2230	600
Total								14,295

Feedback from participant farmers

Individual interview responses regarding the Koekoek chicken breeds relative to other foreign breeds and local breeds were documented. The farmers that took part gave excellent feedback. The Koekoek chicken breeds were noted to be good scavengers during the data collection period, just as the indigenous breeds. Because they are highly scavengers without being confined to a house, the chickens are a suitable breed for a free scavenging habitat, especially for rural residences. Some of the hens exhibit signs of broody behavior, and they are more resistant to disease than other exotic chicken varieties that were previously in circulation. They added that other disadvantages included low egg production rates, feathers that are not the best color for the market, high feed consumption, and delayed egg laying.



Fig 1. Chicken rearing practices under farmer supervision

CONCLUSION AND RECOMMENDATION

The current demonstration's results showed that "Potchefstroom Koekoek" coped well under farmer management; this implies that better feeding, housing, and health care could increase production. Farmers know that this breed is capable of producing more if given the right nutrition and careful attention, but most of them chose not to use the recommended management practices. However, the overall productivity of the birds raised under farmer management scenarios was lower than that of birds raised under intensive management systems. However, the recent demonstration made clear how important it is for farmers in those areas to continue producing this kind of useful chicken. Farmers' views and observations proved that breed adaptability was unquestionable. Considering the aforementioned, training programs on farmer management production systems for farmers and extension personnel ought to be designed with a focus on disease prevention, better housing, and enough nutrition. Thus, there were some notable differences in the mortality, weight at 20 weeks, and age at initial egg laying when compared to local breeds of chickens. We suggest that the performance and adaptability of Koekoek chicken in Yeki District were excellent, based on the results of the current study. As a result, farmers may widely produce this breed of chicken. Therefore, in order to facilitate chick accessibility and production processes in the study area, responsible government and private organizations should give the development of a chicken incubation and multiplication center their full attention.

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