

Research article

Performance Evaluation of Local Chicken at Enebsie Sar Midir Woreda, Eastern Gojjam, Ethiopia

Melkamu Bezabih Yitbarek¹ and Andargie Zewudu²

¹Department of Animal Science, Debre Markos University, Ethiopia, Mobile +251911054673, fax +251587711764, E-mail: melkamu_bezabih@yahoo.com

²Enebsie Sar Midir Woreda Agricultural office, Eastern Gojjam zone, Amhara Region, Ethiopia

Abstract

This study was carried out to evaluate the performance of local chickens in terms of average egg production per annum, hatchability percentage, age at first laying, age of slaughtering, age at marketing, number of egg set to a hen for hatching, brooding length, clutch size and amount of feed supplemented per head (g) under farmers management condition in three representative peasant associations from 180 households (60 each). The data was collected by using questionnaires, observation and interviews. As the study revealed that average annual egg production was 65 per year per hen, age at first laying was 7 months, age of slaughtering was 5 months, numbers of eggs set was 13 per hen, number of chicks hatched was 9, brooding length was 3 months, number of eggs per clutch was 17, clutch size was 4 per year and amount of feed supplemented per day per chicken was 45gm. The performance of local chicken under farmer's management condition was low. Therefore this local chickens should be crossed with pure exotic for maximizing the production. In addition to this, the overall husbandry and/or management activities with intensive system should be adapted to farmers in order to improve performance of chicken and the living standard of households in a better way condition. Copyright © www.acascipub.com, all rights reserved.

Key words: Local chickens, husbandry practice, performance evaluation

INTRODUCTION

According to the CAS (2007) survey, the chicken population in Ethiopia is estimated to be 33.9 million head and 10.3 million are in Amhara region or accounts about 30.5% from national population. Also chicken population in Enebsie Sar Mider Woreda is 25670 and traditional chicken rearing is practiced by virtually every family in rural Ethiopia, indicating that chickens are affordable source of animal protein (Demeke, 2003).

Poultry production is practiced predominantly by the rural small holder's farmers using local stock under scavenging management. The output from traditional production sector is low compared to their contribution to the local chicken population. The average annual egg production ranges from 34 to 80 eggs per hen with a very small size of about 45 gram egg (Mwalusanya, et al., 2002), long age of sexual maturity, long brooding length and small egg size etc. moreover, since farmers in the woreda who are rearing local chickens as a secondary income generating sources, they do not give much more emphasis for their chickens. The major reason for such a low productivity, low rate of

growth and delayed maturity for reproduction and production are low standards of management, health care and feeding. Even though productivity of local chicken is very poor, they are important to withstand certain harsh environmental conditions and can perform better under poor management than cross and exotic breeds. Therefore, this study was intended to evaluate the performance of local chicken under farmers' level of management condition in Enebsie Sar Midir Woreda.

MATERIALS AND METHODS

Description of the study area

The study was conducted in three kebeles selected from Enebsie Sar Midir woreda (woin wuha, Derj, and Gunaguna). The woreda is located 365 km North-west of Addis Ababa, 180 km to the East of Bahir Dar and 197 km to the East of Debere Markos. The total area of the woreda is 106764 hectare. Its agroclimatic zone is 53% Lowland, 23% Midland and 24% High land. The population of the woreda is 140047; male 69688 Female 70359. The annual rainfall is 900mm-1200mm and has an altitude range from 1900m-3000m above sea level. The temperature range is 10.5°C to 26°C. The major local livestock resources are cattle (61709), goat (34195), sheep (20777), chicken (25670), hive (5742), donkey (11954), Mule (133), and horse (115) (woreda Agri. Office, 2002 E.C).

Sampling Techniques

Three representative peasant associations were selected purposively. From these peasant associations one hundred eighty households were selected by using pervasive sampling techniques in collaboration with the woreda agricultural office which have a potential in rearing village chickens. Mostly educated male and female farmers were participated to fill the prepared semi structured questionnaires.

Methods of data collection

The Primary quantitative and qualitative data was collected by using semi structured questionnaires. Interviews were used to check whether the data that are collected is accurate or not. A transect walk in sixty households from each peasant association was made for field observation and seen the farmers' management practices. Secondary data which were assumed to supplement the primary data were obtained from the woreda agricultural office and kebelles Assistance development agent's office report and documents.

Statistical Analysis

Both quantitative and qualitative data was analysed by using SPSS statistical software. From this software, descriptive statistics was used to observe frequency, percentage and mean

RESULT AND DISCUSSION

Breeds of local chicken available in the woreda is presented in table 1

Table-1: Distribution of chicken breeds in Enebsie Sar Midir woreda.

Breeds	Numbers	%
Local	22266	86.74
Cross	2269	8.84
Local x White Leg Horn(WLH)	1513	66.68
Local x Rhode Island Red (RIR)	756	33.32
Exotic	1135	4.42
Rhode Island Red (RIR)	757	66.69
White Leg Horn(WLH)	378	33.31
Total	25670	100

As indicated in table-1; most of the poultry breeds that are reared by the farmers in the woreda are local chickens (86.74%) and the rest 13.26% are both the cross of local Vs exotic of the two breeds and pure exotic (white leg horn and Rhod Island Red) from the total population (25670 birds). Therefore most of the farmers in the woreda is being rearing local chickens. Village chickens are also owned by the farmers in respect to their wealth status; 58.33% are owned by poor people, 28.34% by Medium and 13.33% by rich people.

In the woreda the animal ownership for sale and house hold consumption is categorized to family members. That is 83.33% by male (husband), 15% by house wife, and 1.66% by son and for daughter is made decision for sale and consumption. According to the respondents, chickens to be rear are obtained from purchase (48.33%), from hatched (50%) and inherited (1.66%).

Reproductive Performance

Local chicken reproductive performance is indicated in Table 2.

Table-2: Local chicken Reproductive performance in nebsie Sar Midir Woreda

No.	Parameters	Peasant Associations					
		Woluha	Derj	Gunaguna	Total	Mean	STDEV
1	Age at 1 st laying (month)	6	8	7	21	7	1
2	Number of eggs per year	57	67	72	196	65	7.64
3	Number of eggs per clutch	15	17	18	50	17	1.53
4	Clutch size	4	4	4	12	4	0
5	No of eggs set per hen	10	14	16	40	13	3.06
6	Chicks hatched from set eggs (No)	6	8	10	24	8	2
7	Hatchability (in %)	60	57	62	179	59.6	2.52
8	Brooding length (month)	3.5	2.5	4.5	10.	3.5	1
9	Age of cockerels for breeding (Month)	4	5	5	14	4.7	0.58

Sexual Maturity

Indigenous village birds in the woreda attain their sexual maturity at an average of seven months (table.2). This result is in line with FAO (2004) report. This may be due to both genetic and environmental factors that influences sexual maturity for long period to attain. A hen incubates her eggs for three weeks and rears the chicks for 12.5 weeks., then each reproductive cycle lasts for about 17 weeks, (in table-2). This result is disagree with FAO (2004) report in that a hen rears her chicks for twelve weeks, then each reproductive cycle lasts for 17 weeks.

Survival Rate

The mortality from hatching to maturity is higher under a weeks (63%) and 1-5 weeks of age (30%) than 6-8 weeks of age (7%). This is mostly caused by disease (45%), malnutrition (21.66%) and predators (33.33%). From this it is suggested that as the age of chicks increase their adaptability and capability to their environment and resistance to disease a respectively so that they can scope from predators easily. This result is in line with Solomon (2003) report; local chickens are superior health status and survival rate, well adapted to the local environment. Though this is true, there is a great loss (mortality) yet.

Egg production

As indicated in Table-2, An average of 65 eggs are laid per hen per year. This is disagree with Tadelle (1996) and FAO (2004) report, the average egg production of native chicken was 30-60 and 34 eggs per year under village condition annually. The reason for this variation is that the management practices of the farmers in the woreda may be somewhat improved from time to time by means of extension services provided by Assistant development agents.

Management of Village Chickens

Supplementary feed of chicken

The supplementary feed of chicken is presented in table 3

Table-3: Main Supplementary feed and amount of supplementary in Enebsie Woreda

Feed type supplemented	Kebele					
	Wolwoha	Derj	Gunaguna	Total	Mean	STDEV
Maize (kg)	0.35	0.55	0.45	0.135	0.45	0.10
Sorghum (kg)	0	0		0	0	0
Wheat (kg)	0	0	0	0	0	0

In village chickens production system, the major proportion of the feed is obtained through scavenging. The main component of the feed source base was insects, worms, seeds, plants materials, etc with very small amount of grain and table left over supplements from the house hold, small holders use extensive system of production. Energy supplements such as maize, sorghum and wheat are offered once a day early in the morning. An average of 0.45 kg is given per day per hen as a supplementary in twice of a day (Table- 3). This result is disagree with Sonaiya et al (1999) report, 0.35 kg grain supplement is given to local chickens per day per hen in the free range system. The reason is maybe due to better feed availability and farmer's adoption in feeding of their chickens in the woreda. This may provide a little beet better egg and meat production to farmers.

Management system of Chickens in the woreda

The type of management system in the woreda is commonly extensive (71.66%). Semi-intensive (23-33%) and intensive (5%). Chickens are kept by the family members for their wellbeing. Those who are responsible for care of chickens take a share of male (husband) 10%, household wife 65% and son and daughter take a share of 11.66% and 13.33% respectively Mostly age ranges 36 to 60 years and take care for the chickens.

Health disease control and mortality

In this study, it is found that the most common diseases of village chickens that frequently occurred in the worda. These are new castel disease (NCD), coccidiosis and salmonllosis are among the many. These diseases can be transmitted by contact between flocks of different households and in stations, entrusting sales and purchase etc. in the first month of offer hatching, which mortality rate is very high, accounts 63%. This result is disagree with Tadellet al; (2003), chick mortality rate is 49% in the first two months offer hatching with expected increase when disease outbreak in the area. the reasons is maybe due to poor management (like housing, low heath care and poor sanitation both nests and back yard where they are scavenging on, poor feed and feeding practices of farmers.

Housing

Housing of local chickens in the woreda is not well adopted /common. Farmers use pertch or floor for their chickens to roost to night. About 71.66% roost inside the family dwelling at night and the rest 28.34% have constructed a small enclosure outside their house. This result is disagree with Tadellet (1996) report, 88.5% roost inside the family dewelling at night and the rest 11.5% have constructed a small enclosure outside the house. The reason may be due to the farmer's awareness in extension services in the management and /or/ husbandry activities by the farmers is carried out in some extent. But it does not mean that the intended result is obtained.

Chicken and chicken products utilization

In this study, it is found that average number of eggs utilized by the house holds for consumption is 15.7% for sale 22.2%, for hatching 62.1% and production of birds for household consumption 11.1%, for role 81% and for

replacement of stock 7.8%. This result is disagree with Tadelles (1996) report, the main objective of keeping poultry is for the production of eggs for hatching 51.8%, for sale 22.6%, for home consumption 20.2% and production of birds for sale 26.6%, sacrifice for healing ceremonies 25%, replacement 20.3% and for home consumption 19.5%. The reason may be due to; now a days there exists high demand for egg and poultry meat. Hence become encouraging the poultry keepers to give more emphasis for their village chicken and hatching many numbers of chicks as well as large quantities of eggs to produce so that satisfying the high demanded market in egg and chicken meat there by the farmers are benefited with profit from their production.

Marketing and Marketing age of local chicken in Enbsie Sar Midr Woreda

Marketing .marketing age and price of eggs are presented in table 4

Table-4: marketing of chicken and egg of local birds in Enebsie Sar Midr Woreda

Feed type supplemented	Kebele					
	Wolwoha	Derj	Gunaguna	Total	Mean	STDEV
Male (month)	5	6	5	16	5.3	1.55
Female (month)	5.8	5.5	5	16.3	5.4	0.40
Sale of an egg (Br.)	0.95	0.99	0.98	2.92	0.97	0.021
Price of cockerels (Br.)	25.6	25	26.9	77.5	25.83	0.97
Price of a bullet (Br.)	28.8	23.7	32.08	84.58	28.19	4.22

As indicated in the above table, the marketing age of local chicken is 5.3 months for male and 5.4 months for female and sale of an egg is average birr 0.97, price of cockerels is birr 25.83 and pullet birr 28.19 per bird in average. The marketing system is informal and poorly developed due to poor marketing information and poorly developed due to poor marketing information at the farmer's level and inadequate transportation facilities. This result is in line with Brancaert (2000) report; the marketing system in most developed as most consumers with greater purchasing power live in and around cities which is far from producers.

Conclusion

The result of this study indicates that local chickens are low in production. Feeding, health care, breeding, selection of highly productive and reproductive traits, housing, etc... is very poor. Extensive chicken rearing system is common in the woreda. Chickens have a chance of attacking by predators and transmittable infectious diseases and other abnormalities. Local chickens have long age of sexual maturity and long brooding length. The average annual egg production as well as total egg production throughout the life of the birds (hens) is very low. This study indicated that there are factors that constrain the production performance of local chickens. These are both natural and human made, like management problems which are grouped under human made, where as genetic factors like breed type (native-chicken) grouped under natural factors. Also awareness of the farmers who rear local chickens is not well adopted in the semi-intensive and intensive system of production.

Recommendation

Based on the result of this finding, the following recommendations have been made.

- Giving great attention or emphasis for the health care , feed and feeding and intensive system of production so that local birds give better egg and meat yield both in quantity and quality.
- Selection of highly productive local chickens and adopt cross breed (local with white leg horn or Rhod Island Red) and exotic of the two with good management/husbandry system.
- Aware farmers in a continuous manner to adopt the intensive and semi-intensive management system and give proper extension service to transform the existing production system to the better and more intensive system of production that provides good quantity and quality of chicken and chicken products.

References

- [1] Branckaert (2000). Indigenous chickens in Indonesia: population and production characteristics in five villages in west Java. Bogor, Indonesia, Research Institute for Animal production, Report No. 2;3-8
- [2] Demeke, 2003. Traditional chicken production , 2nd edition, Netherlands pp35.
- [3] FAO, 2004, Small-scale poultry production: Animal production and Health technical shed No 1, Rome.
- [4] Mwalusanya, Katule, Mutayoba, Mtambo, Olsen, Minga, 2002. Productivity of local chicken under village management conditions; Tropical Animal health and production, Vol 34, NoS, PP 405-416.
- [5] Solomon, 2003. Growth performance and survival of local and white leg horn chicken under scavenging and intensive system of management in Ethiopia. Jimma college of Agriculture, Jimma, Ethiopia.
- [6] Sonaiya E B, Branckaert R D S and Guèye E. F., (1999). Research and Development Options for Family Poultry. First INFPD/FAO Electronic Conference on Family Poultry: 7 December 1998. <http://www.fao.org/ag/aga/agap/lpa/fampo1/Intropap.htm> 5 March 1999.
- [7] Tadelle D., (1996). Studies on Village Poultry Production Systems in the Central Highlands of Ethiopia. M.Sc Thesis, Swedish University of Agricultural Science. Pp, 70.
- [8] Tadelle D.; Nigusie D.; Alemu Y and K. J. Peters, (2003). The Feed Resource Base and Its Potentials for Increased Poultry Production in Ethiopia. World's Poultry Science Journal (2002), 58: 77-87 Cambridge University Press