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Review Article

Husbandry Practice and Reproductive Performance of Indigenous Chicken Ecotype in Awi Zone, Amhara Regional State, Ethiopia

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ABSTRACT

The study was conducted to generate comprehensive information on Husbandry practice and Reproductive performance of indigenous chicken ecotype in Awi zone in Adiss-kidame town in Fagita district of Awi Zone, Amahara Regional State, Ethiopia. The study was performed based on household survey and observation. For household survey, three kebeles were selected and a total of 60 households (20 from each kebeles) were involved. Most of the household in the study area was practiced backyard chicken production systems (73.3%). The major objective of raising chicken in the study area was egg production (46.7%) and income generation (46.7%). The majority of the households in the study area were practiced semi-extensive management systems (60%). The entire households in the study area were providing supplementary feed and water for their chicken. The age of cockerels at first mating and pullets at first egg laying were 5.21 months and 5.77 months, respectively. The entire households in the study area were hatching the egg by using natural incubation hence broody hens used as a natural incubation. This finding was put baseline for understanding about Husbandry practice and Reproductive performance of indigenous chicken ecotype serve as a base for designing a sustainable chicken production strategies in the study area.

Keywords: Indigenous chicken; Management; Performance

INTRODUCTION

Poultry production system in Ethiopia is indigenous and small flock, minimal input and unorganized marketing system [1]. Ethiopia is believed to have the largest livestock population. According to [2] there are about 56.53 million chickens in Ethiopia, comprising of 94.31, 3.21 and 2.49 % of indigenous, hybrid and exotic types, respectively. In Ethiopia, most chicken populations are non-descriptive type. However, they showed a great variation in their production performance, which might be due to their wide spread distribution and adaptive response to different ecological conditions [3-6].

In Ethiopia, most chicken populations are non-descriptive type. However, they showed a great variation in their production performance, which might be due to their wide spread distribution and adaptive response to different ecological conditions [6]. Indigenous chicken (95.86 %) in Ethiopia is found in huge number distributed across different agro-ecological zones [7] under a traditional family-based scavenging management system. This indicates that they are highly important in farm animals kept as a good source of animal protein and income to most of the rural populations.

Given the highest potential for poultry production and presence of diverse ecotypes, is imperative to conduct comprehensive studies to characterize morphological, functional, and adaptive traits of local chickens, identifying farmers breeding practices, and trait preference of local chicken producers in the study districts. Therefore, the objective of this study was to designed with manage mental system and reproductive performance of indigenous chicken Ecotypes in Awi Zone Ethiopia.

MATERIALS AND METHODS

Description of the study is Fagita district is located in East-South to Awi Zone, Amahara Regional State, Ethiopia. Adiss-kidame town in Fagita district is bordered on the south by Banja Shekudad, on the west by Guangua, on the north by Dangila, and on the east by the Mirab Gojjam Zone. Towns in Faggeta

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Lekoma include Addis Kidame town in Fagita district. The district is situated between 11020' North latitude and 36045' East longitude.

Data collection methods

Questionnaire

Both primary and secondary sources of data were used for the study. To collect the primary data, a semi-structured questionnaire was designed. The questionnaire was pre-tested before administration and some re-arrangement, reframing and correcting in accordance with respondent perception was done. The questionnaire was administered to the selected households or representatives by a team of researchers.

Secondary Data Sources

The secondary data was collected from the study district office of livestock and fishery resources to complement the production system and agro-ecology along with climate, vegetation cover, topography, human population and livestock population.

Sampling method

Sampling technique

In order to conduct this study purposive and random sampling techniques was used. Purposive sampling method was used to select kebeles. Random sampling method was employed to select the study sample unit (Households) which was expected the representative at the whole population in the study area.

Sampling size

From the total kebeles (22) found in the study area, three (3) kebeles were purposively selected. The selected Kebeles were more experienced in backyard chicken production and nearby to collect the data easily. Hence, by using random sampling technique 48 Households (16 HHs from each kebeles) were selected for interview.

Data Management and Statistical Data Analysis

The data collected from each study site was checked for any error and corrected during the study period, coded and entered into computer for further analysis.

Questionnaire data

Data collected through questionnaire was described by descriptive statistics using Statistical Package for Social Sciences (SPSS version 20.0.2013).

RESULTS AND DISCUSSION

Feed Resources and Feeding Management

The major feeds and feeding practices of chickens in the study area as indicated by the respondents were reported. The results showed that 85% of the Households feed their chicken with some kind of feed in addition to scavenging. The result was in agreement with the report of [4] who reported that 99.3% of chicken owners in North West Amhara Region provided supplementary feeds to village birds. According to the results of this study, 15% were only scavenging around the backyard. In the current study farmers practiced supplementary feeding system use homegrown crops such as 41.18%, 15.68%, 11.76%, 13.72% and 17.66%, like wheat, maize, barely, sorghum and mixture with leftovers.

The type of supplemental feeds varied based on the type of agricultural practice. The frequency of feeding showed that the majority of the respondents (60.78%) was Feed chicken three times a day (morning, afternoon and evening), 21.57% and 17.65% were feed once and twice (morning and afternoon) respectively. The respondent farmers further reported that chicken were fed on ground (54.90%), clay pot (21.57%), wooden trough (17.65%) and plastic (5.88%) containers.

Watering practice management

The result on provision of water to the chicken, based on respondent farmer's responses, was presented. The results showed that 93.33% of respondents provide water their chicken. This result was related with [8] who reported that 100% of chicken owners were provided water for their chicken.

The frequencies of watering showed that chicken were provided water ad-libitum (free aces), three times/day, Twice/day and once/day by 85.71%, 8.93%, 3.57% and 1.79% (overall figures) of respondent farmers in the study area. The major sources of household water were river, dam (pond), hand pump and spring water this are (83.33%, 3.33% and 6.66/ 6.66%, respectively). In contrast with [9] showed that well water (31.7%), tap water (29.1%), river (27.3%), tap water and well water (6.2%), river and tap water (4.2%) as well as river and well water (1.6%) sources of water in western Tigray.

Showed that respondents use watering troughs clay pot (35.18%), wooden (31.48%), plastic (16.67%), stone (9.26%) and metallic (7.40%) of farmers respectively. This was in line with the report of [10] in central Tigray [11] in Southern Ethiopia and [5] in Bure district.

Housing management systems

As illustrated in the majority of the households in the study area were practiced semi-extensive management systems (60%). Based on the information collected from the respondents most of the households in the study area were have a separate chicken house (86.7%). Similarly, [12] reported that, in south Wollo, Ethiopia, about 41.3 percent of the households shared the same room followed by a separate quarter in the same roof (37.5 percent) and separately constructed houses 92.2 percent). According to the information obtained during the survey, the popular types of housing system in the study area were semi-extensive or restricted range (63.3%). In addition, majority of respondent households (26.66%) were cleaned the poultry house daily.

Poultry health management

The sources of diseases, Parasite and control measures, in the study areas was presented. According to respondents in the study area, the incoming flock (either neighbor's flock or immigrants) was the major source of chicken infection (53.33%)

in the study area [6] also reported that the major cause of death in local chicken was seasonal outbreak of NCD. In addition, respondents from Quara discovered that the main sources of chicken disease were incoming and own flocks, respectively.

The majority of respondents 78.33%) knew about parasitic infestation in Adiss kidame town in fagita district. The indigenous practices, *via*: Smoking, Changing place, No intervention and spring medicine, were used to control parasitic infestation in the study areas. The overall results showed that 65.96%, 14.89%, 6.38% and 12.76% of respondents practiced Smoking, Changing place, spring medicine and No intervention, respectively, for controlling parasitic infestation.

Occurrence of predator

The occurrence of predators in the study areas was presented in the majority proportion (98.33%) of respondents reported that predators were occurring in the study areas. This result was in line with report of [4] that predation was one of the major constraints in village chicken production in northwest Ethiopia. The most common predators mentioned by respondents were Vulture, wild Cat, Dog, Snake, Bee bitt and "sulsuly/fotte" (locally available predators of wild animal in this area).

Local name sulsuly/fotte were wild animal predators common in all areas that attacks poultry in rainy seasons for the standing crops in the field were providing camouflage to these predators and poultry were becoming easy target due to this. This result was in line with report of [4] that predation is one of the major constraints in village chicken production in northwest Ethiopia. The average mean types of predators were 28.81% Vulture, 16.95% Cat and Dogs, 0% Snake,15.26% and Bee bitt and 22.03% Sulsuly/fotte/ of respondents were respond in the study areas respectively. This result was in agreement with [13] reported that predators such as birds of prey (locally known as "Culullee") (34%), cats and dogs (16.3%) and wild animals (15%) were identified as the major causes of village poultry in rift valley of Oromia, Ethiopia.

Chicken production systems

As illustrated in the entire households in the study area were kept exotic chicken ecotype. The major sources of that chicken were Purchased from unknown sources (60%) followed by Gift from governments (33.3%). Based on the information obtained from the respondents, the major objective of raising chicken in the study area was egg production (46.7%) and income generation (46.7%). Similary, [3] reported that, village households in tropics like Ethiopia keep their chicken for purposes other than for reproduction, sale and consumptions ,in particular for their socio-religious functions at home, gifts ,for ceremonies and chicken are given as or received to show or to accept a good relationship or to say thanks for favor or help.

According to the information obtained during the survey, the main sources of local roosters in Adiss kidame town (Fagita district) was hatched at the house/flock (63.3%) followed by purchased from unknown sources (30%). According to the information obtained from the respondents, most of the household in the study area was practiced backyard chicken production systems (73.3%). Similarly [14] reported that, the village chicken production system in Ethiopia followed the primitive type with 5-20 birds per households, simple rearing in backyard with inadequate housing, feeding and health care. Such production systems may result in slow growing, and poor layers of small sized eggs. Village chickens however are ideal mothers, good sitters, hatch their own eggs, excellent foragers and have immunities to resist common poultry diseases.

Flock structure and ownership pattern of chicken

The proportion of different class of animals reflects the management decision of the producers, which in turn is determined by their production objective [15]. As illustrated in the average number of chicken per household (Mean ± SE) was 17.83 ± 1.91. Flock structure (Mean ± SE) of chicken in the study area is presented. In this study as compared to the other age groups layers made a major share (6.93 ± 1.22) in study district followed by pullets (5.03 ± 0.68).

Reproductive performance of local chicken

The least square mean of various production and reproduction traits (mean age at first service for cockerel in month, age at first egg laying of hen in month, number of clutch per year of local chicken, number of egg per clutch of local chicken, length of clutch in days for local chicken, total eggs per year of local chicken, interval between two consecutive broody periods, number of egg incubate for hatching per year and number of egg set to broody hen) of local chicken populations in the study area was presented.

The age at first service of cockerels was 5.220.03 months in fagita district. Similarly the age at first laying of egg in hen were 5.740.05 in the study area. This result was in line with the report of [16] overall mean age at first mating of male chickens and the age at first egg of female chickens were 5.29 and 5.96 months in central Tigray And smaller than with the report of [17] in which mean age of sexual maturity of indigenous chicken in Fogera district was 23.48 ± 0.1 and 23.6 ± 0.11 weeks for male and female respectively. The overall mean numbers of clutches per hen per year of local chicken ecotypes were 4.270.04 in the study area. This result was in line with the findings of [18] who reported that the overall mean number of clutches per hen per year of local chicken ecotypes in western zone of Tigray was 4.42. The overall mean number of egg per clutch of local chicken were (14.380.25) the mean of the study area.

The present result showed in a number of eggs per clutch was smaller as compared with findings of [16] who reported 15.20 eggs/clutch in central Tigray [3] who reported 17.7 eggs/clutch in five agro-ecology zones of Ethiopia and [17] reported 16.6 eggs/clutch in Fogera district. However, present results were higher than those reported by [19] and [6] in which the mean egg number laid per clutch per hen of local chickens in Gomma wereda and North Wollo Zone were 12.92 and 12.64, respectively.

The overall mean length of clutch in days for cycle of local chicken was 14.40 ± 0.24 days, and the overall total number of

eggs per year per hen (62.21 ± 0.99) in the study area. This result was similar with reports of [5] and [11] who reported that the mean annual egg yield per hen of indigenous chickens in Bure district and Wonsho district were 60 eggs and 62.95 eggs. The number of eggs set to broody hen was 12.50 ± 0.3 of overall means. This result was higher than [16] who reported that the number of eggs incubated in midland and highland agro-ecologies were 11.4 and 11.4, respectively in central Tigray.

CONCLUSION AND RECOMMENDATION

The agricultural sector is a corner stone of the economic and social life of the people since they are used for generation of extra cash incomes, provision of animal protein and religious/ cultural considerations of the people. Indigenous breeds of chickens are playing an important role in rural economies in most of the developing (underdeveloped) countries especially in Ethiopia. Since local chickens have good potential to adapt in different agro-ecology, Variations of disease and water shortage of the environments. They play a major role for the rural poor and marginalized section of the people with respect to their subsidiary income and provide them with nutritious of chicken egg and meat for their own consumption. Generally, chicken rearing system in the study area was mixed with crop- livestock production system using extensive management of indigenous chickens. The presences of various predators and diseases prevalence were two major economic important of chicken rearing constraints. According to the above discussion and conclusion the following recommendations are developed.

i. Farmers should be creating of awareness about chicken management system for the improvement of chicken products.

ii. Research and developmental organizations should give attention to village poultry sector and its development.

iii. The main problem for chicken production in the study area was reported to be disease. Therefore, efforts should be implemented to identify major chicken diseases, plan appropriate health control measures and introduce fast and efficient veterinary service.

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