

Challenges and Opportunities of Village Poultry Production in Arbegona Woreda, Sidama Zone, Southern Ethiopia

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Abstract

The study was conducted to identify the challenges and opportunities of village poultry production in Arbegona Woreda, Sidama Zone. Both primary data via structured questionnaire and secondary data from different relevant offices, published and unpublished sources were gathered using 120 statistically selected households. To enrich the data, field observations and group discussions were also made. The result of the study indicated that the dominant flock structure in the study area is laying hens (42.4%) followed by pullets (19.1%). Hatching egg naturally at home (50%) and purchasing from market (45%) are the main flock sources of poultry as responded by the households. The result also indicated that 95% of the breeds in the study area are local breeds indicating use of hybrid and exotic breeds is less common probably because of lack of awareness. The main purpose of keeping poultry and egg is for selling (50% & 40% respectively) followed by egg for incubation (31.7%) and birds for reproduction (30%). Majority of the farmers (78.3%) use traditional medicine to treat chickens using local herbs when the flock get diseased. Birds reach first egg laying at 7 month of age as 60% of the respondents reported. Majority of the respondents identified predator with an index value of 0.218 as their major constraint affecting poultry productivity followed by flock mortality, disease and low production with the index values of 0.178, 0.158 and 0.141 respectively. The major opportunities of village chicken production in the study area were market availability followed by feed access, credit service and extension according to their order of importance.

Keywords: Arbegona Woreda, Challenges, Opportunities, Predator, Respondents

Introduction

Poultry farming is widely practiced in Africa. Almost every farmstead keeps poultry for consumption, cash income, religious and cultural considerations (Dwingeretal, 2003). Poultry production has an important socio-economic role in developing countries (Alders, 2004).

Village poultry is affordable source of animal protein and sources of family income. Poultry is a source of self-reliance for women since, poultry and egg sales are decided by women (Aklilu *et al.*, 2007) both of which provide women with an immediate income to meet household expenses and sources of food. Household poultry require limited space, feed and capital investment compared to other domestic animals kept in rural Ethiopia.

Poultry production system in Ethiopia is indigenous and an integral part of farming system and predominantly prevailing in the country and it is characterized by small flock, minimal input and unorganized marketing system (Abera and Solomon, 2007). Ethiopia has large population of chickens estimated to be 50.38 million (CSA, 2013) with native chickens of non disruptive breed. With regard to breed, 96.9 percent, 0.54 percent and 2.56 percent of the total poultry were reported to be indigenous, hybrid and exotic, respectively. Ethiopian poultry production is characterized by primitive type with 5-20 birds per household, simple rearing in backyard with inadequate farming and health care with small flock numbers (Tadelle D and B. Ogle, 2001).

Modern poultry production started in Ethiopia some years ago mainly in colleges and research station. The activities of these institutions mainly focused on the introduction of exotic breeds to the country and distribution of these breeds to the farmers including management, feeding housing and health care practices (Tadelle D and B. Ogle, 2001). Poultry production and management practices in Arbegona Woreda can be characterized by extensive poultry production system and productivity of village chickens is low owing disease prevalence, predators and poor management activities. Generally, the production system is characterized by small size of unimproved indigenous flock per household.

Although there is a huge potential of keeping poultry in the study area, the system of production is traditional. As a result, chickens are exposed to many challenges and also the production system in the area is not yet assessed and documented. Therefore, the objective of this study was to determine the challenges and opportunities of village poultry production in the study area.

MATERIALS AND METHODS

Description of the study area

The assessment was conducted in Arbegona Woreda which is located in Sidama Zone of the South Nation

Nationalities and People Regional State. Arbegona is located 339 Km South from Addis Ababa and 77 Km South East from Hawassa town. It is demarcated by Gorche Woreda in North West, on the North by Oromia Region and on the East Bensa Woreda. The Woreda has two agro-ecological zones: Dega (86%) and Woyna Dega (14%). Annual rain fall is between 1250-1300 mm per year. The altitude ranges between 2000-3336 m above sea level. The economic activity of the Woreda is mainly agriculture with rearing farm animals and cultivation of land. The dominant crops in the Woreda are maize, wheat, enset, barley, pea and bean (AWAO 2007).

Sampling method

To this study, multistage sampling methods were used to collect data. At first stage of sampling, six kebeles were selected from 39 total kebeles purposively based on the experience and intensity of poultry production that obtained from the woreda bureau of agriculture as information. At the second stage, 20 households from each kebele were selected randomly with the total sample size of 120 households.

Data collection method

The primary data were collected by using structured questionnaire, observation and interview from 120 randomly selected respondents. The secondary data were collected from reviewing published and unpublished sources and reports of the wereda agricultural office.

Statistical analysis

Data collected were analyzed using SPSS 20. Survey results were reported using descriptive statistics such as percentage and presented in the form of tables, graphs and charts. A priority index was used to rank the constraints of village poultry production according to their severity and opportunities based on their relative importance using the following formula:

$$\text{Priority index (PI)} = \frac{(F1 \times 3) + (F2 \times 2) + (F3 \times 1)}{F \text{ total}}$$

F1= Frequency of the first rank

F2= Frequency of second rank

F3 = Frequency of third rank

FT= Frequency of total respondents

Results and Discussion

Flock size and structure

As indicted in table 1, the dominant flock structure in the study area were laying hens (42.4%), followed by pullets (19.1%), chicks (15.5%), cocks (12.2%) and cockerels (10.7%). The relatively higher proportion of laying hens per household in the study area might be because of the interest of the farmers for increased egg production and using laying hens as parent stocks for hatching as the sources of replacement. The mean flock size recorded in this study was 7.93 which was slightly lower than the report of Asefa (2007) for Awassa Zuria (8.8) and by Mekonnen (2007) for Dale Wereda (9.2). However, the result was higher than the report of Meseret (2010) which was (6.2) and the national average (4.1) as reported by CACC (2003). The number of cocks and cockerels were few which might indicate that all farmers don't rear cocks as they share cock for breeding among neighbors.

Table 1: Flock size and structure in the study area

Flock composition	Min.	Max.	Sum	Mean	SD	Percentage (%)
Cock	17	22	116	19.3	1.97	12.2
Hen	64	71	404	67.3	2.58	42.4
Pullet	28	33	182	30.3	1.97	19.1
Chicks	20	29	148	24.7	3.14	15.5
Cockerel	15	19	102	17.0	1.67	10.7
Total			952			100
Average Flock size = 952/120 = 7.93						

Source of flock or poultry

As indicated in figure 1, majority of the respondents responded that their source of poultry was hatching of egg at home (50%), followed by purchasing from market (45%) and from research center (5%). The result clearly indicates that hatching egg at home as a source of flock is very common in the study area.

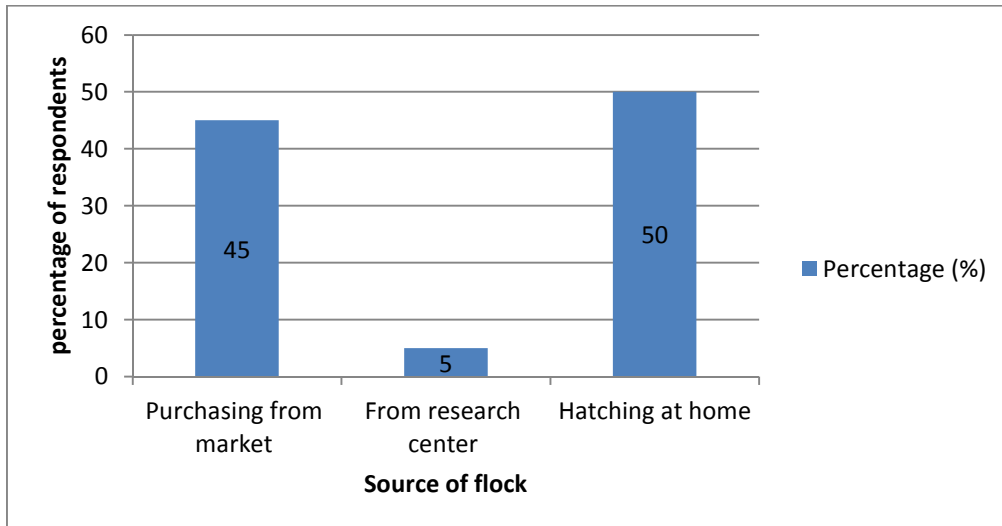


Figure 1: Source of flock (%) in the study area

Breed type

Most of the chickens in the study area as indicated in figure 2 were local breed (93.3%), followed by cross breed (5 %) and exotic breed (1.7 %). This result is in agreement with CSA (2009), which reported that, the breed composition of poultry production in Ethiopia as 96.6% local breed, 2.8% exotic breed and 5% cross breed. This might be because of the low accessibility of improved breed and low awareness of the producers to use improved breed widely.

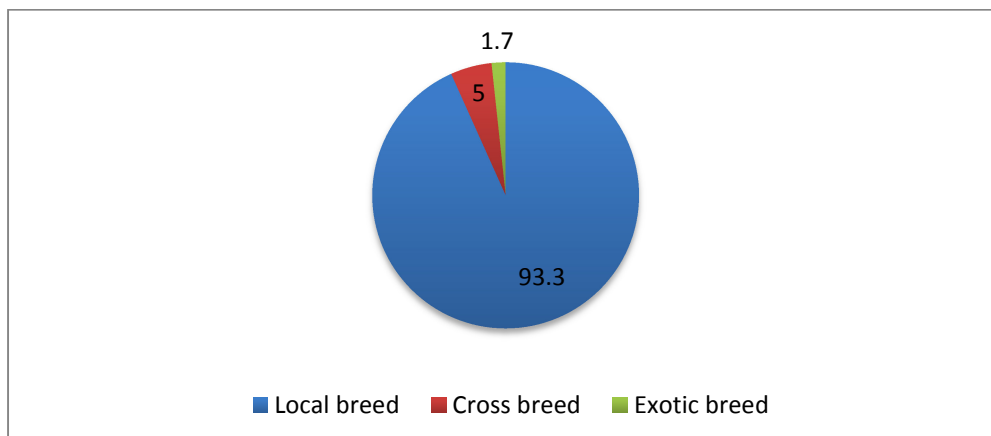


Figure 2: Type of breed (%) in the study area

Purpose of keeping poultry in the study area

The purposes of keeping poultry by households as indicated in figure 3 and 4 were for different reasons across the study area. Most of the respondents giving highest priority for sale for both eggs and chickens (40% and 50%) respectively, followed by egg for incubation (31.7%) and chickens for reproduction (30%). Minimum priority was given for both egg (28.3%) and chickens (20%) for consumption. This result is different from the report of Kibret (2008), who reported that the main function of chickens for farmers is provision of meat and egg for home consumption.

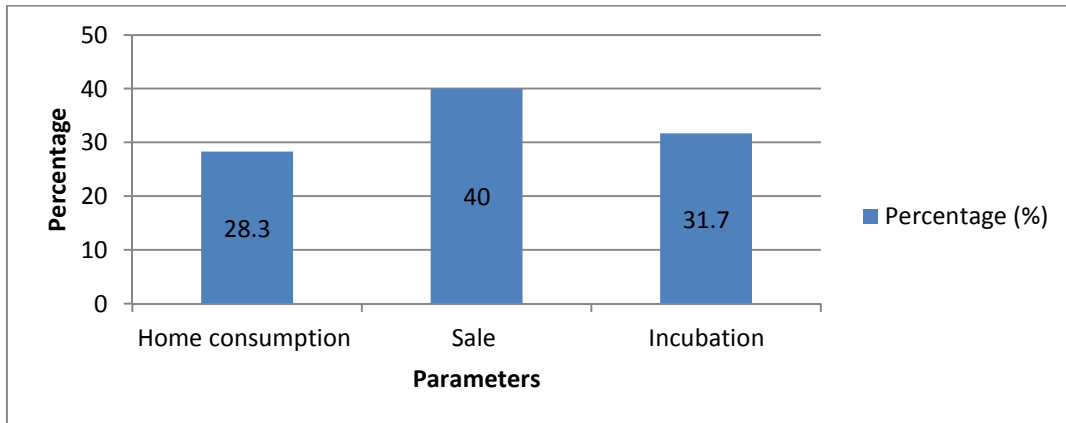


Figure 3: Priority of using egg (%) in the study area

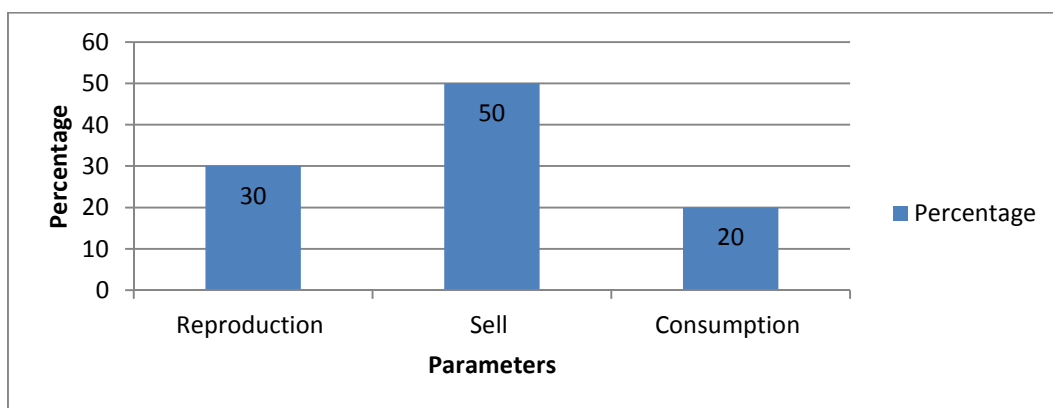


Figure 4: Purpose of keeping poultry in the study area

Housing System

Most of the farmers house their chickens by sharing the same room perch (60%). The rest 28.3% and 11.7% of the respondents use separate room with in their house and separate entirely respectively. Although the farmers use the same room with and without perch to house chickens, there exist increased mortality of chickens by predators. This report is in agreement with the report of Dwigeretal (2003), who reported that village chickens mortality accounts due to predators because of lack of proper housing. In contrast to Mekonnen (2007) who reported that there is no specific separate poultry houses in Dale Wereda, the current study indicated that 11.7% of the respondents use separate room housing system.

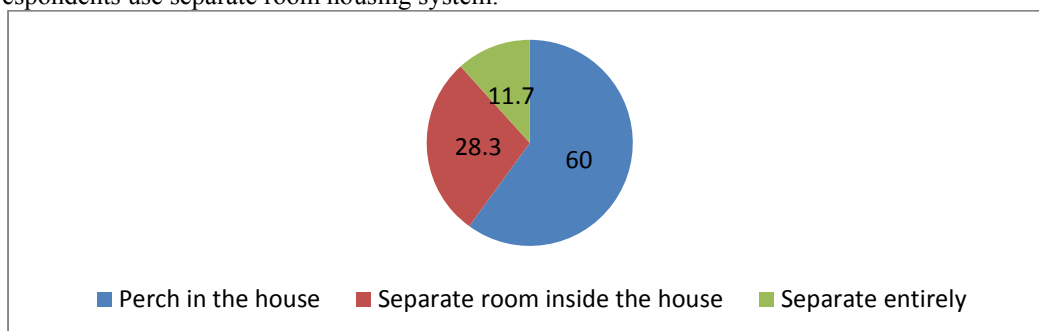


Figure 5: Housing system of poultry (%) in the study area

Practice, frequency and supplementation of feeding system

Table 2: Practice, frequency and supplementation of feeding system

Parameters		No. of respondents	Percentage (%)
Frequency of feeding	Once a day	36	30
	Twice a day	68	56.7
	3 times a day	16	13.3
Feeding practice	Totally in a group	120	100
	Separating age	NA	-
	On trough	NA	-
	On ground	120	100
Type of supplementary feed	Grains	46	38.3
	Food left over	60	50
	Kitchen waste	14	11.7

*NA = not applicable

The majority of respondents (56.7%) responded that they feed their flock twice a day and 30% and 13.3% feed once and 3 times a day respectively. As indicated in table 2, all of the respondents in the study area feed their flock in the ground feeding system. This clearly indicates that feeding is not age specific which implies birds do not feed according to their demand. The trend of ground feeding that is not hygienic affects poultry health. Half of the respondents (50%), supplement their birds with house left over followed by grains (38.3%) and kitchen waste (11.7%).

As supported by focal group discussion, poultry spend more of their time by scavenging and foraging in the study area. This result agrees with Singh (2008), who reported that village chickens usually feed handful grain at the morning and get more of their supplement by scavenging.

Health care mechanism

Health care is one management activity of village poultry production to improve chicken productivity. As indicated in the table 3, the majority of farmers (78.3%) use traditional medicine by local herbs such as garlic, lemon and ginger with feeds to cure chickens when they are infected. On the other hand 21.7% of the respondents use modern medicine with help of veterinarian. Farmers using modern medicine were lower probably because of lower veterinarian accessibility and lack of awareness in the study area. Health care practices such as avoiding feed contamination, water and cleaning poultry house were not practiced well which was supported by group discussion that periodic devastation of flock by disease is very high which is in agreement with the report of Solomon (2007), who indicated that the village level contact between different household flocks, increase poultry mortality.

Table 3: Health care mechanism of chickens in the study area

Health Care	Min.	Max.	Sum	Mean	SD	Percentage(%)
Modern Medicine	3	5	26	4.33	0.82	11.7
Traditional Medicine	14	18	94	15.67	1.63	78.3
Total						100

Production and reproduction performance

Table 4: Production and reproduction performance of village chicken in the study area

Characteristics		No. of respondents	Percentage (%)
Age 1 st egg laying (month)	5 month	4	3.3
	6 month	8	6.6
	7 month	72	60
	8 month	36	30
Number of egg /clutch/hen	12 eggs	72	60
	13 eggs	30	25
	14 eggs	18	15
No. of hatching/hen/ year	2 times	72	60
	3 times	48	40
No. of egg set/hatching	8	24	20
	9	34	28.3
	10	48	40
	11	10	8.3
	12	4	3.3
No. of chicks hatched/hen	6	20	16.7
	7	86	71.6
	9	14	11.7
Hatchability (%)		7.3/10*100	73

The above table 4 indicates that the majority of chickens in the study area attain sexual maturity and start laying at age 7 month which is in agreement with Mekonnen (2007) who reported age at first egg was 7.07 months from indigenous pullets of Dale wereda. The hen lays about 12 eggs /hen/ clutch as responded by majority of the household (60%). The frequency of hatching/hen/ year in the study area were two times in a year as responded by 60% of the households. Although the average number of egg set/hatching were 10, the majority of respondents (71.6%) responded the number of chicks hatched/hen were 7.3 with a gross hatchability of 73%. This result is in agreement with the report of Melkamu (2013), who reported that the number of egg set in one hatching was 10 with a hatchability of 72 %.

Constraints of village poultry production

Table 5: Constraints of village poultry production in the study area

Constraints	No. of respondents in each choice							F- sum	Priority index (PI)	Rank
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th			
Predator	28	18	8	5	1	0	0	367	0.218	1
Feed shortage	3	2	5	20	16	10	4	210	0.125	5
Flock mortality	12	8	20	10	8	1	1	299	0.178	2
Low production	6	11	6	10	13	6	8	237	0.141	4
Disease	6	13	14	8	9	7	3	266	0.158	3
Breed	2	5	4	3	9	16	21	156	0.093	6
Market	3	3	3	4	4	20	23	145	0.086	7
Total								1680	1.00	

The major constraints of village poultry production in the study area is presented in table 5. The most serious constraint hindering poultry production in the study area is predator with an index value of 0.218. This might be because of poor housing system and the scavenging feeding system of poultry in the study area. The second serious problem of poultry production is flock mortality with an index value of 0.178 and prevalence of disease and low production were ranked as third and fourth with index values of 0.158 and 0.141, respectively. This result is in line with the findings of Melkamu (2013) who stated predator, feed shortage, flock mortality and low production as first, second, third and fourth constraints, respectively.

Opportunities of village poultry production

Table 6: Opportunities of village poultry production in the study area

Opportunities	No. of respondents in each choice				F-sum	Priority index (PI)	Rank
	1 st	2 nd	3 rd	4 th			
Market	20	24	11	5	179	0.30	1
Credit service	10	17	20	13	144	0.24	3
Feed access	22	9	15	14	159	0.27	2
Extension service	8	10	14	28	118	0.20	4
Total					600	1.00	

Despite there were many constraints that affect poultry production in the study area, there were also a couple of opportunities to improve village poultry production such as market access, credit service, feed access and extension service. From the study, as indicated in table 6, market access was the primary opportunity with an index value of 0.30 which is consistent with the report of Melkamu (2013). The second opportunity of poultry production is feed access with an index value of 0.27 and credit service and extension were ranked as third and fourth with index values of 0.24 and 0.20, respectively.

Conclusion and recommendation

This study was conducted to determine the challenges and opportunities of village poultry production in Arbegona Woreda, Sidama Zone. The result of the study indicated that poultry production in the study area contained many problems such as predator being the most serious, flock mortality as the 2nd, disease as the 3rd and low production as the fourth problem. Though there are different constraints, market access, feed access, credit service and extension were some of the opportunities identified according to their order of importance in the study area.

It was also indicated that 78% of the respondents use traditional medicine to treat chicken and 50% were using food left over as supplementary feed for their chickens. The results of the study also indicated that the mean flock size per household was 7.93 chickens, the value of which is higher than the national average, 4.1. The chickens are confined within the family during night time and released outside in search of feed early in the morning resulting in high mortality caused by disease condition and predators.

It is reported that 40% of the total egg produced in the Wereda are meant for sale, 31.7 for incubation and 28.3 % of the respondents rear poultry for the purpose of consumption indicating that poultry and poultry products are among the farm products that generate house income.

Therefore, appropriate intervention in chicken disease and predator control activities, breed improvement strategies, providing frequent extension services in form of training to farmers focusing on disease prevention, improved housing, feeding and watering of chicken are recommended in order to improve productivity of chicken.

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