American-Eurasian J. Agric. & Environ. Sci., 9 (5): 529-533, 2010
ISSN 1818-6769

Major Constraints and Health Management of Village Poultry Production in Rift Valley of Oromia, Ethiopia

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Abstract: Critical constraints for village poultry production in the study area were identified as: diseases and predators, lack of proper health care, poor feeding and poor marketing information. Replacement of indigenous chickens by exotic chicken breeds is also a major threat in eroding and dilution of the indigenous genetic resources. Newcastle Disease (NCD) (locally called "kofis" or "fengil") was identified as a major and economically important health constraint that hinders the expansion of village chicken production in the study area. The result of the current study revealed that the price of chicken products varied between months of the year and were determined by a number of driving factors. Some of these determinant factors affecting prices of chicken products in the study area were identified as: demand and supply of chicken products, market day types (holyday versus ordinary market days) and fasting seasons. Demand and supply of chicken products were highly related with religious festivals, mainly Christian festivals. It is also discovered that observing plumage color (45.4%), looking its physical stand and shank length (37.1%), looking the type of comb (8.6%) and looking parent's performance/pedigree (1.1%) play great role during marketing. Therefore, there is a need to design and implement a research programme to collect, conserve and improve the indigenous chickens in order to advance poultry production and productivity in the study area.

Key words: Village chicken · Constraints · Health · Management · Oromia · Ethiopia

INTRODUCTION

In Ethiopia, the agricultural sector is a corner stone of the economic and social life of the people. The sector employs 80-85 percent of the population and contributes 40 percent to the total GDP [1]. Livestock production, as one component of agriculture, covers 40 percent of agricultural output playing an important role in the national economy as it contributes 13-16 percent of the total GDP [2, 3]. The diverse agro ecology and agronomic practice prevailing in the country together with the huge population of livestock in general and poultry in particular, could be a promising attribute to boost up the sector and increase its contribution to the total agricultural output as well as to improve the living standards of the poor livestock keepers [4].

At national level in Ethiopia, 99% of the total, 56.5 million, estimated chickens are contributed by village poultry production while only 1% is from intensive exotic breed maintained under intensive management system [5]. Despite their low productivity, this prevailing production system are known to possess desirable characters such as thermo tolerant, resistant to some disease, good egg and meat flavor, hard eggshells and high dressing percentage [6]. They do have also fast generation interval and high reproductive rate as they are prolific, easy to rear and their output can be generally expanded more rapidly and easily than that of other livestock [7].

Although there are studies conducted, in general, on characterization of poultry production system in some places of the country by some researchers [6, 8, 9, 10], clear information is lacking regarding the major constraints and health management of village poultry production in rift valley of Oromia, Ethiopia. Therefore, the objectives of the current study were to collect base line information on major constraints and health management of village poultry production in rift valley of Oromia, Ethiopia.

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MATERIALS AND METHODS

Description of the Study Area: The study was conducted in five randomly selected districts of west Arsi and east Shoa zones (Siraro, Shalla, Shashamane, Adami-Tullu Jido kombolcha and Boset) in mid rift valley of Ethiopia. The study areas are located at 709'N to 8045'N and 38032'E to 39017'E encompassing about 40-60km width and more than hundred kilometers length bounded by high land plateaus characterized by semi-arid type of climate with an erratic, unreliable and low rain fall, averaging between 500 and 900mm per annum. The rainfall is bimodal with the long rains from June to September and short rains from February to April [11].

Study Design and Sampling Methods: A total of eighty eight households rearing village poultry were randomly selected and interviewed using structured questionnaire. Accordingly, data on major constraints (health problems, marketing and others), health managements, opportunities and challenges of village poultry production in mid rift valley of Oromia were collected.

Data Analysis: Collected data were analyzed using Statistical Package for Social Sciences Inc. [12]. Descriptive statistics such as mean, range, frequency and percentage were used to summarize and present the results.

RESULTS AND DISCUSSION

Major Constraints of Village Poultry Production: Lack of market, shortage of labour and feed, disease, predation, low production by local birds, neighborhood conflict, damage of garden and crops, theft, lack of knowledge (e.g. reproduction management), shortage of space and housing, lack of financial capital and effect on family members' health were the constraints mentioned by farmers village poultry production [13]. The major constraints of village poultry production in the study area were partly due to the prevailing diseases and predators, lack of proper health care, poor feeding and poor marketing information. On the other hand attempt of replacing indigenous chickens by exotic chicken breeds was identified as a major threat in eroding and dilution of the indigenous chicken genetic resources.

Diseases and Predators as Major Causes of Mortality for Village Poultry: The major causes of death for village poultry production in the study area were commonly disease (mainly New Castle Diseases locally known as "Sombe/Fengil"), followed by predation. This is in agreement with the report of Hoyle [14] and Negussie [15] where disease and predators were known to be the major causes of mortality in the country. According to their report New castle disease accounted for the largest proportion of overall flock mortality to be 57.3% followed by fowl pox 31.6%, coccidiosis 9.4% and predator loss 1.7%. In Shashemane and Adami Tulu Jiddo Kombolcha of the present study area Regassa *et al.* [16] reported the prevalence of New castle disease as 11%. It was also indicated that in Africa one of the major constraints to village fowl production is the prevalence of various diseases [17]. The occurrence of diseases is seasonal where the highest chicken death rate was observed during the rainy season (June to August) (80%) followed by March to May (14.4%) (Table 1). This finding is also similar with the work done by Halima [18] in Northwestern Ethiopia.

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. Disease and predator problem is mentioned by owners not only for chicken but also for brood mortality. This is in line with the report of Mekonnen [19] from the southern part of Ethiopia where snakes, rats, dogs, cats and foxes were the main predators that caused losses especially in young birds. Similarly, according to Aberra's [6] report from the Southern part of Ethiopia wild birds (eagle, hawk, etc.) are the most common predators during the dry season while wild cat (locally known as "Shelemetmat") is the most dangerous predator during the rainy season.

Market as a Constraint for Village Poultry Production: Even though chicken meat is relatively cheap and affordable source of animal protein [9], lack of organized marketing system and the seasonal fluctuation of price are the main constraints of the poultry market in Ethiopia [19] which is in agreement with the present study result.

According to 78% of the respondents women and children take chicken and eggs to the local market and sell to traders or directly to consumers. During marketing the decision maker for egg and chicken sell are women and men. In the study area the price of live chickens is affected by seasonal demand (holidays and fasting seasons) where September to November and March to May were months of high demand for eggs and chickens.

Table 1: Causes of mortality and health management of village poultry

	East Shoa Zone		West Arsi Zone			
	Districts					
Variables	Adami Tulu	Boset	Shashamane	Siraro	Shalla	Over all
Causes of chicken mortality (%)						
Birds of prey	33.4	36.4	39.0	32.0	29.4	34.0
Cats and dogs	0.0	13.5	18.6	21.5	29.4	16.3
Wild animals	20.0	17.5	8.5	10.7	11.8	15.0
Diseases	46.6	32.6	30.5	35.7	29.4	34.0
Accident	0.0	0.0	3.4	0.0	0.0	0.7
Season frequently disease occurred (%)						
Sep-Nov.	14.3	3.0	8.0	0.0	0.0	5.0
March-may	0.0	29.0	20.0	23.0	0.0	14.4
June-Aug.	85.7	65.0	72.0	77.0	100.0	80.0
Proportion of sick chickens died (%)						
All	37.5	64.3	81.8	86.7	66.7	67.0
Half	37.5	32.0	18.2	6.7	16.7	22.0
One third	25.0	3.7	0.0	0.0	0.0	6.0
Quarter	0.0	0.0	0.0	6.7	16.7	5.0
Measure taken when chicken get sick (%)						
Sell them	0.0	3.1	3.7	13.3	0.0	4.0
Treat with traditional medicine	48.0	53.3	33.3	33.3	50.0	44.0
Consult veterinarian	7.0	12.5	18.5	6.7	12.5	11.6
Do nothing	45.0	28.1	44.5	46.7	37.5	40.4

Table 2: Marketing of village poultry

	East Shoa Zone		West Arsi Zone			
	Districts					
Variables	Adami Tulu	Boset	Shashamane	Siraro	Shalla	Over all
Season of selling chicken (%)						
Sep-Nov.	-	64	46.0	58.3	20.0	38
Dec-Feb.	-	15	15.0	16.6	0.0	9
March-may	-	11	15.0	8.3	80.0	23
June-Aug.	-	10	24.0	16.6	0.0	10
Season of buying chicken (%)						
Sep-Nov.	0	4	5.5	33.3	0.0	9
Dec-Feb.	0	4	11.0	0.0	25.0	8
March-may	0	27	11.0	8.3	0.0	9
June-Aug.	100	65	72.5	57.3	75.0	74
Color preferred (%)						
Brown/gray/red	60	81	78.0	91.0	50.3	72
White	25	8	0.0	0.0	16.3	10
Black	15	11	22.0	9.0	33.3	18

The price of live birds is often double during holidays and reducers during fasting season. The survey also revealed that 94% of respondents rely on the color of birds during marketing where brown/gray/red (72%) and black (18%) colors being the most preferred ones (Table 2). This is in accord with the work of Mekonnen [19] that identified the variation in price mainly attributed to high demand for chickens for Ethiopian New Year and holidays. According to him, it is also partly influenced by weight, age of chickens and availability. The plumage color, sex, combs types, feather covers are also very important for influencing price.

According to 56% of the respondents socio-cultural context of Ethiopia also affected village poultry keeping especially by causing dynamics of demand and consequently management of flocks. Religious festival days are associated with increased poultry consumption and sales and decreased during fasting periods directly related to the Orthodox Christian fasting months. These patterns cause strong fluctuations in prices of poultry products. Prices increase in the onset of festivities and decrease in fasting periods. Ideally, households increase and reduce their flocks according to prices. This is in agreement with the report of Fisseha [4] from the North-west part of Amhara region, Ethiopia, mainly due to the high population of Orthodox Christian religion followers.

Feed as a Constraint for Village Poultry Production: Feed resources are a major input in poultry production systems, estimated to account for about 60 percent of total production costs in the commercial poultry sector [20]. In village chicken production systems, it is difficult to estimate the economic and/or physical value of this input because there are no direct methods of estimating the scavenged feed resource which constitutes most of the feed input [21]. Despite this in the present study 95% of the respondents indicated that June to August is the major time of the year during which feed shortage mostly occurs for village poultry as it is not harvesting season of grain or cereal crops affecting village poultry production. This is because according to 94.3% of them there is high relationship between the season and egg output from village poultry.

Replacement of Indigenous Chickens by Exotic Chicken Breeds: The local chicken genetic resources in the Amhara region of Northwest Ethiopia were seriously endangered owing to the high rate of genetic erosion due to the extensive and random distribution of exotic chicken breeds, by both governmental and non-governmental organizations, since they are believed to dilute the indigenous genetic stock [18]. This is in agreement with the present study where farmers complained an attempt done so far in improving the genetic potential of local birds through distribution of cockerel, pullet and fertile eggs from birds of exotic origin have had ill- effect because of: reducing the brooding ability of hens, reducing adaptation to low input feeding system and endangering the genetic base of village chicken population. This threat is also in line with the FAO report [22], which states that animal genetic resources in developing countries in general, are being eroded through the rapid transformation of the agricultural system, in which the main cause of the loss of indigenous animal genetic resources is the indiscriminate introduction of exotic genetic resources, before proper characterization, utilization and conservation of indigenous genetic resources.

Health Management in Village Poultry Production: It has been reported by Halima [18] from Northwest Ethiopia that most (72.43 %) farmers do not properly examine their chicken and provide no health management services. In the present survey, 44% of farmers in the study area usually treat sick chickens using traditional medicine whereas others (41%) do nothing. Only 11% of the respondents consult veterinarians when their chickens get sick; this is as a result of veterinary service insufficiency. They use garlic, different kind of green leaves, lemon, local alcohol, paper powder, butter, etc as drenching, nasal application and smoking. The response to treatment vary considerably where 45% fully recovered, 33% partially recovered and 22% no response to traditional treatment. According to 67% of the respondents from the sick chickens all died while 22% of them replied that half of the sick chickens died (Table 1). Average number of chicken died due to disease in the last six months/HH in the study area ranges between 2 and 14.

From this survey it is also understood that only 31% of the village chicken owners know the presence of vaccine for chicken diseases and almost no farmer vaccinated their chicken. According to 96% of the respondents, if poultry vaccine service is available they can vaccinate their chicken with a charge ranging from ten cents to five birr. Even though isolation of sick chickens from healthy one is the first measure to be taken to minimize the risk of disease spread during outbreak, such kind of practice is reported only in 42% of the respondents but not in 56.8% of them. To save their chicken during disease outbreak village poultry producer take different kind of measures like: use traditional medicine (33%), consult veterinarian (11.4%), call traditional healers (10.4%), sell the survived ones (4.5%).

CONCLUSIONS AND RECOMMENDATIONS

In general, the present study identified various major constraints such as diseases and predators, lack of proper health care, poor feeding and poor marketing information. Replacement of indigenous chickens by exotic chicken breeds is also a major threat in eroding and dilution of the indigenous genetic resources. Insufficient capital and a

knowledge gap among smallholders also restrict poultry production. Therefore, there is a need to design and implement a research programme to collect, conserve and improve the indigenous chickens in order to advance poultry production and productivity in the region.

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