

VILLAGE POULTRY PRODUCTION IN THE SUDAN

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Abstract

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A survey form provided by the Joint FAO/IAEA Division was used to collect data on village poultry production in the Sudan. The production system in the households was based on scavenging indigenous domestic chickens, at times accompanied by pigeons, guinea fowls, ducks or turkeys. The average flock size was 18.8 birds and included 44.3% hens, 10% cocks, 20% growers and 24.8% chicks. The hen to cock ratio was 4.4:1. Average egg production was 3.1 per hen per month, of which 76% were incubated by hens. About 78% of incubated eggs hatched of which 75% survived the brooding period. Approximately half of the households provided the chickens with housing. Around 25.7% of interviewed households used chicken manure as fertilizer. While scavenging, chickens fed on insects, grass, vegetables and kitchen wastes. Feed supplements included sorghum, millet and sometimes wheat bran and alfalfa. The ownership of village chickens was shared between all gender categories and all were involved in the management of the birds. The major constraints to village poultry production in the Sudan were identified and included inadequate health care, poor production, inappropriate housing and poor knowledge of poultry management.

1. INTRODUCTION

Village chickens are generally birds of indigenous breeds living in almost symbiotic relationship with human communities [1]. Out of a total population of 45.3 million chickens in Sudan the conventional sector comprises around 30 million from which the annual meat and egg production is 20.1 million birds and 900 million eggs, respectively [2]. Desai [3] classified the indigenous breed (Baladi) into three types that include large Baladi, bare-neck and Betwil. The large Baladi is the most common type and distributed all over the country. The birds are of medium size (adults weighing 1.350–1.362 kg), with a small crushed comb and a lot of plumage of varying colors. The bare-neck type is smaller and characterized by a featherless neck. It occurs in various colors, is very active and comparatively more resistant to diseases than the other two types [3]. The Betwil type is the smallest in body size. The adult body weight averages 0.681–0.908 kg, with tiny black legs and a compact body [3]. The native Baladi hen lays on average 40–50 eggs per year while the Betwil is considered the best layer producing 70–80 eggs per year [2]. However, under controlled conditions and improved management the average egg production can increase to 172–177 [2, 4].

Although traditional poultry production has been present throughout Sudanese villages and rural areas as well as in some towns, little information about the production system is available in the literature. The results presented in this communication provide some detailed production parameters of village poultry production in Sudan. Moreover, the major problems and some solutions are presented.

2. MATERIALS AND METHODS

2.1. Selection of zones, villages and households

Khartoum (central Sudan) and Gedarif (eastern Sudan) areas were the two areas selected as zone 1 and 2, respectively (Fig.1).

Five villages located east of the Nile some 15–50 km north of Khartoum were selected in zone 1, namely Ezergab, Abu Halima, Hassanya, Dabba and El Gaili. In zone 2 three villages, El Soufi, Abayo and Gibaisha, located 1–10 km from Gedarif city were selected. Four to six households were selected in each village. The selection of Khartoum and Gedarif was made to represent two ecologically different environments, while the villages were selected on the advice of the local veterinary office taking into consideration the number of chickens per household and previous cooperation with veterinary authorities.

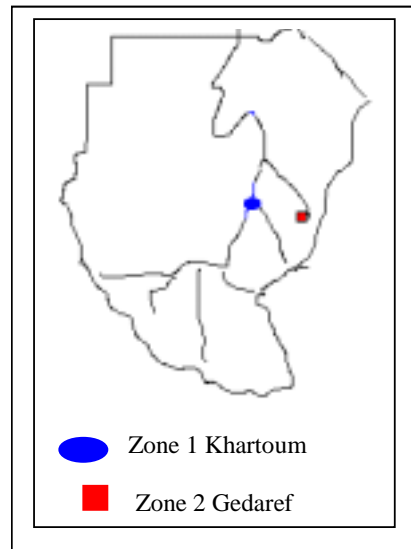


FIG. 1. Map of Sudan showing the two study zones selected for conducting the survey.

2.2. Collection of data

The Joint FAO/IAEA Division of Animal Health, Vienna, supplied a survey form in order to standardize the collection of production data on village poultry. The survey was translated into Arabic.

The study area was visited between 1 and 24 June 1999 to collect data during the dry season and between September 27 and October 6, 1999, for collecting information during the wet season. During the field visits the person responsible for chicken production in each household (in most cases a woman) was interviewed. All the data were entered in an excel spreadsheet and analyzed.

3. RESULTS

3.1. Main features of village poultry production in Sudan

The production system encountered in the households of both zones was based on scavenging by indigenous domestic chickens. Chickens were left to search for their own food, scratching and picking on the ground while only small amounts of grains or kitchen leftovers were provided. Such a system of traditional poultry raising is widely encountered in the villages and suburban centers of Sudan.

Average flock size of chickens in the study area was 18.8 birds and varied between 6 and 63 birds.

The hen to cock ratio in Sudan is 4.4: 1, which is relatively high, compared to that of Ethiopia and Gambia. Around 54.3% of the flock are mature chickens. The proportion of mature hens in a flock is used to estimate egg and chicken production [5]. The pattern in the Sudan indicates that indigenous chickens are dual-purpose birds. A different age structure pertains in Malaysia and Thailand in which about 75% of chickens in village flocks were less than 6 months of age [1] and therefore chickens are kept mainly for meat production.

Most households kept chickens only (71.4%), while 14.3% kept pigeons, 8.6% kept guinea fowls, 8.6% kept turkeys and 2.9% ducks.

The average clutches recorded per hen per year were 3.1 and ranged between 1 and 6. Average eggs per clutch were 12 and varied between 2 and 20. About 77% of eggs laid by chickens were incubated and the rest (23%) were used by the households as food or sold. About 78% of incubated eggs hatched of which 75% survived the brooding period. A hatchability of 78% as reported in the present study fell within the range reported in the literature [5]. Chick mortality of 25% reported in this study is quite normal. In Malaysia the mortality with natural brooding has been estimated at 60-70% [1]. Broodiness is a constraint to egg production by village hens. This factor can be manipulated through discouraging brooding. In a previous study the average egg production reached 177 eggs per year when indigenous chickens were housed in cages under relatively improved management [2]. This

management practice is common in Ethiopia in which a relatively high egg production (143 eggs per hen per year) was reported [6].

3.2. Housing

Nearly half (48.7%) of the households provided overnight housing for the birds. Chickens in 20.6% of the households were kept overnight within the main house, while 12.8% of the birds perched in trees or on roofs. The pattern of cleaning of shelters varied to some extent between the two zones (Fig. 2).

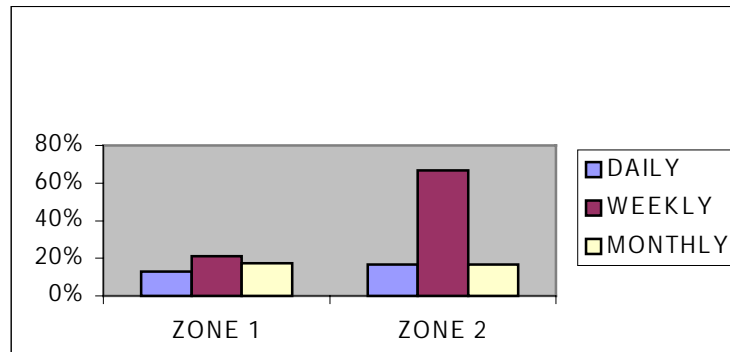


FIG. 2. Frequency of chicken house cleaning in both zones.

About 25.7% of interviewed households used chicken manure as fertilizer for cultivation purposes, while the remaining households discarded it. The proportion of households using chicken manure as fertilizer was higher in zone 2 (33.3%) than in zone 1 (21.7%).

3.3. Feeding

Scavenging is the only feeding system encountered in both zones. Chickens fed on insects, grass, vegetables, kitchen wastes or dry bread. The proportion of the various types of foodstuff is shown in Fig. 3. Insects and kitchen waste comprised the majority of feedstuff scavenged by chickens.

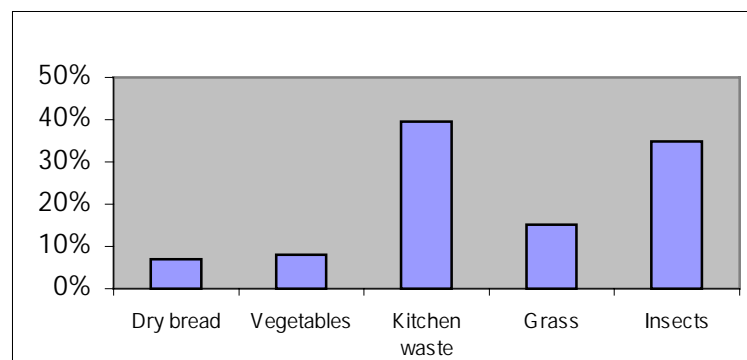


FIG.3. Proportion of various feed stuff scavenged by village poultry.

Almost all households in both zones gave feed supplements to their chickens. Cereals were the most dominant feed supplements (Fig. 4). However, some provided wheat bran, sesame or alfalfa and in one occasion a formulated layer diet was given. Either tap water or well water was given to the birds (Fig. 5).

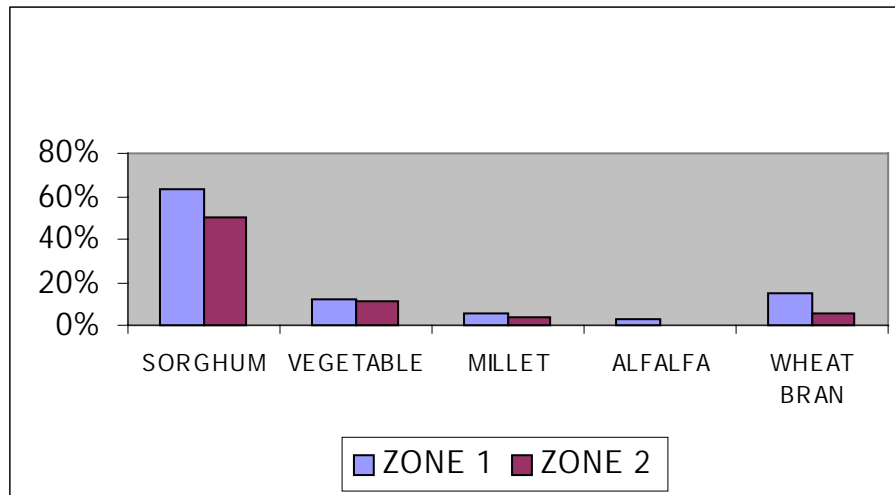


FIG. 4. Various feed supplements given to village chickens in the two zones.

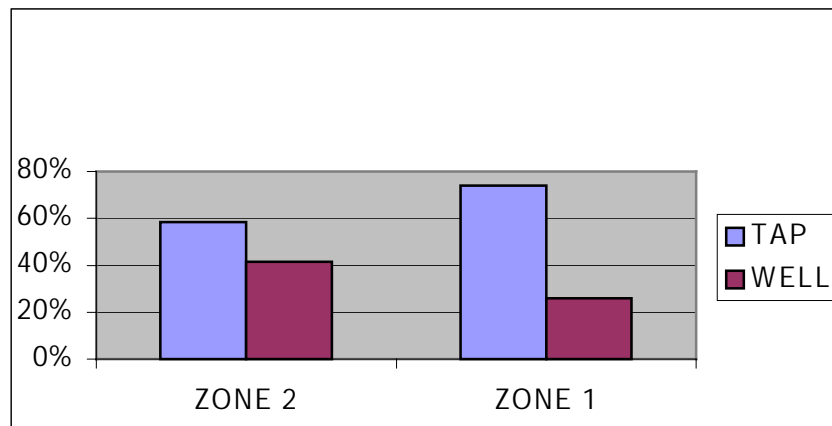


FIG. 5. Source of drinking water given to poultry in the two zones.

3.4. Purchasing and selling

Chickens were mostly purchased from the market in the same village and rarely from markets in neighbouring villages. Selling of eggs and live chickens was done in most cases to consumers in towns and only in a few cases to traders.

It was mainly the responsibility of women in zone 1 (65.2%) followed by children (17.3%)

3.5. Flock ownership and management profile

The pattern of flock ownership in both zones is shown in Figure 6.

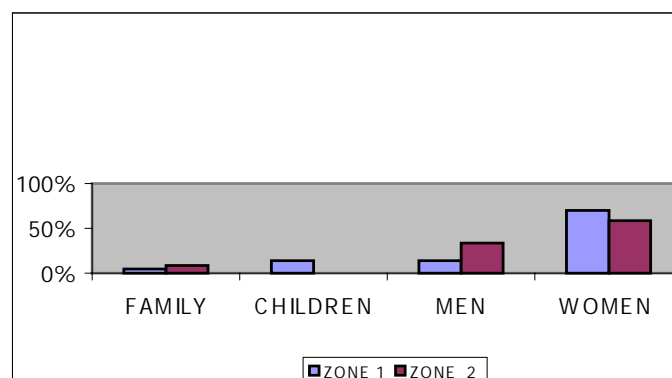


FIG.6. Pattern of flock ownership in both zones.

3.6. Division of labour

Division of labour for various activities concerned with village poultry production is shown in Figure 7.

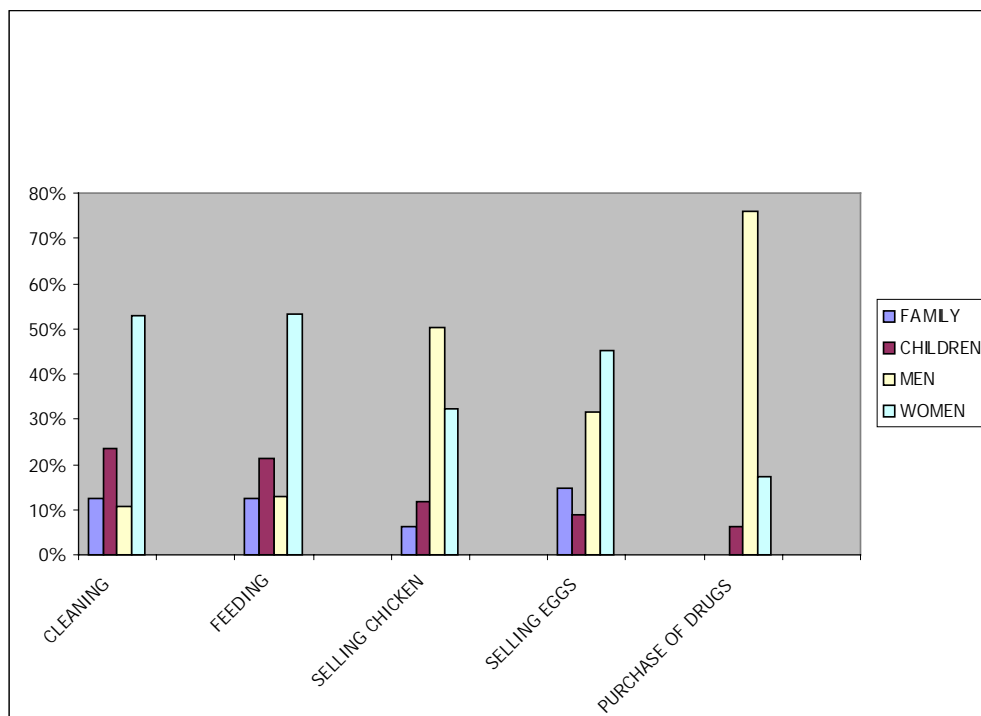


FIG.7. Division of labour among gender categories in village chickens in Sudan.

3.7. Economic function of village chickens

During the interviews farmers ranked the function of village chickens in order of importance as follows: most important as a source of food, then as a source of income and lastly for social functions.

3.8. Animal health

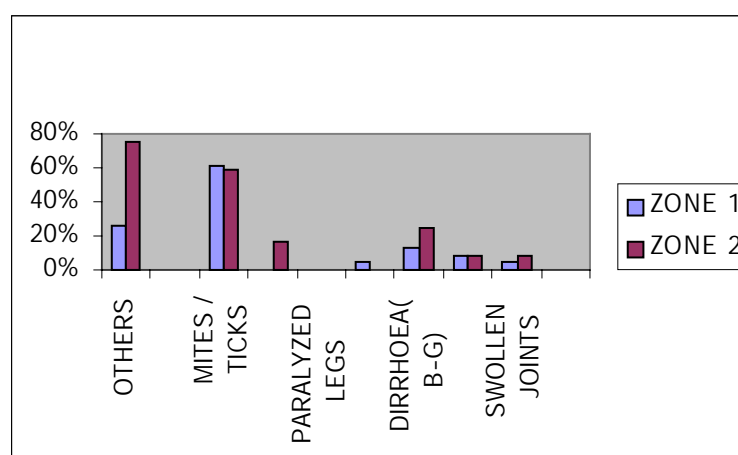


FIG. 8. Ailments (other than Newcastle disease) affecting village poultry in the two zones of Sudan.

About 77% of surveyed households experienced disease problems in the previous year. External parasites (ticks and mites) and Newcastle disease (ND) were the most important and prevailing diseases in the study area with 50% and 30% incidence rates, respectively. Ten households all from zone 2 (Gedarif area) suffered from outbreaks of ND. Table I shows households in both zones, which were affected with ND between July and October 1999. The mean mortality rate was 76%, but ranged between 40 to 96%. Three isolates of Newcastle disease virus (NDV) were obtained and their properties are being studied.

TABLE I. DETAILS OF NEWCASTLE DISEASE INFECTIONS DURING JULY – AUGUST 1999.

Zone	Village	Household	Date of infection	Total number of chickens affected	Number dead	Mortality rate
1	5	2	October, 1999	18	10	56%
1	5	4	October, 1999	10	4	40%
2	1	1	July, 1999	26	25	96%
2	1	2	July, 1999	54	45	85%
2	1	3	August, 1999	23	18	78%
2	1	4	July, 1999	23	20	91%
2	2	2	July, 1999	12	11	92%
2	2	3	July, 1999	50	41	82%
2	3	1	August, 1999	34	21	62%
2	3	2	August, 1999	23	14	61%
2	3	4	August, 1999	21	12	57%
Total		11		294	222	76%

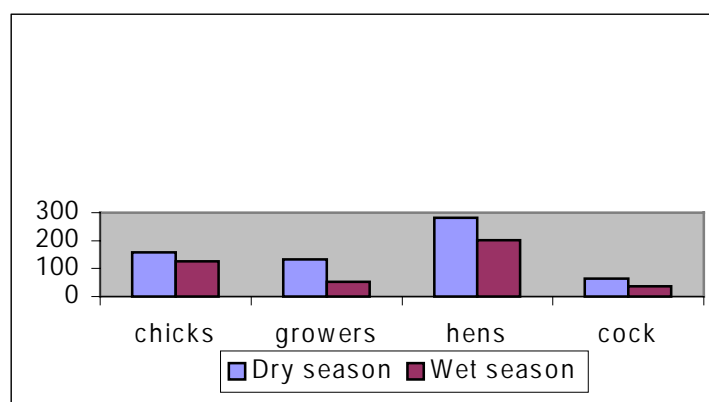


FIG. 9. Number of chickens by age groups present during the dry and wet season.

The difference in the number of chickens by age groups present during the dry and wet season is shown in Figure 9. A remarkable reduction in the number of birds available occurred during the wet season. The reduction was relatively higher in the growers than in chicks, hens or cocks. The main reason for the reduction was mortality due to outbreaks of Newcastle disease.

4. DISCUSSION

The flock size figures reported in the present study are within the ranges reported in the literature. The flock size in Ethiopia, The Gambia and Zimbabwe averaged 10, 12 and 20 birds per household, respectively [5].

The proportion of the various age groups within a flock as recorded in the present study is shown in Table II and compared with figures from Ethiopia and the Gambia.

TABLE II. PROPORTION OF VARIOUS AGE GROUPS WITHIN A FLOCK IN SUDAN, ETHIOPIA AND THE GAMBIA

Country	Hens	Cocks	Growers	Chicks	Hen:cock ratio
Sudan	4.43	1	2	2.48	4.4:1
Ethiopia*	3.49	1.31	1.66	2.87	2.8:1
The Gambia*	2.22	0.68	3.18	3.92	3:1

* from [5]

The major constraints encountered during the surveys of village poultry production in Sudan were threefold:

* Inadequate health care

The major problem of the existing village production system in Sudan is the high incidence of Newcastle disease. Therefore, Newcastle disease is a primary constraint to increasing village poultry in Sudan. The disease seems to be endemic in the country particularly in the Gedarif area (zone 2) with frequent epidemics. Mortality could reach 96%. External parasites can be ranked second in importance. The availability of vaccines or veterinary drugs to farmers was generally poor. This was partly due to the fact that vaccines and drugs were too expensive or sold in such large quantity batches (1000 doses for example) that they were uneconomic for the village farmer, who generally keeps a small sized flock.

* Poor productivity

The present study showed that productivity of village chickens under the prevailing system in Sudan was low. This is in agreement with previous studies [4, 7]. Therefore, the low genetic potential of village chickens can be put as a constraint. However, the indigenous breeds are more adapted to unfavourable climatic conditions, particularly the extreme heat.

* Inappropriate housing

More than half of the surveyed households did not provide housing or shelter for their chickens. Consequently, birds were subject to predation and theft. From the farmer's perspective, a chicken house forms a favourable environment for external parasites such as ticks. We noticed that chicken houses made from locally available materials like mud or red brick usually helped the multiplication of external parasites.

Finally, the results from our study showed that women are responsible for most of the management aspects related to chickens. Rural women lack sufficient educational background necessary for successful poultry management and had no access to veterinary extension services. The survey results showed that traditional poultry production was totally ignored by local and federal authorities.

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