

Guinea Fowl Feeding Practices in the Western Tandjile Department, Chad

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Abstract: The study evaluated the practice of feeding in the Western Tandjile Department. Four sub-prefectures (Kelo, Baktchoro, Kolon, and Bologo) were chosen for their guinea fowl potential. A total of 202 guinea fowl farmers were the subject of a cross-sectional and retrospective survey in February 2022. The majority of guinea fowl farming has been practiced by married men of primary structural level and for the most part Christians. Results showed that the main activity was the cultivation of cereals and oil seeds (agriculture). Among poultry, guinea fowl farming was the most represented (58.45%) in the field of poultry. The current number of guinea fowls is clearly higher than the starting line-up. The sex ratio was 3 males to 10 females with the age of sexual maturity of 7 months for both males and females. Purchasing has been the most common method of acquiring guinea fowl. Most of the farmers confirmed that guinea fowl feed themselves behind the boxes with insects, fallen cereals, plants, termites, earthworms, and ants. The frequency of food distributions most observed was twice a day (morning and evening). The majority of farmers use traditional guinea fowl and few use feeders. The difficulty associated with guinea fowl farming in the Western Tandjile was the high cost of feed on the markets. Improving the performance and productivity of guinea fowl in the Western Tandjile deserves special attention to their feeding.

Keywords: Feeding Practice, Guinea Fowl, Western Tandjile, Chad

1. Introduction

In most African countries, livestock production is an important source of wealth [1]. The rearing of short-cycle animal species, particularly rural poultry, is a survival strategy for poor populations [1, 2]. In recent years, guinea fowl farming has experienced a particular error in the Western Tandjile Department [3].

Under the current conditions of traditional poultry farming in Chad, poultry and fish in particular are wandering. They cover their own nutritional needs [4-6, 3]. Studies have shown that guinea fowls feeding is quite diverse, including

cereals and oil seeds [7, 8]. In modern poultry farming, feed accounts for 70 – 80% of production costs and is considered to be the main factor in the development of poultry farming in Africa [9]. Under these conditions, breeding performance is extremely low. Several authors believe that guinea fowl production performance can be improved if they are subjected to improved farming conditions [10]. As a result, feeding guinea fowl is a major challenge in the majority of developing countries, including Chad [11, 12].

In addition to diseases and predators, guinea fowl were confronted with recurrent problems of quantitative and qualitative feed deficit linked to the absence and/or

irregularity of feed resources available in the immediate environment and the insufficient and inadequate intake of feed supplements [13-16]. However, the value of other alternative and/or cheaper alternative and/or non-conventional local food resources in feeding guinea fowl deserve to be known. These resources may be a better way to improve the feeding and productivity of guinea fowl at a lower cost, hence the interest of this study. The objective of this study is to identify feed practices in the Western Tandjile Department.

2. Materials and Methods

2.1. Description of the Study Zone

The study was carried out in the Western Tandjile

Department, whose capital is Kelo in the Sudanian zone of Chad (Figure 1). This Department is located at latitude 9.3995° Nord and longitude 15.8038° East. The climate is humid and tropical. Apart from commercial activities, the populations of this locality practice agro-salvo-pastoral activities. Rainfall varies between 500 and 1200 mm per year. The average annual temperature is around 35°C. The rainy season corresponds to the growing season and runs from April to the end of October. This period is characterized by an abundance of green vegetation, especially young shoots highly valued by poultry. The dry season runs from November to April. March and April are generally the hottest, and July and August the wettest. The vegetation of the region is a shrubby savannah with gallery forests in places.

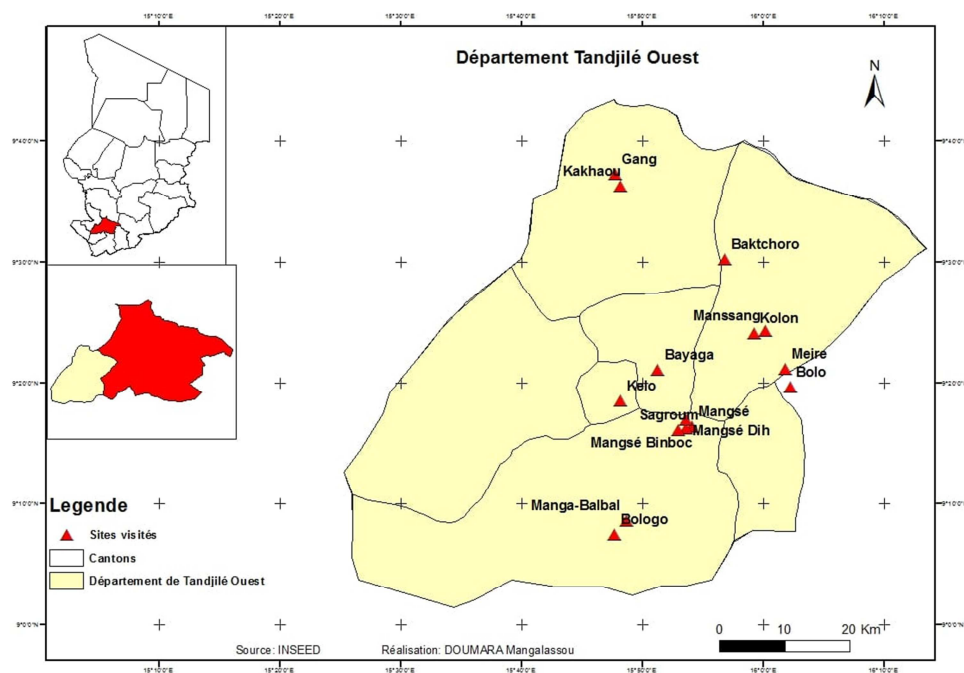


Figure 1. Map of the study zone.

2.2. Survey Methods, Sampling, and Data Collected

The study was conducted by cross-sectional and retrospective survey in February 2022. It took place in the farmer's yard, in the presence, if possible, of guinea fowl. A total of 202 breeders were involved. These farmers, all consenting to participate in the survey, were randomly selected from 4 sub-prefectures (Kelo, Baktchoro, Kolon, and Bologo). By sub-prefecture, 02 cantons and 04 villages per canton were concerned, for a total of 08 cantons and 32 villages. The data collected covered the profile of the farmers, the types of crops grown, the other poultry reared in households, the feeding practices of the backyards, the feeding kinds of stuff concerned, the frequency of distribution of this feed, the expenditure on guinea fowl feeding and the difficulties faced by these farmers.

2.3. Statistical Analysis

The software XLSTAT (6.1.9) was used for data analysis. Descriptive statistics provided dispersion parameters (frequencies, means, standard deviations, minimum, maximum, and percentage), and an analysis of variance (ANOVA) was performed to compare the means. Newman Keuls multiple comparison tests was used to assess the significance of differences in means at the 5% level.

3. Results

3.1. Socio-Professional Characteristics of Livestock Farmers

The majority of guinea fowl farmers in the Western Tandjile Department area were carried out by men (88%) and

married (92%). They were for the vast majority of Christians (91%) against 1% of Muslims and 8% animists. The difference between Christians and non-Christians was significant ($p < 0.05$).

The majority of guinea fowl farmers in the Western Tandjile Department have a level of education having reached primary school, followed by those at the secondary level. The proportion of those with tertiary education is the lowest (Figure 2).

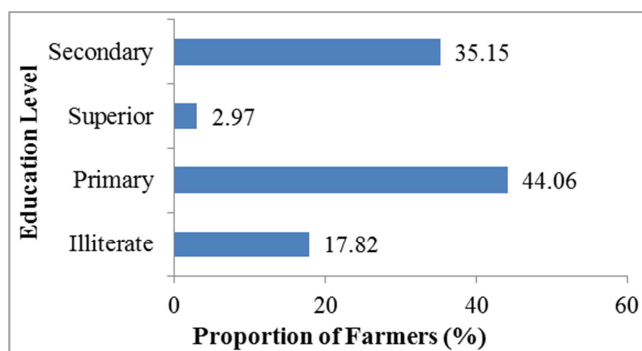


Figure 2. Education Level of Farmers in the Western Tandjile Department, Chad.

Most of the farmers surveyed were monogamous. The average size of the family was 9.16 ± 0.30 and the average size of the family was 4.89 ± 0.20 individuals (Table 1).

Table 1. Number of Wives, Family Size, and Number of Active Persons in Households in the Western Tandjile Department, Chad.

	Women (n)	Size of family (n)	Number of family assets (n)
Minimum	1.00	3.00	1.00
Average \pm SD	1.35 ± 0.05	9.16 ± 0.30	4.89 ± 0.20
Maximum	5.00	33.00	20.00

The majority of farmers are mainly engaged in agriculture, particularly the cultivation of cereals and oilseeds (72%) followed by cereals alone (28%).

Most farmers distribute cereals as the main complementary feedings to their guinea fowl followed by oil-seeds associated with cereals at once (21%) ($p < 0.05$).

Out of a total of 202 poultry farmers of all species in a household, guinea fowl farmers account for 58.42%, chickens 30.20%, ducks 8.92% and pigeons 2.46%. Guinea fowl farming is the most common type of poultry farming,

followed by chickens and ducks. Pigeons are bred by a small proportion of producers.

The importance of guinea fowl farming is reflected in its higher numbers in households than other poultry (Table 2).

Table 2. Type of poultry reared in households in Western Tandjile Department, Chad.

Type of poultry raised	Number (N)	%
Guinea Fowl	118	58.42
Chickens	61	30.20
Ducks	18	8.92
Pigeons	5	2.46

As regards the average number of poultry reared in the Western Tandjile Department, that of guinea fowl was more represented (22.20 ± 0.72). It is followed by chickens (14.16 ± 0.69) and pigeons (13.96 ± 1.21). Duck farming was the least practiced by producers ($p < 0.05$) (Table 3).

Table 3. Number (N) of poultry reared by household in the Western Tandjile Department, Chad.

	Chickens	Guinea fowl	Ducks	Pigeons
Minimum	2,00	2,00	1,00	4,00
Avg. \pm SD	$14,16 \pm 0,69$	$22,20 \pm 0,72$	$6,54 \pm 0,44$	$13,96 \pm 1,21$
Maximum	66,00	65,00	30,00	23,00

Avg. \pm SD = Mean \pm Standard deviation

An increasing number of guinea fowl was noted comparing to that of the department (Table 4). The sex ratio was 3.33 ± 0.14 males to (10.70 ± 0.46) females and the age of sexual maturity of males was (7.03 ± 0.14) and females (7.02 ± 0.14).

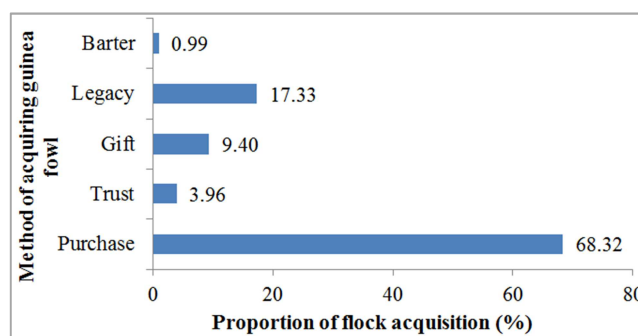


Figure 3. Mode of Acquisition of Guinea Fowl in the Western Tandjile Department, Chad.

Table 4. Initially Number and Current Poultry Population by Sex and Age.

	Initial Number (N)	Actual Male	Actual Female	Male age (months)	Female age (months)	Actual Number (N)
Minimum	2.00	1.00	1.00	4.00	4.00	2.00
Avg \pm SD	14.13 ± 0.58	3.33 ± 0.14	10.70 ± 0.46	7.03 ± 0.14	7.02 ± 0.14	22.90 ± 0.72
Maximum	40.00	11.00	32.00	16.00	16.00	65.00

Avg. \pm SD = Mean \pm Standard deviation

Guinea fowl are acquired in different ways, the main one being the purchase of eggs for brooding and the disposal of guinea fowl to constitute his farmyard, followed by inheritance from relatives or friends. The mode of egg

acquisition at baseline was significantly more practiced ($p < 0.05$).

The breeding of the guinea fowls in the study zone is almost individual (96%).

3.2. Guinea Fowl Feeding Practices

About 80% of fish farmers report that these poultry feed behind huts followed by routes not far from houses (Figure 4). The guinea fowls seek their own food in most cases.

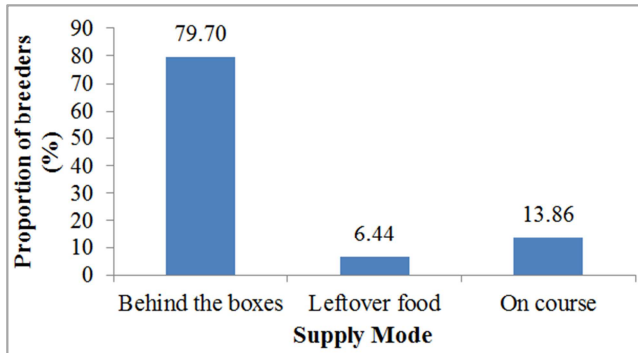


Figure 4. Methods of feeding guinea fowls.

The majority of farmers have been surveyed for the fact that guinea fowl are fed up in a traditional state with insects, fallen cereals, and termites (Table 5).

Table 5. Types of Feed Consumed by Guinea Fowl in Western Tandjile, Chad.

Consumption of feed	Number (n)	Proportion (%)
Locusts-insects-plants	21,00	10,40
Insects-cereals fallen	116,00	57,43
Insects-Fallen Cereals-Termites	42,00	20,79
Insects-Fallen cereals-plants	6,00	2,97
Insects-Ants-Earthworms	3,00	1,49
Insects-ants-plants	12,00	5,94
Insects-Termites-Earthworms	1,00	0,50
Insect-Plants	1,00	0,50

Most farmers (84.09%) distribute guinea fowl supplement feed twice (02) times per day. The frequency of daily distributions most observed was that of the morning and evening, followed only once a day either in the morning or in the evening (Table 6). These feeding kinds of stuff are distributed as supplements to guinea fowl.

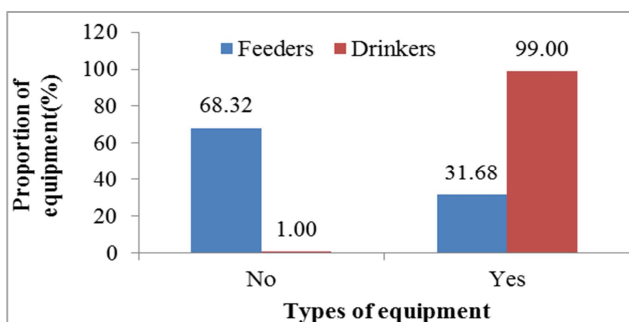


Figure 5. Equipment in Guinea Fowl Feeder and Drinker in Households.

Table 6. Daily Frequency of Distribution of Guinea Fowls Feed by Farmers.

Frequencies of distribution	Number of staff (n)	Percentage (%)
1 time	28.00	13.93
2 times	169.00	84.09
3 times	4.00	2.00

Almost all farmers have drinkers for guinea fowl, while 68% have guinea fowl feeders (Figure 5).

The demand for guinea fowl by farmers in the study was the purchase of eggs (table 7). The overall cost of expenditure averages USD 3.50 ± 0.10. These eggs are placed under an incubator hen in order to provide guinea fowl chicks for the start of the rearing of guinea fowls. The majority of livestock farmers with additional feed costs and the cost of acquisition was USD 5.905 ± 0.94.

Table 7. Start-up egg purchase price and feed cost/month.

	Egg price (Dollar)	Feed cost/month
Minimum	163.69	65.47
Average ± SD	350.39± 10.40	589.63± 94.20
Maximum	1227.64	4910.55

3.3. Difficulties Faced by Producers

The difficulties encountered by guinea fowl producers were the lack of resources (77%) and the high volume of feed on the market (23%).

4. Discussion

4.1. Socio-Professional Characteristics of Guinea Fowl Farmers

The majority of guinea fowl farmers in the Western Tandjile department have reached the level of primary education. The same observations were made in Chad by [3]. In this study zone, the practice of this activity by men and largely Christians confirms the observations reported in the same way by [6, 3]. The preponderance of men is also observed in Togo, Cameroon, Senegal, Democratic Republic of Congo (DRC) [17-20]. In contrast, in Burkina Faso, poultry farming is generally a woman's business [5, 21].

The most common poultry farm in Western Japan was that of the guinea fowl. This enthusiasm is explained by a dual-purpose production (meat and eggs) on the one hand, and on the other hand by the existence of a flourishing egg market in particular. The income generated by this production enables to meet the needs of the farmers. These are the purchase of cereals, the payment of the work market, medical spawning, self-employment and schooling of children etc.) [3].

The age of sexual maturity was 7 months for both males and females. The sex ratio was 3 males to 10 females or 1 male to about three females. This result was similar to those [17, 22-24], with a sex ratio of one male to two females [25] report a ratio of one male for every 3 females, similar to our results. This sex - ratio is exploited by farmers to prevent males from dragging females over a long distance for egg-laying. This allows farmers to control the laying of females.

4.2. Guinea Fowl Feeding

The feeding method of guinea fowl in the Western Tandjile department is similar to the traditional practice of rearing with low complement of birds. Guinea fowl pull the feeding during wandering behind the huts. Similar

observations occur [22, 5, 7, 26]. Most farmers distribute feeding stuffs to supplement guinea fowl. Our results showed that supplements in cereals, legumes, by-products, etc. are brought to guinea fowl by farmers once or twice a day. The same observations are reported [6, 3] in the same study area. Elsewhere, similar data are reported [22, 27]. The frequency of distribution of guinea fowl feeding was twice a day (morning and evening). This result is similar to that obtained [23, 7]. The frequency of feeding distribution of once or twice a day was adopted by most farmers to retain their backyards. This strategy is implemented not only to maintain guinea fowl around the huts near the concessions but also to improve egg-laying performance during the season indicated. The breeding of guinea fowl or the production of eggs is speculative in this Department and all actions allowed to increasing the products of this farming.

Like chickens in traditional farming, guinea fowl also benefited from more drinkers of different types and feeders in small proportions. Similar observations have been made in Burkina Faso and Chad in chicken farming [28, 29, 20] for guinea fowl. The use of traditional drinking troughs by farmers is explained by the fact that these drinkers are locally watered by the artisans and are easy to find. Sometimes there are pieces of canaries and holds that farmers use to water poultry. The use of feeders is partly due to their size. These feeders are not accessible due to a lack of financial means.

As for the difficulties encountered by guinea fowl farmers, we note the high costs of feed on the market. The same observations were reported [30]. Feed is an important factor in animal production, particularly poultry farming. It deserves special attention in interventions to improve livestock productivity. Apart from deadly pathologies in backyards, food constraints considerably limit the expression of production and reproduction performance in poultry farming.

5. Conclusions

This study has made it possible to understand the mode and practice of feeding guinea fowls in Western Chad. It has also made it possible to identify the main food resources distributed to the guinea fowls and the frequency distribution. Men have been the most involved in the farming of guinea fowl, which remains the highest poultry in Western Africa. In addition, farmers find it difficult to feed their guinea fowls as a result of the high costs of food on the markets. In addition, further work on the use of food resources unconventional in guinea fowl feed would be necessary to reduce the cost of production of guinea fowl and to improve their product performance.

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Conflicts of Interest

The authors declare no conflicts of interest.

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