



Production Characteristics of Local Guinea Fowl (*Numida Meleagris*) in the Urban Commune of Tessaoua, Niger

Moussa Hassan Ousseini ^{a*}, Brah Nouri ^b
and Souley Garba Mahamadou Laminou ^b

^a Faculty of Agronomy and Environmental Sciences, University Dan Dicko Dankoulodo of Maradi, P.O. Box 465, Maradi, Niger.

^b Animal Production Department, National Institute of Agronomic Research of Niger, BP: 429 Niamey, Niger.

Authors' contributions

This work was carried out in collaboration among all authors. Author MHO did the methodology, writing original draft, data curation, conceptualization, funding acquisition. Author BN did the writing review & editing, data curation, formal analysis. Author SGML did the data collection. All authors read and approved the final manuscript.

Article Information

DOI: <https://doi.org/10.9734/ajaar/2024/v24i7524>

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/118081>

Original Research Article

Received: 09/04/2024

Accepted: 13/06/2024

Published: 20/06/2024

ABSTRACT

Guinea fowl breeding is an important source of animal protein and income for populations in Niger. Improving this activity requires better knowledge of production practices. Thus, a survey was carried out in August 2023 in the urban commune of Tessaoua (Maradi/Niger) in order to provide the necessary information on the practice of guinea fowl breeding. For this purpose, sixty (60) producers distributed in 6 villages (10 producers / villages) within a radius of 15km around the urban commune of Tessaoua were interviewed using a structured questionnaire. The results of this

*Corresponding author: Email: moussah_ousseini@yahoo.fr;

study show that guinea fowl breeding is an activity mainly carried out by men (86%). Guinea fowl (28.47%) are raised at the same time with chickens (60.08%), pigeons (6.74%), ducks (4.52%) and Turkey (0.20%). The predominant breeding system for local guinea fowl in the urban commune of Tessaoua is scavenging (77%). The guinea fowl most preferred by producers are respectively those with gray plumage (44%), gray plumage with white breast (23%), and those with ash plumage (21%). Guinea fowl breeding products are mainly intended for sale (45%), for self-consumption (36%) and donation (14%). Sixty-eight percent (68%) of producers do not vaccinate their poultry. This is why Newcastle disease is the most catastrophic for 52% of producers. The main constraints in guinea fowl breeding in the urban commune of Tessaoua are diseases (67%) and lack of resources (18%). It is clear that the development of the sector necessarily involves strengthening the surveillance of avian diseases, coupled with veterinary monitoring and supervision of producers.

Keywords: Constraints; guinea fowl; local poultry; Tessaoua.

1. INTRODUCTION

Niger is a Sahelian country with an agro-pastoral vocation. Livestock farming occupies more than 87% of the population [1]. The livestock sector for which Niger has an undeniable comparative advantage in the West African sub-region [1], contributes more than 11% to the constitution of the national GDP (Gross Domestic Product) and more than 25% of the budget of households [2]. This strong contribution makes this sub-sector an effective weapon in the tireless fight against poverty and food insecurity, not only because of its contribution of animal products of high nutritional value but also and above all through the creation of jobs and substantial income in rural areas [3,1]. In this sector, the poultry sector, represented by traditional poultry farming (around 98% of poultry numbers) and modern poultry farming [4], occupies a very important place in the household economy, food security and nutrition and the fight against poverty.

Guinea fowl breeding occupies a special place in Niger, given its socio-economic and nutritional importance in the lives of the populations. The promotion of mixed agriculture requires knowledge of its practice as well as knowledge of the zootechnical and genetic characteristics of guinea fowl. This work was undertaken to characterize the local guinea fowl production system in order to better identify the constraints linked to traditional guinea fowl breeding in the urban commune of Tessaoua.

2. MATERIALS AND METHODS

2.1 Study Area

The study was carried out in the Urban Commune of Tessaoua (Maradi/Niger region).

This Municipality was created in 2003 by Law No. 2003-010 of October 1, 2003 creating Municipalities and setting the names of their capitals. It is one of the seven (7) communes in the department. The Urban Commune of Tessaoua is limited to the East by the Rural Commune of Maijirgui, to the North by the Rural Commune of Kanan Bakaché. The population of the municipality of Tessaoua is estimated at 161,517 inhabitants, the Municipality of Tessaoua covers an area of 824 km². It is made up of Hausa who live alongside Fulani, this population has an increase rate of around 3.6% and an average density of 196.01 inhabitants/km².

2.2 Investigations

The survey was carried out in 6 villages in the urban commune of Tessaoua during the month of August 2023. The choice of villages was made on the basis of the large number of guinea fowl producers at the village level. The municipal livestock service helped in the choice of villages.

The choice of producers is based on two criteria: i) Knowledge of the species by the person to be interviewed; ii) Availability and willingness to answer questions asked. The village chief helped in the choice of producers.

In each village 10 guinea fowl producers were chosen. A total of 60 producers were questioned as part of this work. The producers were questioned individually in the village. The way of sampling farmers was the same from one village to another, the aim of which is to collect different information.

The Data collection in the field was carried out using a questionnaire which made it possible to

collect information on the guinea fowl production system.

2.3 Data Analysis

All collected data were processed with Excel 2019 and subjected to descriptive analysis with SPSS (Statistical Package for Social Sciences.) Version 26 software.

3. RESULTS AND DISCUSSION

3.1 Characteristics of Guinea Fowl Producers

Men represented 87% of guinea fowl producers in the urban commune of Tessaoua (Fig. 1). This

result corroborates that of Francis et al. [5] in Cameroon, that of Kongue [6] in Togo and that of Floribert et al. [7] in the Democratic Republic of Congo. However, in Burkina Faso poultry farming in general is a women's activity [8]. Fig. 2 showed that 45% of producers are in the age group of 30 to 50 years. Similar results were found by Issa et al. [9] in Chad and by Mbengue [10] in Senegal. Fig. 3 showed that 71% of guinea fowl producers are householder. Agriculture and livestock breeding represented the main activities of guinea fowl producers in the urban commune of Tessaoua with 47 and 27% respectively (Fig. 4). 87% of the producers met in the urban commune of Tessaoua are married (Fig. 5). This result is similar to that found by Fall et al. [11] in Senegal.

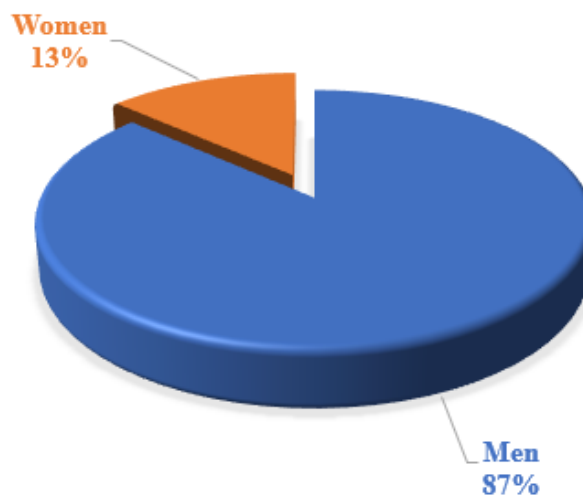


Fig. 1. Distribution of producers by gender

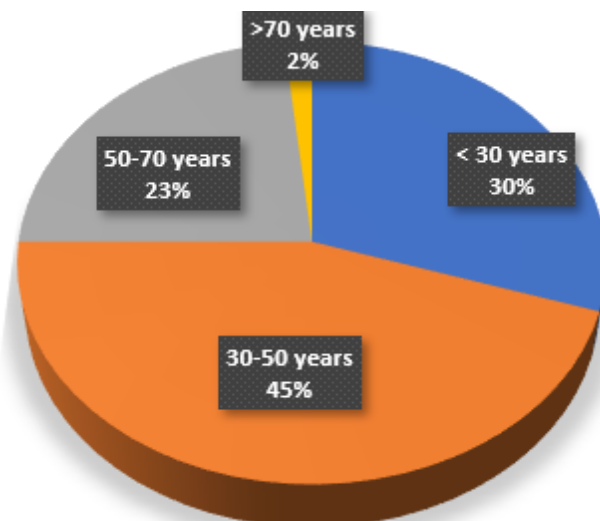


Fig. 2. Age of respondents

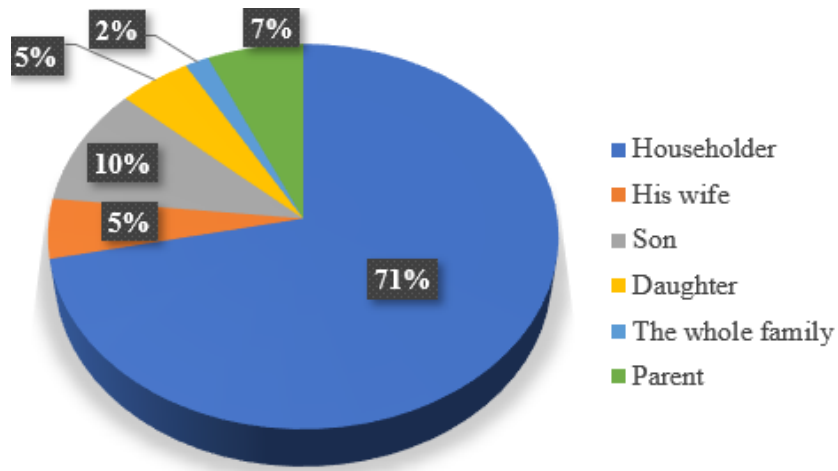


Fig. 3. The position in the family of the producers surveyed

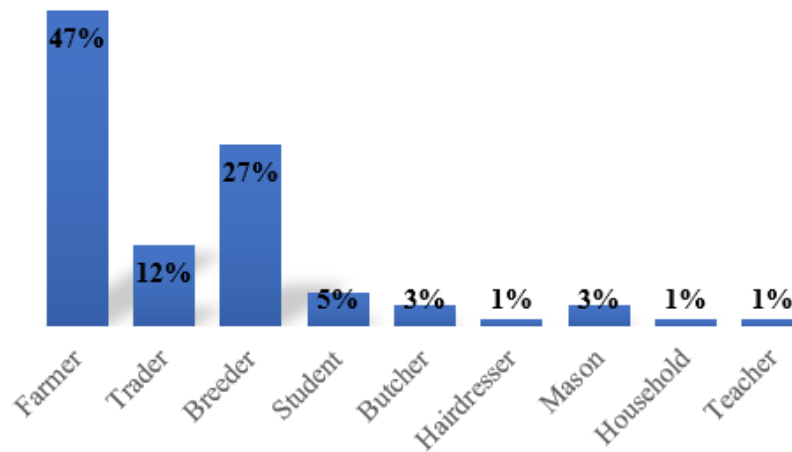


Fig. 4. The main activities of producers

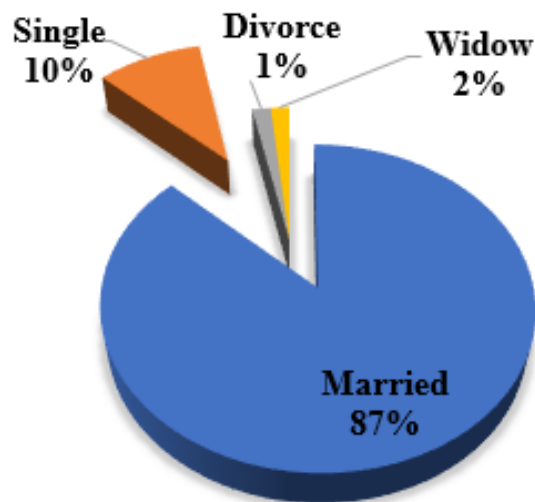


Fig. 5. Marital status of producers

3.2 Technical Characteristics of Guinea Fowl Production

3.2.1 Structure of the poultry herd of guinea fowl producers

The poultry stock of guinea fowl producers consists of chicken (60.08%), guinea fowl (28.47%), pigeon (6.74%), duck (4.52%) and turkey (0.20%) (Table 1). The predominance of chicken can be explained by the fact that the hen is used by producers as an incubator for guinea fowl eggs.

3.2.2 Experience in breeding guinea fowl

This study shows that 80% of guinea fowl producers have more than 5 years of experience in breeding guinea fowl (Fig. 6). This result corroborates that found by Tellah et al. [12] in Chad. However, no producer has received training in breeding guinea fowl.

3.2.3 Guinea fowl breeding system

Fig. 7 presented the different breeding systems among producers. Thus, scavenging is the main breeding method for 77% of producers. This free-

range breeding method is found in the majority of regions of sub-Saharan Africa [13,14,15].

3.2.4 Objectives of guinea fowl breeding

The objectives of producers in breeding guinea fowl have been varied. However, the most common are sale and self-consumption with 45 and 36% respectively (Fig. 8). Other similar studies [16,17] show that poultry farming is essentially a practice linked to economic reasons because of the income that can be obtained but also for consumption [18].

3.2.5 Favorite guinea fowl colors

Fig. 9 shows guinea fowl plumage colors based on producer preferences. Guinea fowl with gray plumage were mainly higher with 44%. Then there are the white-breasted grays with 23%, then comes the ashes and whites with 21% and 12% respectively.

3.2.6 Guinea fowl egg management policy

Guinea fowl eggs are mainly intended for hatching (40%), sale (38%) and consumption (22%) (Fig. 10).

Table 1. Composition of the poultry herd of guinea fowl producers

Poultry	Effective	Frequency
Chicken	918	60.08%
Guinea fowl	435	28.47%
Pigeon	103	6.74%
Duck	69	4.52%
Turkey	3	0.20%

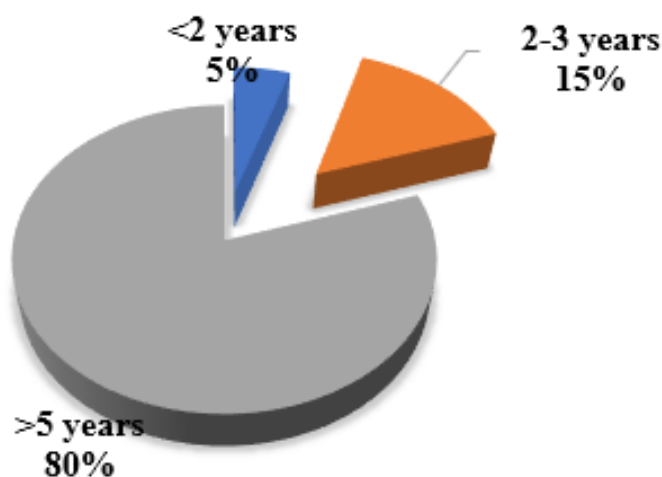


Fig. 6. Experience of producers in breeding guinea fowl

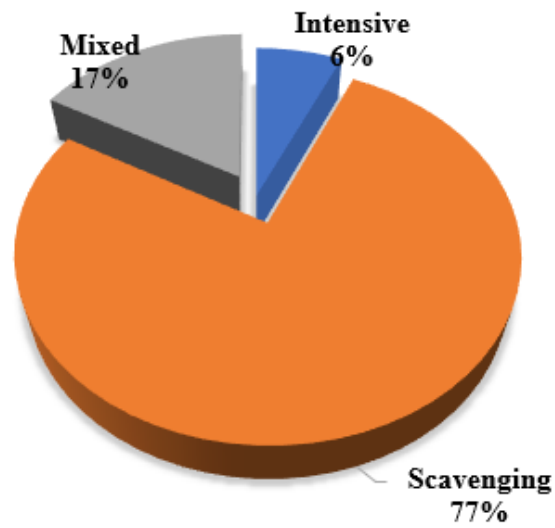


Fig. 7. The different breeding systems among producers

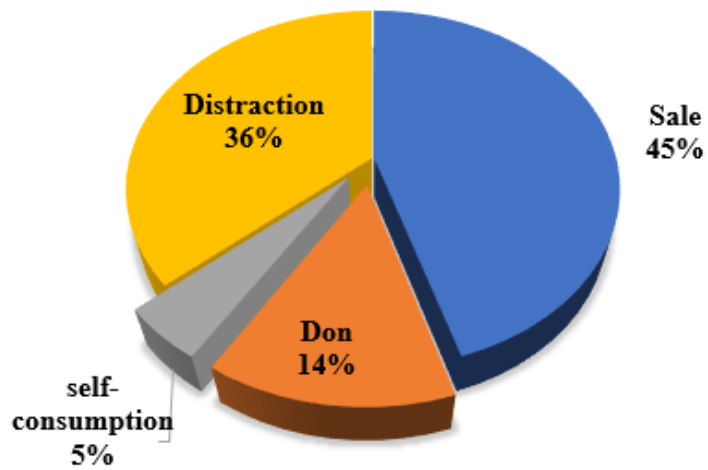


Fig. 8. The objectives of producers in breeding guinea fowl

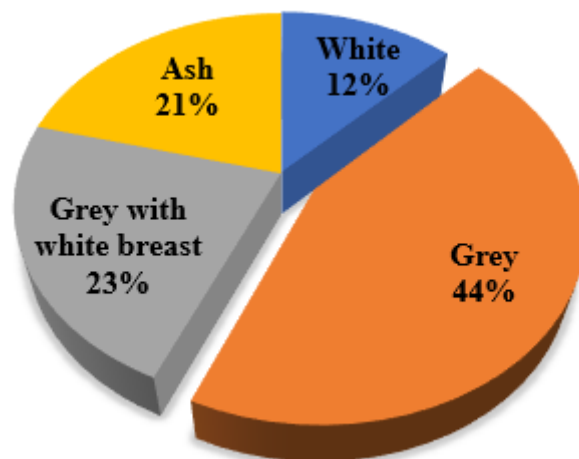


Fig. 9. Guinea fowl colors preferred by producers

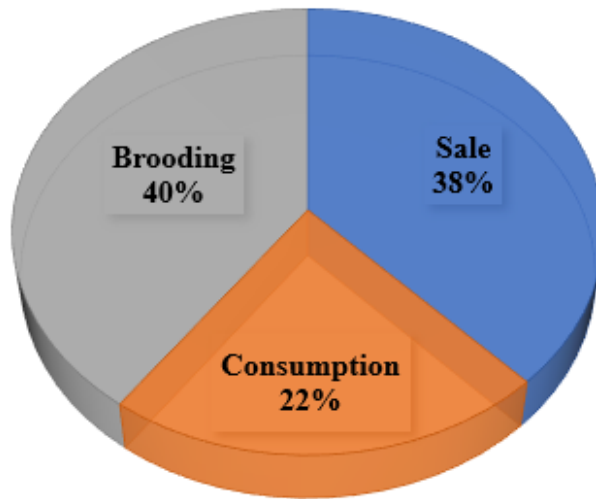


Fig. 10. Use of guinea fowl eggs

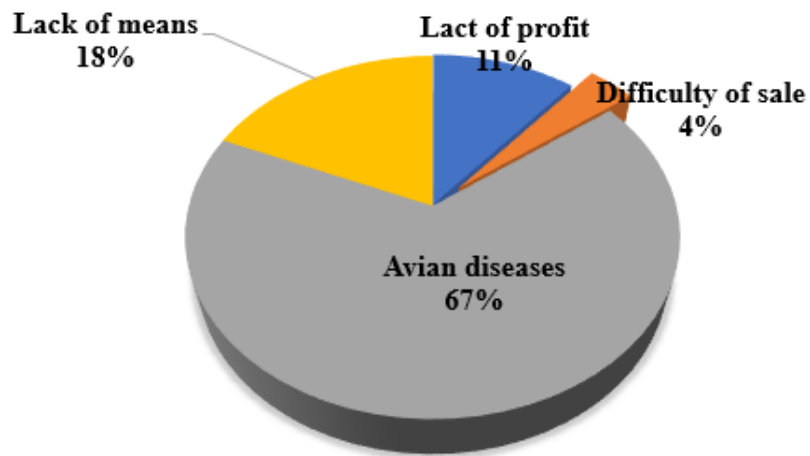


Fig. 11. Causes of guinea fowl production stopping

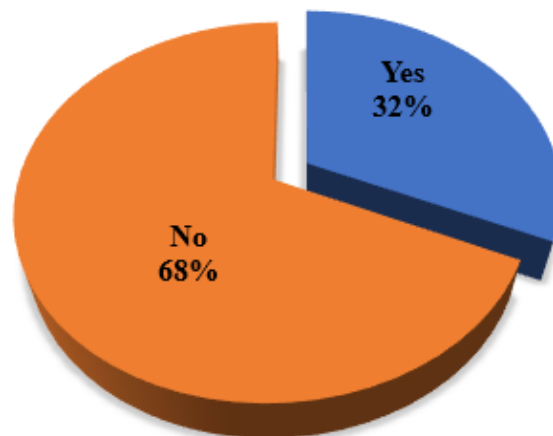


Fig. 12. Proportion of producers who vaccinate

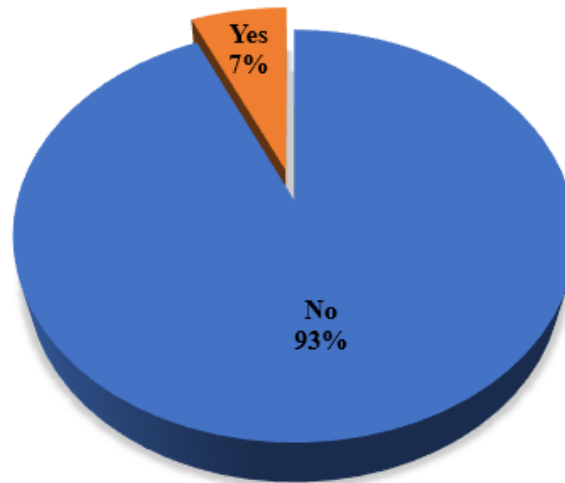


Fig. 13. Receipt of visits from veterinary agents

Table 2. Common guinea fowl diseases in the urban commune of Tessaoua

Newcastle disease	Avian influenza	Avian smallpox	Marek disease	Parasite disease	Breathing disease	<i>E. Coli</i> infection
52%	7%	2%	8%	13%	15%	3%

Table 3. Constraints of guinea fowl production

Diseases	Stolen	Lack of nutrition	Lack of housing	Lack of funding	Lack of training
38%	11%	10%	6%	10%	25%

3.2.7 Causes of guinea fowl production stopping

The causes of cessation of guinea fowl breeding are mainly avian diseases and lack of resources with 67 and 18% respectively (Fig. 11). The result of this study shows that 68% of producers do not vaccinate their animals (Fig. 12). Poultry production cannot be done without appropriate veterinary monitoring. Unfortunately Fig. 13 shows that 93% of guinea fowl producers do not receive visits from veterinary agents for their poultry.

3.2.8 Common guinea fowl diseases

Several diseases affect guinea fowl (Table 2). Newcastle disease is the most common with a rate of 52%.

3.3 Constraints linked to guinea fowl production in the urban commune of Tessaoua

Several constraints constitute an obstacle to the development of guinea fowl production in the

urban commune of Tessaoua. The major constraints of guinea fowl breeding are zootechnical and health-related (Table 3). They are comparable to those recorded by Huart et al. [19] in Benin. The lack of health monitoring causes enormous damage for producers, especially when it comes to Newcastle disease. The lack of training or adequate breeding equipment contributes to a drop in production in this poultry sub-sector. It is therefore important to strengthen technical and health support for producers in order to promote food security and the fight against poverty in rural areas.

4. CONCLUSION

This study is carried out to characterize the local guinea fowl production system in order to better identify the constraints linked to traditional guinea fowl breeding in the urban commune of Tessaoua. Thus, the guinea fowl is raised in the presence of other poultry and mainly with the chicken. The majority of guinea fowl producers have continued in guinea fowl breeding with unfortunately no training experience in poultry farming. It also emerges from this study that very

few producers receive visits from veterinary agents. This explains the reason why guinea fowl breeding has stopped for many producers due to disease. This study made it possible to understand the constraints in the production of local guinea fowl (*N. meleagris*) raised in rural areas. For any program to improve guinea fowl breeding, it is necessary to take into account the training aspect of producers, the poultry feeding aspect and above all take into account adequate health monitoring of the flock by veterinary agents.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

All the producers who participated in this survey were first informed about the main purpose of the study and their participation was voluntary and anonymous. A written agreement was obtained from each producer at the beginning of his interview.

ACKNOWLEDGEMENT

Our thanks go to the management of the livestock department of Tessaoua who provided us with an agent who helped us in identifying diseases.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Republic of Niger, Ministry of Livestock. Sustainable Livestock Development Strategy (SDDE 2012-2035); 2013.
2. FAO. Review of the livestock sector in Niger; 2010. Available: https://reca-niger.org/IMG/pdf/Niger_Revue_national.pdf
3. Amadou Moussa B, Idi A, Benabdeljelil K. Rural family poultry farming in Niger: diet and zootechnical performance. RIDAF. 2010;19(1):5-12.
4. Republic of Niger. Analysis of the results of surveys on livestock markets and poultry livestock, General census of agriculture and livestock. 2008;2005-2007:99p.
5. Francis DD, Felix M, Yacouba M, Production characteristics of local guinea fowl (*Numida meleagris*) in the Sudano-Sahelian zone of Cameroon. Science and technology, Natural sciences and agronomy. Special special. 2016;2.
6. Kongue T. Production system and constraints of village mixed agriculture in the prefecture of Tandjoaré in northern Togo. Family Poultry |Communications en Aviculture Familial. 2016;25:(1-2)-9/42.
7. Floribert NN, Christophe K, Nicher BR. Status of mixed agriculture in the city of Kisangani and its surroundings, DR Congo. Africa Science. 2022;20(1):15–27.
8. Bansé O, Jean SZ, Laya S. Characteristics of poultry farming in the Sahelian zone of Burkina Faso. 2017;263-280.
9. Issa Y, Mopate LY, Missohou A. Marketing and consumption of traditional poultry in sub-Saharan Africa. Journal of Animal & Plant Sciences. Flight. 2012;14(3):1985-1995. Available: <http://www.m.elewa.org/JAPS;> ISSN 2071 – 7024
10. Mbengue AM. Poultry farming in the commune of Thiès (Senegal): characteristics and contribution to household income. End of study thesis at ISFAR in Bambey. 2019;34(46):47p.
11. Fall AK, Nesseim TDT, Ndour SD. Sociotechnical determinants of poultry raising within concessions in the commune of bambey, Senegal. European Scientific Journal, ESJ. 2021;17(40):158. Available: <https://doi.org/10.19044/esj.2021.v17n40p158>
12. Tellah M, Djal AK, Andaravous Ballah TD, Leng Tchang B, Mopate Logtene Y. Characteristics of rural guinea fowl (*Numida meleagris*) breeding system in the sub-prefecture of baktchoro, Chad. International Journal of Livestock Research. 2019;5(36):8-17.
13. Idi A. Peasant practices in traditional poultry farming in Niger. International Network for Family Poultry Development Newsletter. 1998;8(3).
14. Dahouda M. Breeding of local guinea fowl in the borgou department of Benin: Comparison of production characteristics on station and in rural areas. DEA

- dissertation, Faculty of Veterinary Medicine of Liège, Belgium. 2003;35p.
15. Saina H. Guinea fowl (*Numida meleagris*) production under smallholder farmer management in Guruve district, Zimbabwe. M.Phil. Thesis, Department of Animal Science, Faculty of Agriculture, University of Zimbabwe. 2005;108p.
 16. Fall AK, MbengueAM. Technical analysis of poultry farming in the municipality of Thies Senegal Agricultural Science Research Journal. 2020;10(12): 342 – 346.
 17. Ouedraogo B, Bale B, Zoundi SJ, Sawadogo L. Characteristics of village poultry farming and influence of improvement techniques on its zootechnical performances in the Sourou province, North-West region of Burkina Faso; Int. J. Biol. Chem. Sci. 2015;9 (3):1528-1543.1538.
 18. Ossebi W. Analysis of the “country chicken” sector in Senegal: Economic and organizational aspects. Master II thesis in animal production and sustainable development. No. 13 EISMV Dakar Senegal. 2011; 44p
 19. Huart A, Bindelle J, Woirin D, Buldgen A. Guinea fowl breeding in Benin under the microscope. EcoCongo. Identification: F-EP-A5-21; 2004.

© Copyright (2024): Author(s). The licensee is the journal publisher. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/118081>