

Assessment Of South Sudanese Native Chickens Management And Socio-Economic Status Of Household Keepers In Central Equatoria State

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Abstract: Chickens as poultry species are distributed worldwide. Globally, they play cultural, social and economic role in the daily livelihood of rural population. South Sudan native chicken under traditional farming system is lacking researches on management and socio-economic characterization of their keepers, therefore, this study aims at assessment of management systems as well as the socio-economic characteristics of native chicken keepers in Juba and Terekaka counties of Central Equatoria state. Data were collected randomly from 40 households in the two areas by means of questionnaires, and were subjected to descriptive analysis using SPSS programme version 20.0. The study revealed that 65% of respondents were females and 47.5% of respondents were not older than 39 years. Among respondents 87.5% were married, with housewives representing 62.5%. Of all respondents 75% have attended school, 37.5% are government employees and 22.5% are unemployed. Majority of respondents (90%), were not providing feeds to their flock, 75% did not provide water and only 12.5% provided supplements. Chicken houses and shelter were provided by 95% of the respondents. Decision over marketing of chicken and eggs was reported by (67.5%) of respondents to be the responsibility of the housewives and that most of chickens are sold alive (75%). Furthermore, assessment on disease prevalence showed that, incidences of infectious diseases were experienced by all respondents (100%) among their flocks. The peak season for disease incidence was reported by 97.5% of respondents to be in Autumn, and the most prevalent disease mentioned by (50%) respondents was New Castle disease. Majority of households (70%), have not received any veterinary services, however 25% and 5% of respondents have received from private practitioners and government respectively. The study concluded that many people in the study area are interested in poultry keeping, but are lacking fund, extension and veterinary care services. Therefore, the study recommends that extension services on poultry keeping must be provided to the interested households in the study area, such that they are able to form chicken producers' groups and cooperatives to enable them access microfinance and small business lending institutions as well as receive veterinary care and other management extension services including good housing and good feeding.

Keywords: South Sudanese native chicken, socio-economics and management system.

I. INTRODUCTION

Throughout the developing and underdeveloped countries native chickens are reared in many rural, peri-urban and urban areas as a major source of food security and economic income

for the poor and middle-income families and communities. They play a vital role in the livelihood of many resource-limited rural and peri-urban household across the developing countries (Alexander et al, 2004).

Indigenous chicken production is mainly recognized in developing countries as a source of cash creation, elimination of poverty and hunger among households (Okeno et al. 2012). Free range system of poultry production is characterized by low input, low output and periodic flock destruction due to outbreak of diseases (Tadelle et al. 2003a)

In south Sudan Bahr El Gazhal region it was found that indigenous poultry farming is contributing to the household families in terms of poverty alleviation and socio-economic development (Jubara et al. 2021). The current study aimed at assessing native chicken management practices and socio-economic characteristics of chicken keepers in Juba and Terekaka counties.

II. MATERIAL AND METHOD

A. STUDY AREA DESCRIPTION

The study was conducted in two areas; Juba County and Terekaka County in the central equatorial state, these two areas were selected for their proximity to demand areas in Juba town, the capital city of the Republic of South Sudan. Juba town is situated on the western site of the River Nile, located between 4°51'00" N and 31°36'00" E, at 550m elevation, of an area covering 20.08m². Juba town temperatures are hot in dry season which exceed mostly 33⁰C (27.5⁰C in average), extremely low humidity levels of 40%, wind invariably stands at E 4mph (6 km/h) and population of 525,953 (Martin & Irina. 2011). Juba city falls in the Hills and Mountains agro-ecological zone and geographically located between the latitude 4.84°N and longitude 31.59°E, sandy loam soil type which is conducive for any agricultural undertakings, rainfall of 941mm and experiences a wet-dry tropical climatic condition which diverse agro-ecological with high potential for agricultural production of different crops (Ngalamu et al., 2019). On the other hand Terekaka area located north juba city (fig.1), lies approximately 53 mile with an estimated population of 176.030 (Martin & Irina. 2011).

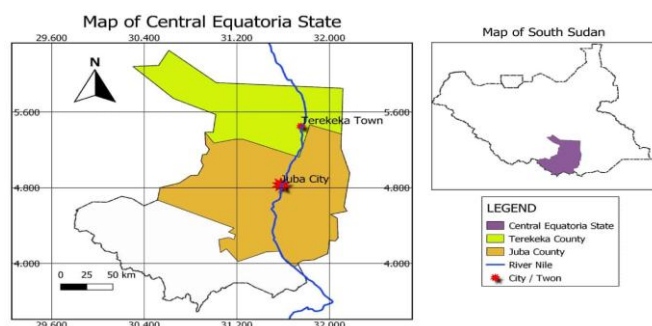


Figure 1: Location of Juba and Terekaka in central equatorial state map

B. RESEARCH DESIGN AND SAMPLE SIZE

Data were collected using questionnaires which were distributed randomly in two areas Juba the capital and Terekaka town north to Juba town, with ample size composed of 40 chicken keeping households from different sex and at different ages.

C. DATA ANALYSIS

The collected data from the assessment were analyzed using SPSS program (Statistical Package for Social Sciences version 20.0) for descriptive statistics and graphs figures clarification.

III. RESULTS AND DISCUSSION

A. SOCIO-ECONOMIC CHARACTERISTICS OF HOUSE HOLD

The results in the table (1) showed that (65%) of the respondents were females, (47.5%) age group were not older than 39 years. This result agree with the result of Oladuni and Futuase (2014) who reported that women are more involved in backyard poultry farming than men. For position in the house holds in (table 1) revealed that 62.5% of the respondents were house wives who were involved in rearing. Regarding marital status (table1) it showed that (87%) of respondents involved in chicken rearing were married, this may be because house wives have facilities and money to purchase chicken and feed them. Educational level of the respondents shown in table (1) also revealed that (75%) represent those who went to school and this indicated that majority of respondents were educated and can facilitate in disseminating information concerning poultry farming in the study area. With regard to occupation the table (1) reveals also that 37.5% of the respondents were government employees, 22.5% non-employed, 20% house wives, 15% private employees and lastly daily workers and students were 2.5%. this showed that the high percentage of government employees (37.5%) of the respondents were involved in chicken farming may be because of their status and facilities they have which enable them to embark on poultry farming than the other groups.

Characteristics	Frequency	Percentage %
Gender		
Male	14	35%
Female	26	65%
Age		
18 – 28 years	6	15%
29 – 39 years	19	47.5%
40 – 49 years	9	22.5%
59 – 69 years	6	15%
Position in the household		
Husband	14	35%
Wife	25	62.5%
Daughter	1	2.5%
Son	0	0%
Relative	0	0%
Others	0	0%
Marital status		
Married	35	87.5%
Unmarried	5	12.5%
Educational level		
Not attended school	10	25%
Primary	19	47.5%
Secondary	9	22.5%

College	2	5%
Vocational	0	0%
Post graduate	0	0%
Other	0	0%
Occupation		
Gov.	15	37.5%
Private employee	6	15%
Daily worker	1	2.5%
Non employed	9	22.5%
House wife	8	20%
Students	1	2.5%

Table 1: Socio-economic characteristics of household

B. CHICKEN BREEDS

Regarding chicken breeds, table (2) revealed that the main types of chicken reared in the area of the study were the Large Bladi, the Bare Neck and the Dwarf. The Large Baladi makes up to (60%) of the chicken flock reared in the area. These results agree with findings of Deng et al. (2022) who found that the majority of South Sudan indigenous chicken genotype is Large Baladi in the three historical regions of South Sudan (Equatoria, Bhar el Gazal and Upper Nile). whereas the Dwarf genotype chicken was 32.5% and Bare-Nake genotype constituted the least (7.5%). The results also agree with findings of Dit (2023) who found on assessment of south Sudanese indigenous breeds, that Large Baladi, the Dwarf and the Bare Neck genotypes, were representing (74%), 26% and 0% respectively. The low percentage of Bare Nacked genotype may indicate that this genotype is at the verge of extinction. This fact must always be kept in mind to avoid loss of this unique South Sudan genetic resource through designed interventions that would protect it from the danger of extinction.

Breed	Frequency	Percentage %
Large Native chicken	24	60%
Bared-Neck	3	7.5%
Dwarf	13	32.5%
Others	0	0%

Table 2: Chicken Breeds

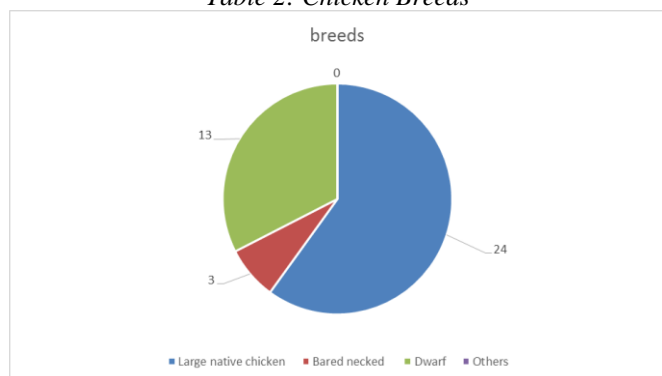


Figure 2: Breeds on native chicken

C. PRODUCTION SYSTEM

The system of production practice in the study area revealed that free range system was 100% and it was the only production system being practiced in the area (Table- 3). This was mainly because it is the cheapest system of production

where by the flock are left to scavenge throughout the day eating what they find around the house and in this way the cost of rearing becomes less and affordable. This finding agree with reports of Dit (2023) who found local chicken breeds of south Sudan reared completely (100%) under free range system on assessment in three areas of central equatorial (Rajaf, Mangala and Luri area).

Production system	Frequency	Percentage %
Free range	40	100%
Semi intensive	0	0%
Intensive	0	0%
Other	0	0%

Table 3: Production systems

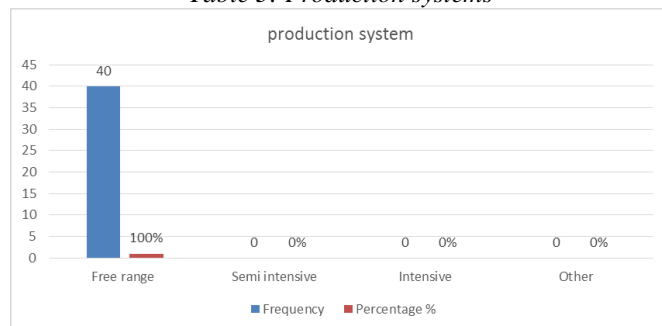


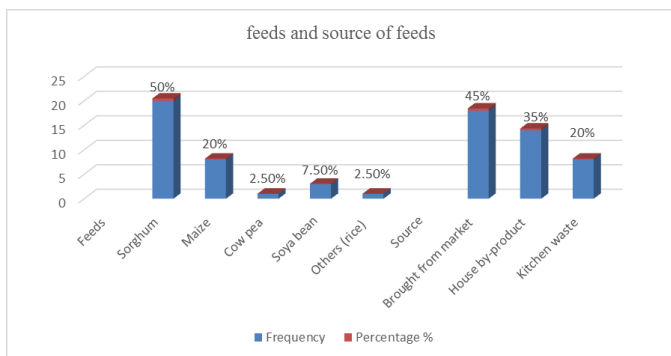
Figure 3: Production system

IV. FEEDING AND SOURCE OF FEEDS

Feeding and source of feeds are major requirement in poultry farming. Table (4) reveals that majority of respondents (50%) feed their chickens sorghum, 20% maize and few others feed cow pea, soya bean and rice at the levels of 2.5%, 7.5% and 2.5% respectively. The mainly reason for most respondents feeding sorghum may be due to availability of sorghum and maize in the study area. Sources of feed shown in table (4) revealed that 45% of feed is bought from market, 35% from crop residues by- product and 20% from kitchen waste. These findings are in agreement with findings reported by Francis et al., (2016), who found that village poultry in Rwanda are characterized by dominantly free scavenging system of feeding.

Feeds & source	Frequency	Percentage %
Feeds		
Sorghum	20	50%
Maize	8	20%
Cow pea	1	2.5%
Soya bean	3	7.5%
Others (rice)	1	2.5%
Source		
Brought from market	18	45%
By-Product of crop residues	14	35%
Kitchen waste	8	20%

Table 4: Feeding and source of feeds



V. FLOCK MANAGEMENT

Regarding flock management Table (5) Reveals that 90% of respondents did not provide food for their chickens; and chickens mainly roam around during the day eating what they find in the surroundings. Only 10% of respondents provide food for their chickens. Water is very crucial for the chickens and lack of provision of clean water to chicken can reduce the performance of these chickens. The study revealed that 75% of the respondents were not providing water to Chickens and only 25% of respondents provided water to their flock. Majority of respondents 95% provide housing to their chicken, and only 5% of respondents housed their chickens in kitchens. Current findings of housing disagree with what was reported by Francis et al. (2016) in found in Rwanda that household families of chicken do not construct separate houses for their chicken and 47.7% of them sharing houses with their chickens, also this disagree with reports of Mekonnen and Egziabher (2007) that nearly all (97.6%) of chicken in Ethiopia not provided with separate houses.

Flock management	Frequency	Percentage %
Feeding		
Food Provided	4	10%
No food provided	36	90%
Watering		
Water Provided	10	25%
No water provided	30	75%
Supplement		
Supplement Provided	5	12.5%
No supplement provided	38	95%
Housing		
In chicken home Kitchen	2	5%
Inside the house	0	0%

Table 5: flock management

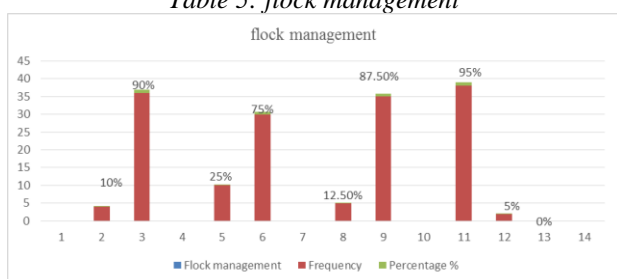


Figure 5: Flock management

VI. DECISION MAKING FOR MARKETING OF CHICKEN AND EGGS

Regarding marketing of chickens and eggs table (6) showed that majority of respondents 75% involved in chicken sale and only 25% sell eggs. This showed that sale of chickens fetch more money than the sale of eggs. On the other hand, decision making for sale of chickens or eggs revealed that 67.5% of house wives take decision of selling chicken or eggs and only 32.5% of husbands were involved in decision making. This finding agree with what was found in Sudan by Yousif et al. (2015) who revealed that women are classified as the highest contributors to chickens ownership, management and decision making within the rearing families.

Question	Yes/No	Frequency	Percentage %
<u>Do you sale alive chicken or egg?</u>	Yes	30	75%
	No	10	25%
<u>Who take decision to sale alive chicken or egg?</u>	Yes	13	32.5%
	No	0	0%
Husband	Yes	27	67.5%
	No	0	0%
Wife	Yes	13	32.5%
	No	0	0%

Table 6: Decision making for marketing of chicken and egg

VII. DISEASES PREVALENCE, SEASONALITY AND VETERINARY SERVICES

Results in Table (7), reveals that all respondents (100%) have confirmed presence of infectious diseases among their chickens, a challenge which greatly affect chicken rearing in the area. This result is in agreement with findings of many authors including Ibrahim et al., (2015), who found that prevalence of infectious diseases is among the major constraints facing Sudanese native chicken kept under extensive system. Results also revealed that most of disease cases have been happening in Autumn (97.5%), then Summer (2.5%), while no cases were reported in Winter (0%). These results are in conformity with findings of Jubara et al., (2021), who found that majority of chicken rearing households (66.7%), in Warab state of South Sudan, reported poultry diseases to occur mostly in the rainy season. Akagha et al. (2021), also confirmed positive correlation between rainfall, relative humidity and incidents of deadly infectious poultry diseases in Nigeria. However, he indicated that New Castle Disease together with some other disease infections occur mostly in the dry season (November – March), agreeing with findings of Nwanta et al., (2008), who found their peak to be between December and March. The study also revealed that New Castle Disease is the major infectious disease affecting native chicken as was reported by 50% of the respondents. Others are Respiratory infections, Diarrhea/Coccidiosis and Lice/Mite as reported by 25%, 17.5%, 7.5% and 5% of respondents respectively. Similar results were reported by

many authors with some variation. Mutaz et al., (2022), using the hemagglutination-inhibition test estimated flock-level seroprevalences of NCD antibodies to be 45% among the backyard chicken flocks in six villages in Geibaish and Alnuhoud localities of West Kordofan State in Sudan. Igbal et al., (2012) previously reported Newcastle Disease seroprevalence among traditionally non-vaccinated chickens kept under the backyard management system in 14 states to be 41.8%, while Sana et al., (2004) reported NCD incidence in two zones in Sudan to be 10% and 91% with 67% and 72% mortality rates respectively. Current findings also showed majority of respondents (70%) reported unavailability of veterinary services, while 25% and 5% received veterinary services from private practitioners and government respectively. These findings agree with Mahoro et al., (2017), who reported lack of vaccination for indigenous chicken in Rwanda.

Particular	Variable	Frequency	Percentage (%)
Prevalence of diseases	Yes	40	100%
	No	0	0%
Peak Season	Summer	1	2.5%
	Winter	0	0%
	Autumn	39	97.5%
Reported Diseases	New Castle Disease	20	50%
	Diahrea/Coccidiosis	7	17.5%
	Lice/Mite	3	7.5%
	Respiratory infections	10	25%
	Others	5	5%
Veterinary Services	Government	2	5%
	Private	10	25%
	Unavailable	28	70%

Table 7: Diseases Prevalence, seasonality and level of Veterinary Services provision

VIII. CONCLUSION

It is evident from the study that the main production system practiced by the chicken keeping households in the study area is the free-range system, which is considered an important source of their livelihood. The study found that housewives play a major role in flock management as well as in decision making over flock utilization including marketing of chicken and eggs. The most types of chicken reared in the study area are of the Large Baladi, the Dwarf and the Bare Neck indigenous chicken. The study also found that there is great interest in poultry keeping among household in the study area, however they are constrained by the lack of enough resources and by absences of extension as well as veterinary care services.

It is recommended that extension services on poultry keeping must be provided to the interested households in the study area, such that they are able to form chicken producers' groups and cooperatives to enable them access microfinance and small business lending institutions as well as receive veterinary care and other management extension services including good housing and good feeding.

REFERENCES

- [1] Akagha, N. U, Nwagbara, M. O., (2021). Effects of Season on Disease Frequency and Mortality of Poultry in Owerri Urban South-Eastern Nigeria. International Journal of Environment, Agriculture and Biotechnology, Vol-6, Issue-3.
- [2] Alexander, D. J., Bell. J. G. and Alders, R. G. (2004). Technology review: Newcastle disease with special emphasis on its effect on village chicken. FAO animal production and health paper No. 161. Rome, food and agriculture organization of the united.
- [3] Deng, B. W., Kainga, T. M. and Kiguzu, A. K. (2022). Breeding practices and traits of economic importance for indigenous chicken in south Sudan. Animal production 24(3): 133-141.
- [4] Dit, D. (2023). Phenotypic characterization of the south Sudanese indigenous chicken: case of central Equatorial state-juba County. MSc thesis, Juba University.
- [5] Egbal, S.A., Khalda, A.K., Iman, M.E. and Al Hassan, A.M. (2012). Serological survey of Newcastle disease and infectious bursal disease in Backyard birds in Sudan. Bull. Anim. Health Prod. Afr., 60(3): 273–278.
- [6] Francis, M., Majyambere, D., Mahoro, J. and Rucamumihigo, X. (2016). Characterization of low cost village poultry production in Rwanda. Academic journals. Vol. 7(9), pp. 76-82.
- [7] Juba assessment report (2005). Sudan local governance and capacity building through strategic participatory town planning. CA No. 623-A-00-05-00318-00.
- [8] Jubara, A. S, Danga, J, Jaja, L. K, Jong, A. D, Ochi, E. B. (2021). Rural Chicken Management Practices in South Sudan: Prospects for Poverty Alleviation and Socio-economic Development. East African Scholars Multidisciplinary Bulletin, Volume-4, Issues-6.
- [9] Mekonnen, G. and Egziabher, M. (2007).characterization of smallholder poultry production and marketing system of dal, Wonsho and loka abaya weredas of southern Ethiopia. Hawassa university, Ethiopia. <https://cgspace.cgiar.org>.
- [10] Mahoro. J., Musaya, T., Mbwza, F., Hubimana, R. and Kahi, A. K. (2017). Management and production characterization of indigenous chicken production system in Rwanda. Poultry Sciences vol. 96, issue 12, 4245-4252.
- [11] Martin, E. and Mosel, I. (2011). City limits: urbanization and vulnerability in Sudan Juba case study. Retrieved. 22 oct.2020. Rural sociology and find rural sociology expert, publication (29,907).
- [12] Mutaz A. I. Hussein, Nussieba A. Osman, Mohamed T. Ibrahim, Ayman M. Alhassan and Naglaa A. Abass, (2022). Seroprevalence and risk factors associated with Newcastle disease in backyard chickens in West Kordofan State, Sudan. Veterinary World, EISSN: 2231-0916 Available at www.veterinaryworld.org/Vol.15.
- [13] Ngalamu, T., Meseka, S., Odra, J. G. and Tongun, N. (2019). Yield performance stability of adapted and improved cowpea in the Equatoria region of South Sudan. Legume Research. An international journal.
- [14] Nwanta, J.A., Egege, S. C., Alli-Balogun, J. K. and Ezema, W. S. (2008). Evaluation of prevalence and

- seasonality of NCD in chicken in Kaduna, Nigeria. World Poultry Science Journal, Volume 64, 2008-issue 3.
- [15] Okeno, T. O., Kahi, A. R. and Peter, K. J. (2012). Characteristics of indigenous chicken production system in Kenya. Tropical animal health and production, 44(3), 601-608.
- [16] Oladunni, M. E. and Fatuase, A. I. (2014). Economic analysis of backyard poultry farming in Akoko North West local government area of Ondo state, Nigeria. Global journal of biology, agriculture and health science, 3 (1), 141-147.
- [17] Sana, A. A., Khalafalla, A. I. Ali, A. S. and Elhassan, S. M. (2004). New Castle Disease in Village Chickens in Sudan: Survey of Disease incidence and Isolation of the causative Virus. Journal of Animal and Veterinary Advances 3 (1): 22-35.
- [18] Win, T. T. Z. (2018). Constrains and opportunities to improve livestock production and health and reduce zoonotic risks in small scale native chicken, cattle and small ruminant farm in central dry zone of Myanmar. Doctor philosophy, the University of Queensland. Research report 89.
- [19] Yousif, I., Berima, M. and Ishag, I. (2015). Evaluation of Sudanese native chicken production system and major constrains U. of K. J. Vet. Med. Anim. Prod., Vol.6 (2) p. 127-135.

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