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Socio-economic Aspects of Farmers and Rearing Practices of Village Chicken in Kannur and Kozhikode Districts of Kerala

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ABSTRACT

The study was conducted for a period of four months from January to April, 2019 in Kannur (n=21) and Kozhikode (n=43) districts of Kerala to document the socioeconomic status and poultry rearing practices among the native chicken farming households. The poultry farmers predominantly belonged to Thiya community (95.24 in Kannur and 83.72% in Kozhikode). Poultry rearing was manly undertaken by females (85.71% in Kannur and 90.70% in Kozhikode) with cattle and goat rearing as major livestock rearing activity (23.81% in Kannur and 49.84% in Kozhikode). Most of the native chicken farmers were marginal landholders with less than 50% of land, primarily engaged in small scale business in Kannur (19.05%) or as agricultural labourer in Kozhikode (34.88%). Coconut cultivation was the main agriculture of native chicken farmers in Kannur (52.38%), whereas mixed farming was more common among them in Kozhikode (27.91%). The farmers mostly possessed 5–10 years of experience (28.57 and 34.88% respectively) with birds in their possession were predominantly sourced within the Panchayat (80.96 and 69.77% respectively). The primary purpose of rearing was mainly for both egg and meat (85.71% in Kannur and 60.47% in Kozhikode), while culling of surplus male chicken was done mostly from 6 months to one year (61.90 and 58.14% respectively) and females were allowed to meet natural death (90.48 and 72.09% respectively). The culled males were predominantly used for home consumption (66.67% in Kannur and 41.86% in Kozhikode) or sold out.

KEYWORDS: Indigenous chicken, rearing practices, socio-economic status of farmers, Kerala

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1. INTRODUCTION

The rural people in Kerala primarily depends on farming as their main source of income; mostly on mixed crop-livestock system of farming, in which backyard poultry is a significant component. A small flock of birds is maintained primarily by the female member of the households to meet nutritional need of the family and to generate secondary income. The backyard chicken utilizes kitchen waste and homegrown agricultural byproducts, efficiently, converting them into animal proteins. The smallholder chicken sector is traditionally based on extensive free-range systems, where the birds gather most of their feed through scavenging. This system enables small farming families, landless labourers and people with income below the poverty line to rear chickens with low inputs and harvest the benefits like egg and meat via scavenged feed resources (Sonaiya, 2005; Islam et al., 2021). The family poultry sector is categorized into small extensive scavenging, extensive scavenging, semi-intensified, and small-scale intensified systems (Anonymous, 2022a). For centuries, farmers in resource-poor communities reared village chickens for food and income (Raj and Hall, 2020). FAO emphasizes the need for diverse food production systems and agricultural practices to meet current and future human needs (Anonymous, 2022b).

Village chicken is primarily reared by female members of the family (Fida et al., 2018) with small landholding, mainly as a secondary source of income alongside other primary agricultural (Kumar et al. 2013c) and/or other non-agricultural (Yousef and Al-Yousef, 2007) activities. Village chicken forms a component of homestead poultry, often integrated with other species such as turkey, ducks, guinea fowl (Das et al. (2008) and/or as mixed farming with other livestock and agriculture (Alimudeen et al., 2020). Village chickens also cater the need of farmer for quality protein in the forms of egg and meat (Mcainsh et al. (2004), serve game purpose (Vij et al. (2005) and play cultural and religious roles (Kumar and Kumar (2007).

Tellicherry breed of chicken of Kerala originates from the Malabar region and found mainly in the under-developed interiors of Kozhikode, Kannur and Malappuram districts of Kerala and Mahe district of Puducherry (Acharya and Bhatt, 1984; Kumar et al., 2013c). Tellicherry hens are moderate egg producers, but possess exceptional qualities of mothering ability, disease resistance and ability to evade predation (Kumar et al., 2013a; Kumar et al., 2016). Generally, native chickens are resistant to most of the diseases, therefore not vaccinated in village conditions (Lalhmunmawia and Das, 2018). Farmers in Kannur and Kozhikode districts of Kerala typically maintain a small flock of around six birds under free range system with minimal infrastructure such as small coop as night shelter. The farmers feed them with kitchen waste and household grains as supplementary feed and give minimal attention on disease management (Kumar et al., 2013b). The desi chicken farmers of Mizoram in India feed rice grain twice a day, spreading on the ground (Lalhmunmawia and Das, 2018). The village poultry rearers market their eggs directly to consumer or at village market or to the middleman or to feriwala (Chaturvedani et al., 2023).

Improving village chicken production requires a good understanding of regional and traditional practices of village chicken husbandry, marketing practices and the identification of major constraints (Sonaiya and Swan, 2004). This study was undertaken to document the socio-economic status of the backyard chicken farmers and the local rearing practices in rural poultry farming at Kannur and Kozhikode districts of Kerala.

2. MATERIALS AND METHODS

A survey study was conducted in a total of 64 households, of which 21 from Thrippangottur Panchayat (lying between 11.80'.07''N, 75.64'.99''E and 11.72'.05''N, 75.60'.22''E) in Kannur district and 43 from Chekkiad Panchayat (lying between 11.79'.97''N, 75.70'.01''E and 11.70'.44''N, 75.67'.40''E) in Kozhikode district for a period of four months from January to April, 2019 using a well-designed questionnaire to gather information on socio-economic status of backyard poultry farmers and practices related to poultry rearing. By the virtue of their remoteness, history of non-mixture of exotic germplasm in the past and phenotypic characters of the birds, these panchayaths were found predominantly to have pure populations of native chicken.

The socio-economic details of the farmers like major occupation, member of the family engaged in poultry keeping, animal husbandry activities other than poultry, land holdings and main agricultural activity were documented from all the families under study. Survey was conducted to record the experience of farmers in each household in poultry rearing, the original source of chicken they rear at present, purpose of rearing and culling age and mode of culling of males and females. The active participant of poultry keeping (males or females or children or all) in each household was also documented.

The z-test was applied to test the significance of difference between the percent values of poultry farming households of two districts.

3. RESULTS AND DISCUSSION

3.1. Socio-economic status of the farmers

3.1.1. Community

The data gathered on socio-economic status (Table 1) of the backyard poultry farmers revealed that out of 64 households

Table 1: Socio-economic status of poultry farmers (n=64)

Sl. No.	Socioeconomic indicators	Categories	Kannur Per cent (count)	Kozhikode Per cent (count)	z-statistics
1.	Community	Thiya	95.24 (20)	83.72 (36)	1.31
		Nair	0.00 (0)	4.65 (2)	1.00
		Muslim	4.76 (1)	6.98 (3)	0.34
		Scheduled caste	0.00 (0)	4.65 (2)	1.00
		Total	100.00 (21)	100.00 (43)	
2.	Primary occupation	Nil	14.29 (3)	2.33 (1)	1.86
		Agriculturist	4.76 (1)	16.28 (7)	1.55
		Agricultural worker	0.00^{B} (0)	34.88^{A} (15)	3.09**
		Mason	4.76 (1)	11.63 (5)	0.88
		Business (small scale)	19.05 (4)	11.63 (5)	0.80
		Job abroad	4.76 (1)	2.33 (1)	0.53
		Coolie	14.29 (3)	18.6 (8)	0.43
		Teacher	14.29 (3)	2.33 (1)	1.86
		Driver	14.29 (3)	0.00 (0)	1.50
		Welder	9.52 (2)	0.00 (0)	1.00
		Total	100.00 (21)	100.00 (43)	
3.	Members engaged in poultry rearing	Males	4.76 (1)	2.33 (1)	0.53
		Females	85.71 (18)	90.70 (39)	0.60
		All	9.52 (2)	6.98 (3)	0.36
		Total			
4.	Other Animal Husbandry (AH) activities	No other AH activities	61.90^{a} (13)	34.88^{b} (15)	2.05*
		Goat	4.76 (1)	16.28 (7)	1.30
		Cattle	23.81 (5)	23.26 (10)	0.05
		Goat and cattle	0.00^{b} (0)	25.58^{a} (11)	2.55*
		Goose, turkey and cattle	9.52 (2)	0.00 (0)	1.00
		Total	100.00 (21)	100.00 (43)	
5.	Land holdings	Below 25%	33.33 (7)	41.86 (18)	0.66
		26 to 50%	52.38 (11)	44.19 (19)	0.62
		51 to 75%	0.00 (0)	4.65 (2)	1.00
		Above 75%	14.29 (3)	9.30 (4)	0.60
		Total	100.00 (21)	100.00 (43)	
6.	Main agricultural activity	No agricultural activity	42.86 (9)	51.16 (22)	0.62
		Coconut	52.38^{A} (11)	11.63^{B} (5)	3.54**
		Plantain	0.00 (0)	4.65 (2)	1.00
		Vegetables	0.00 (0)	4.65 (2)	1.00
		Mixed farming (tapioca, plantain and coconut)	4.76^{b} (1)	27.91^{a} (12)	2.16*
		Total	100.00 (21)	100.00 (43)	

a, b: Per cent values bearing different superscripts within a row differ significantly (p<0.05); A, B: Per cent values bearing different superscripts within a row differ significantly (p<0.01); *,**: Significant (p<0.05), (p<0.01)

included in this study, 56 households (87.50%) belonged to Thiya community, the major inhabitants of this region. It was observed that the people from other community like Nair, Muslims and Scheduled Cast were also involved in poultry keeping, with no significant difference in community participation between the districts. Tantia et al. (2005), Vij et al. (2005a) and Vijh et al. (2006) reported that the rearing of indigenous chickens like Ghagus, Miri and Daothigir respectively, was the activity of people of certain communities in different parts of India.

3.1.2. Primary occupation

The primary occupation of backyard poultry farmers was predominantly agricultural labourers, accounting 23.44% among all households surveyed, with wide (p<0.05) variation between districts, ranging from 0.00% in Kannur to 34.88% in Kozhikode district. This variation could be attributed to the topography of the surveyed area. The Thrippangottur Panchayat in Kannur district features predominantly hilly terrain, which limits agricultural activities, whereas Chekkiad Panchayat in Kozhikode contains more plains, offering greater opportunities for agriculture. Other major primary occupations like daily coolie job, small-scale business and other minor occupations were evenly distributed among backyard poultry farmers across the two districts. In a similar study, Yousef and Al-Yousef (2007) reported that 77% of farmers raise chickens in Saudi Arabia, of which, 8% were farmers, 23% were government employees and 46% were merchants.

3.1.3. Members engaged in poultry rearing

It was observed in the present study that mostly the women (85.71% in Kannur and 90.70% in Kozhikode district) were engaged in chicken rearing, while the men were involved in agricultural work and other off-farm activities. The pattern of gender involvement was consistent across the two districts. Similar findings were reported by Halima et al. (2007b) in north-west Ethiopia (74.16%) and Yasmin et al. (2020) in Bangaladesh (92.15%). Similarly, greater participation of women (70.00%) in chicken rearing has earlier been reported in Ethiopia by Mengesha et al. (2008). Kumar et al. (2021) stated that the village chickens support women and unemployed youth in India by bridging the supply and demand for chicken products such as meat and eggs. Most of the housewives in the survey area were the members of a self-help group (SHG) supported by Kerala Government called *Kudumbasree*. It was evident during survey that most of the women raise money in full or a part from the income of chicken rearing to deposit as savings in *Kudumbasree* scheme.

3.1.4. Other animal husbandry (AH) activities

Most of the backyard poultry farmers (61.90%) in Kannur district did not engage in any other animal husbandry activity, while a sizeable number of 25.58% backyard poultry farmers in Kozhikode district reared cattle and goats alongside. This difference could be attributed to the topography; the hilly terrain in Kannur limits additional animal husbandry, whereas plains in Kozhikode supported a mixed farming model integrating poultry with cattle and goats. Similarly, Tantia et al. (2005) reported that Ghagus birds were being reared by the farmers along with dairy animals and were fed with left over concentrates from dairy animals. However, only 9.52% farmers in Kannur and none in Kozhikode had more than one type of poultry component in their backyards, a deviation from the common practice in Bangladesh, where two or more varieties of poultry species like ducks and pigeon were reared along with chicken (Das et al., 2008). There was a local belief among the farmers that birds' droppings, if consumed accidentally would make the dairy animals sick; therefore, some dairy farmers avoided keeping poultry with other livestock.

3.1.5. Land holdings

A significant majority of poultry farmers (85.94% or 55 out of total 64 households) had owned less than 50% of land because the people in this area were mainly agricultural workers of low-income group. The average landholding was 35.95 and 31.74% in Kannur and Kozhikode districts respectively with overall landholding of 33.13% among the poultry farmers. However, Singh et al. (2023) documented a higher landholding of 0.75 ha (187.50%) in tropical climatic zone of Himalayan region and Yasmin et al. (2020) reported a lower landholding of 9.84% among the poultry farmers of Bangladesh. The distribution of land or the average landholding among the poultry farmers did not differ between Kannur and Kozhikode districts.

3.1.6. Main agricultural activity

Coconut cultivation dominated as primary agriculture among farmers in both the districts. This observation concurs with the current official figure of Department of Economics and Statistics, Government of Kerala, stating that the coconut plantation covers as much as 83,663 hectares out of 1,86,766 hectares of net cropped area in Kannur and 1,15,706 hectares out of 1,45,218 hectares in Kozhikode district. A sizeable number of poultry farmers (27.91%) in Kozhikode district involved in mixed farming, which coincided with the results of the present study of 25.58% of the farmers rearing goat and cattle along with poultry as discussed earlier. Coconut cultivation was found to be significantly (p<0.01) higher in Kannur district and mixed farming was found to be more (p<0.05) common in Kozhikode district. The income from poultry was considered as the subsidiary one to their main farm income from crop cultivation or to the wage from agricultural work. In

agreement with the present findings, Mcainsh et al. (2004) also reported mixed crop-livestock farming system as common practice among rural poultry farmers in Zimbabwe.

3.2. Native chicken rearing practices

3.2.1. Experience in native chicken rearing

The data collected with respect to experience in poultry rearing (Table 2) revealed that around 90% of the farmers had more than five years of experience in native chicken rearing in both the districts. There was a disparity in the age group distribution of backyard poultry farmers between the districts with Kozhikode having significantly (p<0.05) more farmers in the age group of 11–15 years of experience category, while Kannur having significantly (p<0.05) more farmers in the age group of 16–20 years of experience category. This showed that the poultry farmers in this area were traditional poultry keepers, well adept in managing native chicken. Kumar et al. (2013b) reported an average of 16.5 years past experience among native chicken farmers in the same study area. A similar observation was made by Yasmin et al. (2020), who reported 15–16 years of experience among native chicken farmers in Bangaladesh.

The chicken present in majority (80.95% in Kannur and 69.77% in Kozhikode) of the households was either bred in the same household or sourced from the neighbourhood households within the Panchayat. Cross-panchayath and cross-district sourcing of chickens were rare in both the districts. Cuc et al. (2006) recorded similar observation in Vietnamese H'mong chickens, where, majority (87.70%) of chickens hatched from within the household flocks, while 7.78% were received as gifts from neighbours and 5.56% brought in as gifts from relatives.

3.2.3. Purpose of chicken rearing

Although, the survey data revealed that most of the farmers (85.71% in Kannur and 60.47% in Kozhikode district) reared chickens for dual purpose of egg and meat, the difference between the districts was statistically significant (p<0.05). There was disparity between the districts among the farmers rearing native chickens for producing eggs, with higher proportion (p<0.05) observed in Kozhikode district. Singh et al. (2023) also documented that 83.8% of households in tropical climatic zone of the Himalayan region rear chickens for both egg and meat purposes. Similar opinion about the utility of different native chicken breeds of India has already been reported earlier (Vijh et al., 2005a; Vijh et al., 2006; Vij et al., 2007). On the other hand, Kalasthi (Vijh et al., 2005b) and Danki (Vij et al., 2005a) breeds of chicken were mainly kept for meat and game purposes (cock fighting). In addition to egg and meat, Mcainsh et al. (2004) reported that the farmers of Zimbabwe kept chicken for manure also. Islam et al. (2021) reported that the chickens were reared primarily for meeting petty expenses (49.50%) and self-consumption (24.50%) in North-East India.

3.2.4. Culling age of birds

A large proportion of farmers (61.90% in Kannur and 58.14% in Kozhikode district) cull the surplus male birds only after six months but before one year of age. Altogether in both the districts, 87.50% of the farmers cull the birds before one and half years of age, indicating that the males reach the peak economic value before this age. In contrast, most of the farmers (90.48% in Kannur and 72.09% in Kozhikode district) do not cull the females usually but maintain them till they meet their natural death. Kumar et al. (2013b) reported an average of culling age of males as 11.10 months in the same study area. The culling age of male cocks observed in this study was closer with the culling age of nine months reported in Nicobari cocks by Vijh et al. (2006). In contrast, the culling age of females was observed as 24 months in Nicobari hens by Vijh et al. (2006). The farmers in this study opined that the males were ready for slaughter at around one year and would like to be killed for meat purpose at any time thereafter for occasions like festivals or for serving the guests or would be sold out during seasons as decided by the housewives. The decision on selling was being mostly taken by the housewives and the revenue credited to them only. Mengesha et al. (2008) also documented that decision for selling of poultry products were the responsibility of women. Yasmin et al. (2020) documented that only women in the farming households (73.28%) in Bangladesh control the revenue generated from native chicken rearing.

3.2.5. Mode of culling of birds

Except a small portion of the farmers in Kozhikode district (6.98%), who used the cocks for religious rites, all other households cull their birds either through sales or for home consumption. A similar observation was recorded by Singh et al (2023), where 81.70% of the households in tropical climatic zone of Himalayan region reared chickens for the purpose of self-consumption and sale. Kumar et al. (2013c) reported that the live weight of indigenous chicken of the same locality was 1.59 kg, which yields 73.50% ready-to-cook carcass and fetches the price of almost three times to that of commercial broilers.

3.2.6. Farmers' opinion on economic feasibility of backyard chicken rearing

A vast majority (95.3%) of the farmers opined that rearing native chicken was profitable because of the low input requirement for the local hens and good demand and high price for the products of native chicken throughout the year were the major factors that contributed for the profit. As chicken farming in smallholder production systems relied on scavengeable feed resources rather than supplementary feeding, the economic viability was high due to income

Table 2: Practices related to native chicken rearing (n=64)

Sl. No.	Rearing practices	Categories	Kannur Per cent (count)	Kozhikode Per cent (count)	z-statistics
1.	Experience in native chicken rearing	Below 5 years	4.76 (1)	13.95 (6)	1.11
		5 to 10 years	28.57 (6)	34.88 (15)	0.50
		11 to 15 years	0.00 (0)	16.28 (7)	1.96*
		16 to 20 years	33.33 (7)	11.63 (5)	2.09*
		21 to 25 years	28.57 (6)	18.60 (8)	0.91
		Above 25 years	4.76 (1)	4.65(2)	0.02
		Total	100.00 (21)	100.00 (43)	
2.	Source of birds reared at present	Within panchayat	80.95 (17)	69.77 (30)	0.95
		Within district	4.76 (1)	23.26 (10)	1.84
		Outside district	14.29 (3)	6.98 (3)	0.94
		Total	100.00 (21)	100.00 (43)	
3.	Purpose of rearing	Eggs	14.29(3)	39.53 (17)	2.05*
		Eggs and meat	85.71(18)	60.47(26)	2.05*
		Total	100.00 (21)	100.00 (43)	
4.	Culling age of male birds	Up to 6 months	0.00 (0)	0.00 (0)	-
		7 months to 1 year	61.9(13)	58.14 (25)	0.29
		1 to 1 ½ years	33.33(7)	25.58 (11)	0.65
		Above 1 ½ years	4.76(1)	16.28 (7)	1.31
		Total	100.00 (21)	100.00 (43)	
5.	Culling age of female birds	Up to 1 year	0.00 (0)	0.00 (0)	-
		1 to 2 years	0.00 (0)	6.98 (3)	1.24
		2 to 3 years	4.76 (1)	16.28 (7)	1.31
		3 to 4 years	4.76 (1)	4.65 (2)	0.02
		Natural death (No culling)	90.48 (19)	72.09 (31)	1.67
		Total	100.00 (21)	100.00 (43)	
6.	Mode of culling of male birds	Own consumption	66.67 (14)	41.86(18)	1.86
		Sale	33.33 (7)	18.6(8)	1.31
		Religious rites	0.00 (0)	6.98(3)	1.24
		Sale and self-use	0.00 (0)	32.56(14)	2.96
		Total	100.00 (21)	100.00 (43)	
7.	Mode of culling of female birds	Self-use	4.76 (1)	9.3(4)	0.64
		Sale	4.76 (1)	6.98(3)	0.34
		Sale and self-use	0.00 (0)	11.63(5)	1.63
		No culling	90.48(19)	72.09(31)	7.14**
		Total	100.00 (21)	100.00 (43)	
8.	Farmers' opinion on economic feasibility	Profitable	100(21)	93.02(40)	1.24
		No specific opinion	0(0)	6.98(3)	1.24
		Total	100.00 (21)	100.00 (43)	

a, b: Per cent values bearing different superscripts within a row differ significantly (p<0.05); A, B: Per cent values bearing different superscripts within a row differ significantly (p<0.01); *,**: Significant (p<0.05), (p<0.01)

generation and the provision of protein (Chaiban et al., 2020). There were perceptions that village chicken meat was very flavorsome, contributing to high meat demand (Kumar et al., 2013c; Ragasa et al., 2020). Interestingly, none of the farmer was in view that native chicken rearing was unprofitable. Muchenje and Sibanda (1977) also reported that farmers of Zimbabwe ranked chicken rearing as the highest income generating animal husbandry activity compared to goat and cattle.

4. CONCLUSION

The indigenous chicken farming was an integral part of animal husbandry in the households of Kannur and Kozhikode districts of Kerala. Farmers predominantly reared birds of indigenous Tellicherry breed, which were sourced or exchanged locally.

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