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## A systematic study on managemental practices and phenotypic characterization of indigenous chicken in Mysore division of Karnataka state under field conditions

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### Abstract

The field study was conducted to characterize the indigenous chicken of the Mysore Division of Karnataka State. Twenty villages of every selected district were surveyed to collect and document information with regard to managemental practices and phenotypic characteristics under field conditions. The average flock size observed in the entire Mysore Division was  $24.79 \pm 0.17$ . The separate housing facility provided was 39.33% in Hassan and 46% in Kodagu District. Dakshina Kannada and in Chikmagalur farmers provided shelter to their indigenous birds is by 58.33% and Udupi is 46%. The percentage of farmers providing extra grains in addition to scavenging with locally available which is not fit for human use Hassan Districts farmers used to provide extra feed by 65% whereas, Chikmagalur and Dakshina Kannada is 62.67% and 57.33% respectively, Kodagu and Udupi provide by 40.67% and 27.33% respectively. The average marketing age of cocks is  $9.10 \pm 0.03$  and hen is  $11.46 \pm 0.05$  months. All the birds were normal feathered. The predominant plumage color and pattern observed was multicolour and solid in males, and brown and dull in females, respectively. The skin and shanks were yellow coloured in majority of the birds. All the observed birds had red ear lobes and majority had brown eyes. Most of the cocks had wattles and have single, pea and rose combed. This study revealed distinctive variations among the birds of five districts of the Mysore Division, providing the basis for further characterization of these indigenous chickens.

**Keywords:** Indigenous chicken, plumage pattern, plumage color, phenotypic characteristics

### Introduction

Indigenous chickens are well known for their adaptability to local climatic and geographical conditions but are generally low performers. These indigenous fowls are small yet active, highly sensitive, resistant to diseases, and require minimal care and management. They play a great role in increasing the income and livelihood of rural families. Their potential as an alternative food source especially at times of sudden economic difficulties has been proven by most families in the countryside. Indigenous chicken is better adapted to scavenging systems of backyard rearing system and characterized by continuous exposure to diseases, inadequate quantity and quality of feeding, poor housing system, and health care. Great variability is observed in phenotypic characteristics of the native birds, with respect to body weight, plumage pigmentation, plumage distribution, comb type, shank and skin color, which increases the adaptability of these breeds to tropical climatic environments. There is a need to study and characterize the native breeds as they are diamonds of genomes and major genes for the improvement of high-yielding germplasm for tropical adaptability and disease resistance.

It is also believed that the meat from these indigenous chickens has therapeutic values (Aini 1990). The organized sector of the poultry industry is contributing nearly 67 per cent of the total output and the rest 33 per cent by the unorganized sector. The Eastern and Southern region of India contributes around 34.26 per cent and 32.74 per cent, respectively. In the unorganized sector, poultry is reared in a free-range extensive system with very little input in the form of grain or farm by-products, birds have to scavenge to get the limited amount of feed resource. The productive output of these birds is very low (60-70 eggs per bird per annum; 2.0 kg in males and 1.5 kg. in females). The eggs and the meat of birds reared in the family poultry production fetches premium price due to high consumer preference in the urban sector. Conservation of these breeds will act as a source of variation for future poultry strain

development. In addition to this, the native birds have great utility for the development of backyard poultry strains in India. Systematic studies on managerial practices and phenotypic characterization of indigenous birds in Karnataka have been studied in Mysore and Bangalore Divisions. In Mysore, it was covered only by three Districts (Chamarajanagar, Mysore, and Mandya). Hence, there is a need to study the managerial practices and phenotypic characterization of indigenous birds of the remaining five Districts of the Mysore Division (Hassan, Kodagu, Chikmagalur, Udipi, and Dakshina Kannada Districts) of Karnataka under field conditions in this view, it was planned and decided to conduct a systematic study on managerial practices and phenotypic characterization of indigenous chicken in Mysore Division of Karnataka State under field conditions.

### Materials and Methods

This study was carried out in the Mysore Division (Hassan, Kodagu, Chikmagalur, Udipi, and Dakshina Kannada Districts) of Karnataka State, with an objective to collect information on phenotypic characterization and managerial practices of indigenous chicken (average flock size, housing and feeding practices) and phenotypic characteristics (plumage color and pattern, skin color, shank color, earlobe color, eye color, presence of wattles and comb pattern) of Indigenous chicken under field conditions.

A structured questionnaire was prepared to gather information about the managerial practices and utilization of the indigenous chicken by the farmers and the morphological features were recorded as per NBAGR proforma. A total of 300 cocks and 750 hens (60 cocks and 150 hens from each District) were evaluated for recording phenotypic characteristics on the spot for a period of six months.

### Statistical analysis

Data collected were subjected to simple descriptive analysis using SPSS statistical package.

### Results and Discussion

#### Managerial practices of indigenous birds of Mysore Division

##### Average flock size

The total flock size presented in the Table 1 ranged from  $16.50 \pm 0.23$  in Dakshina Kannada to  $30.26 \pm 0.25$  in Udipi district, in Hassan,  $22.45 \pm 0.21$  in Kodagu, and  $30.09 \pm 0.25$  in Chikmagalur district. The average total flock size per household is  $24.79 \pm 0.17$ . The statistical analysis shows a significant difference ( $P \leq 0.05$ ) between Districts, Udipi shows a significantly higher flock size compared to other Districts, whereas Dakshina Kannada shows a significantly lower flock size when compared with other Districts. The average flock size of the present study is in agreement with Rajakumar (2013) [9] in indigenous birds of Bangalore Division ( $18.77 \pm 0.12$ ), Gopinath (2013) [5] in indigenous birds of Mysore Division ( $18.51 \pm 0.21$ ) and Veerannagowda (2020) in indigenous birds of Belagaum Division ( $23.07 \pm 0.17$ ). The lower flock size was reported than the present study by Gupta *et al.* (2006) [6] in desi birds of Meghalaya ( $15.85 \pm 1.60$ ).

##### Marketing age of indigenous chicken

The data on the average age of cocks at marketing presented in the Table 1 ranged from  $8.12 \pm 0.09$  in Dakshina Kannada to  $9.85 \pm 0.06$  in Hassan, in Udipi district, it is  $9.12 \pm 0.05$ ,

$9.16 \pm 0.07$  in Kodagu, and  $9.23 \pm 0.05$  in Chikmagalur district. The average marketing age of cocks is  $9.10 \pm 0.03$ . The average marketing age of hens ranged from  $8.50 \pm 0.07$  in Dakshina Kannada to  $12.67 \pm 0.09$  in Chikmagalur,  $11.52 \pm 0.06$  in Hassan, Udipi district it is  $12.20 \pm 0.10$ ,  $12.43 \pm 0.08$  in Kodagu and in the district. The average marketing age of hens is  $11.46 \pm 0.05$ . The findings of this study are comparable with the reports of Veerannagowda, (2020) enumerated in his study that the overall average marketing age of males was  $9.04 \pm 0.06$  months and in the case of females, it was  $11.14 \pm 0.05$  months and comparable with the reports of Gopinath (2013) [5] in indigenous chicken of Mysore Division in both males and females, Rajakumar (2013) [9] in male indigenous chicken of Bangalore Division. The higher marketing age than the present study was reported by Vijh *et al.* (2006) [19] in Nicobari females (24 months) and Rajakumar (2013) [9] in female indigenous chickens of the Bangalore Division.

##### Provision of separate housing facilities

The farmer interviewed and data collected regarding the housing facilities are expressed in per cent and presented in the Table 2 for providing shelter facilities and confinement systems used farm sheds, the fenced ground floor of their houses and purposely constructed shelters to house their indigenous birds in these prepared structures. Majority of the farmers in Hassan did not provide nests for laying hens, whereas some farmers provided wooden crates with paddy husk. The majority of the laying hens laid the eggs on paddy straw kept in cattle sheds by 60.67% whereas, Kodagu and Udipi did not provide shelter for their birds by 54% whereas, Dakshina Kannada and in Chikmagalur, farmers provided shelter to their indigenous birds is by 58.33% respectively. The indigenous birds are mostly kept indoors during the night under a bamboo basket or on the bare floor or sometimes with gunny bags, plastic and polythene sheets are used to protect the birds against cold breeze. Wooden houses are also made for birds and few farmers have specially constructed brick houses made of cement and pebbles. The housing facilities and laying nest facility provided by farmers in this study area are similar to observations reported by Veerannagowda, (2020) that 70.50 per cent of the farmers did not provide housing facilities while only 29.50 per cent provided housing facilities for their birds adjoining to their house or to animal sheds.

##### Feeding practices

In this study feeding of extra grain practices provided by the poultry farmers were enquired and the results were expressed in per cent and presented in the Table 2 as per farmer interviewed for providing extra grain most of the farmers feed their birds, utilized the locally available which is not fit for human use consisting of rice and corn grains and bran very few provide commercially available feed in lesser quantity and some farmers were using dairy feed for feeding their birds. Hassan Districts farmers used to provide extra feed by 65% whereas, Chikmagalur and Dakshina Kannada are 62.67% and 57.33% respectively, Kodagu and Udipi provide by 40.67% and 27.33% respectively. The present findings were in agreement with the findings of Gupta *et al.* (2006) [6] who reported that farmers of Meghalaya provided the chickens with cereal grains and kitchen waste in addition to scavenging and similar feeding practices were also reported by Veerannagowda, (2020) that the majority of the farmers

(72.50%) provided extra ration in the morning and evening and only (27.50%) of the farmers did not provide any extra grains or ration to their birds.

#### **Vaccination status against Newcastle disease**

The percentage of farmers getting their birds vaccinated against Newcastle disease was expressed in per cent and presented in the Table 2. The vaccination against ND was carried out regularly by overall 52.79% of the farmers and the rest of the farmers of about 47.20% did not get their birds vaccinated. The present findings were in agreement with the findings of Veerannagowda, (2020) revealed that the vaccination against ND was carried out regularly by overall 54 per cent of farmers the percentage was highest in Dharwad followed by Bijapur and Belgaum. The present findings were in disagreement with findings Gopinath, (2013) [5] reported that 39 per cent of the farmers got their birds vaccinated, while 61 per cent did not get their birds vaccinated against Newcastle disease. Similarly, Rajakumar, (2013) [9] also reported that the majority of the farmers (64%) did not get their birds vaccinated and only (36%) got their birds vaccinated against Newcastle disease. Viji *et al.* (2007) [14] reported a similar trend in the Tellicery breed of chicken.

#### **Purpose of rearing birds**

The farmer interviewed and presented in the Table 2 for the mode of disposal of birds through local sales is highest in Dakshina Kannada and Hassan Districts with 48.33% and 41.67% the other Districts Kodagu, Chikmagalur and Udupi with values of 15.33%, 16% and 15% respectively. The frequency of farmers slaughtering birds for home consumption was highest in Kodagu and Udupi with 53.33% and Hassan, Chikmagalur, Dakshina Kannada Districts having 36.67%, 27.33%, and 26.67% respectively. The farmers interviewed for both Sale and own use of birds is highest in Chikmagalur and Udupi Districts with 56.67% and 31.67% the other Districts Hassan, Kodagu, and Dakshina Kannada Districts was 21.67%, 31.33% and 25% respectively. The results of the present study are similar to that of Rajakumar, (2013) [9] who disclosed that farmers who reared birds for sale and family use, family use and for sale only. Gopinath, (2013) [5] also discovered that majority of the farmers reared the native birds for family use followed by for family use and sale purpose and only for sale purposes. Kumar and Kumar (2007) [7] detailed similar findings and reported that the majority of the farmers reared indigenous chicken for their own use and sale purpose and the percentage of farmers kept exclusively for sale purpose were minimum. Veerannagowda, (2020) described the majority of the farmer's mode of disposal of birds through local sales in all three districts of Belgaum Division.

#### **Phenotypic characterization of indigenous birds of Mysore Division**

##### **Feather morphology**

The results of the present study presented in the Table 3 revealed that all the birds by 100 percent are of normal feathers and no frizzle feather and silky feather was not noticed in the case of both cocks and hens. The findings of this study are comparable with the reports of Rajakumar, (2013), in the indigenous chicken of Bangalore Division of Karnataka and Gopinath, (2013) [5], in indigenous chicken of Mysore Division of Karnataka reported that feather morphology was normal (100%) in both males and female

birds. Veerannagowda, (2020) elaborate in his study that overall feather morphology in males of indigenous chicken of Belgaum Division was normal. The findings of this study are in disagreement with the reports of Negusie Dana *et al.* (2010) documented normal (81.4%) and silky feathered (18.6%) in Native birds of Ethiopia.

##### **Feather distribution**

The results of the survey presented in the Table 3 showed that normal feather distribution by 100 per cent and there was no naked neck or feathered shank and feet was not noticed in both cocks and hens during the study of 300 cocks and 1050 hens were considered for recording feather distribution. The results of the present study showed that normal feather distribution by 100 per cent and there was no naked neck or feathered shank and feet was not noticed in both cocks and hens. The findings of this study are in disagreement with the reports of Rajakumar, (2013) described the percentage of feather distribution in the indigenous chicken of Bangalore Division of Karnataka as 96.63% normal, 2.33% naked neck and 1.03% feathered shank and feet in male birds and in case of female birds it was 96.88% normal, 1.83% naked neck and 1.28% feathered shank and feet. Gopinath, (2013) [5] published that in the indigenous chicken of Mysore Division of Karnataka the feather distribution was 95.03% normal and 4.95% naked neck in pooled sex. Veerannagowda, (2020) summarized in his study revealed that percentage of feather distribution in males was 77.40% normal and 22.58% naked neck and in the case of females it was 81.66% normal and 18.33% naked neck.

##### **Plumage color**

In the present study, the percentage of plumage colour presented in the Table 4 in the Mysore Division for both cocks and hens is documented as the most predominant being black and multi colour. The results are in agreement with Rajakumar (2013) [9] and Gopinath (2013) [5] also reported similar findings in the Bangalore Division and Mysore Division of Karnataka. Rajakumar (2013) [9] reported brown (31.24%), black (23.92%), and multicolour (21.25%), red (15.81%), white (3.85%) and blue (2.9%) plumage colour in males of Bangalore Division of Karnataka and in case of females it was brown (31.73%), black (24.20%), and multi-coloured (21.36%), red (13.28%), blue (5.61%) and white (3.81%). Gopinath, (2013) [5] reported white (9.97%), black (15.07%), blue (0.85%), red (20.34%), brown (18.04%), gold (7.24%) and mixed colour (28.44%) plumages in pooled sex of birds of Mysore Division of Karnataka. Similar observations were reported in the Ghagus breed by Acharya and Bhat (1984). These observations are comparable with that of Singh and Singh (2004), Tania *et al.* (2006a) and Negusie Dana *et al.* (2010) in different breeds of indigenous chicken. Veerannagowda, (2020) enumerated in his study, that the six varied plumage colours were recorded for males, the most predominant being brown (30.37%). Other colour were black (27.41%), red (18.52%), white (4.81%), blue (2.96%) and multi colour (15.93%). In females it was brown (28.15%), white (3.70%), blue (2.04%), black (26.30%), red (20%) and multi colour (19.82%).

##### **Primary plumage pattern**

The results of primary plumage pattern presented in the Table 5 in the indigenous chicken of Mysore Division for both cocks and hens is documented as the most predominant is



solid and dull plumage pattern, second dominant is spotted and mottled plumage pattern, the stripped, patchy and barred is less commonly seen in the study area. The results of the present study are in agreement with Rajakumar, (2013)<sup>[9]</sup> who reported solid (35.18%), dull (22.77%) and mottled (20.91%), in the case of females it was solid (35.82%), dull (23.43%) and mottled (18.49%) in the indigenous chicken of Bangalore Division of Karnataka. Veerannagowda, (2020) revealed in his study based on the primary plumage pattern the males were classified into solid (34.44%), dull (24.8%) and mottled (17.04%). In the case of females (32.40%) was solid, dull (23.89%) and mottled (16.48%). The results of the present study are in disagreement with Gopinath (2013) reported in pooled sex of indigenous chicken of Mysore Division of Karnataka as solid (45.78%), dull (8.96%), stripped (18.46%), patchy (19.18%), spotted (2.39%), barred (3%) and mottled (2.17%). These observations are on par with the reports of Tantia *et al.* (2005b), Vij *et al.* (2005), and Negusie *et al.* (2010).

### Secondary Plumage Pattern

The secondary plumage pattern was also studied presented in the Table 6 in indigenous chickens of the Mysore Division. The feathers were examined for secondary plumage patterns in cocks and hens and the values show self-black, self-red, and self-white are more dominant when compared with self-blue, barred, lasing and mottled. The results of the present study are in agreement with Rajakumar (2013)<sup>[9]</sup> and Gopinath (2013). Rajakumar (2013)<sup>[9]</sup> reported that in male birds of Bangalore Division of Karnataka, six categories of secondary plumage pattern were noticed namely; self-red (37.90%), mottled (30.01%), self-black (23.45%), self-white (3.85%), self-blue (2.90%), barred (2.67%). Gopinath (2013) reported that in indigenous chickens of Mysore Division of Karnataka as self-white (12.83%), self-black (19.69%), self-blue (1.87%), self-red (37.57%), barred (3.34%), mottled (4.27%) and lasing (20.38%) in pooled sex. The frequency of red and black was highest and self-blue was the least. Bhuiyan *et al.* (2005), Vij *et al.* (2005), Tantia *et al.* (2006a) and Vij *et al.* (2006a) discovered higher frequencies of red and black. Veerannagowda, (2020) inscribed in his study based on the secondary plumage pattern in males was self-white (4.81%), self-black (25.56%), self-blue (2.22%), and self-red (36.66%), barred (4.81%) and mottled (25.92%) and in case of females it was self-white (4.81%), self-black (22.78%), self-blue (3.88%), and self-red (37.41%), barred (7.78%) and mottled (23.33%).

### Skin color

Two types of skin colour were recorded, the white and the yellow among both cocks and hens studied in Hassan District presented in the Table 7 skin colour in cocks maximum is recorded as white-skinned than yellow skin and in hens maximum recorded is yellow skin than white skin. The results of the present study are in agreement with Rajakumar (2013)<sup>[9]</sup> who documented that in males of Bangalore Division under field conditions yellow colour predominated with 97.58% and 2.41% white coloured, whereas in case of females it was yellow (97.62%) and white (2.38%). Gopinath (2013)<sup>[5]</sup> reported in indigenous chickens of Mysore Division of Karnataka as white (9.95%) and yellow (90.04%) in pooled sex. Kumar and Kumar (2007)<sup>[7]</sup> published other skin colours like grey, and/or pink alone or along with white and yellow have been reported in other indigenous chickens. Chaterjee

and Yadav (2008) reported pinkish white or yellow white and Ravikumar (2011) detailed that the black skin in different breeds of chicken in various locations. Veerannagowda, (2020) described in his study that the colour of the skin in males was yellow (95.18%) and white (4.81%) and in the case of females it was yellow (95.73%) and white (4.25%).

### Shank color

The type of shank colour presented in the Table 7 noticed in birds studied in Mysore Division maximum is yellow shank, black and white shank noticed in lesser amount in both cocks and hens. The results of the present study are in agreement with Rajakumar (2013)<sup>[9]</sup> who reported in indigenous chicken of Bangalore Division of Karnataka as yellow (93.17%), black (3.17%), white (2.85%) and green (0.4%) in males and in females it was yellow (92.99%), black (4.14%), white (1.75%) and green (1.10%). Gopinath (2013)<sup>[5]</sup> reported in indigenous chickens of Mysore Division of Karnataka as yellow (77.97%), white (7.13%), black (10.89%) and green (3.98%) in pooled sex. The results of the study are in agreement with Tantia *et al.* (2005b)<sup>[11]</sup>, Vijh *et al.* (2005b)<sup>[11]</sup> and Kumar and Kumar (2007)<sup>[7]</sup> documented that majority of the birds had yellow-colored shank. Veerannagowda, (2020) acknowledges in his study that the yellow colour is the most dominant shank colour. In males, it was yellow (87.77%), white (3.70%), and black (6.29%) and green (2.22%). In the case of females it was yellow (89.62%), white (2.21%), and black (6.29%) and green (1.84%).

### Ear lobe colour

In the present study, the colour of the ear lobe was found maximum red and very minimum is white in males and in females it was 100% red ear lobe. The results are in agreement with Rajakumar (2013)<sup>[9]</sup> and Gopinath (2013)<sup>[5]</sup> who also reported similar findings. Rajkumar (2013) reported 100% red ear lobe in males and in females it was 99.75% red and 0.25% white in the indigenous chicken of Bangalore Division of Karnataka. Gopinath (2013)<sup>[5]</sup> reported that ear lobe colour was 100% red in both males and females of the Mysore Division of Karnataka. Veerannagowda, (2020) disclose in his study that the colour of the ear lobe was found to be red (99.25%) and white (0.74%) in males and in females it was 100% red ear lobe.

### Eye color

The prevalence of three eye colours namely; grey, brown and black in the Mysore Division and presented in the Table 7. The results of the present study showed maximum grey and brown coloured eyes and minimum birds showed black coloured eyes in cocks and in hens respectively. The results of the present study are in agreement with the findings of Rajkumar (2013), who enumerated that in indigenous chicken of Bangalore Division of Karnataka, in males it was brown (46.26%), grey (44.76%) and black (14.71%). In the case of females, it was brown (53.04%), grey (39.62%) and black (7.34%). Gopinath (2013)<sup>[5]</sup> published in indigenous chicken of Mysore Division of Karnataka as brown (91.26%) and grey (8.72%) in pooled sex. Veerannagowda, (2020) described in his study the indigenous chicken of Belgaum Division showed three different variants; grey, brown and black colour. In males, it was 37.77% grey, 55.55% brown and 6.66% black. In the case of females, it was 37.38% grey, 53.7% brown and 8.88% black.

**The Comb type**

The indigenous chickens were examined for comb-type and presented in the Table 7 like a single comb, pea comb and rose comb in indigenous chicken of Mysore Division. The result is a majority of the birds showed a single comb followed by a pea comb and very few showed a rose comb. In case of cocks it was single, followed by pea comb and rose comb. In case of hens it majority was single comb followed by pea comb and rose comb. The results of the present study are in agreement with the findings of Gopinath (2013) [5] described that in indigenous chicken of the Mysore Division of Karnataka it was predominantly single comb (97.61%) and pea comb (2.37%) only. Veerannagowda, (2020) elaborated in his study that the majority of the birds showed single comb followed by pea comb and very few showed rose comb. In case of males it was single (73.33%), followed by pea comb (22.21%) and rose comb (4.44%) only. In case of females, it was single comb (73.51%), pea comb (22.03%) and rose comb (4.44%). Rajakumar (2013) [9] reported contradictorily of the present study that, single comb (45.17%), pea comb (52.15%) and rose comb (2.67%) in males and in females it was single comb (47.29%), pea comb (49.07%) and rose comb (3.64%) in the birds of Bangalore Division of Karnataka.

**Comb colour**

The birds were examined for comb colour like red and black, in Mysore Division and were recorded and presented in the

Table 7. All the cocks and hens showed 100% red coloured comb. The results of the present study are in agreement with Rajakumar (2013) [9] and Gopinath (2013) [5] who also reported 100% red coloured combs in indigenous chicken of Bangalore and Mysore Division of Karnataka, respectively. Almost all the Indian breeds have red coloured combs. Veerannagowda, (2020) described in his study that all the indigenous birds of Belgaum Division were found to have red coloured combs.

**Presence or absence of wattles**

The result of the presence of wattles or absence of wattles presented in the Table 7 in indigenous chicken of Mysore Division is recorded as 100% of cocks of all Districts of Mysore Division had shown the presence of wattles whereas, hens shows 40% present and 60% absent. Rajakumar (2013) [9] reported similar findings in indigenous chicken of Bangalore Division, overall per cent of wattles present was 47.84% and wattles absent was 52.15% in the case of male birds. In case females it was 50.93% and 49.07%, respectively. Gopinath (2013) [5] reported, in indigenous chicken of Mysore Division of Karnataka that wattles were present in 93.42% of birds and absent in 6.57% of birds in pooled sex of indigenous chicken. Veerannagowda, (2020) contradictorily that in his study that in males wattles were present in 38.51% of the birds and the rest 61.47% did not possess wattles. In case of females, it was present in 43.51% of birds and absent in 56.47%.

**Table 1:** Average flock size and composition of indigenous chicken.

District	No. of Farmers	Chicks	Cocks	Hens	Total number of Birds (No)	Marketing age of males (months)	Marketing age of Females (months)
Hassan	300	6.35±0.12 <sup>a</sup>	2.18±0.07 <sup>ad</sup>	4.92±0.07 <sup>a</sup>	22.45±0.21 <sup>a</sup>	9.85±0.06 <sup>a</sup>	11.52±0.06 <sup>a</sup>
Kodagu	300	7.71±0.11 <sup>b</sup>	2.37±0.08 <sup>a</sup>	4.39±0.08 <sup>b</sup>	24.65±0.23 <sup>b</sup>	9.16±0.07 <sup>b</sup>	12.43±0.08 <sup>b</sup>
Chikmagaluru	300	9.45±0.10 <sup>c</sup>	2.17±0.05 <sup>ad</sup>	5.76±0.10 <sup>c</sup>	30.09±0.25 <sup>c</sup>	9.23±0.05 <sup>b</sup>	12.67±0.09 <sup>b</sup>
Udupi	300	9.74±0.11 <sup>c</sup>	1.97±0.05 <sup>bd</sup>	5.21±0.08 <sup>a</sup>	30.26±0.25 <sup>d</sup>	9.12±0.05 <sup>b</sup>	12.20±0.10 <sup>b</sup>
Dakshina Kannada	300	4.43±0.12 <sup>d</sup>	1.37±0.04 <sup>c</sup>	3.97±0.05 <sup>d</sup>	16.50±0.23 <sup>e</sup>	8.12±0.09 <sup>c</sup>	8.50±0.07 <sup>c</sup>
Overall Mean	1500	7.53±0.07	2.01±0.03	4.85±0.04	24.79±0.17	9.10±0.03	11.46±0.05

Means bearing at least one common superscript within a column do not differ significantly ( $P \leq 0.05$ )

**Table 2:** Vaccination status, housing, feeding practices and purpose of rearing followed by the farmers (%)

District	Housing		Extra Grain Provided		Vaccination		Purpose Of Rearing		
	Yes	No	Yes	No	Yes	No	Sale	Own Use	Sale and Own Use
Hassan	39.33	60.67	65.00	35.00	47.33	52.67	41.67	36.67	21.67
Kodagu	46.00	54.00	40.67	59.33	48.33	51.67	15.33	53.33	31.33
Chikmagalur	58.33	41.67	62.67	37.33	58.33	41.67	16.00	27.33	56.67
Udupi	46.00	54.00	47.33	52.67	48.33	51.67	15.00	53.33	31.67
Dakshina Kannada	58.33	41.67	57.33	42.67	61.67	38.33	48.33	26.67	25.00

**Table 3:** Percentage of feather morphology of indigenous chicken of Mysore Division.

Categories	Percentage of Birds									
	Males feather morphology & distribution (n=300)					Females feather morphology & feather distribution (n=750)				
	Hassan (60)	Kodagu (60)	Chikmagalur (60)	Udupi (60)	Dakshina Kannada (60)	Hassan (150)	Kodagu (150)	Chikmagalur (150)	Udupi (150)	Dakshina Kannada (150)
Normal	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

**Table 4:** Percentage of plumage colour of indigenous chicken of Mysore Division.

Categories	Percentage of Birds									
	Males plumage colour					Females plumage colour				
	Hassan	Kodagu	Chikmagalur	Udupi	Dakshina Kannada	Hassan	Kodagu	Chikmagalur	Udupi	Dakshina Kannada
White (%)	5.00	6.67	6.67	8.33	6.67	4.67	6.00	3.33	4.00	6.00
Blue (%)	5.00	1.67	3.33	5.00	1.67	1.33	0.67	2.67	1.33	2.00
Black (%)	38.33	25.00	26.67	21.67	25.00	32.00	35.33	27.33	32.00	35.33

Red (%)	6.67	11.67	15.00	6.67	15.00	18.67	14.00	15.33	20.67	22.00
Brown (%)	13.33	35.00	21.67	30.00	18.33	16.00	18.00	20.00	14.00	9.33
Multicolour (%)	31.67	20.00	26.67	28.33	33.33	27.33	26.00	31.33	28.00	25.33

**Table 5:** Percentage of primary plumage pattern of indigenous chicken of Mysore Division.

Categories	Percentage of Birds									
	Males primary plumage pattern (n=300)					Females primary plumage pattern (n=750)				
	Hassan (60)	Kodagu (60)	Chikmagalur (60)	Udupi (60)	Dakshina Kannada (60)	Hassan (150)	Kodagu (150)	Chikmagalur (150)	Udupi (150)	Dakshina Kannada (150)
Solid (%)	26.00 (13)	20.00 (10)	16.00 (8)	22.00 (11)	16.00 (8)	36.67 (55)	33.33 (50)	28.00 (42)	30.67 (46)	28.00 (42)
Dull (%)	30.00 (15)	24.00 (12)	28.00 (14)	24.00 (12)	30.00 (15)	30.67 (46)	25.33 (38)	32.67 (49)	28.00 (42)	28.67 (43)
Stripped (%)	6.00 (3)	4.00 (2)	8.00 (4)	4.00 (2)	8.00 (4)	4.67 (7)	6.67 (10)	7.33 (11)	9.33 (14)	6.00 (9)
Patchy (%)	4.00 (2)	16.00 (8)	8.00 (4)	16.00 (8)	8.00 (4)	4.00 (6)	7.33 (11)	6.00 (9)	2.00 (3)	5.33 (8)
Spotted (%)	8.00 (4)	12.00 (6)	16.00 (8)	12.00 (6)	16.00 (8)	9.33 (14)	5.33 (8)	6.67 (10)	8.67 (13)	6.67 (10)
Barred (%)	14.00 (7)	14.00 (7)	18.00 (9)	14.00 (7)	18.00 (9)	9.33 (14)	16.67 (25)	14.67 (22)	19.33 (29)	22.00 (33)
Mottled (%)	12.00 (6)	10.00 (5)	6.00 (3)	8.00 (4)	4.00 (2)	5.33 (8)	2.67 (4)	4.67 (7)	2.00 (3)	3.33 (5)

**Table 6:** Percentage of secondary plumage pattern of indigenous chicken of Mysore Division.

Categories	Percentage of Birds									
	Males secondary plumage pattern (n=300)					Females secondary plumage pattern (n=750)				
	Hassan (60)	Kodagu (60)	Chikmagalur (60)	Udupi (60)	Dakshina Kannada (60)	Hassan (150)	Kodagu (150)	Chikmagalur (150)	Udupi (150)	Dakshina Kannada (150)
Self-white (%)	10.00 (6)	11.67 (7)	5.00 (3)	8.33 (5)	5.00 (3)	4.00 (6)	7.33 (11)	6.00 (9)	7.33 (11)	6.00 (9)
Self-black (%)	38.33 (23)	35.00 (21)	41.67 (25)	33.33 (20)	46.67 (28)	29.33 (44)	24.00 (36)	28.67 (43)	24.00 (36)	28.67 (43)
Self-blue (%)	5.00 (3)	3.33 (2)	1.67 (1)	3.33 (2)	1.67 (1)	2.00 (3)	1.33 (2)	2.67 (4)	3.33 (5)	4.00 (6)
Self-red (%)	35.00 (21)	40.00 (24)	38.33 (23)	43.33 (26)	38.33 (23)	42.67 (64)	36.67 (55)	35.33 (53)	40.67 (61)	46.67 (70)
Barred (%)	6.67 (4)	8.33 (5)	3.33 (2)	10.00 (6)	3.33 (2)	14.00 (21)	18.00 (27)	19.33 (29)	12.00 (18)	7.33 (11)
Lasing (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
Mottled (%)	5.00 (3)	1.67 (1)	10.00 (6)	1.67 (1)	5.00 (3)	8.00 (12)	12.67 (19)	8.00 (12)	12.67 (19)	7.33 (11)

**Table 7:** Distribution of qualitative characters of indigenous chicken of Mysore Division

Categories	Type	Percentage of Birds									
		Males (n=300)					Females (n=750)				
		Hassan (60)	Kodagu (60)	Chikmagalur (60)	Udupi (60)	Dakshina Kannada (60)	Hassan (150)	Kodagu (150)	Chikmagalur (150)	Udupi (150)	Dakshina Kannada (150)
Skin colour	White	81.67	78.33	76.67	88.33	91.67	6.67	5.33	3.33	6.00	4.67
	Yellow	18.33	21.67	23.33	11.67	8.33	93.33	94.67	96.67	94.00	95.33
Shank colour	Yellow	71.67	68.33	66.67	76.67	75.00	85.33	84.00	90.67	89.33	87.33
	White	11.67	18.33	23.33	5.00	15.00	3.33	4.00	2.67	1.33	2.00
	Black	11.67	6.67	8.33	13.33	6.67	8.00	9.33	6.00	7.33	6.67
Ear lobe colour	Green	5.00	6.67	1.67	5.00	3.33	3.33	2.67	0.67	2.00	4.00
	Red	96.67	100.00	100.00	93.33	100.00	100.00	100.00	100.00	100.00	100.00
	White	3.33	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00
Eye colour	Grey	60.00	63.33	53.33	60.00	56.67	46.67	43.33	40.67	34.00	44.67
	Brown	25.00	30.00	35.00	25.00	36.67	47.33	52.67	54.00	56.00	51.33
	Black	15.00	6.67	11.67	15.00	6.67	6.00	4.00	5.33	10.00	4.00
Comb Type	Single	55.00	50.00	56.67	60.00	51.67	73.33	75.33	80.67	76.00	79.33
	Pea	33.33	40.00	35.00	33.33	38.33	23.33	22.00	17.33	19.33	14.67
	Rose	11.67	10.00	8.33	6.67	10.00	3.33	2.67	2.00	4.67	6.00
Comb	Red	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

colour	Black	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Wattles	Present	100.00	100.00	100	100	100	38.67	23.33	56.67	36.67	41.33
	Absent	0.00	0.00	0	0	0	61.33	76.67	43.33	63.33	58.67

### Conclusions

This systematic study on managemental practices and phenotypic characterization of indigenous chicken in Mysore Division of Karnataka State under field conditions disclosed phenotypic variability which is affected by both genetic and environmental factors. Considering the disease resistance, adaptability nature to local climate and geographical conditions and productive performance of these birds, which have vast potential for development of improved backyard strains. This study of indigenous chickens of all the five districts needs further investigation for molecular characterization and genetic divergence with other Indian breeds and efforts must be taken to completely characterize these birds and conserve them for future generations.

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