



Comparative analysis of production system and marketing pattern of commercial *desi* chicken farming venture and backyard poultry farming in Tamil Nadu

R BABYUSHA¹, K M SAKTHIVEL^{2✉}, N NARMATHA² and V UMA²

Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu 600 051 India

Received: 24 August 2020; Accepted: 1 September 2021

Keywords: Backyard poultry, Commercial *desi* chicken venture, *Desi* chicken management, *Desi* chicken marketing, *Desi* chicken production

In India, the poultry meat market is flooded with customized and homogenised broiler meat and this mass market approach neglects to focus on customers with divergent preferences in terms of nutritional aspect, food safety, ecology, animal welfare and environmental sustainability (EMCC 2006). In recent days, elite and literate consumers have increasingly inclined towards native chicken meat as it is produced in natural environment. On the other hand, they developed unfavourable attitude towards broiler chicken meat on the account of its taste, rearing pattern and health aspects. Thus, a niche market has emerged for *desi* chicken meat and eggs in late 2000s. This resulted in shifting of backyard system (five to 50 birds) of rearing to commercial venture with the flock size of more than 50 birds (Ahuja and Sen 2007). The commercial *desi* chicken farming sector has been evolving as new entity in the last decade with various stakeholders such as breeders, hatchery operators, equipment fabricators and feed suppliers, etc. There is dearth in knowledge on how commercial *desi* chicken farming venture differs from backyard poultry farming in terms of volume of operation and management practices. Against this backdrop, this study was taken up with the objective of analyzing the production system and marketing pattern of commercial *desi* chicken farming venture in relation to backyard poultry farming.

In this study, commercial *desi* chicken farmers were operationalized as farmers rearing more than 50 *desi* chicken with minimum of one year experience. A list of commercial *desi* chicken farmers and backyard poultry farmers was collected. By using cumulative square root frequency method, the farmers were grouped into three categories as small, medium and large. By using proportionate random sampling, 17 farmers from small category, 30 farmers from medium category and 13 farmers from large category were selected. Thus, a total of 60 commercial *desi* chicken farmers were selected. Further, 30 backyard poultry farmers in the same geographical area

were selected for comparison. Data were collected using a pre-tested structured interview schedule. Frequency, percentage and chi-square test were applied to analyze the data.

Management practices: The results of Freeman–Halton and Fischer exact tests (Table 1) revealed that the commercial *desi* chicken farming venture differ significantly from backyard poultry farming with respect to type of housing ($P<0.01$), use of litter material ($P<0.05$), provision of drinker and feeder ($P<0.01$), feeding practices for different age groups ($P<0.01$), feeding of kitchen waste ($P<0.01$), method of incubation ($P<0.05$), type of brooding ($P<0.01$), use of disinfectant ($P<0.01$) and adoption of vaccination, deworming and delicing ($P<0.01$).

However, there is no significant ($P>0.05$) difference in feeding of green fodder, use of water sanitizer and adoption of beak trimming. Majority (85.00%) of the commercial *desi* chicken farmers provided night shelter with open grazing area and 38.33% permanent shed; while, only 18.33% used litter material inside the shed/ night shelter. In backyard poultry farming, cent% of the respondents followed backyard farming system of rearing and majority (90.00%) did not provide housing for the birds and none of them used litter material for birds.

In commercial *desi* chicken farming venture, nearly two-third of the respondents used improved drinker and feeder for birds; while, in backyard farming, none of the farmer used improved feeder or drinker. In commercial *desi* chicken farming venture, more than three-fourth (78.33%) of the respondents provided age specific feed and 10.00% provided green fodder for birds; whereas, in backyard poultry farming, none of the farmer provided age specific feed or green fodder. This clearly indicates that farmers of commercial *desi* chicken farming venture are market oriented than backyard poultry farmers, hence using improved feeder to avoid wastage of feed, commercial ration and age specific feeding to obtain fast growth. The use of only household materials as feeder and drinker and household grains as feed but not the use of any improved feeder and drinker and commercial feed in *desi* chicken farming has been reported by Kumar *et al.* (2013).

Present address: ¹Puliyankurichi, Salem, Tamil Nadu.
²Veterinary College and Research Institute, Namakkal, Tamil Nadu. ✉Corresponding author email: sakthivelvet@gmail.com

Table 1. Management practices followed by the respondents

Management practice	Category	Commercial (n=60) F(%)	Backyard (n=30) F(%)	Chi-square
Type of housing ^a	Permanent	23 (38.33)	0 (0.00)	55.201**
	Temporary	30 (50.00)	3 (10.00)	
	No housing	7 (11.67)	27 (90.00)	
Use of litter material ^b	Yes	11 (18.33)	0 (0.00)	0.013*
	No	49 (81.67)	30 (100.00)	
Provision of drinker ^a	Improved	38 (63.33)	0 (0.00)	40.205**
	Locally available	19 (31.67)	27 (90.00)	
	Not using	3 (5.00)	3 (10.00)	
Provision of feeder ^a	Improved	39 (65.00)	0 (0.00)	66.397**
	Locally available	3 (5.00)	25 (83.33)	
	Not using	18 (30.00)	5 (16.67)	
Feeding practices for different age groups ^a	No age specific feeding	10 (16.67)	30 (100.00)	63.811**
	Age specific feeding for chicks alone	47 (78.33)	0 (0.00)	
	Age specific feeding for different age groups	3 (5.00)	0 (0.00)	
Feeding of green fodder ^b	Yes	6 (10.00)	0 (0.00)	0.173 ^{NS}
	No	54 (90.00)	30 (100.00)	
Feeding of kitchen waste ^b	Yes	2 (3.33)	10 (33.33)	0.000**
	No	58 (96.67)	20 (66.67)	
Method of incubation ^a (Commercial n=43)	Natural incubation	32 (74.42)	30 (100.00)	9.877*
	Custom hatcheries	10 (23.26)	0 (0.00)	
	Own hatchery	1 (2.32)	0 (0.00)	
Type of brooding ^b	Natural	29 (48.33)	30 (100.00)	0.000**
	Artificial	31 (51.67)	0 (0.00)	
Use of water sanitizer ^b	Yes	3 (5.00)	0 (0.00)	0.548 ^{NS}
	No	57 (95.00)	30 (100.00)	
Use of disinfectant ^b	Yes	19 (31.67)	0 (0.00)	0.000**
	No	41 (68.33)	30 (100.00)	
Adoption of vaccination ^a (Ranikhet disease)	Periodical	40 (66.67)	3 (10.00)	39.455**
	Non periodical	16 (26.67)	8 (26.67)	
	Not followed	4 (6.66)	19 (63.33)	
Adoption of deworming ^b	Yes	14 (23.33)	0 (0.00)	0.004**
	No	46 (76.67)	30 (100.00)	
Adoption of beak trimming ^b	Yes	6 (10.00)	0 (0.00)	0.137 ^{NS}
	No	54 (90.00)	30 (100.00)	
Adoption of delicing ^b	Yes	14 (23.33)	0 (0.00)	0.004**
	No	46 (76.67)	30 (100.00)	

** , Significant(P<0.01); * , Significant (P<0.01); ^{NS}, Non-significant; ^a , Freeman-Halton test; ^b , Fisher Exact test.

In commercial *desi* chicken farming venture, among the farmers maintaining parent flock, nearly three-fourth of the respondents practiced natural incubation while the remaining farmers followed artificial incubation. About half (51.67%) of the respondents practiced artificial brooding. In backyard farming, cent % of the respondents followed natural incubation and natural brooding similar to the findings of Kumar *et al.* (2013).

Two-third (66.67%) of the commercial *desi* chicken farmers followed periodical vaccination against Ranikhet disease; while 15 and 16.67% of them vaccinated their birds against fowl pox and infectious bursal disease respectively. In backyard poultry farming, majority (63.33%) of the respondents did not follow vaccination against Ranikhet disease. In commercial *desi* chicken farming venture, deworming, beak trimming and delicing were followed by

23.33, 10 and 23.33% of the respondents respectively. None of the backyard poultry farmers followed delicing, beak trimming and deworming of birds.

Production parameters: The results of Freeman–Halton and Pearson's chi-square revealed that commercial *desi* chicken farming venture differ significantly (P<0.01) from backyard poultry farming in production parameters, viz. weight at eight weeks and 12 weeks of age, annual egg production, number of clutches per year, hatchability of eggs and livability of birds (Table 2). In commercial *desi* chicken farming venture, the average body weights of birds at eight and 12 weeks of age were 486 and 696 g respectively; while, in backyard farming it was 295 and 525 g respectively. Similar finding in backyard poultry at eight and 12 weeks of age was also reported by Chatterjee and Yadav (2008). Average annual egg production in

Table 2. Production performance of birds in commercial and backyard poultry farming

Performance indicator	Category	Commercial F (%)	Backyard (n=30) F (%)	Chi-square
Weight at 8 weeks ^b (commercial n=60)	Up to 340 g	6 (10.00)	25 (83.34)	47.566**
	340–500 g	14 (23.33)	1 (3.33)	
	More than 500 g	40 (66.67)	4 (13.33)	
Weight at 12 weeks ^b (commercial n=60)	Up to 500 g	2 (3.33)	25 (83.34)	69.211**
	500–800 g	46 (76.67)	1 (3.33)	
	More than 800 g	12 (20.00)	4 (13.33)	
Annual egg production ^a (commercial n=43)	Up to 43 eggs	13 (30.23)	19 (63.33)	11.629**
	43–52 eggs	11 (25.58)	8 (26.67)	
	More than 52 eggs	19 (44.19)	3 (10.00)	
Number of clutches per year ^b (commercial n=43)	3	19 (44.19)	29 (96.67)	23.067**
	3–4	15 (34.88)	1 (3.33)	
	4–6	9 (20.93)	0 (0.00)	
Hatchability of eggs ^b (commercial n=43)	Up to 69%	4 (9.31)	15 (50.00)	16.882**
	69–82%	20 (46.51)	11 (36.67)	
	More than 82%	19 (44.18)	4 (13.33)	
Livability of birds ^b (commercial n=60)	Up to 66%	1 (1.67)	24 (80.00)	63.742**
	66–85%	26 (43.33)	6 (20.00)	
	More than 85%	33 (55.00)	0 (0.00)	

**, Significant (P<0.01); ^a, Pearson's chi-square test; ^b, Freeman Halton test.

commercial *desi* chicken farming venture and backyard poultry farming was 51 and 40 eggs respectively. Average number of clutches per bird per year in commercial *desi* chicken farming venture and backyard poultry was four and three respectively. The findings on egg production and clutches in backyard poultry is in line with the finding of Nath *et al.* (2012), whereas, similar annual egg production of 34.59 eggs and higher clutch cycles of 7.7 per year was reported by Kumar *et al.* (2016) in backyard *desi* chicken.

The average hatchability of eggs was higher (81%) in commercial *desi* chicken farming venture than that of backyard poultry farming (67.42%) similar to the findings of 62.26% by Kumar *et al.* (2016) in backyard poultry. Similarly, livability was also high (83%) in commercial *desi* chicken farming venture compared to backyard poultry (56.83%). The finding in backyard poultry is in line with the finding of Chatterjee and Yadav (2008) and Kumar *et al.* (2016). In commercial *desi* chicken farming venture, 41.38% of the respondents spent ₹ 29 to 50 per kg live weight towards expenditure on feed.

Marketing pattern: It could be inferred from Table 3 that 56.67% of the respondents marketed the birds directly to the consumer at farm gate followed by 33.33 and 23.33% who sold to the retailer and at village market respectively in commercial *desi* chicken farming venture. There was significant difference in marketing age (P<0.01) and marketing weight (P<0.05) between commercial and backyard farming (Table 4). The average age at marketing in commercial *desi* chicken farming venture and backyard poultry farming was six and eight months respectively. The average body weights of the birds at marketing in commercial and backyard farming were 2 and 1.85 kg respectively. Similar finding in backyard poultry farming was also reported by Chaturvedani *et al.* (2015). Feeding of concentrate feed and grains and adoption of scientific management practices

Table 3. Marketing method of birds

Marketing method	Commercial* (n=60) F (%)	Backyard* (n=30) F (%)
Directly to the consumer at farm gate	34 (56.67)	4 (21.05)
Retailer	20 (33.33)	5 (26.32)
Village market	14 (23.33)	10 (52.63)
Institutional sale	3 (5.17)	0 (0.00)
Own stall	2 (3.45)	0 (0.00)
Middleman	2 (3.45)	0 (0.00)

*, Multiple responses.

Table 4. Age and weight of birds at marketing

Variable	Category	Commercial (n=58) F (%)	Backyard (n=19) F (%)	Chi-square
Age at marketing ^a	3–6 months	32 (55.17)	3 (15.79)	9.836**
	6–8 months	17 (29.31)	12 (63.16)	
	8–12 months	9 (15.52)	4 (21.05)	
Weight at marketing ^a	1–1.5 kg	15 (25.86)	2 (10.53)	6.106*
	1.5–2.25 kg	22 (37.93)	13 (68.42)	
	2.25–3.25 kg	21 (36.21)	4 (21.05)	

**, Significant (P<0.01); *, Significant (P<0.05); NS, Non-significant; ^a, Freeman Halton test.

might be the reason for attaining better weight at an early age in commercial *desi* chicken farming.

Thus, it could be concluded that commercial *desi* chicken farming venture is completely a different entity in terms of structure, farming methods and performance of birds from backyard poultry farming. The emerging commercial *desi* chicken farming venture needs specific scientific package of practices that would increase the profitability of this

enterprise and would help to sustain the enterprise in the long run.

SUMMARY

A study was taken up to evaluate the production system and marketing pattern of commercial *desi* chicken farming venture in relation to backyard poultry farming in Namakkal district of Tamil Nadu. The findings revealed that the farmers of commercial *desi* chicken farming venture differ significantly (from backyard poultry farmers with respect to management, production and marketing aspects, viz. type of housing, provision of drinker and feeder, feeding practices for different age groups, feeding of kitchen waste, type of brooding, use of disinfectant and adoption of vaccination, deworming and delicing. The use of litter material and method of incubation also differed significantly between farming methods. The production performances like body weight at eight and 12 weeks of age, annual egg production, number of clutches per year, hatchability of eggs, livability of birds and marketing age of the birds were also significantly different between the two methods of *desi* chicken farming.

REFERENCES

- Ahuja V and Sen A. 2007. Scope and space for small scale poultry production in developing countries. *Proceedings of International Conference on Poultry in the 21st Century: Avian Influenza and Beyond*, Bangkok, November 5–7.
- Chatterjee R N and Yadav S P. 2008. Farming system of Nicobari fowl—An endangered breed of Andaman and Nicobar Islands, India. *World's Poultry Science Journal* **64**(2): 245–56.
- Chaturvedani A K, Khalid N L, Khyalia N K and Pratap J. 2015. Empowering tribal women through backyard poultry in Bastar district of Chhattisgarh. *Journal of Krishi Vigyan* **3** (special issue): 19–22.
- EMCC (European Monitoring Centre on Change). 2006. Trends and drivers of change in the food and beverage industry in Europe: Mapping report. http://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef0637en.pdf
- Kumar P G, Churchil R R, Jalaludeen A, Narayanankutty K, Joseph L, Kannan A and Anitha P. 2013. A survey on village chicken production in Kerala state of India. *World's Poultry Science Journal* **69**: 917–30.
- Kumar P G, Churchil R R, Jalaludeen A, Narayanankutty K, Peethambaran P A, Praveena P E, Chacko B and Ajithbabu B. 2016. Egg production and certain behavioural characteristics and mortality pattern of indigenous chicken of India. *Animal Genetic Resources* **59**: 27–36.
- Nath B G, Pathak P K and Mohanty A K. 2012. Constraints analysis of poultry production at Dzogu area of North Sikkim in India. *Indian Journal of Applied Animal Science* **2**(4): 397–401.