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COMPARATIVE PERFORMANCE OF VANARAJA AND INDIGENOUS CHICKEN UNDER INTENSIVE SYSTEM IN SUB TEMPERATE CLIMATIC CONDITION OF NORTH WESTERN HIMALAYAN STATE OF HIMACHAL PRADESH

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Abstract: The present study was carried on to evaluate the comparative performance of Vanaraja, a dual purpose birds developed for backyard poultry farming for their suitability to local temperate to sub- temperate agroclimatic conditions for their further promotion in backyard farming160 Vanaraja birds and 180 indigenous non descript birds of Himachal Pradesh were reared simultaneously under intensive system of management. The body weight at different ages for Vanaraja and indigenous chicken differ significantly. Body weight at 5 weeks of age for Vanaraja and indigenous was 539.12±2.09 and 226±1.89gms respectively. Corresponding Body weight at 20 weeks of age for male was 2751±12.91and 1958±10.75gms for Vanaraja and indigenous respectively, while for female was 2081±12.68 and 1357±11.32gms. The comparative estimate of egg production revealed that egg production for Vanaraja is comparatively higher than indigenous chicken which differed significantly. The average fertility, hatchability on total egg set basis and chick survivability of hatched chicks up to eight weeks of age for Vanaraja was 86.82±2.26, 74.58±1.16 and 94.32±0.10% respectively, whereas for that of indigenous was 87.84±1.54, 77.64±3.24 and 95.18±0.12% respectively, almost similar for both genetic group. But average weight of hatched chicks for Vanaraja and Indigenous was 36.95±0.09 and 28.97±0.06 gms respectively which differ significantly ($P<0.05$). Performance of Vanaraja under sub temperate condition of the state was found satisfactory and the birds are well adapted to local agro-climatic condition under intensive system of production. Further studies should be carried to evaluate the performance of Vanaraja under traditional/rural poultry farming condition

Keywords: Indigenous Chicken, Vanaraja, Performance, Intensive system.

Introduction

Poultry farming in Himachal Pradesh is largely a small scale backyard activity as commercial scale poultry enterprises have failed to pickup. Different poultry stocks developed for backyard poultry farming are being tried for their suitability to local temperate to sub- temperate agroclimatic conditions for their further promotion in backyard farming. The present study was carried on to evaluate the comparative performance of Vanaraja, a

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dual purpose birds developed for backyard poultry farming by crossing random bred meat birds as female line and Red Cornish as male line at Project Directorate on Poultry, Hyderabad (Rao *et al*. 2009) and local indigenous chicken of Himachal Pradesh under intensive system of rearing.

Materials and Methods

160 Vanaraja birds and 180 indigenous non descript birds of Himachal Pradesh were reared simultaneously under intensive system of management at HP Agricultural University poultry farm under standard brooding feeding and management practices. Standard commercial mash feed were offered to them at different growing stages. Body weights (up to 40 weeks), mortality during different ages and various egg production parameters were recorded for both the stock. Hatchability performance was recorded on 7 batches (224.15±22.37 egg/batch) for Vanaraja and 6 batches (180.06±24.37 egg/batch) for indigenous under standard condition of artificial hatching. Data generated was subjected to analysis of variance using Statistical Analysis Software (version 9.2) employing Fisher's Least Significant Difference test.

Result and Discussion

The body weight at different ages for Vanaraja and indigenous chicken are given in Table 1 and they differ significantly ($P<0.05$) for body weights at various ages. Body weight at 5 weeks of age (combined sex) for Vanaraja and indigenous was 539.12±2.09 and 226±1.89gms respectively. Corresponding Body weight at 20 weeks of age for male was 2751±12.91and 1958±10.75gms for Vanaraja and indigenous respectively, while for female was 2081±12.68 and 1357±11.32gms. The comparatively higher body weight of Vanaraja can be attributed to the fact that this variety has been developed by incorporating Cornish germplasm, which is excellent meat type bird. Body weights recorded for Vanaraja at different intervals and relative growth under intensive condition of rearing were similar to earlier finding of Jha et al., (2012) in Jharkhand region. Body weight of indigenous chicken under intensive system of rearing in the present study is comparable to performance of indigenous chicken of Mizoram as reported by Haunshi et al., (2011).

Table1: Least Square Means for body weight of different age groups of Vanaraja and Indigenous chicken

Trait	Particulars	Sex	Vanaraja (N)	Indigenous Chicken (N)
Body Weight (gms)	Day old (combined sex)		$37.04\pm0.08^{A}(160)$	$29.14\pm0.06^{B}(180)$
	5 Weeks(combined sex)		$539.12\pm2.09^{A}(155)$	$226\pm1.89^{B}(175)$
	10 Week	Male	$1298\pm9.75^{A}(69)$	$719\pm17.69^{B}(94)$
		Female	$1058\pm10.56^{A}(83)$	$612\pm8.58^{B}(79)$
	20 Week	Male	$2751\pm12.91^{A}(66)$	$1958\pm10.75^{B}(91)$
		Female	$2081\pm12.68^{A}(81)$	$1357\pm11.32^{B}(78)$
	40 Week	Male	$3265\pm10.91^{A}(64)$	$2458\pm14.72^{B}(89)$
		Female	$2318\pm11.88^{A}(79)$	$1772\pm17.65^{B}(75)$

Note: Figures bearing different superscript row wise differ significantly (P<0.05)

The comparative estimate (Table 2) of egg production revealed that egg production for Vanaraja is comparatively higher than indigenous chicken which differed significantly (P<0.05). The average age at sexual maturity for Vanaraja and indigenous birds was 162 and 176 days respectively which indicate that Vanaraja birds mature comparatively earlier than indigenous. Also with regard to egg weight there are significant differences (P<0.05) between Vanaraja and indigenous chicken at different ages which can be assigned to the fact that it is the improved variety developed using improved germplasm. Similar findings are observed in another farm evaluation of Vanaraja by Kalita *et al*., (2011) with comparative evaluation of Vanaraja and Assam indigenous chicken and Kumaresan *et al*., (2008) under subtropical hill agro-ecosystem of North-Eastern region. Although early period mortality (0-8 week) for Vanaraja is higher (4.3%) than indigenous (3.3%) but is statistically non significant (P<0.05). The growing stage and laying period mortality was comparable for both the stocks. Similar mortality pattern regarding early chick mortality in Vanaraja was observed by Jha *et al*., (2012) and Bhat *et a*l., (2007), but laying stage mortality in the present study was comparatively lower as reported in earlier studies.

The average fertility, hatchability on total egg set basis and chick survivability of hatched chicks up to eight weeks of age for Vanaraja was 86.82±2.26, 74.58±1.16 and 94.32±0.10% respectively, whereas for that of indigenous was 87.84±1.54, 77.64±3.24 and 95.18±0.12% respectively, almost similar for both genetic group. But average weight of hatched chicks for Vanaraja and Indigenous was 36.95±0.09 and 28.97±0.06gms respectively (Table 2). The chick weight on hatching differ significantly (P<0.05), which can be attributed to the fact that Vanaraja's eggs were heavier and chick weight on hatching is dependent on

egg weight. Hatchability performance of Vanaraja reported in the present study is similar to the findings of Jha et al., (2012) who reported fertility and hatchability on total egg set basis was 85.26% and 77.82% respectively under intensive system of management in Jharkand region. In another study Kumaresan et al., (2008) reported average hatchability for Vanaraja to be 68.7% under hill agro-ecosystem of North Eastern region which is lower than those observed in the present study (74.58%).

Table 2: Least Square Means for Egg production, Mortality and hatching traits of Vanaraja and Indigenous chicken

Trait	Particulars	Vanaraja(N)	Indigenous (N)
Egg Weight	32 Week	$55.64\pm0.18^{a}(65)$	$35.91\pm0.28^{b}(91)$
	40 Week	$57.32\pm0.12^{a}(64)$	$42.48\pm0.39^{b}(89)$
	52 Week	$59.68\pm0.15^{a}(64$	$48.65\pm0.29^{b}(89)$
HDEP (no.)	Up to 40 Week	$50.12(64)^{a}$	$34.09(89)^{b}$
	Up to 52 Week	$86.75(64)^{a}$	$57.58(89)^{b}$
	Up to 72 Week	$131.97(62)^{a}$	$84.25(87)^{b}$
Mortality	0-8 Week	$4.3\% (160)^{a}$	$3.3\%(180)^{b}$
	8-24 Week	$4.0\%(152)^{a}$	$3.5\%(174)^{a}$
	24 and above	$3.1\%(147)^{a}$	$2.9\%(168)^{a}$
Hatching	Fertility (%)	86.82 ± 2.26^{a}	87.84 ± 1.54^{a}
	Hatchability (TES)(%)	74.58 ± 1.16^{a}	77.64 ± 3.24^{a}
	Chick Weight(gms)	36.95 ± 0.09^{a}	28.97 ± 0.06^{a}
	Survivability (0-8 wks)%	94.32 ± 0.10^{a}	95.18 ± 0.12^{a}

Note: Figures bearing different superscript row wise differ significantly ($P<0.05$)

Conclusion

The present study indicated that the performance of Vanaraja birds were comparatively better than local indigenous chicken of Himachal Pradesh for various growth and production trait, whereas mortality, hatchability, fertility and chick survivability was almost comparable to local chicken. Performance of Vanaraja under sub temperate condition of the state was found satisfactory and the birds are well adapted to local agro-climatic condition under intensive system of production. Further studies should be carried to evaluate the performance of Vanaraja under traditional/rural poultry farming condition among so that these birds can be introduced in to rural backyard production system which can be viable

alternative to ensure nutritional security to local population along with an alternate option for sustainable livelihood and employment.

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References

[1] Bhat, G.A., Khan, A.A Banday, M.T., Raquib, M and Shanaz (2007). Proceeding of Seminar on backyard poultry farms for women empowerment and nutritional security cum scientist poultry farmer's meet. P-33-39.

[2] Haunshi, S and Doley, S. (2011). Performance of native chickens of Mizoram under intensive system of rearing. *Indian Veterinary Journal.* 88(3):45-47.

[3] Jha, D.K., Prasad, S., Soren, S.K. and Mahto, D. (2012). Performance of vanaraja birds under deep litter system of management. *Indian Veterinary Journal.* 89(1):75-76

[4] Kalita, N., Barua, N., Chutia, H., Islam, R., Pathak, N. and Kalita, R. (2011). Egg Quality and Carcass Characteristics of Vanaraja and Indigenous Chicken Reared under Intensive System. *Indian Veterinary Journal*, 88: 66-67

[5] Kumaresan, A., Bujarbarauah, M.K., Pathak, K.A., Cheetri, B., Ahmed, S.K. and Haunshi, S. (2008). Production system and performance of improved dual purpose chickens under a sub-tropical hill agro-ecosystem in India. *Tropical Animal Health Production.* 40:395-402

[6] Rao, C.V.S. Rao, G.N. Sharma, R.P., Reddy, B.L.N., Gupta, B.R. and Satyanarayana, A. (2009). *Indian Journal of Animal sciences.* Genetic studies on juvenile traits of Vanaraja chickens 74:1229-1231