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A comparative study of body weight gain and carcass traits of pure native chicken of Chhattisgarh, PB-2 and their crosses

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Abstract
The present study was carried out to develop a new location-specific rural poultry variety in Chhattisgarh. There were four groups: T_1 (native), T_2 (PB2), and T_3 (native x PB2 reared at the farm) (native x PB2 reared in the farmer's backyard). The significance (p<0.05) difference was reported in cumulative weight gain of 0-20 weeks of age. (T_1, T_2, T_3 and T_4; 922.59±26.95 g, 2858.01±129 g, 1897.20±53.5 g and 1278.96±171.1 g respectively). The least (p<0.05) average daily gain was recorded for T_1 (6.90±2.36 g), followed by T_4 (9.12±1.22) and T_3 (13.54±0.38), whereas the highest for T_2 (19.93±0.74 g). The dressing percent of T_1, T_2, T_3 and T_4 was reported as 70.66±2.50, 72.43±1.41, 71.65±1.76, and 69.82±1.47, respectively. In the experiment, the significantly (p<0.05) highest breast percentage was found in T_4, whereas the highest (p<0.05) leg and wing percentage was recorded in T_1. In the organoleptic test, overall acceptance score of T_3 meat was significantly (p<0.05) higher as compared to T_2 and T_1.

Keywords: Native chicken, PB2, crossbreed, body weight gain, carcass traits, sensory evaluation

Introduction
There is great scope and demand in the poultry sector as urbanisation is increasing with population and changes in lifestyle. There is increasing demand for native chicken in urban areas due to its rich flavour, and people are ready to pay a premium price for Desi chicken. In India, 68.84% of the population (83.3 crore) lives in villages, whereas in Chhattisgarh, 76.7% is the rural population, whose main source of livelihood is agriculture. Out of these 10.10 crore rural households (i.e., 49.49 crore population) are landless (Balk *et al.*, 2019) [1]. There is an increase in the marginalisation of land; 70% of the agricultural households possess less than 1 hectare (Balk *et al.*, 2019) [1], so they have limited resources for agriculture and dairy. However, backyard poultry is largely prevalent in these households for ease of rearing, self-replication, and low input costs. In Chhattisgarh, one third of the population belongs to the tribal community, they have been rearing backyard poultry for ages. Their income can be increased by introducing an improved backyard poultry farming package of practises. Rural poultry as a source of eggs and meat has the potential to mitigate the effects of protein malnutrition, which is very widely spread among the rural poor. (Maske *et al.*, 2019) [27] Rural backyard poultry system is defined as low-input or no-input businesses, scavenging system, little supplementary feeding, only night shelter, natural incubation, no health care practises, and local marketing (Mandal *et al.*, 2006) [26] (Rath *et al.*, 2015) [37]. It remained unaffected during the poultry feed price hike (Pathak and Nath 2013) [31]. As compared to commercial birds, eggs and meat from backyard poultry are known to be organic and healthy. Generate employment in rural areas and help in checking migration of people to urban areas; there are several government schemes and NGO's support for rural poultry, to create entrepreneurship and generate income at their village. (Das *et al.*, 2008) [8].

Materials and Methods
The research was carried out on day-old chicks of local native chickens and PB2 chicks, which were procured from DPR Hyderabad and then maintained at the Poultry Demonstration and Experimental Unit (PDEU) of the College of Veterinary Science and Animal Husbandry, DSVCKV, Durg, C.G. The study was conducted for a period of 20 weeks. There were 4 groups: T_1 (native), T_2 (PB2), T_3 (native x PB2 reared on the farm), and T_4 (native x PB2

reared at the village under a semi intensive system). Each group was divided into 4 replicates of 60 birds. The native chicks (240) and PB2 (240) female day old chicks (parent stock) were studied for growth and carcass traits. Then After attaining sexual maturity, the male of the native chicken and female of PB-2 were crossed under flock mating. The crossed chicks obtained were reared at the PDEU farm (T_3, N-240) and in a semi-intensive system at four different farmers backyards (T_4, N-240) and studied for growth and carcass traits.

1. **Body weight gain:** Body weight gain was determined at weekly intervals from the 0^{th} day to the 20^{th} week in an experimental trial. It was computed by taking the difference between the body weight at the end of the week and that at the start of the week.
2. **Average daily weight gain (ADG):** ADG was calculated on the basis of total body weight gain and the number of days for the study. ADG = Total body weight gain / Number of days for study
3. **Mortality rate:** The rate of mortality in the different age groups was determined as the ratio between the number of birds dead and the initial total number of birds in the flock multiplied by 100 (Ratsaka *et al*., 2012) [38].
4. **Carcass traits:** Randomly, two birds per replicate were sacrificed by the humane method of slaughter at 12 weeks of age to study the following carcass characteristics: The birds were made to starve for 12 hours before the actual slaughter.

Organ weight: The organs such as breast, thigh, wing, drumstick, neck, giblets (liver, gizzard heart), and total edible parts (dressing + giblets) were weighed by using a digital weighing balance.

Cut-up parts: The cut-up parts were determined as per the procedures of Khanna and Panda (1983) [21]. The breast, leg, back, neck, and wings were weighed separately, and percent yields were computed in relation to eviscerated weight.

Dressed yield (%): It was calculated by the given formula (Magala *et al*., 2012) [24]:

$$\text{Dressing \%:} \frac{\text{Dressed weight with giblets (g)}}{\text{Pre slaughter live weight (g)}} \times 100$$

Eviscerated yield (%): It was calculated by given formula:

$$\text{Eviscerated \%:} \frac{\text{Eviscerated weight without giblet (g)}}{\text{Pre slaughter live weight (g)}} \times 100$$

Giblet (%): It was calculated by given formula:

$$\text{Giblet \%:} \frac{\text{Weight of giblet (Heart + Liver + Gizard) (g)}}{\text{Pre slaughter live weight (g)}} \times 100$$

Sensory Evaluation

A panel of 10 semi trained judges was employed for the organoleptic evaluation of meat. Cooked meat was presented to the judges for quality evaluation under identical conditions. Identical conditions include cooking of meat samples at the same volume and under the same pressure in a pressure cooker for the same time. The score sheet developed by Peryan and Pilgrim (1957) [33] was followed for the organoleptic evaluation of meat samples. The parameters were scored in the range of 1–10.

Statistical analysis: To see the difference between different treatment groups, one-way analysis of variance was applied as per the procedure given by Snedecor and Cochron (1994) [42]. If there is any significant difference in any group, then DMRT was applied as per the procedure given by Steel and Torrie (1984) [44].

Results and Discussion

Body weight gain

The mean weekly body weight gain of T_1, T_2, T_3 and T_4 chicks from 1 to 20 weeks of age, is presented in Table 1.1. In a study of body weight gain from 0 to 2 weeks weight gain significantly ($p<0.001$) differed among groups; the lowest weight gain was found in T_1 (8.46±0.72 g), whereas the highest weight gain was reported in T_2 (97.07±10.54 g). In weeks 3 and 4, the lowest body weight gain was found in native chicks (T_1), whereas weight gain was significantly ($p<0.001$) different among T_2, T_3 and T_4. From week 5 to week 8, the significant lowest weight gain was in T_1 (181.27±1.91^a) whereas the significantly highest weight was found in T_2 (609.53±18.61). The weight gain for T_3 and T_4 was reported as 360.56±67.54 and 352.17±35.06. It indicated the hardiness and ability of F_1 to perform under local field conditions.

In the study of weight gain during the period between week 8 to week 12 of age, the highest weight gain (744.41±91.40 g) was found in T_2, whereas the other T_1, T_3, and T_4 groups did not differ significantly (256.01±6.20, 236.21±15.41 and 203.73±40.65) From 12 to 16 weeks, the significantly ($p<0.001$) highest weight gain (765.22±30.59) was recorded in T_2, followed by T_3 (425.71±12.59) whereas no significant difference was reported in T_4 and T_1 groups in the weight gain (190.91±44.10 and 255.85±11.2). The reason for the slight lower weight gain in village level might be, farmers not being able to match the feed requirement. From weeks 16 to 20, significantly ($p<0.001$) higher body weight gain was reported in T_3 (449.79±5.79) followed by T_2 (345.48±9.21) after that, T_4 (238.57±19.23) and lowest weight gain were found in T_1 (168.85±17.88). In the study of cumulative body weight gain of 0 to 20 weeks, the significant ($p<0.001$) highest value was reported for T_2 (2858.01±129^d) followed by T_3 (1897.20±53.5^c) then T_4 (1278.96±171.1^b) while lowest weight gain was found in T_1 (922.59±26.95^a) The present result of Native was comparable with Mandal *et al.* (2007) [25], Vikash *et al.* (2023) [48] and Khan *et al.* (2012) [20]. The weight gain found in the present study was higher as compared to the findings of Khawaja *et al.* (2012) [22]. whereas Faruque *et al.* (2013) [11] reported higher weight gain. Kashyap *et al.* (2018) [18] also reported similar weight gain in the colour broiler. In the different comparative studies of coloured broiler and native birds, the results obtained by Krishna *et al.* (2007) [23] Ramana *et al.* (2010) [36] Gonmei, (2012) [12] Pathak (2013) [32] were in line with the present findings, they recorded higher body weight gain in coloured broilers as compared to local native chickens. The present findings on comparative weight gain at farm and field were in close agreement with Padhi *et al.* (2012) [29] and Niraj *et al.* (2018) [28].

Table 1: Body Weight gain of Local native, PB-2 and their crosses

Age	Local Native	PB-2	Native male X PB2 female (at Farm)	Native male X PB2 female (at Field)	Sig
	T_1	T_2	T_3	T_4	
2nd Week	8.46±0.72^a	97.07±10.54^d	54.00±05.27^c	29.00±1.64^b	***
3rd Week	13.20±0.55^a	121.45±19.12^b	89.35±3.72^b	81.76±25.94^b	**
4th Week	34.26±1.21^a	116.01±9.31^b	121.06±7.68^b	133.10±8.26^b	***
5th - 8th Week	181.27±1.91^a	609.53±18.61^c	360.56±67.54^b	352.17±35.06^b	***
9th -12th Week	256.01±6.20^a	744.41±91.40^b	236.21±15.41^a	203.73±40.65^a	***
13t -16th Week	255.85±11.20^a	765.22±30.59^c	425.71±12.59^b	190.91±44.10^a	***
17th-20th Week	168.85±17.88^a	345.48±9.21^c	449.79±5.79^d	238.57±19.23^b	***

Means having different superscript a, b, c and d differ significantly.
Significant*($p<0.05$), **($p<0.01$), ***($p<0.001$), NS- non significant.

Table 2: Cumulative weight gain of Local native, PB-2 and their crosses

Age	Local Native	PB-2	Native male X PB2 female (at Farm)	Native male X PB2 female (at Field)	Sig
	T_1	T_2	T_3	T_4	
0-4th Week	60.56±2.06^a	404.59±22.70^c	292.79±15.59^b	292.70±37.91^b	***
0-8th Week	241.83±3.63^a	1014.12±36.59^c	743.45±19.83^b	644.87±71.93^b	***
0-12th Week	497.85±6.52^a	1747.29±98.73^c	1021.69±46.53^b	848.60±112.18^b	***
0-16th Week	753.73±14.99^a	2512.52±125.4^c	1447.40±56.30^b	1039.46±154.99^a	***
0-20th Week	922.59±26.95^a	2858.01±129^d	1897.20±53.5^c	1278.96±171.1^b	***

Means having different superscript a, b and c differ significantly
Significant*($p<0.05$), **($p<0.01$), ***($p<0.001$), NS- non significant

Average daily gain

The average daily gain of T_1, T_2, T_3, and T_4 chicks for the total of 20 weeks of the study period, is presented in Table 1.3, significantly ($p<0.001$) highest value of average daily gain was recorded for T_2 (19.93±0.74), followed by T_3 (13.54±0.38) after that T_4 (9.12±1.22) whereas lowest value was recorded in T_1 (6.90±2.36). Chatterjee *et al*. (2002) [7] reported similar values in the local native bird and the Nicobari bird. Other groups of birds could not be compared due to the paucity of research reports on PB2 and other coloured birds. Least weight gain was found in native chickens due to their genotype and less feed conversion efficiency, they are more suitable for natural foraging behaviour as compared to deep litter.

Table 3: Average Daily gain 0-20th Week for Local native, PB-2 and their crosses

Local Native	PB-2	Native male X PB2 female (at Farm)	Native male X PB2 female (at Field)	Sig
T_1	T_2	T_3	T_4	
6.58±0.19^a	19.93±0.74^d	13.54±0.38^c	9.12±1.22^b	***

Means having different superscript a, b, c and d differ significantly
Significant*($p<0.05$), **($p<0.01$), ***($p<0.001$), NS- non significant

Table 4: Mortality of Local native, PB-2 and their crosses

Age	Local Native	PB-2	Native male X PB2 female (at Farm)	Native male X PB2 female (at Field)	Sig
	T_1	T_2	T_3	T_4	
0 – 6th Week	25.03^b	5.87^a	11.06^a	8.42^a	***
7th –18th Week	40.18^c	9.37^{ab}	6.90^a	16.52^b	***

Means having different superscript a, b and c differ significantly
Significant*($p<0.05$), **($p<0.01$), ***($p<0.001$), NS- non significant

Mortality

The average mortality percent of T_1, T_2, T_3, and T_4 chicks from 1 to 20 weeks of age is presented in table 1.4. In the experiment, mortality was recorded,0 to 6 weeks, the highest ($p<0.001$) mortality was recorded in native birds T_1 under farm conditions (25.03±02.64), Mortality rates for T_2, T_3, and T_4 were found to be 5.87, 11.06 and 8.42. whereas mortality percent did not differ significantly among these 3 groups. From week 7 to week 18, the highest ($p<0.001$) mortality was found in T_1 chickens (40.18±4.66) followed by T_4 (16.52±1.74), T_2 (9.37±0.95) and the lowest mortality was recorded in T_3 6.90. As compared to the present findings in native bird mortality, lower mortality was reported in Hansali and Tripura black AICRP (2017-18) [1], AICRP (2021-22) [2]. In the present study of PB2 mortality percent, similar results were also obtained in CSML, CSFL and Jabalpur colour (AICRP, 2017-18) [1] and AICRP (2021-22) [2]. In the study of mortality in cross-breeds, Jha *et al*. (2013) [16] and sola-Ojo *et al*. (2012) [43] were reported similar results to the present findings, whereas contrary to this, lower mortality was reported in Himsamridhi, DN cross, PB2x Desi, and BND AICRP (2021-22). In the 6-20 weeks, the mortality percent of the F1 cross was similar to that of the BN cross and Kadaknath and Jharsim AICRP (2017-18) [1]. As compared to the present result of PB2 higher mortality was found in PB1, PB2, and Dahlem Red AICRP (2021-22) [2].

Carcass Traits

The carcass characteristics of T_1, T_2, T_3, and T_4 chicks is presented in table 1.5. In the study of carcass traits, the lowest pre slaughter weight was found in native birds, whereas no significant difference was found among the 3 groups. There were no significant differences reported in eviscerated percent and dressing percent among all groups. Eviscerated percent of T_1, T_2, T_3 and T_4 groups of chickens were reported as 66.10±2.52, 65.68±1.62 and 66.17±1.89 and 65.05±1.72

respectively, Dressing percent of T_1, T_2, T_3 and T_4 was reported as 70.66±2.50 72.43±1.41, 71.65±1.76 and 69.82±1.47 respectively.

Significantly (p<0.01) lowest breast cut weight was found in T_1 (143.00±2.93 g) bird, whereas no significant difference was observed among T_2, T_3 and T_4 (312.55±34.40 g, 348.06±51.75 g and 347.25±26.05 g), Least (p<0.01) drumstick weight was found in T_1 (92.50±6.04 g) whereas drumstick weights of T_4 T_2 and T_3 were noted as 127.5±5.9 g 184.50±23.67 g and 141.50±9.53 g respectively. Significantly (p<0.01) heaviest thigh was noted in T_2 (178.25±29.05) followed by T_3 and T_4 and T_1 thigh weight were found as 139.25±20.17 g, 139.75±12.7 g and 86.37±6.6 g respectively. The wing weights of T_1, T_2, T_3 and T_4 were 70.12±4.01 125.06±22.11, 101.37±8.37 and 106.25±9.4 g. respectively. Significant lightest (p<0.01) neck weight (38.12±3.39) was observed in T_1 whereas neck weights of T_2, T_3 and T_4 were found to not differ from each other (94.31±12.47 g 102.75±17.5 g and 80.0±10.54 g). Significantly lowest back weight was found in native birds (95.25±23.17 g) where the back weight of T_2, T_3, T_4 was recorded as 283.06±54.65 g, 220.12±14.65 g and 205.25±21.57 g which did not differ from each other. Significantly lowest heart weight was recorded in T_1 5.43±0.15 g, followed by T_3, T_4 and T_2 were found as 8.5±2.03 g, 9.0±1.58 g and 11.5±1.39 g respectively, Significantly lowest liver weight was recorded in T_1 (14.87±0.74 g) followed by T_3, T_4 and T_2 liver weights were recorded as 39.50±2.02, 34±2.85 and 63.87±6.59 respectively. Significantly lowest gizzard weight was found on T_1 15.12±1.32 g whereas gizzard weights of T_2, T_3 and T_4 were noted at 45.00±6.42 g, 32.62±4.01 g and 30.12±.82 g respectively, those did not differ significantly. Different cutup part percent of T_1 were found as breast 27.6±1.91%, leg 34.16±1.29^c wing 13.41±.35^b and neck with back 24.76±2.75. Different cutup part percent of T_2 were breast 28.77±.64^a, leg 30.19±1.65^b wing 10.29±.72^a neck with back 30.74±2.71 Different cutup part percent of T_3, breast 30.49±.79^a, leg 27.60±.41^{ab} Wing 10.04±.75^a neck with back 31.85±.94 Different cutup part percent of T_4 breast 34.50±1.06^b, leg 26.55±0.48^a wing 10.56±0.62^a neck with back 28.37±1.83 A significantly higher (p<0.01) breast percent was found in T_4 whereas the breast % of other groups were not significantly different. Reason for the higher breast% in T_4 that reared in a semi intensive system at villages, those birds have more space to forage, increased muscle activity and exercise contributed to the higher breast meat content Significantly (p<0.01) higher leg percent was found in T_1 followed by T_2 whereas leg % of other groups were not significantly different. A significantly (p<0.01) higher wing percent was found in T_1, whereas the wing percentages of the other groups were non significantly different, The reason for the higher leg and wing percent in native chickens might be due to their genetic traits, The native birds have been selected over generations to be hardy and adaptable, which often results in more balanced muscle growth throughout the body. in contrast, commercial birds are bred for rapid weight gain and breast meat production. Whereas neck and back % was reported not differ among group. In the study of giblet % of T_1, T_2, T_3 and T_4 were reported as 4.52±.26, 6.69±.38, 5.30±.15 and 4.76±.33 respectively, whereas the highest giblet weight was found in T_2.

The carcass trait of native fowl in the present study was similar to Miri (Vijh, 2005) [47] and local natives (Sudheer, 2021) [45]. As compared to the present study, Gopinath (2013) and Rajkumar *et al.* (2013) [34] reported a higher dressing percent in native chickens, whereas Singh and Pathak (2016) [41] and Thamizhannal *et al*. (2022) [46] were found lower dressing percent in indigenous chickens. Contrary to present findings, a lower dressing% was reported by Haunshi *et al*. (2013) [14] Khan *et al*. (2019) [19] in native chickens.

In comparison to the present study of PB2 and cross-breed, Devatkal *et al.* (2018) [9], Pandey *et al.* (2018) [30] and Indumathi, *et al* (2019) [15] were reported similar dressing percent in colour broiler and cross breeds. Khan *et al.* (2019) [19] Shakila *et al.* (2020) [39] reported lower dressing percent. Bhaskar Reddy *et al*. (2021) [4] studied dressing % and cut up part % of of Rajasri, Vanaraja and Broiler and their results were closely agreement with present study. Niraj *et al.* (2018) [28] kalita and talukdar (2022) [17] also reported similar dressing percent in Kamrupa and Jharsim at different management system. Devatkal, *et al.* (2018) [9], Sheikhhasan *et al*. (2020) [40] and Thamizhannal 2022 [46] reported a more or less comparable cutup part % than the present study.

Compared to present findings, Bhonsle *et al* (2019) [5] reported similar dressing percent leg% giblet in improved varieties, whereas neck with back% are lower as compared to our study, whereas in our study, higher breast% was reported as compared to Bhonsle *et al* 2019[5], lower wing% was found in the present study of PB2 and crosses.

Sensory Evaluation

The carcass characteristics of T_1, T_2, T_3, and T_4 chicks is presented in table 1.6. In the study, we found a significant (p<0.01) difference among T_1, T_2, and T_3 chicken meat organoleptic properties. Significantly (p<0.01) better colour was reported in T_3 T_2 (8.0±.17 7.62±.08) lowest value was found in T_1 7.08±.048., A better (p<0.01) flavour was found in T_3 T_2 8.01±.140^b 7.71±.01^b whereas significantly least value was reported in T_1 7.15±.10^a, Similarly, Bhaskar Reddy *et al*. (2021) [4] reported higher colour and flavour in crossbreeds as compared to the parent; better juiciness was reported in T_3 T_2 8.08±.10^b 7.34±.10^b while the significantly lowest value was found in T_1 bird 7.18±.08^a, Similarly, lower juiciness in slow growing birds was reported by Castellini *et al.* (2006) [6]. The best tenderness and texture were found in T_3 as compared to T_2 and T_1, The overall acceptance value of T_3 meat 8.27±12^b was significantly (p<0.01) higher as compared to T_1, T_2 7.41±.12^a 7.78±.12. high sensory score of crossbreed chickens due to the combination of desired traits from both parent breeds. Our findings were in line with Rajakumar *et al.* (2013) [34], Bhonsle *et al.* (2019) [5] and Rajkumar *et al*. (2020) [35] They found a significant effect of genotypes on organoleptic properties. On the contrary, Pandey *et al*. (2018) did not find any significant difference. Similar to our results, Devatkal *et al.* (2018) [9] also found the varieties (Rainbow rooster and Indbro Aseel) having indigenous germplasm showed better scores in sensory evaluation over commercial fast-growing birds. Similar to the present study, Dyubele *et al.* (2010) [10] found a higher sensory score in broiler meat compared to indigenous birds.

Table 5: Carcass parameters of Local native, PB2 and their crosses

	Local Native	PB-2	Native male X PB2 female (at Farm)	Native male X PB2 female (at Field)	P Value
	T_1	T_2	T_3	T_4	
Pre Slaughter Weight	789.87±43.50^a	1824.75±228.29^b	1523.37±93.72^b	1541.75±63.80^b	**
Breast weight (g)	143.00±2.93^a	348.06±51.75^b	312.55±34.40^b	347.25±26.05^b	**
Drumstick weight (g)	92.50±6.04^a	184.50±23.67^c	141.50±9.53^b	127.5±5.9^{ab}	**
Thigh weight (g)	86.37±6.6^a	178.25±29.05^b	139.25±20.17^{ab}	139.75±12.7^{ab}	*
Wing weight (g)	70.12±4.01^a	125.06±22.11^b	101.37±8.37^{ab}	106.25±9.4^{ab}	NS
Neck weight (g)	38.12±3.39^a	94.31±12.47^b	102.75±17.51^b	80.0±10.54^b	*
Back weight (g)	95.25±23.17^a	283.06±54.65^b	220.12±14.65^b	205.25±21.57^b	*
Eviscerated weight (g)	525.37±41.31^a	1213.25±182.72^b	1017.12±84.41^b	1006.0±65.88^b	**
Heart weight (g)	5.43±0.15^a	11.5±1.39^b	8.5±2.03^{ab}	9.0±1.58^{ab}	*
Liver weight (g)	14.87±0.74^a	63.87±6.59^c	39.50±2.02^b	34±2.85^b	***
Gizzard weight (g)	15.12±1.32^a	45.00±6.42^b	32.62±4.01^b	30.12±.82^b	***
Eviscerated %	66.10±2.52	65.68±1.62	66.17±1.89	65.05±1.72	NS
Dressed weight (g)	560.81±41.10^a	1333.62±193.86^b	1097.62±88.29^b	1079.1±65.55^b	**
Dressing %	70.66±2.50	72.43±1.41	71.65±1.76	69.82±1.47	NS
Leg weight (g)	178.87±12.43^a	362.75±52.58^b	280.75±23.28^b	267.2±18.6^{ab}	**
Neck with back weight (g)	133.37±26.42^a	377.37±66.61^b	322.87±23.51^b	285.2±25.7^b	**
Breast %	27.6±1.91^a	28.77±.64^a	30.49±.79^a	34.50±1.06^b	**
Leg %	34.16±1.29^c	30.19±1.65^b	27.60±.41^{ab}	26.55±0.48^a	**
Wing %	13.41±.35^b	10.29±.72^a	10.04±.75^a	10.56±0.62^a	**
Neck with back %	24.76±2.75	30.74±2.71	31.85±.94	28.37±1.83	NS
Giblet%	4.52±.26^a	6.69±.38^b	5.30±.15^a	4.76±.33^a	**

Means having different superscript a, b and c differ significantly.
Significant*($p<0.05$), **($p<0.01$), ***($p<0.001$), NS- non significant.

Table 6: Sensory Evaluation of Local native, PB2 and their crosses

	Parameters	Local Native	PB-2	Native male X PB2	P Value
		T_1	T_2	T_3	
1	Colour	7.08±.048.^{a}	7.62±.08^b	8.0±.17^b	**
2	Flavour	7.15±.10^a	7.71±.01^b	8.01±.140^b	**
3	Juiciness	7.18±.08^a	7.34±.10^b	8.08±.10^b	**
4	Tenderness	7.02±.7^a	7.16±.12^a	8.13±.11^b	**
5	Texture	7.25±.2^a	7.28±.013^a	8.04±.21^b	*
6	Acceptance	7.41±.12^a	7.78±.12^a	8.27±12^b	**

Means having different superscript a, b and c differ significantly
Significant* ($p<0.05$), **($p<0.01$), ***($p<0.001$), NS- non significant

Conclusion
In the present study, it is concluded that F_1 (Native x PB2) chicken has been found suitable for farm and field conditions in Chhattisgarh. PB2 was also performed well in climate Chhattisgarh, whereas the performance of local native chickens at farm conditions was substandard. It may perform better at semi scavenging system where they can exhibit natural behaviour. Dressing percent was not influenced by genotypes; body weight, age, and sex were the main factors that influenced dressing percent. The F_1 can be crossed with Dahlem Red (Three way Cross) to develop a new location specific variety, best suitable for Chhattisgarh rural region.

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