

# CARCASS CHARACTERISTICS OF COMMERCIAL BROILERS

## REARED UNDER VARYING STOCKING DENSITIES

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### ABSTRACT

*Two hundred and forty numbers of straight run commercial (vencobb-100) broiler chicks were reared under varying stocking densities from 0 to 42 days of age to study their effect on various carcass quality parameters. The stocking densities tried were 900, 750, 600 and 450 cm<sup>2</sup> per bird. The broilers were reared under standard management conditions with ad-libitum feeding and watering on deep litter system of management. The per cent of New York dressed weight was significantly ( $p < 0.01$ ) higher in 750 cm<sup>2</sup> followed by 600 cm<sup>2</sup>, 450 cm<sup>2</sup> and 900 cm<sup>2</sup> per bird density groups. Significantly higher ( $p < 0.01$ ) eviscerated weight was recorded in 750 cm<sup>2</sup> cm per bird density, followed by 600 cm<sup>2</sup>, 900 cm<sup>2</sup> and 450 cm<sup>2</sup> cm. Percent ready-to-cook yield obtained was higher ( $p < 0.01$ ) in 750 cm<sup>2</sup> cm per bird density group. However the percent meat yield was obtained was higher ( $p < 0.01$ ) in 750 cm<sup>2</sup> cm per bird density group. However the percent meat yield was found to be ( $p < 0.01$ ) higher ( $59.89 \pm 0.89$ ) in 900 cm<sup>2</sup> per bird density, followed by 450 cm<sup>2</sup> cm ( $54.70 \pm 0.59$ ), 600 cm<sup>2</sup> cm ( $54.33 \pm 0.57$ ) and 750 cm<sup>2</sup> ( $52.13 \pm 0.62$ ). The percent skin yield was found to be ( $p < 0.01$ ) higher ( $14.45 \pm 0.14$ ) in 600 cm<sup>2</sup> cm per bird density compare to other groups. The percent bone yield was ( $p < 0.05$ ) higher ( $29.19 \pm 1.03$ ) in 750 cm<sup>2</sup> cm per bird density. The parameters such as percent yield of trimmable fat, gible, back, breast, wings, thigh, drumstick, fat pad thickness and breast angle didn't show any difference.*

**Key words:** Broilers, stocking density, carcass characteristics.

### INTRODUCTION

Poultry meat production in India during 2004 was 1.6 million metric tonnes, as against the world's production of 67 million metric tonnes. (FAO 2005) As such, India contributes only about 2.39 per cent to the world's total poultry meat production and ranks fifth position in the world's poultry production (Mandal *et al.*, 2005). Therefore, it is imperative that there is a tremendous scope and opportunity for the Indian broiler industry to get profit but

poor managerial methods adapted to augment the production by compromising the quality of the broiler meat produced are hampering it. Poor production performance of broilers and meat quality has been attributed to inadequate floor space as a result of which poor micro environmental conditions inside the poultry house and competition for the feed and water. Providing optimum floor space, feeding and watering and space for the normal movement of

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birds are ideal facilities for better production. Therefore the present study was aimed at to study various carcass quality attributes of commercial broilers as influenced by rearing stocking densities.

## MATERIALS AND METHODS

A total of 240 numbers of day old meat – type straight run Commercial (Vencobb-100) chicks from single hatch were utilized for the trial. These chicks were weighed and wing banded and randomly allotted to 12 groups of 20 each. Three replicates were assigned to the following four different floor densities viz, 900, 750, 600 and 450 cm<sup>2</sup> per bird and reared for 42 days from 0 to 42 days of rearing period. At 42 days of age one male and one female from each replicate were randomly picked up for slaughter study. By slaughter study the data on New York dressed weight, ready to cook yield, eviscerated weight, giblet, cut up parts (back, breast, wings, thigh and drumstick) were recorded in percentage. The Arson values of data collected were subjected to statistical analysis as per the method proposed by snedecor and Cochran (1994).

## RESULTS AND DISCUSSION

The Carcass traits of Broilers at different stocking densities are presented in Table 1. Significant ( $p < 0.01$ ) differences in Per cent New York dressed weight, eviscerated yield, ready-to-cook yield, skin and meat yield were noticed between different density reared broilers. Similar results were quoted by Gill and Sharma (1992), Deek and Harthi (2004), Galobart and Moran (2005). But Kumararaj and Narahari (1992) Raj Manohar (2000) Dozier *et al.* (2006) did not find any significant differences in the yield of above parameters in the broilers reared at various stocking densities.

Broilers reared at the density of 450 cm<sup>2</sup> per bird had significantly ( $p < 0.01$ ) lower percent of eviscerated and ready to cook yield. The highest ( $p < 0.01$ ) skin yield was observed in bird reared at 600

cm<sup>2</sup> per bird. The meat yield was higher ( $p < 0.01$ ) in 900 cm<sup>2</sup> reared group followed by other densities at 600, 450 and 750 cm<sup>2</sup>. Significantly least ( $p < 0.05$ ) bone yield was observed in broilers at 900 and 600 cm<sup>2</sup>. The trimmable fat and wing were numerically higher in 900 cm<sup>2</sup> density group. The trimmable fat yield in this study is in agreement with findings similarly numerically higher giblet, thigh and drumstick yields were recorded in birds reared under 450 cm<sup>2</sup> density group. These were in agreement with findings of Mahapatra and Mohapatra (1982), Kumararaj and Raj manohar (2000). But Gill and Sharma (1992) observed significant differences in giblet yield at various stocking densities reared broilers.

At Different stocking density reared broilers the New York dressed yield, eviscerated, ready to cook yield were found to be higher in the 750 cm<sup>2</sup> per bird, where as meat yield was highest in the 900 cm<sup>2</sup> per bird density group. All the remaining parameters did not show any statistical difference between different stocking densities.

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**Table 1**Mean  $\pm$  SE of carcass traits of broilers as influenced by stocking densities and its analysis of variance

Traits (in per cent)	Floor space (cm <sup>2</sup> )/ bird				
	900	750	600	450	F Value
New York dressing weight	89.55 <sup>b</sup> $\pm$ 1.19	94.29 <sup>a</sup> $\pm$ 1.41	91.65 <sup>b</sup> $\pm$ 0.28	89.66 <sup>b</sup> $\pm$ 0.77	4.944**
Eviscerated weight	75.00 <sup>a</sup> $\pm$ 0.86	77.72 <sup>a</sup> $\pm$ 2.15	76.21 <sup>a</sup> $\pm$ 1.27	68.75 <sup>b</sup> $\pm$ 0.81	8.18**
Ready-To-Cook weight	79.89 <sup>a</sup> $\pm$ 0.91	82.19 <sup>a</sup> $\pm$ 2.16	81.03 <sup>a</sup> $\pm$ 1.42	73.22 <sup>b</sup> $\pm$ 0.89	7.78**
Skin weight	10.08 <sup>b</sup> $\pm$ 0.27	12.74 <sup>a</sup> $\pm$ 0.84	14.45 <sup>a</sup> $\pm$ 0.14	10.60 <sup>b</sup> $\pm$ 0.38	17.22**
Meat weight	59.89 <sup>a</sup> $\pm$ 0.89	52.13 <sup>b</sup> $\pm$ 0.62	54.33 <sup>b</sup> $\pm$ 0.57	54.7 <sup>b</sup> $\pm$ 0.59	23.21**
Bone weight	23.96 <sup>c</sup> $\pm$ 1.40	29.19 <sup>a</sup> $\pm$ 1.03	25.65 <sup>bc</sup> $\pm$ 1.23	28.05 <sup>ab</sup> $\pm$ 0.76	4.33*
Trimmable fat weight	2.96 $\pm$ 0.31	2.68 $\pm$ 0.31	2.93 $\pm$ 0.50	2.54 $\pm$ 0.19	0.35 <sup>NS</sup>
Giblet weight	6.01 $\pm$ 0.21	5.46 $\pm$ 0.24	5.89 $\pm$ 0.38	6.11 $\pm$ 0.19	1.16 <sup>NS</sup>
Back weight	21.03 $\pm$ 0.41	21.36 $\pm$ 0.55	21.80 $\pm$ 0.33	21.03 $\pm$ 0.63	0.56 <sup>NS</sup>
Breast weight	23.89 $\pm$ 0.59	23.89 $\pm$ 0.59	23.71 $\pm$ 0.21	22.35 $\pm$ 0.48	2.23 <sup>NS</sup>
Wings weight	14.30 $\pm$ 0.56	12.96 $\pm$ 0.53	13.49 $\pm$ 0.33	13.24 $\pm$ 0.39	1.55 <sup>NS</sup>
Thigh weight	17.36 $\pm$ 1.67	17.25 $\pm$ 0.57	16.74 $\pm$ 0.41	17.95 $\pm$ 0.25	0.29 <sup>NS</sup>
Drum stick weight	14.65 $\pm$ 1.07	14.99 $\pm$ 0.28	15.16 $\pm$ 0.53	15.72 $\pm$ 0.43	0.47 <sup>NS</sup>
Fat pad thickness (mm)	3.47 $\pm$ 0.07	3.47 $\pm$ 0.09	3.13 $\pm$ 0.16	3.07 $\pm$ 0.19	2.32 <sup>NS</sup>
Breast angle °	73.83 $\pm$ 1.08	72.7 $\pm$ 1.20	73.17 $\pm$ 1.04	72.67 $\pm$ 1.09	0.25 <sup>NS</sup>

Means bearing at least one common superscript in each row do not differ significantly

\* Significant (P&lt;0.05),

\*\* highly significant (P&lt;0.01)