

Effect of slaughter weight on slaughter performance of a native swine breed "Ghungroo" of Duars' Valley and allied zone

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Abstract

Ghungroo (GR) is a native pig breed which is mainly reared by the tribes of Duars' Valley and allied zone. To assess the breed's performance more comprehensively, a research work had been planned to evaluate the effect of slaughter weight on slaughter performance by dividing 18 GR pigs in three groups (viz. 40-50 Kg, 50-60 Kg and 60-70 Kg) having six animals in each group. Hot Carcass Weight, Dressing Percentage, Chilled Carcass Weight, Loin Eye Area, Back Fat Thickness, Carcass Length, shoulder weight, ham weight and loin weight increased significantly ($P < 0.01$) while shoulder percentage, ham percentage, loin percentage and head percentage decreased significantly ($P < 0.01$) with the increase in slaughter weight.

Key Words: Ghungroo Pig, Slaughter Performance, Slaughter Weight.

Introduction

Ghungroo (GR) breed of pig has recently been reported by West Bengal University of Animal and Fishery Sciences. High prolificacy, faster growth, consumers' preference and adaptability to low management input are some of the outstanding characteristics of the breed. It is most prevalent in Duars' valley of eastern Sub-Himalayan region of West Bengal between 880 to 900 E longitudes and 26.30 to 27.30 N latitude. The area belongs to the civil districts of Darjeeling, Jalpaiguri and Northern part of Cochinbhar. The breed is also available in the eastern part of Nepal adjoining Darjeeling district. Average litter size at birth is 11.92 ± 0.06 and litter size up to eighteen is common. Body weight at birth, 5 months and 1 year of age are 1.08 ± 0.22 , 38.91 ± 1.49 and 106.3 ± 0.31 kg respectively irrespective of sex. The breed attains puberty at 7 months of age. (Pan, 2006). Practically no published records were found on performance of GR pigs as a meat producer. Considering the relative importance of pigs in meat production in India particularly to cope up the deficiency of animal protein and to keep pace with the increasing demand of meat and meat products, the present study was aimed to evaluate the effect of slaughter weight on slaughter performance of GR pigs.

Material and Methods

The study was conducted on 18 GR pigs. The

pigs were raised under intensive system of management and were provided with similar housing, feeding and managerial care. The effect of slaughter weight on slaughter performance was studied by dividing the GR pigs in three groups (viz. 40-50 Kg, 50-60 Kg, and 60-70 Kg) having six animals in each group. The animals were brought to the slaughter house the day before slaughter. Overnight fasting and ad libitum water was provided to enhance the carcass quality. The pigs were slaughtered, dressed, eviscerated and split as per the method described by Ziegler (1968) with certain modifications. After slaughter, weight of hot carcass weight (HCW), head, heart, liver (after cutting off the gall bladder), kidney, spleen, lung and trachea, full gastro intestinal (GI) tract, empty GI tract and fillets were recorded. Then the hot dressed carcasses were hanged in the chill room and allowed to chill for 24 hours at around 4-5°C. After 24 hours chilled carcass weight (CCW) was recorded.

The carcass was then split into equal halves and each half was further disjoined to make the various cuts viz. shoulder, ham, loin etc. and the weight were taken. Shoulder%, Ham% and Loin% were calculated by comparing their respective weight with hot carcass weight and expressed as the percentage of hot carcass weight. Head%, Blood%, Kidney%, Liver%, Heart%, Spleen%, Lung+Trachea%, Fillet%, Full GIT%, Empty GIT%, Shank%, Tail% and Hair% were calculated by comparing their respective weight with slaughter

weight and expressed as the percentage of slaughter weight.

Carcass length: Carcass length was measured from the anterior point of the aitch-bone to anterior edge of the first rib by the help of a cloth tape. It was recorded in centimeter. (Bundy et al, 1976).

Back fat thickness: Back fat thickness was measured including the skin at three points- a) at first rib, b) at last rib, c) at last lumbar vertebra, with the help of a slide caliper, and an average of above three measurements was made. (Christien et al., 1980).

Loin eye area: Loin eye area was measured between 10th and 11th rib. At first a cross section was made between 10th and 11th rib. Then a tracing paper was placed on the loin eye area. The area was traced by pencil and later measure with the help of a compensating graph paper. The observation was recorded in square centimeter. (Krider and Carrol, 1971).

Dressing percentage: The carcass yield or dressing out percentage was found out by comparing the dead weight with the live weight and was expressed as percentage of the live weight of the animal (Thornton and Gracey, 1974).

Dressing percentage (%) = Hot carcass weight / Live weight X 100

Carcass cooler shrink percentage: This parameter was calculated in the following way (Cisneros et al., 1996):

Carcass cooler shrink (%) = Hot carcass weight – Chilled carcass weight / Hot carcass weight x 100

Data were analyzed by One Way ANOVA according to Duncan's multiple range test (Duncan, 1955) using SPSS@ (10.0) software. P<0.05 is treated as significant and P<0.01 is noted as highly significant.

Results and Discussion

HCW, DP, CCW, LEA, ham weight and loin weight showed significant (P<0.01) increase and shoulder%, ham% and loin% showed significant (P<0.01) decrease as the slaughter weight increases. No significant difference was observed for carcass cooler shrink. For BFT and CL, lowest (P<0.01) value was observed in 40-50 Kg. slaughter weight group, but no significant difference was observed between group II and III. Head% and kidney% demonstrated significant (P<0.01) decrease along with increase in slaughter

Table-1. Effect of slaughter weight on some slaughter parameters of GR pigs (Mean ± SE)

Slaughter Parameters	40-50kg (Gr. I)[N=6]	50-60kg (Gr. II)[N=6]	60-70kg (Gr. III)[N=6]	Level of significance (P value)
Slaughter weight (kg)	45.85±0.70a	56.05±0.73b	66.27±0.60c	P<0.01
Hot carcass wt (kg)	29.06±0.43a	36.19±0.53b	45.21±0.43c	P<0.01
Dressing percentage (%) ¹	63.39±0.22a	64.57±0.53b	68.22±0.24c	P<0.01
Chilled carcass weight (kg)	27.50±1.01a	35.47±0.53b	44.35±0.45c	P<0.01
Carcass cooler shrink (%) ¹	5.48±2.57	1.99±0.15	1.90±0.11	N.S.
Loin eye area (cm ²)	11.13±0.18a	15.45±0.51b	18.18±0.13c	P<0.01
Back fat thickness (cm)	2.00±0.09a	2.36±0.03b	2.45±0.04b	P<0.01
Carcass length (cm)	60.68±0.95a	66.00±0.68b	67.28±0.51b	P<0.01
Shoulder weight (kg)	7.26±0.16a	7.99±0.14b	9.61±0.12c	P<0.01
Shoulder percentage (%) ²	24.96±0.23a	22.09±0.12b	21.26±0.16c	P<0.01
Ham weight (kg)	7.03±0.13a	7.98±0.14b	9.48±0.12c	P<0.01
Ham percentage (%) ²	24.18±0.15a	22.03±0.15b	20.97±0.16c	P<0.01
Loin weight (kg)	6.49±0.11a	7.67±0.09b	8.95±0.16c	P<0.01
Loin percentage (%) ²	22.34±0.13a	21.23±0.45b	19.78±0.21c	P<0.01
Head ¹ (%)	8.967±0.101a	8.530±0.060b	7.961±0.081c	P<0.01
Blood ¹ (%)	3.040±0.075a	2.835±0.057b	2.695±0.057b	P<0.01
Kidney ¹ (%)	0.438±0.012a	0.362±0.006b	0.317±0.008c	P<0.01
Liver ¹ (%)	2.432±0.056a	2.049±0.069b	2.057±0.101b	P<0.01
Heart ¹ (%)	0.449±0.014a	0.417±0.017ab	0.380±0.012b	P<0.05
Spleen ¹ (%)	0.220±0.008	0.212±0.003	0.388±0.216	N.S.
Lung + Trachea ¹ (%)	1.293±0.043	1.348±0.052	1.285±0.036	N.S.
Fillet ¹ (%)	0.501±0.009	0.484±0.014	0.518±0.046	N.S.
Full GIT ¹ (%)	11.938±0.091a	11.975±0.10a	11.143±0.239b	P<0.01
Empty GIT ¹ (%)	5.871±0.056ab	6.038±0.060a	5.617±0.135b	P<0.05
Shank ¹ (%)	2.764±0.107a	2.527±0.115ab	2.317±0.126b	P<0.05
Tail ¹ (%)	0.188±0.012a	0.163±0.008ab	0.159±0.007b	N.S.
Hair ¹ (%)	1.024±0.067	1.002±0.073	1.028±0.094	N.S.

¹ Percentage of the slaughter weight. ² Percentage of the hot carcass weight.

Row wise superscripts (a, b, c etc.) denote that significant difference appeared between groups according to Duncan's multiple range Test. P<0.05 is significant and P<0.01 is highly significant. N.S. – Not Significant.

weight. The group with minimum slaughter weight showed maximum blood% ($P < 0.01$) and liver% ($P < 0.01$). Heart%, shank% and tail% showed significant difference ($P < 0.05$) between group I and III, but no significant difference was observed between group I & II and group I & III. No significant difference was recorded among the groups for spleen%, Lung +Trachea%, fillet% and hair%. Pigs with maximum slaughter weight showed lowest value for full GIT% ($P < 0.01$) and empty GIT% ($P < 0.05$), but no difference was observed between group I & II. Probably, this is the first work on slaughter performance of GR pig as the breed has come into limelight recently due to its high prolificacy and faster growth. So no previous work on its slaughter performance was traced but the results corroborated the findings of Lakhani et al. (1997). They recorded that as the body weight of desi pigs increases the values of different carcass traits increases except ham weight percent which showed decline trends.

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