

EFFECT OF AGE ON CARCASS CHARACTERISTICS OF 75 % LWY PIGS UNDER DIFFERENT FEEDING SYSTEM

M. Muthulakshmi^{1*}, M. Murugan², H. Gopi³, R. Ilavarasi⁴ and G. Margaret Salomi⁵

¹Assistant Professor, ²Associate Professor, ³ Professor and Head
Post Graduate Research Institute in Animal Sciences, Kattupakkam,
TANUVAS, Tamilnadu-603 203

^{4&5}Junior Research Fellow of All India Co-ordinated Research Project on Pigs
E-mail: muthulakshmivet@gmail.com (*Corresponding Author)

Abstract: A study was carried out with the objective to evaluate the effect of age on carcass characteristics of 75 % Large White Yorkshire (LWY) pigs under different feeding systems. Thirty weaned male piglets were selected and randomly divided into two groups. Piglets in Group I (Concentrate) and Group II (Swill) was maintained under intensive system of housing. The pigs were slaughtered hygienically as per the standard slaughter procedure at the slaughter unit of PGRIAS, Kattupakkam on 7th, 8th and 9th month of age. There was a highly significant ($P < 0.01$) difference in live weight, carcass and non-carcass components (liver, lungs, heart, spleen, stomach and intestine, abdominal fat, bristles etc.,) of both feeding system and age of slaughter. Group II had significantly ($P < 0.01$) higher body weight and carcass weight than Group I. The pre-slaughter weight (kg) and hot carcass weight (kg) of Group II were 80 ± 2.88 , 84 ± 4 , 93.33 ± 5.69 and 57.63 ± 1.78 , 61.39 ± 4.11 , 69.48 ± 3.94 respectively; Group I were 60.3 ± 1.33 , 76.16 ± 4 , 78.354 ± 4.42 and 43.69 ± 0.92 , 57.44 ± 2.40 , 60.39 ± 3.60 , respectively. Dressing percentage (%) and back fat thickness of Group I and II were increased significantly ($P < 0.01$) increasing age of slaughter. Moreover higher dressing percentage (%) and lower back fat thickness noticed in Group I. The muscular development as indicated by loin eye area was significantly ($P < 0.05$) higher in Group I as compared to Group II. It is concluded that earlier slaughter age resulted in greater quality grades with lower dressing percentage.

Keywords: Feeding system, carcass characteristics, dressing percentage, 75 % Large White Yorkshire pigs.

Introduction

The origin of animals, carcass characteristics and its meat quality are important criteria for butchers and consumers when it comes to making purchasing decisions. Also, breed is a relevant element of pork production since it may be related to a traditional production system and specific environments. The modern technology of pig feeding consists of meeting the biological needs with proper combination of feed ingredients and locally available by-products to yield pig meat at cheaper cost. Pork is an important source of high quality animal

protein. Mutton, beef and chicken meat alone cannot meet the animal protein requirements of the growing population. In this context, the quick growing multiparous pig is one of the best choices to meet the demand for animal protein. Hence this study was conducted to assess the effect of age on carcass characteristics of 75 % LWY pigs under different feeding system.

Materials and Methods

Thirty weaned crossbred (Large White Yorkshire 75% and Desi 25 %) piglets maintained under the All India Co-ordinated Research Project on pigs at Post Graduate Research Institute in Animal Sciences, Kattupakkam, Tamilnadu-603 203, were selected for this study. The randomly selected piglets were divided into two groups with each group consisting of 15 animals and they were subjected to two different feeding system viz., Piglets in Group I (Concentrate) and Group II (Swill) was maintained under intensive system of housing. The swill was collected from student's hostel situated near the farm. The pigs had free access to water in individual pens. The pigs were slaughtered hygienically as per the standard slaughter procedure at the slaughter unit of PGRIAS, Kattupakkam on 7th, 8th and 9th month of age. The data on live weight, carcass weight, dressing percentage, carcass length, back fat thickness, loin eye area and other carcass traits were recorded and the data analyzed statistically for the significance (Snedecor and Cochran, 1994).

Results and Discussion

Pre-slaughter weight

The Pre-slaughter weight (Table 1) was significantly ($P < 0.01$) higher in swill fed group compared to concentrate fed group. This is in agreement with the findings of Srinivas and Sagar (1991), Anil et al. (2007), Chinnamani (2008) and Muthuramalingam (2011) also reported better body weight in piglet raised under swill feed than those raised under concentrate feed. On the contrary Somanandha Sarma et al. (1996) and Ranjan et al. (2003) in a comparative study on growth performance of pigs with concentrate and swill feed reported significantly higher body weight in pigs under concentrate feed than swill feeding. Also significant ($P < 0.01$) increasing trends of pre-slaughter weight in age of slaughter.

Hot Carcass weight

The hot carcass weight (Table 1) was significantly ($P < 0.01$) higher in swill fed group compared to concentrate fed group. This might be due to the swill feed having a higher body weight at the time of slaughter. This finding of high carcass weight was corroborated by Srinivas and Sagar (1991). This result might also be due to variation in final weight between treatment groups leading to difference in carcass weight. This was in accordance with

Mishra *et al.*(1989), Bhadoria (1996). On the contrary Westendorf *et al.* (1998) and Jha *et al.* (1999) reported that concentrate fed group had high carcass weight than garbage fed group.

Dressing percentage

The dressing percentage (Table 1) was significantly ($P<0.01$) higher in concentrate group than swill fed group. Somanadha Sarma *et al.* (1996) and Jha *et al.*(1999) observed that the concentrate fed group had high dressing percentage than swill groups. On the contrary Sinha *et al.* (1993), Muthuramalingam (2011) and Chinnamani *et al.* (2008) reported that swill fed group had high dressing percentage than concentrate fed group. Group II had no significance at 7 and 8 month age of slaughter. Furthermore dressing percentage significantly ($P<0.01$) rising trends in age of slaughter.

Carcass length

There was highly significant ($p<0.01$) difference in carcass length(Table 1) of swill fed group (89.74 ± 0.50 cm) compared to concentrate fed group (86.36 ± 0.42 cm). There was no significant difference between Group I and Group II at 7 month age of slaughter. These might be due to higher carcass weight with increase in carcass length.This finding was in agreement with Codray *et al.*(1978), Sinha *et al.* (1993) and Chinnamani *et al.* (2008). On the contrary Jha *et al.* (1999) observed that concentrate fed group had high carcass length than swill fed group.

Back fat thickness

The swill fed group had significantly ($p<0.01$) high back fat thickness (Table 1) (4.34 ± 0.76 cm) compared to concentrate fed group (3.94 ± 0.07 cm). These might be due to definite influence of the feeding on body fat deposit. The effect of high fat nutritional diet, leads to conversion of excess energy into fat deposition. This was in accordance with Srinivas and Sagar (1991), Sinha *et al.* (1993) and Chinnamani *et al.* (2008). On the contrary Somanadha Sarma *et al.* (1996) and Jha *et al.* (1999) reported that concentrate fed group had high back fat thickness than swill fed group. There was significant ($P<0.01$) increasing trends of back fat thickness in age of slaughter

Loin eye area

The loin eye area (cm^2) (Table 1) was significantly higher in concentrate fed group ($28.00 \pm 0.31\text{cm}^2$) compared to swill group ($26.30 \pm 0.47\text{cm}^2$) (Table 1). These might be due different dietary protein level in the diet. These finding were corroborated by Jha *et al.* (1999). On the contrary Krider and Carrol (1971) and Sinha *et al.* (1993)

Table: 1 Carcass characteristic 75% LWY pigs on different age under different feeding system

S. no	Carcass characteristic		7 th month	8 th month	9 th month
1.	Live weight (Kg)	Group I	60.3±1.33 ^a	76.17±4.00 ^b	78.36±4.42 ^c
		Group II	80.00±2.88 ^a	84.00±4.00 ^b	93.33±5.69 ^c
2.	Carcass weight (Kg)	Group I	43.69±0.92 ^a	57.44±2.4 ^b	60.39±3.60 ^c
		Group II	57.63±1.78 ^a	61.39±4.11 ^b	69.48±3.94 ^c
3.	Dressing percentage	Group I	72.46±0.20 ^a	75.50±0.81 ^b	77.05±1.00 ^c
		Group II	72.07±0.07 ^a	72.95 ±1.38 ^b	74.50±0.93 ^c
4.	Carcass length (Inch)	Group I	30.33±0.33 ^a	31.83±1.01 ^b	34.00±0.58 ^c
		Group II	30.66±1.66 ^a	33.4±1.28 ^b	35.33±0.88 ^c
5.	Loin eye area (Cm ²)	Group I	26.60±1.22 ^a	27.40±0.44 ^b	28.00±1.08 ^c
		Group II	18.40±0.98 ^a	23.00±0.94 ^b	26.30±1.24 ^c
6.	Back fat Thickness (cm)	Group I	2.96±0.33 ^a	3.64±0.08 ^b	3.94±0.07 ^c
		Group II	3.86±0.14 ^a	3.94±0.10 ^b	4.34±0.76 ^c
7.	Meat percentage	Group I	46.67 ± 0.22 ^a	48.28 ± 0.22 ^b	51.82 ± 0.22 ^c
		Group II	40.29 ± 0.81 ^a	42.78 ± 0.81 ^b	43.93 ± 0.81 ^c
8.	Fat percentage	Group I	33.13 ± 0.20 ^a	31.34 ± 0.20 ^b	28.13 ± 0.20 ^c
		Group II	40.07 ± 0.51 ^a	41.08 ± 0.51 ^b	42.07 ± 0.51 ^c
9.	Bone percentage	Group I	20.20 ± 0.11 ^a	20.38 ± 0.11 ^b	20.55 ± 0.11 ^c
		Group II	19.64 ± 0.65 ^c	16.14 ± 0.65 ^b	14.00± 0.65 ^a

observed that swill fed group had high loin eye area than concentrate fed group. There was positive significant ($P<0.01$) increasing trends loin eye area in age of slaughter of both group.

Total edible offals

The total edible offals (kg) was significantly ($P<0.01$) high in swill fed group compared to concentrate group. Chinnamani (2008) also observed that swill fed group had higher total edible offals than concentrate fed group.

Total inedible offals

Total inedible offals (kg) was significantly ($p<0.01$) higher in swill fed than concentrate fed.

Meat, fat and bone

The meat (per cent) was found to be significantly ($P<0.01$) higher in 100 per cent concentrate group (51.82 ± 0.22 per cent) compared to swill fed groups (43.93 ± 0.81 per cent). These

might be due to less fat accumulation in group I. The fat (per cent) was found to be significantly higher ($P < 0.01$) in swill fed group (42.07 ± 0.51 per cent) compared to concentrate group (28.13 ± 0.20 per cent). These might be due to more fat accumulation in swill fed group. The bone (per cent) was found to be highly significant ($P < 0.01$) in concentrate group (20.05 ± 0.11 per cent) compared to swill fed group (14.00 ± 0.65 per cent). This might be due to the more bone content and less fat accumulation in group I. Based on the above study, concluded that earlier slaughter age resulted in greater quality grades with lower dressing percentage.

References

- [1] Anil, K.S., Saseendran, P.C., Joseph Mathew and Murugan, M. (2007). Effect of management systems on growth performance of two genetic groups of pigs. *Tamilnadu Journal of Veterinary and Animal Sciences.*, 3(1): 16-20.
- [2] Bhadoria, H.B.S. (1996). Carcass traits of Large White Yorkshire pigs. *Indian Journal of Animal Production and Management.* 12: 114-116.
- [3] Codray, J.C., Huffman, D.I and McGuire, J.A. (1978). Predictive equations for estimating protein and fat in the pork carcass. *Journal of Animal Science.*, 46 : 666-673.
- [4] Jha, D.D., Singh, S.K. and Devi, A.A. (1999). Studies on carcass characteristics of pigs. *Indian Journal of Animal Research.*, 33: 48-50 Krider, J.L. and Carrol, W.E.R. (1971). *Swine Production*. Fourth edition. Mcgraw-Hill Publication, New York p. 441.
- [5] Krider, J.L. and Carrol, W.E.R. (1971). *Swine Production*. Fourth edition. Mcgraw-Hill Publication, New York p. 441.
- [6] Mishra, R.R., Shiv Prasad and Krishnan Lal. (1989). Studies on carcass traits of Large White Yorkshire pigs . *Indian Journal of Animal Production and Mangement.*, 5 :130-133.
- [7] Muthuramalingam, T., Tensingh Gnanaraj, P., Sivakumar, T., Murallidharan, Ra. and Murugan, M. (2011). Influence of heat treated swill feed on the performance of large white yorkshire pigs. *Tamilnadu J. Veterinary & Animal Sciences* 7 (6): 312-314.
- [8] Ranjan, R., Singh, S.K and Singh, S.S. (2003). Growth performance on different feeding and rearing practices in pigs. *Indian Journal of Animal Sciences.*, 73(2): 194-196
- [9] Sreemannarayana, O. (1996). Studies on carcass characteristics of Large White Yorkshire pigs fed with garbage and finisher mash. *Indian Veterinary Journal.*, 73: 356-357
- [10] Sinha, .S.K., Singh, R.A. and Sharma, B.D. (1993). Carcass and economic traits of swine production on culinary. *Indian Journal of Animal Sciences.*, 63: 787-789

- [11] Snedecor. G.W and Cochran, W.G. (1994). *Statistical Methods*, IOWA State University Press, Ames, IOWA, USA. p.313
- [12] Somanadha Sarma. S., S., Subha Reddy, M.V and Sreemannarayana, B. (1996). Studies on carcass characteristics of Large White Yorkshire fed garbage and finisher mask. *Indian Veterinary Journal.*, 73: 356-357.
- [13] Srinivas, B and Sagar, R.H. (1991). Comparative performance of indigenous pigs reared on different feeding practices. *Indian Journal of Animal Nutrition.*, 8:161-162.
- [14] Westendorf, M.L., Dong, Z.C. and Schoknecht, P.A. (1998). Recycled cafeteria food waste as a feed for swine: Nutrient Content, Digestibility, Growth and Meat Quality. *Journal of Animal Sciences.*, 76: 2976–2983.