

EVALUATION OF BEST SEX AND ECONOMIC SLAUGHTER WEIGHT ON STANDARD FEEDING IN LARGE WHITE PIGS UNDER INDIAN CONDITIONS

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Summary

A comparative study was conducted in total thirty six large white weaner pigs of about 15 kg body weight namely boars, barrows and gilts to evaluate best sex and economic slaughter weight with one standard ration. In 159 days study period feed consumption, growth, feed conversion ratio and carcass quality were judged in all sexes of pigs at 50, 70 and 90 kg body weight. It was noted that upto 70 kg body weight the growth in boars and gilts 46.0 and 49.0 kg and feed conversion ratio 4.83 and 4.81 were superior and economical over the barrows, which were 45.5 kg and 4.95. Later on there were too many fluctuations in growth and feed conversion ratio in all sexes of pigs, which would be uneconomical. Carcass quality was also better in boars and gilts than barrows. No boar taint was noted in most of the boar carcasses. Hence it is concluded that boars and gilts can be raised upto the 70 kg body weight for economic pork production.

(Key Words : Boars, Barrows, Growth, Carcass Quality, Boar Taint)

Introduction

Little work has so far been done in India on the determination of best sex and economic slaughter weight of pigs and therefore the pig farmers always feel great difficulty to rear their pigs more economically. In view of these shortcomings a study was undertaken with different sexes of pigs at different body weights, so that it may be possible to indicate as to which sex of the pigs gives best performance and meat quality at an economic slaughter weight.

Materials and Methods

Thirty six weaned large white pigs consisting of boars (uncastrated male), barrows (castrated male) and gilts (females) of about two and a half months of age and an average of 15 kg body weight were selected. They were randomly allotted in three groups, each group having 12 animals. The designed used for allotment was Completely Randomised Designed (CRD). A standard ration

table 1 was prepared and fed to the above three groups of pigs as per their appetite till they attained the slaughter weight of about 50, 70 and 90 kg. During experimental period of 159 days, daily feed consumption, fortnightly body weight and feed conversion ratio were recorded.

Two metabolic trials, each of five days duration with four animals in each group were carried out (1st in early period of growth i.e. at about 50 kg body weight and 2nd nearing the slaughter weight at about 70 kg body weight) to find out the digestibility of various proximate principles. All the samples of feed and faeces were analysed as per AOAC (1970).

On attainment of slaughter weights of about 50, 70 and 90 kg, 2 to 5 animals from each group at each weight were slaughtered as per farmers Bulletin of U. S. Dept. of Agriculture (Anon, 1970) for judging the carcass quality. Boar taint in boars was evaluated by solder iron method as prescribed by Patterson (1977).

Results and Discussion

The results were recorded in two phases table 2. In the 1st phase of 126 days in which most of the pigs attained the live weight of 50 and 70 kg, the average total growth was 46.0, 45.5 and 49.0 kg in boars, barrows and gilts while

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TABLE 1. GROSS & CHEMICAL COMPOSITION OF STANDARD RATION FED TO PIGS

S. No.	Ingredients	Percentage
1	Crushed barley	50
2	Wheat bran	25
3	Ground nut cake	15
4	Fish meal	8
5	Mineral mixture	2
6	Vitablend (Vit. A + B + D)	20 gm
7	Copper sulphate	100 gm
Chemical analysis:		
8	Crude protein	16.75
9	Digestible energy (kcal/kg)	3,050
10	Crude fibre	7.02
11	Calcium	0.81
12	Phosphorus	0.58

TABLE 2. AVERAGE GROWTH AND FEED CONVERSION RATIO ETC IN DIFFERENT SEXES OF PIGS (IN TWO PHASES)

S. No.	Particulars	Boars	Barrows	Gilts
1st phase of 126 days				
1	Total growth/pig (kg)	46.00 ^a	45.50 ^a	49.00 ^b
2	Growth/day/pig (gm)	365	361	388
3	Feed consumption/day/pig (kg)	1.76	1.78	1.86
4	Feed conversion ratio	4.83 ^a	4.95 ^a	4.81 ^a
2nd phase of 33 days				
1	Total growth/pig (kg)	11.50 ^a	11.00 ^a	8.30 ^b
2	Growth/day/pig (gm)	360	360	280
3	Feed consumption/day/pig (kg)	1.80	2.66	2.07
4	Feed conversion ratio	5.00 ^b	7.40 ^a	7.40 ^a

N.B.: Figures having same letter do not differ significantly.

the average feed conversion ratio worked out as 4.83, 4.95 and 4.81 respectively. In the 2nd phase which was continued for 33 days with only 10 pigs left after slaughtering at 50 and 70 kg body weight the average growth and feed conversion ratio were recorded as 11.5, 11.0 and 8.3 kg and 5.0, 7.40 and 7.40 in boars, barrows and gilts respectively.

From the 1st phase it was noted that the performance of gilts was significantly better than others sexes while in the 2nd phase performance of boars was better. But when the combined results of both the periods were studied it was observed that the growth in boars and gilts was the same in 159 days i.e. about 57 kg, while the feed conversion ratio was better in boars than

in gilts and barrows confirming the findings of Hansson (1974).

Further it was also noted that upto about 70 kg body weight (1st phase) the growth and feed conversion ratio in boars and gilts were good while in the later period (2nd phase) the difference was too much which would be uneconomical. Therefore, it appears that slaughter of pigs upto 70 kg body weight would be better and more economical than at higher weights (Brooks et al., 1964; Kumar et al., 1974).

The average digestible coefficients of dry matter, crude protein, ether extract, crude fibre and nitrogen-free extract in early period of growth and nearing the slaughter weight were quite satisfactory and practically the same in all sexes

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TABLE 3. AVERAGE DIGESTIBLE COEFFICIENTS OF NUTRIENTS IN DIFFERENT SEXES OF PIGS (%)

Sex of pig	Dry matter	Crude protein	Ether extract	Crude fibre	Nitrogen free extract
In early period of growth					
Boars	75.48 ± 1.78	71.49 ± 2.05	67.83 ± 3.15	32.08 ± 4.23	85.36 ± 2.78
Barrows	75.71 ± 1.67	75.38 ± 2.17	82.13 ± 1.79	39.50 ± 0.86	84.67 ± 2.68
Gilts	75.29 ± 2.08	77.75 ± 1.18	79.25 ± 2.18	21.68 ± 3.76	86.65 ± 0.95
Nearing the slaughter weight					
Boars	74.20 ± 0.85	75.33 ± 0.27	77.51 ± 1.15	33.36 ± 1.38	83.18 ± 2.18
Barrows	72.86 ± 3.09	73.80 ± 1.07	72.31 ± 2.38	29.74 ± 1.79	83.91 ± 0.86
Gilts	67.04 ± 2.09	66.42 ± 1.93	80.20 ± 1.35	18.20 ± 1.35	77.56 ± 2.08

of pigs, which might be due to the feeding of one ration.

Carcass quality: The important carcass quality parameters of different sexes were at about 50, 70 and 90 kg slaughter weights were shown in Table 4.

The dressing percentages in different sexes of pigs at each live weight did not differ significantly. Back fat thickness and area of eye muscle increased as the body weight increased confirming the results of Jesse et al. (1983). While in boars and gilts the back fat thickness and area of eye muscle were practically the same at each weight, it significantly differed from barrows at 70 and

90 kg weight which might be due to some hormonal effect on body.

The weight of liver and body cut like ham was practically the same at each slaughter weight but it significantly differed between the slaughter weights because as the weight increased the weight of liver and body cuts also increased.

From all these carcass quality parameters and visual assessment, it was observed that gilts have good carcass quality due to the optimum amount of muscle and fat while boar carcasses were leaner which are more suitable for lean meat preparations while barrows carcasses were fatty. All these findings are quite resemble with the results of

TABLE 4. AVERAGE CARCASS QUALITY PARAMETERS OF BOARS, BARROWS AND GILTS AT DIFFERENT SLAUGHTER WEIGHTS

Sex of Pig	Dressing percentage (%)	Back fat thickness (cm)	Area of eye muscle (cm ²)	Weight of liver (kg)	Weight of ham (kg)	Carcass quality
At 50 kg						
Boars	65.92 ± 2.47 ^a	1.55 ± 0.13 ^a	27.90 ± 2.89 ^a	1.05 ± 0.15	4.17 ± 0.60	Lean
Barrows	69.90 ± 2.73 ^a	1.98 ± 0.22 ^a	30.42 ± 3.27 ^a	1.12 ± 0.11	4.20 ± 0.43	Lean
Gilts	66.67 ± 1.13 ^a	1.58 ± 0.23 ^a	29.40 ± 1.06 ^a	1.05 ± 0.06	4.42 ± 0.31	Good
At 70 kg						
Boars	68.68 ± 0.98 ^a	1.95 ± 0.17 ^a	33.93 ± 1.11 ^a	1.23 ± 0.08	5.45 ± 2.47	More lean
Barrows	70.04 ± 0.75 ^a	2.71 ± 0.35 ^b	34.13 ± 3.34 ^a	1.26 ± 0.10	5.51 ± 0.20	Fatty
Gilts	72.90 ± 0.62 ^b	2.39 ± 0.06 ^b	40.05 ± 2.41 ^a	1.40 ± 0.02	6.21 ± 0.45	Good
At 90 kg						
Boars	72.18 ± 0.67 ^a	1.75 ± 0.05 ^a	52.00 ± 2.00 ^a	1.80 ± 0.30	7.40 ± 0.40	More muscle less fat
Barrows	73.66 ± 0.98 ^a	2.68 ± 0.13 ^b	37.13 ± 1.12 ^b	1.43 ± 0.11	6.25 ± 0.75	Fatty
Gilts	72.58 ± 1.68 ^a	2.32 ± 0.10 ^a	57.75 ± 0.25 ^a	1.55 ± 0.19	7.50 ± 0.50	Good

N.B.: Figures having same letter do not differ significantly.

Hansson et al. (1975).

Boar taint was also detected in the boars at different slaughter weights by solder iron and open pan method. It was noted that some carcasses showed the boarish smell while other did not show any smell even at the higher body weight. This view was supported by Malmfors and Hansson (1974). Meat preparations were also prepared from the carcasses of different sexes but nothing (boarish smell) was noted by the taste panel in the preparations. Hence, it may be suggested that boar meat can easily be used for certain meat preparations like sausages, salami etc. without any noticeable smell and taste as indicated by Cowan and Taluntais (1979).

Thus from all the above observations and results it may be concluded that boars and gilts are the better sexes than barrows. Regarding the economic slaughter weight the performance of pigs was quite good upto 70 kg body weight but after this too many fluctuations were noted in growth, feed conversion and carcass quality. Hence slaughter of pigs upto 70 kg may be recommended for economic pork production.

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