

EFFECT OF HOUSING AND FEEDING SYSTEMS ON THE PRODUCTION PERFORMANCE OF LARGE WHITE YORKSHIRE X DESI PIGS

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Pig rearing based on a commercial pig ration with conventional feed ingredients is not profitable considering the present market values of pork, cost of feed ingredients and feed conversion efficiency of available genetic groups of pigs in Kerala. The need for formulating a low cost pig feed deserves top priority for sustainable pig husbandry especially growth which is fore most to be considered. This trial was conducted to compare the productive performance of crossbred pigs under different housing and feeding conditions especially concentrate and swill feeding.

Twenty-four crossbred weaned piglets (Large White Yorkshire and Desi) were randomly selected from Centre for Pig Production and Research, Kerala Agricultural University, Mannuthy as uniformly as possible with respect to age, sex and bodyweight were utilised for the study. The piglets were randomly divided into four groups of six animals each and allotted to one of the following treatments.

T₁ - group housing with wallowing facility, fed with conventional feed (control)

T₂ - group housing with wallowing facility, fed with unconventional feed (left over food from hostels and other organic food waste)

T₃ - individual housing without wallowing facility, fed with conventional feed

T₄ - individual housing without wallowing facility, fed with unconventional feed

During the experimental period data viz., average daily feed intake, monthly body weight was

recorded and with that average daily gain and feed conversion efficiency were calculated. Proximate composition of different feed samples was also analyzed as per A.O.A.C (1990).

It was observed that average daily feed intake was 1.23 ± 0.10 kg on DM basis in unconventional feed fed groups compare to conventional feed (1.03 ± 0.10 kg). This is in agreement with Westendorf *et al.* (1998) who suggested that pigs must be fed with food waste nearly four times the volume of concentrate feed on fresh matter basis.

The average fortnightly body weight of different treatment presented in table 1 and they showed a progressively increasing weight with advancing age. There were differences ($P < 0.05$) in the body weight of T₃ and T₄ groups (individually housed) from ninth fortnight. However, these differences were statistically not significant ($P > 0.05$) although individually housed pigs showed better growth. The reason may be of least social stress for individually housed animals as reported by Patterson (1985) and Bustamate *et al.* (1996).

The final body weights of T₁, T₂, T₃ and T₄ groups were 53.66 ± 2.54 , 55.70 ± 2.5 , 56.17 ± 3.68 and 57.00 ± 1.48 kgs respectively. It was observed that pigs fed with unconventional feed showed higher body weight, which may be due to better nutrients and higher dry matter content of the waste which was collected from hostel supplemented with boiled infertile hatchery egg and chicken waste and also indicates a better growth rate to production systems with unconventional feed resources. This

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was in support to the findings of Ranjan *et al.* (2003) and Ravindra *et al.* (2004). They reported that significantly highest ($P < 0.05$) body weight was observed in pigs maintained on hotel waste with 20 per cent concentrate.

It can be seen from the table 2 that the average daily gain (ADG) of T_1 , T_2 , T_3 and T_4 were 0.30 ± 0.03 , 0.32 ± 0.02 , 0.32 ± 0.03 and 0.33 ± 0.02 kg respectively. Individually housed pigs fed with unconventional feed had numerically higher ADG indicating the suitability of this genetic composition in production system with unconventional feed and least social stress. This might be due to uneven sharing of feed amongst pigs in group housing and more energy retention in individually penned pigs. This result is similar to the reports of Patterson (1985), Spicer and Aherne (1987) and Reinhart *et al.* (1989). Better ADG in pigs fed with unconventional feed again supports its adaptation to unconventional feeding systems.

Feed conversion ratio (FCR) on dry matter basis of T_1 , T_2 , T_3 and T_4 were 3.30 ± 0.51 , 3.90 ± 0.17 , 3.12 ± 0.52 and 3.80 ± 0.12 respectively. The FCR was highest in group housed pigs fed with unconventional feed and least in individually housed conventional feed fed groups. A trend for reduction in FCR towards later stages of growth in animals maintained on unconventional feed in both housing systems may be due to variation in the nutritive value of the swill fed to the animals and also deficiencies of essential elements arising from it as reported by Westendorf *et al.* (1998). It also indicated that an intervention in the feeding regime by supplementing the unconventional feed with deficient nutrients after periodical nutritional analysis of the feed is essential for sustaining the feed conversion efficiency for throughout the growth period. There was an improvement in the feed conversion efficiency of the pigs housed in individual pens. This supports the report of Becker *et al.* (1964) who reported an improvement in the conversion of feed to live weight gain with individual penning.

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Table 1
Fortnightly body weights of pigs (kgs)

Fortnights	Treatment groups			
	T ₁	T ₂	T ₃	T ₄
Initial	8.00 ^a	8.00 ^a	8.25 ^a	8.00 ^a
1.	10.50 ^a	10.75 ^a	11.10 ^a	10.92 ^a
2.	13.00 ^a	13.75 ^a	13.92 ^a	13.92 ^a
3.	15.50 ^b	16.58 ^a	16.80 ^a	16.92 ^a
4.	19.00 ^b	20.66 ^a	20.83 ^a	21.83 ^a
5.	25.33 ^a	26.50 ^a	25.83 ^a	26.33 ^a
6.	31.33 ^a	32.33 ^a	32.50 ^a	32.50 ^a
7.	37.66 ^a	38.50 ^a	39.66 ^a	38.66 ^a
8.	42.83 ^a	43.83 ^a	45.33 ^a	44.66 ^a
9.	48.00 ^a	49.83 ^a	50.50 ^a	50.66 ^a
10.	53.66 ^a	55.70 ^a	56.17 ^a	57.00 ^a

Figures having different superscripts in a row differ significantly (P<0.05)

Table 2
Average daily gain of pigs (kg)

Fortnights	Treatment groups			
	T ₁	T ₂	T ₃	T ₄
1.	0.166 ^a	0.183 ^a	0.189 ^a	0.194 ^a
2.	0.166 ^b	0.200 ^a	0.189 ^a	0.200 ^a
3.	0.166 ^b	0.188 ^{ab}	0.189 ^{ab}	0.200 ^a
4.	0.233 ^b	0.271 ^{ab}	0.272 ^{ab}	0.328 ^a
5.	0.422 ^a	0.389 ^{ab}	0.333 ^{bc}	0.300 ^c
6.	0.400 ^a	0.389 ^a	0.444 ^a	0.411 ^a
7.	0.422 ^a	0.411 ^a	0.478 ^a	0.411 ^a
8.	0.344 ^a	0.355 ^a	0.378 ^a	0.400 ^a
9.	0.344 ^a	0.400 ^a	0.344 ^a	0.400 ^a
10.	0.377 ^a	0.400 ^a	0.377 ^a	0.422 ^a
Mean ± S.E	0.30 ± 0.03	0.32 ± 0.02	0.32 ± 0.03	0.33 ± 0.02

Figures having different superscripts in a row differ significantly (P<0.05)

Table 3
Chemical composition of feeds

Ingredients	Swill	Chicken waste	Infertile egg	Grower ration	Finisher ration
Dry matter	27.97 ± 0.03	28.12 ± 0.05	40.13 ± 0.05	90.50 ± 0.03	90.72 ± 0.03
Moisture	72.03 ± 0.05	71.88 ± 0.06	59.87 ± 0.05	9.51 ± 0.05	9.28 ± 0.05
Crude Protein	8.36 ± 0.04	21.30 ± 0.05	16.68 ± 0.04	18.20 ± 0.04	14.10 ± 0.03
Ether Extract	2.39 ± 0.03	41.22 ± 0.05	29.47 ± 0.04	5.86 ± 0.03	2.23 ± 0.03
Crude Fibre	4.10 ± 0.06	3.70 ± 0.05	0.03 ± 0.04	6.93 ± 0.05	12.00 ± 0.04
Nitrogen Free Extract	8.94 ± 0.04	26.99 ± 0.03	29.93 ± 0.04	57.51 ± 0.03	61.09 ± 0.04
Total Soluble ash	4.19 ± 0.01	6.79 ± 0.03	23.89 ± 0.02	11.50 ± 0.03	10.58 ± 0.02
Acid insoluble ash	0.46 ± 0.01	0.68 ± 0.01	0.91 ± 0.02	5.74 ± 0.02	5.36 ± 0.01