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GROWTH PERFORMANCE, NUTRIENT UTILIZATION AND CARCASS CHARACTERS OF CROSSBRED FINISHER PIGS FED DIFFERENT LEVELS OF FEED

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Abstract: A total of twenty four (LWY x Desi) cross-bred pigs with average initial weight of 35.50±0.81kg were used in a 90 day trail to determine the effect of feed quantity offered on growth performance, nutrient utilization and carcass characters of finisher pigs. In a completely randomized design 24 animals were made into 3 groups and a basal diet was fed to all groups.
Keywords: Feed restriction, nutrient digestibility, growth, carcass characters

INTRODUCTION

Growth rate and nutritional requirements of pigs are two essential factors necessary for maximum pork productivity. Restriction of feed is practiced in the farm either as a strategy or the animal may restrict its feed intake during stress conditions (Collin *et al*, 2001) or disease (Laevens *et al*, 1999). Farm strategy includes either to reduce the cost of kg meat production or to prevent fat deposition during finishing period. In both the casas of feed restriction, the pig adjusts its metabolism to maintain homeostasis. During feed restriction, a greater fraction of retained energy is deposited as protein rather than lipid resulting in leaner pigs (Lovatto *et al*, 2006). The present experiment was designed to study the effect of feed restriction on the growth performance, nutrient digestibility and carcass characters of crossbred finisher pigs as a farm strategy.

MATERIALS AND METHODS

One basal diet (Table 1) was formulated as per NRC (2001) requirements and was evaluated during finisher (35-70kg) phase. The diet was fed to 24 male pigs with an average body weight of 35.50±0.81kg, divided into four groups of animals at random such that a basal diet was fed to all the animals. Group 1 had adlib access to feed (AL) and groups 2, 3 and 4 had feed restriction (FR) upto10, 20 and 30 percents, respectively.

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The pigs were housed individually in separate pens and all the pigs were dewormed before the start of the experiment. The group 1 pigs had unlimited access to feed and water throughout the duration of the growth trial. The daily feed offered and the left over was recorded and the body weights of the pigs were recorded at weekly intervals.

A digestion trial was conducted using all the six animals in each treatment. The pigs were individually placed in metabolic cages and had free access to water. Feed was offered according to the groups. The pigs were acclimatized to the cages for 3 days followed by a collection period of 5 days. During the collection period, faeces were collected daily from each pig. The daily feed intake, left over and faeces voided was recorded. An aliquot of 1/10th of the total faeces voided was preserved for further laboratory analysis. The diet and faecal samples were analyzed for proximate composition (AOAC, 1995).The data was subjected to one-way classification of analysis of variance (Snedecor and Cochran, 1989) and the means were tested by least significant difference.

RESULTS AND DISCUSSION

The ingredient and chemical composition (%) of the basal diet is presented in Table 1. The diets were formulated as per NRC, 2001 requirements.

Nutrient digestibility: The digestibility (%) of nutrients except DM was not significantly different among groups (Table 2). The digestibility of DM was higher for AL fed pigs than FR group. These results tally with those of Fraga et al. (2009) where in it was reported a decrease in the digestibility coefficient and digestible nutrients of the experimental diets as a function of qualitative feed restriction levels. This study did not confirm that feed restriction increased nutrient digestibilities during feed restriction phase which was in line with Lovatto et al. (2006).

Growth performance: The weight gains during growth trial were not significantly different among the groups except for ADG (g) (Table 3). The ADG (g) was higher ($P< 0.05$) for AL fed pigs as compared to FR fed group. These results were in agreement with Lovatto et al. (2006), Serrano et al. (2009) and Suresh and Suryanarayana (2013). In the present study the ADG (g) for group one was higher ($P< 0.05$) and these results are in agreement with Serrano et al. (2009) and Suresh and Suryanarayana (2013). The feed per kg gain did not show any significant difference between treatments in the present study and also not much difference was noticed numerically in ADG in the present study indicating that the influence of feed restriction on production indices over growth period and depends very much on its degree and duration (Donker et al., 1986; Crister et al., 1995; Daza et al., 2003). The quantitative

restriction of feed influence on the production indices and digestibility of nutrients and it largely depended on the period of exposure to feed restriction. There was no significant effect on the carcass characters (Table 4) among the treatments except Loin eye area.

CONCLUSION

It could be concluded that quantitative restriction of feed could be practiced without affecting the production indices with a non significant change in feed/kg gain and cost of feed per kg gain. However continuous restriction need attention in terms of productivity.

Table 1. Ingredient and chemical composition (%) of basal diet

Ingredient	**%**
Maize	58.75
Deioled Rice Bran	20.00
Soybean meal	19.00
Mineral Mixture	2.0
Salt	0.25
Total	**100**
Lysine	0.67
Methionine	0.24
AB_2D_3	0.02
Chemical composition	
DM	89.62
OM	88.31
CP	16.05
TA	11.69
EE	1.09
CF	10.21
NFE	60.96
Calcium	0.64
Total phosphorus	0.72
Available phosphorus	0.15
DE (kcal/kg)*	3100

Table 2: Effect of dietary treatments on nutrient digestibility (%) finisher phase

	G1	G2	G3	G4
DM*	85.27[a]±0.58	85.84[a]±0.86	84.08[b]±0.88	85.27[a]±0.58
CP	85.00±0.61	85.98±0.50	85.13±0.58	85.00±0.61
CF	55.79±0.51	56.78±1.61	56.80±2.10	55.79±0.51
EE	79.99±1.31	79.49±1.67	79.01±1.49	79.09±1.31
NFE	90.37±0.59	90.91±0.76	90.76±0.87	90.37±0.59

[ab]values in a row not sharing common superscripts differ significantly *(P<0.05)

Table 3: Effect of dietary treatments on growth performance of cross-bred pigs during finisher phase (35 to 70 kg body weight)

Parameter	G1	G2	G3	G4
Initial weight (kg)[NS]	35.50±0.81	35.08±0.30	35.91±0.70	35.58±0.61
Final weight (kg) [NS]	70.75±0.25	70.66±0.42	69.33±0.33	70.76±0.25
Weight gain (kg) [NS]	35.25±0.97	35.58±0.49	33.41±0.71	35.17±0.37
No. of days [NS]	90.16±1.53	90.66±1.40	91.66±1.47	91.96±1.53
ADG (g)*	343.16[a]±5.70	338.20[b]±10.43	337.60[b]±10.72	335.16[b]±5.70
ADFI (kg) [NS]	2.13±0.05	2.12±0.04	2.05±0.03	2.13±0.05
Feed / kg gain	5.68±0.15	5.76±0.10	5.62±0.07	5.71±0.15
Cost of feed/kg gain (Rs.)	80.64±3.51	79.21±2.20	79.52±1.68	78.69±3.51

[ab]values in a row not sharing common superscripts differ significantly *(P<0.05)
NSNot Significant

Table 4: Effect of dietary treatments on carcass characteristics of cross-bred finisher pigs

Treatment	Weight at slaughter (kg)^{NS}	Hot carcass weight (kg) ^{NS}	Dressing percentage ^{NS}	Carcass length (cm)^{NS}	Loin eye area (sq. cm)**	Average back fat thickness (cm)^{NS}	Primal cuts		
							Weight of ham (kg)^{NS}	Weight of Loin (kg)^{NS}	Weight of shoulder (kg)^{NS}
G1	70.66±0.27	55.47±0.32	81.40±0.30	70.75±0.58	29.50^{b}±0.56	2.32±0.11	14.79±0.20	12.87±0.32	9.53±0.13
G2	70.66±0.42	56.62±0.50	80.11±0.50	70.66±0.71	32.00^{b}±1.12	2.24±0.09	14.94±0.10	13.95±0.81	9.40±0.13
G3	70.83±0.38	57.94±0.69	81.54±0.70	70.91±0.47	34.00^{a}±0.93	2.13±0.08	15.08±0.11	13.59±0.87	9.57±0.19
G4	70.75±0.38	58.63±0.71	82.84±0.63	70.66±0.49	32.16^{b}±1.12	2.09±0.01	14.95±0.23	13.67±0.53	9.17±0.12

^{ab}values in a row not sharing common superscripts differ significantly **(P<0.01)

^{NS} Not significant

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