COMPARATIVE EVALUATION OF GROWTH AND CARCASS TRAITS IN LARGE WHITE YORKSHIRE, DESI AND THEIR CROSSBRED PIGS*

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ABSTRACT

Data on a total of 24 pigs belonging to different genetic groups viz., Large White Yorkshire, Desi and crossbreds were analysed from weaning to eight month of age to study the effect of genetic group on growth and carcass traits. The effect of genetic group was found to be highly significant for third, fifth and eighth month bodyweights in Large White Yorkshire, Desi and crossbred pigs. No significant difference was observed in third month of age between Large White Yorkshire and crossbred pigs. The growth studies indicated that higher body weight and average daily gain were noticed in Large White Yorkshire and followed by crossbred and Desi pigs in all months. Better feed conversion efficiency (2.77 ± 0.10, 3.75 ± 0.26 and 5.03 ± 0.42) was noticed at fifth month in Large White Yorkshire and crossbred pigs and at fourth month in Desi pigs respectively. The different genetic groups differed significantly with respect to dressing percentage, back fat thickness, loin eye area and carcass length. The Large White Yorkshire exceeded the crossbred and Desi pigs in all the carcass traits.

Key words : Large White Yorkshire pigs, Crossbred pigs, Desi pigs, Growth, Carcass characteristics, Feed efficiency.

INTRODUCTION

Pigs are important meat producing livestock, and are versatile animals capable of withstanding diverse management and agro-climatic conditions. High prolificacy, shorter generation interval, faster growth rate and utilisation of non-competitive feed into animal protein are biological advantages of pig rearing. The economics of pork production depends upon the carcass traits such as dressing percentage, carcass length, back fat thickness and loin eye area. Efforts to increase dressing percentage and carcass length are of utmost importance as they are related to the economic returns of swine production. Similarly, back fat thickness is a reliable indicator of total external fat and loin eye area is an indirect measurement for assessing total lean meat. But, all these above factors are related to breed, growth and weight at the time of slaughter. So, a study was carried out to compare the growth and carcass traits in three genetic groups.

MATERIALS AND METHODS

A random sample of eight animals from each genetic group viz, Large White Yorkshire, Desi and crossbred pigs were selected at weaning (56 days) and castrated. The experimental animals were maintained under uniform housing, feeding and other management practices prevailing in All India Co-ordinated Research Project on Pigs at Centre for Pig Production and Research, Mannuthy, Kerala. The pigs were fed with concentrate ration from

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weaning to eight months of age to study the growth, average daily gain, feed conversion efficiency and carcass characteristics.

The finisher pigs at the age of 240 days were slaughtered, dressed, eviscerated and halved as per the procedure recommended by Ziegler (1968). The weight of the hot carcass after removal of head and shank was recorded and chilled overnight ($24^\circ$ C). After chilling the carcass halves were disjointed to make various cuts viz., shoulder, ham and loin. The back fat thicknesses, loin eye area, dressing percentage and carcass length were considered for carcass evaluation. The mean and standard error for all body weights from weaning to eight month of age and carcass traits were estimated in each genetic group and the effects of genetic group on growth and carcass traits were worked out as per standard statistical procedure (Snedecor and Cochran, 1981).

RESULTS AND DISCUSSION

Growth

The mean body weight of experimental pigs from weaning to eight months of age for three genetic groups was presented in Table 1. The eighth month body weight of Large White Yorkshire, Desi and crossbred pigs were 76.50 ± 3.95, 36.87 ± 1.75 and 66.62 ± 4.01 kg respectively. Analyses of data revealed that from weaning to fourth month of age, there was no significant difference in the body weight between Large White Yorkshire and crossbred pigs. This might be due to better mothering ability of Desi sows together with the hybrid vigour resulting in crossbred pigs. However, from fifth to eighth month (slaughter age), there was a significant difference noticed in the body weight between Large White Yorkshire and crossbred pigs. But in Desi pigs, the body weight increase from weaning to eighth month of age was very low and significantly lower than Large White Yorkshire and crossbred pigs. This poor body weight gain in Desi population is the only reason for preferring Large White Yorkshire and crossbred pigs in commercial farms and backyard pig rearing instead of Desi in Kerala.

<table>
<thead>
<tr>
<th>Age in months</th>
<th>Body Weight (kg)</th>
<th>Average daily gain (kg)</th>
<th>Feed conversion efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>16.43 ± 1.12</td>
<td>8.20 ± 1.37</td>
<td>0.181 ± 0.02</td>
</tr>
<tr>
<td>4 months</td>
<td>24.12 ± 1.88</td>
<td>6.07 ± 0.79</td>
<td>0.271 ± 0.04</td>
</tr>
<tr>
<td>5 months</td>
<td>42.87 ± 5.23</td>
<td>2.77 ± 0.10</td>
<td>0.669 ± 0.03</td>
</tr>
<tr>
<td>6 months</td>
<td>53.75 ± 3.20</td>
<td>6.03 ± 0.75</td>
<td>0.388 ± 0.04</td>
</tr>
<tr>
<td>7 months</td>
<td>64.25 ± 2.96</td>
<td>6.22 ± 0.60</td>
<td>0.418 ± 0.05</td>
</tr>
<tr>
<td>8 months</td>
<td>76.50 ± 3.95</td>
<td>6.84 ± 0.74</td>
<td>0.437 ± 0.05</td>
</tr>
</tbody>
</table>

Means with same superscript do not differ significantly ($P \leq 0.01$).
The genetic group was found to be highly significant \((P \leq 0.01)\) for third, fifth and eighth month body weights in Large White Yorkshire, Desi and crossbred pigs which was endorsed by Kumar et al. (1990), Mukhopadhyay et al. (1991), Singh et al. (1997b), Deo et al. (1992) and Gaur et al. (1996). But, in third month, there was no significant difference in growth between Large White Yorkshire and crossbred pigs. This finding was in agreement with that of Suraj (2000).

**Average Daily Gain (ADG)**

The mean average daily gain of various genetic groups was presented in Table 1. The highest average daily gain was noticed at fifth month of age in Large White Yorkshire \((0.669 \pm 0.025\text{kg})\), Desi \((0.216 \pm 0.017\text{kg})\) followed by crossbred pigs \((0.541 \pm 0.027\text{kg})\). This finding of maximum average daily gain during fifth month is in agreement with reports of Suraj (2000) in Large White Yorkshire, Desi and crossbred pigs in Kerala. This calls for adopting better feeding and management practices during this period for maximum exploitation of growth potential of these genetic groups. The study revealed that the overall increment in body weight gain was rapid up to eighth month of age and thereafter it was showing declining trend which indicates the optimum age for the slaughter in pigs.

Higher body weight and average daily gain were noticed in Large White Yorkshire followed by crossbred and Desi pigs through out the period of study. Similar findings had been observed by Gaur et al. (1996) and Chatterjee et al. (1987).

**Feed Conversion Efficiency (FCE)**

Higher feed conversion efficiencies of \(2.77 \pm 0.10\) and \(3.75 \pm 0.26\) for fifth month were in Large White Yorkshire and crossbred pigs were observed respectively (Table 1). But in Desi pigs, higher feed conversion efficiency was noticed only during fourth month \((3.27 \pm 0.42)\).

The feed conversion efficiency decreased with increase in the age, which was endorsed by Dash and Mishra (1986), Kumar et al. (1990), Singh et al. (1990) and Suraj (2000) in all the three genetic groups; but on the contrary, Singh et al. (1990) observed increasing feed conversion efficiency with increase of age. The overall feed conversion efficiency was higher in Large White Yorkshire \((1:4.8)\) followed by crossbred \((1:5.1)\) and Desi pigs \((1:5.9)\) from weaning to eight month of age, which was concurred with the report of Suraj (2000).

**Carcass traits**

The mean and standard error of different carcass traits of three genetic groups of pigs are detailed in Table 2. In carcass traits, Large White Yorkshire performed better when compared to crossbred and Desi pigs.

The genetic group was found to differ highly significantly \((P \leq 0.01)\) in respect of dressing percentage, back fat thickness, loin eye area, and carcass length. This was not in agreement with the report of Samanta et al. (1995) in crossbred pigs. But, Singh et al. (1997a) attributed similar results in all three genetic groups.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Large White Yorkshire</th>
<th>Desi</th>
<th>Crossbred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcass weight (kg)</td>
<td>58.50 ± 3.27</td>
<td>23.10 ± 1.48</td>
<td>46.80 ± 3.16</td>
</tr>
<tr>
<td>Carcass length (cm)</td>
<td>65.00 ± 0.57</td>
<td>44.00 ± 0.42</td>
<td>58.00 ± 0.60</td>
</tr>
<tr>
<td>Back fat thickness (cm)</td>
<td>3.56 ± 0.19</td>
<td>2.44 ± 0.13</td>
<td>3.20 ± 0.31</td>
</tr>
<tr>
<td>Loin eye area ((\text{cm}^2))</td>
<td>20.80 ± 0.75</td>
<td>12.90 ± 0.59</td>
<td>17.90 ± 0.57</td>
</tr>
<tr>
<td>Dressing percentage (%)</td>
<td>76.20 ± 0.69</td>
<td>60.20 ± 0.72</td>
<td>71.10 ± 0.69</td>
</tr>
</tbody>
</table>

Means with same superscript do not differ significantly \((P \leq 0.01)\).
CONCLUSION

From the results of this study, it was proved that Large White Yorkshire would be the breed of choice with respect to growth, average daily gain, feed conversion efficiency and carcass traits when compared to other genetic groups. But, the performance of Large White Yorkshire and crossbreds in field conditions need to be studied further before arriving at the final decision, considering the varying environment and management practices followed.

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