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Genetic Evaluation of Post Weaning Growth Performances in Large White Yorkshire Cross Bred Pigs

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ABSTRACT

Background: The profitability in swine production is mostly associated to the superior growth performance. The information pertaining to the genetic and non-genetic factors influencing growth traits is significant to enable animal breeders to adopt better selection and managemental methods.

Methods: Data from 50% LWY-Desi genetic group and 75% LWY-Desi genetic group that were maintained at the All India Coordinated Research Project (AICRP) on Pigs, Sri Venkateswara Veterinary University, Tirupati were used to understand the effect of genetic and non-genetic parameters on production traits.

Result: The genetic group, period of birth, season, parity and sex have significant influence on post weaning body weights in most of the ages. Certain age groups showed significant effect on post-weaning average daily gain; but no specific trend was observed for age groups between the two genetic groups. The heritability estimates for post weaning body weights and ADG were medium to high in both the genetic groups. The genetic and phenotypic correlations among post-weaning body weight were inconsistent in direction. Overall, the 75% LWY-Desi genetic group performed better than 50% LWY-Desi genetic group, presumably due to the higher exotic inheritance and genetic superiority.

Key words: Average daily gain, Correlation heritability, Post weaning body weights, Swine.

INTRODUCTION

Swine industry could play a vital role in augmenting the animal protein supplies and raise the income levels of poorer sections of developing nations. Pigs are rated as one of the best meat producing animals because of a number of biological advantages such as high prolificacy, efficient mothering ability, rapid growth, economic feed conversion efficiency and shorter generation interval. The pig population was declined by 12% in India as per 20th Livestock Census (DAHD, 2019) compared to 19th Livestock Census (DAHD, 2012). The decline may be attributable to poor genetic quality of the animals, making them less remunerative (Chaudhary *et al*., 2019). In addition, the religious restriction and food taboos are the major contributing reasons for the declined population.

In order to augment the production potential of indigenous pigs, crossbreeding with exotic breeds like Large White Yorkshire (LWY) has been initiated in 1985 under the aegis of All India Coordinated Research Project (AICRP) on Pigs and was being evaluated periodically. Performance of crossbreds is likely to vary in different agroclimatic conditions. Hence, evaluating influence of various genetic and non-genetic factors on performance of crossbred pigs is essential according to the prevailing climatic conditions. Post weaning growth is an important determinant of age at slaughter and age at sexual maturity and is therefore one of the major components of profitability in swine industry (Das and Bhowal, 2002). Genetic improvement is an integral part of many pig development programs and selecting animals with high production potential based on their genetic value is a common practice being followed for genetic im-provement of herds (Bryan *et al.,* 2019). Estimating genetic parameters of production traits is vital to optimize breeding programs and improve the sustainability of pig production in

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economical aspect (Kapell *et al.,* 2009). Although the initial selection is based on weaning weight, the pigs for breeding are chosen based on the post-weaning growth rates. Keeping in view the importance of post-weaning growth performance, the present study was conducted with an objective to study the effect of various genetic and non-genetic factors on post-weaning body weights and post-weaning daily weight gains in 50% and 75% LWY-Desi crosses.

MATERIALS AND METHODS

The data were collected over a period of six years during 2004 to 2010 from the All India Coordinated Research Project (AICRP) on Swine, Sri Venkateswaara Veterinary University, Tirupati, Andhra Pradesh, India. The data were related to 523 piglets belonging to 50% LWY-Desi genetic group born to 40 sires in 126 farrowings and 591 piglets of 75% LWY-Desi genetic group born to 47 sires in 135 farrowings. The measurements included in the model were the body weights at twelve (BW12), sixteen (BW16), eighteen (BW18), twenty-four (BW24) and twenty eight (BW28) weeks along with the average daily gains (ADG) from 8 to12 (ADG 8-12), 12 to 16 (ADG 12-16), 16 to 20 (ADG 16-20), 20 to 24 (ADG 20-24) and 24 to 28 (ADG 24-28) weeks. The animals were maintained in simple housing with asbestos roof, open yards and side walls so as to provide shade and protect from rain. Sows were shifted to individual farrowing pens 10 days prior to the expected date of farrowing and were kept until the weaning period (8 weeks). After weaning, the pigs were grouped sex wise, housed and reared separately in stalls. The grower feed (CP: 16% and ME: 3000 kcal/kg) was offered till they attained 35 kg body weight followed by finisher feed (CP: 14g% and ME: 2800 kcal/kg) till the slaughter weight. Data were classified according to Genetic groups (50% and 75% LWY-Desi cross), seasons viz. summer (March-June), rainy (July-October) and winter (November-February), periods (2005-2007 and 2008-2010), sex (male and female), litter size (1 to 6, 7 to 9 and 10 to 12) and parity (1 and 2). The genetic and non-genetic parameters were estimated using least squares analysis (Harvey, 1979). The effects were estimated using Duncan's Multiple Range Test (DMRT) as modified by Kramer (1957). Heritability was estimated using paternal half sib correlation method (Becker, 1985) and the standard error of heritability (Swiger *et al*., 1964) and correlations (Snedecor and Cocharan, 1967) were estimated after adjusting for significant non genetic effects.

The data recorded on post weaning body weights and ADG were analyzed using the following linear model.

$$Y_{ijklmno} = \mu + G_i + P_j + S_k + L_l + X_m + F_n + e_{ijklmno}$$

Where,

$Y_{ijklmno}$ = Measurement on o^{th} piglet belonging to n^{th} parity, m^{th} sex, l^{th} litter size at birth, k^{th} season of birth, j^{th} period of farrowing and i^{th} genetic group. The μ is the overall mean, G_i is the effect of i^{th} genetic group, P_j is the effect of j^{th} period, S_k is the effect of k^{th} season of birth, L_l is the effect of l^{th} litter size group at birth, X_m is the effect of m^{th} sex of piglet, F_n is the effect of n^{th} parity and $e_{ijklmno}$ is the random error that is assumed to be normally and independently distributed with mean zero and variance σ^2_e.

RESULTS AND DISCUSSION

Post-weaning body weights

The least square mean post-weaning body weights of the 50% LWY crossbred pigs and 75% LWY crossbred pigs at different ages are presented in Table 1. In general, the 75% LWY-25% Desi crossbred pigs recorded heavier body weights at all the ages compared to the 50% LWY-Desi crossbred. The exotic breeds weigh heavier than desi pigs (Kumaresan *et al*., 2006). The heavier body weight of 75% LWY crossbreds can be attributed to more of exotic blood compared to 50% LWY crossbreds.

The period of birth had a significant effect on the body weights at 12, 20 and 28 weeks of 50% LWY crossbreds. However, the period of birth did not influence the body weights of 75% LWY crossbreds. The result suggests that improvement in management over the period could influence the performance of 50% LWY crossbreds whereas the managemental practices have no scope in increasing the production performance of 75% crossbreds. The season of birth was found to be significant on post weaning body weights in both the genetic groups. Piglets born in winter season recorded significantly higher body weights, which can be attributed to favorable effect of winter season as the exotic breeds were well acclimatized to the lower temperatures (Naha *et al.,* 2017).

The litter size at birth significantly influenced the post weaning body weights at all ages studied. The piglets belonging to smaller litter-sized groups recorded higher weights, probably because of increased share of milk and feed to the individual piglet. A highly significant (P<0.01) effect of parity on all post weaning body weights was observed. The second parity piglets had higher post-weaning body weights compared to primipara. Similar observation was made by Toshimongla *et al.* (2020). Sex had significant effect (P<0.01) on post-weaning body weights and males were significantly heavier than females. The variation of body weights between different age groups and sexes might be due to the linearly increased body weight with the advancement of age, consequently increasing the metabolic activity and muscular, skeletal and reproductive growth (Misiura *et al.,* 2021).

Post-weaning average daily weight gains

The least squares mean ADGs of 50% LWY piglets and 75% LWY piglets during post-weaning period are presented in Table 2. The 75% LWY crossbreds showed higher ADGs. Similarly, Das and Bhowal (2002) observed higher daily weight gains in Hampshire crosses. The period of birth has significant effect on ADG in certain ages in the two genetic groups but didn't show specific trend. The season has significant effect at 12-16 and 20-24-weeks age in 50% LWY-

Table 1: Least squares mean body weights (kg) of 50% and 75% LWY crossbred pigs at various ages.

Effect	50% LWY					75% LWY				
	BW12	BW16	BW20	BW24	BW28	BW12	BW16	BW20	BW24	BW28
Overall	16.38±0.25	22.64±0.37	32.66±0.46	41.33±0.46	51.76±0.46	18.45±0.17	25.99±0.24	34.96±0.30	42.90±0.46	53.20±0.33
	(523)	(516)	(498)	(493)	(487)	(590)	(581)	(0.30)	(567)	(557)
Period of birth	**	NS	*	NS	**	NS	NS	NS	NS	NS
2004-2007	15.88±0.30^{a}	22.72±0.43^{a}	31.97±0.55^{a}	40.74±0.55^{a}	50.72±0.55^{a}	18.18±0.23^{a}	25.99±0.31^{a}	35.07±0.40^{a}	42.90±0.44^{a}	52.92±0.43^{a}
	(308)	(292)	(284)	(280)	(275)	(319)	(313)	(308)	(305)	(298)
2008-2010	16.87±0.33^{b}	22.56±0.47^{a}	33.41±0.60^{b}	41.92±0.60^{a}	52.68±0.60^{b}	18.72±0.24^{a}	26.00±0.33^{a}	34.84±0.42^{a}	42.81±0.46^{a}	53.48±0.46^{a}
	(215)	(224)	(214)	(213)	(212)	(271)	(269)	(265)	(261)	(258)
Season of birth	**	**	**	**	*	**	*	NS	**	**
Summer	16.25±0.33^{a}	21.60±0.47^{a}	31.35±0.61^{a}	40.56±0.62^{a}	50.97±0.61^{a}	17.88±0.27^{a}	25.5±0.47^{a}	34.62±0.47^{a}	43.36±0.1^{a}	53.46±0.52^{a}
	(194)	(191)	(183)	(180)	(177)	(217)	(214)	(210)	(206)	(201)
Rainy	15.86±0.40^{ab}	21.96±0.59^{ab}	32.30±0.74^{ab}	41.08±0.74^{ab}	51.30±0.74^{ab}	18.81±0.33^{b}	26.29±0.59^{ab}	36.08±0.35^{b}	44.62±0.38^{b}	53.5±0.62^{b}
	(146)	(143)	(137)	(136)	(135)	(135)	(133)	(131)	(130)	(127)
Winter	17.02±0.31^{c}	24.35±0.46^{c}	34.34±0.57^{c}	42.36±0.58^{c}	53.00±0.58^{c}	18.66±0.23^{bc}	26.13±0.46^{c}	33.83±0.74^{ac}	40.71±0.82^{c}	52.58±0.44^{ac}
	(183)	(182)	(178)	(177)	(175)	(238)	(236)	(235)	(233)	(231)
LSB	*	*	**	**	**	*	*	**	**	**
1 to 6	17.19±0.27^{a}	23.00±0.39^{a}	31.82±0.47^{a}	40.51±0.49^{a}	49.87±0.49^{a}	19.85±0.27^{a}	26.44±0.37^{a}	34.96±0.47^{a}	43.36±0.5^{a}	52.28±0.51^{a}
	(195)	(190)	(179)	(177)	(174)	(201)	(197)	(195)	(190)	(189)
7 to 9	16.41±0.22^{b}	24.17±0.31^{b}	34.03±0.39^{b}	42.66±0.40^{b}	52.57±0.40^{b}	17.95±0.20^{b}	26.73±0.27^{b}	36.08±0.35^{b}	44.62±0.38^{b}	54.88±0.38^{b}
	(299)	(298)	(294)	(293)	(291)	(317)	(314)	(310)	(309)	(301)
10 to 12	15.55±0.6^{bc}	20.68±0.97^{c}	32.12±1.23ac	40.83±1.23^{ac}	52.83±1.22^{bc}	17.50±0.43^{bc}	24.81±0.59^{c}	33.83±0.74^{ab}	40.71±0.82^{ab}	5242±0.82^{bc}
	(29)	(28)	(25)	(23)	(22)	(72)	(70)	(69)	(68)	(67)
Parity	**	**	**	**	**	**	**	**	**	**
1	15.21±0.28^{a}	20.87±0.40^{a}	30.44±0.50^{a}	39.08±0.51^{a}	49.21±0.50^{a}	17.83±0.22^{a}	25.00±0.31^{a}	33.95±0.39^{a}	42.16±0.43^{a}	51.89±0.42^{a}
	(336)	(331)	(319)	(314)	(310)	(371)	(363)	(358)	(356)	(350)
2	17.55±0.33^{b}	24.41±0.47^{b}	34.87±0.60^{b}	43.58±0.60^{b}	54.31±0.60^{b}	19.07±0.24^{b}	26.98±0.33^{b}	35.96±0.43^{b}	43.63±.047^{b}	54.50±0.47^{b}
	(187)	(185)	(179)	(178)	(176)	(219)	(218)	(216)	(211)	(207)
Sex of piglet	**	**	**	**	**	**	**	**	**	**
Male	17.57±0.30^{a}	23.93±0.44^{a}	34.22±0.55^{a}	42.97±0.55^{a}	53.54±0.55^{a}	19.55±0.22^{a}	27.13±0.30^{a}	36.23±0.38^{a}	44.44±0.42^{a}	54.63±0.42^{a}
	(276)	(270)	(256)	(253)	(248)	(296)	(291)	(286)	(284)	(276)
Female	15.19±0.29^{b}	21.36±0.43^{b}	31.11±0.54^{b}	39.70±0.54^{b}	49.98±0.54^{b}	17.35±0.23^{b}	24.85±0.31^{b}	33.68±0.39^{b}	41.35±0.43^{b}	51.76±0.43^{b}
	(247)	(246)	(242)	(240)	(239)	(294)	(290)	(288)	(283)	(281)

NS - Not significant *Significant ($P<0.05$), **Highly significant ($P<0.01$). Means with similar superscript(s) with in the column for an effect do not differ significantly.

LSB- Litter size at birth.

Table 2: Least squares mean average daily weight gains (ADG) of (kg/day) 50% and 75% LWY crossbred pigs at various ages.

	50% LWY					75% LWY				
Effect	ADG 8-12	ADG 12-16	ADG 16-20	ADG 20-24	ADG 24-28	ADG 8-12	ADG 12-16	ADG 16-20	ADG 20-24	ADG 24-28
Overall	0.252±0.005	0.209±0.007	0.269±0.007	0.285±0.007	0.309±0.007	0.261±0.006	0.274±0.004	0.310±0.005	0.301±0.007	0.350±0.005
	(523)	(516)	(498)	(493)	(487)	(590)	(581)	(574)	(567)	(557)
Period of birth	**	**	*	NS	NS	**	NS	NS	**	**
2004-2007	0.236±0.007^{a}	0.228±0.008^{a}	0.258±0.009^{a}	0.287±0.008^{a}	0.310±0.008^{a}	0.282±0.007^{a}	0.272±0.006^{a}	0.304±0.007^{a}	0.282±0.007^{a}	0.339±0.008^{a}
	(308)	(292)	(284)	(280)	(275)	(319)	(313)	(308)	(305)	(298)
2008-2010	0.267±0.007^{b}	0.190±0.009^{b}	0.280±0.009^{b}	0.284±0.009^{a}	0.308±0.009a	0.239±0.007^{b}	0.275±0.006^{a}	0.316±0.007^{a}	0.319±0.007^{b}	0.360±0.007^{b}
	(215)	(215)	(214)	(213)	(212)	(271)	(269)	(265)	(261)	(258)
Season of birth	NS	**	NS	*	NS	NS	**	NS	NS	*
Summer	0.244±0.008^{a}	0.179±0.009^{a}	0.272±0.009^{a}	0.301±0.009^{a}	0.319±0.009^{a}	0.278±0.008^{a}	0.294±0.007^{a}	0.300±0.008^{a}	0.306±0.008^{a}	0.362±0.008^{a}
	(194)	(191)	(183)	(180)	(177)	(217)	(214)	(210)	(206)	(201)
Rainy	0.250±0.009^{a}	0.204±0.011^{b}	0.272±0.011^{a}	0.289±0.011^{ab}	0.29±0.011^{a}	0.261±0.009^{b}	0.267±0.008^{b}	0.311±0.009^{a}	0.307±0.009^{a}	0.331±0.010^{b}
	(146)	(143)	(137)	(136)	(135)	(135)	(133)	(131)	(130)	(127)
Winter	0.261±0.007^{a}	0.244±0.008^{c}	0.263±0.009^{a}	0.266±0.009^{c}	0.309±0.008^{a}	0.244±0.007^{c}	0.260±0.006^{c}	0.319±0.007^{a}	0.289±0.007^{a}	0.357±0.007^{ac}
	(183)	(182)	(178)	(177)	(175)	(238)	(236)	(235)	(233)	(231)
LSB	**	**	**	NS	*	**	**	NS	NS	**
1to 6	0.294±0.007^{a}	0.197±0.007^{a}	0.267±0.008^{a}	0.281±0.0087^{a}	0.293±0.007^{a}	0.298±0.007^{a}	0.235±0.006^{a}	0.302±0.008^{a}	0.304±0.008^{a}	0.311±0.008^{a}
	(195)	(190)	(179)	(177)	(174)	(201)	(197)	(195)	(190)	(189)
7 to 9	0.245±0.005^{b}	0.259±0.006^{b}	0.313±0.006^{b}	0.288±0.006^{a}	0.315±0.006^{b}	0.255±0.005^{b}	0.303±0.005^{b}	0.322±0.006^{a}	0.312±0.006^{a}	0.343±0.006^{b}
	(299)	(298)	(294)	(293)	(291)	(317)	(314)	(310)	(309)	(301)
10 to 12	0.217±0.013^{c}	0.171±0.018^{a}	^{c}0.228±0.019^{c}	0.287±0.019^{a}	0.319±0.018^{bc}	0.230±0.013^{c}	0.283±0.010^{b}	^{c}0.304±0.012^{a}	0.286±0.012^{a}	0.396±0.013^{c}
	(29)	(28)	(25)	(23)	(22)	(72)	(70)	(69)	(68)	(67)
Parity	**	**	NS	NS	NS	**	NS	NS	NS	**
1	0.230±0.006^{a}	0.189±0.007^{a}	0.271±0.008^{a}	0.288±0.008^{a}	0.309±0.007^{a}	0.230±0.006^{a}	0.267±0.005^{a}	0.305±0.006^{a}	0.294±0.006^{a}	0.332±0.007^{a}
	(336)	(331)	(319)	(314)	(310)	(371)	(363)	(358)	(356)	(350)
2	0.274±0.007^{b}	0.229±0.009^{b}	0.261±0.009^{a}	90.283±0.008^{a}	0.309±0.009^{a}	0.291±0.007^{b}	0.280±0.006^{a}	0.315±0.007^{a}	0.307±0.007^{a}	0.368±0.007^{b}
	(187)	(185)	(17)	(178)	(176)	(219)	(218)	(216)	(211)	(207)
Sex of piglet	NS	NS	NS	*	*	NS	NS	NS	NS	NS
Male	0.256±0.001^{a}	0.213±0.008^{a}	0.271±0.006^{a}	0.288±0.008^{a}	0.317±0.005^{a}	0.269±0.001^{a}	0.273±0.005^{a}	0.317±0.006^{a}	0.304±0.006^{a}	0.346±0.007^{a}
	(276)	(270)	(256)	(253)	(248)	(296)	(291)	(286)	(284)	(276)
Female	0.248±0.001^{a}	0.205±0.008^{a}	0.267±0.006^{a}	0.283±0.008^{b}	0.301±0.006^{b}	0.253±0.001^{a}	0.275±0.005^{a}	0.303±0.006^{a}	0.297±0.006^{a}	0.354±0.007^{a}
	(247)	(246)	(242)	(240)	(239)	(294)	(290)	(288)	(283)	(281)

NS- Not significant * Significant ($P<0.05$) **Highly significant ($P<0.01$), Means with similar superscript(s) with in the column for an effect do not differ significantly.
LSB- Litter size at birth.

crossbreds and 12-16 and 24-28 weeks in 75% LWY crossbreds but not during other stages of growth. Interestingly, the summer season showed higher ADGs, except for 12-16 weeks of age in 50% LWY-crossbreds. The higher ADGs in summer season could be attributed to the efficient heat stress managemental practices followed in the sheds (Hyder *et al*., 2017). The litter size at birth influenced the ADG at most of the ages. The parity effect was significant in early post weaning age with piglets born in second parity recording higher ADG. Males recorded higher ADG than females in majority of the ages.

Heritability estimates

The heritability estimates for post-weaning body weights in 50% and 75% LWY genetic groups ranged from 0.38 to 0.56 and 0.30 to 0.53, respectively (Table 3). Results are consistent with the estimates reported by earlier research workers (Ilatsia *et al.,* 2008). Moderate to high heritability estimates obtained for body weights in the present study indicate the existence of adequate genetic variance and offered scope for improvement through selective breeding. Heritability estimates of ADGs in 50% and 75% LWY genetic groups ranged from 0.16 to 0.42 and 0.15 to 0.31, respectively (Table 4), which were well within the range of literature estimates of earlier studies (Ilatsia *et al.,* 2008 and Bryan *et al.,* 2019). The heritability of ADG during 12 to 16 weeks age could not be estimated in both the genetic groups because of sampling error. Heritability estimates for ADGs at majority of ages ranged from low to medium, indicating the existence of genetic variance, which could facilitate improvement through selection coupled with optimum managemental conditions.

Correlations

The genetic correlations among post-weaning body weight were mostly positive and ranged from 0.77 (BW24 with BW28) to 0.95 (BW16 with BW24) in 50% LWY and from 0.37 (BW12 with BW28) to 0.94 (BW16 with BW20) in 75% LWY genetic groups. Medium to high genetic correlations were also reported by Ilatsia *et al.* (2008). The range of

Table 3: Heritability estimates and correlations among body weights in LWY crossbred pigs.

	50% LWY				
	BW12	BW16	BW20	BW24	BW28
BW12	0.45±0.11	0.80	0.84	0.82	0.85
BW16	0.82	0.56±0.13	0.91	0.95	0.92
BW20	0.73	0.76	0.38±0.16	0.82	0.95
BW24	0.71	0.79	0.49	0.39+0.19	0.77
BW28	0.70	0.75	0.86	0.46	0.41+0.12
			75% LWY		
	BW12	BW16	BW20	BW24	BW28
BW12	0.33±0.17	0.66	0.53	0.39	0.37
BW16	0.79	0.42±0.19	0.94	0.81	0.83
BW20	0.70	0.87	0.30±0.18	0.88	0.91
BW24	0.62	0.76	0.89	0.46+0.19	0.87
BW28	0.58	0.72	0.82	0.87	0.53+0.12

Table 4: Heritability estimates and correlations among ADGs in LWY crossbred pigs.

	50% LWY				
	ADG 8-12	ADG 12-16	ADG 16-20	ADG 20-24	ADG 24-28
ADG 8-12	0.16±0.12	0.15	0.67	-0.25	0.35
ADG 12-16	0.13	$	-0.45	-0.23	-0.11
ADG 16-20	0.09	-0.21	0.33±0.17	-0.40	0.50
ADG 20-24	-0.05	0.13	-0.23	0.28±0.12	-0.10
ADG 24-28	0.04	-0.07	0.06	-0.07	0.42±0.14
			75% LWY		
	ADG 8-12	ADG 12-16	ADG 16-20	ADG 20-24	ADG 24-28
ADG 8-12	0.15	-0.18	-0.28	-0.04	-0.03
ADG 12-16	-0.06	$	0.66	0.27	0.15
ADG 16-20	-0.02	0.05	0.21 ± 0.10	0.26	-0.63
ADG 20-24	0.05	0.03	0.03	0.26±0.20	-0.63
ADG 24-28	-0.01	-0.15	0.15	-0.26	0.31±0.19

Heritability estimates in diagonals, genetic correlations are above diagonal, phenotypic correlations are below diagonal.

$- Not estimable.

phenotypic correlations in 50% and 75% LWY was 0.46 (BW24 with BW28) to 0.86 (BW24 with BW28) and 0.58 (BW12 with BW28) to 0.89 (BW20 with BW24), respectively (Table 3). The results were in accordance with the findings of Das and Bhowal (2002). The genetic correlations among ADGs ranged from -0.45 (ADG 12-16 with ADG 16-20) to 0.67 (ADG 8-12 with ADG 16-20) in 50% LWY and from -0.63 (ADG 20-24 with ADG 24-28) to 0.66 (ADG 12-16 with ADG 16-20) in 75% LWY. The ranges of phenotypic correlations in 50% and 75% LWY were -0.23 (ADG16 - 20 with ADG 20-24) to 0.13 (ADG 8-12 with ADG 12-16) in 50% LWY and from -0.26 (ADG20 to24 with ADG 24-28) to 0.15 (ADG 16 to20 with ADG 24-28) (Table 4). The phenotypic and genetic correlations of ADGs were low in magnitude and inconsistent in direction. On contrary, Das and Bhowal (2002) reported a higher phenotypic and genetic correlations among daily body weight gains in Hampshire crossbred pigs. The observed inconsistencies in genetic and phenotypic correlations could be attributed to the variation in the number of records (Ilatsia *et al.,* 2008).

CONCLUSION

The study revealed that the genetic group of animals influence the post weaning body weights and post weaning average daily gains. The 75% LWY-Desi genetic group recorded significantly heavier body weights at all the ages, indicating their superiority in the prevailing agro-climatic conditions. Management practices like planned mating and restricting the farrowing to winter season can be recommended as the pigs born during this season attained higher weights. The effect of sex was significant in majority of the ages. Males recorded higher body weights and ADGs at all ages. Moderate heritability estimates of growth traits in post-weaning period indicates the genetic variability and scope for genetic improvement by adopting suitable effective selection methods.

Conflict of interest: None.

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