

**THE EFFECT OF DIFFERENT HOUSING SYSTEMS
ON THE PERFORMANCE OF CROSSBREDS****R. Juška, Violeta Juškienė****Summary**

Forty pigs were used in the trials to determine the effect of different housing systems on the performance of two-way (LWxELW) and three-way [(LWxSY)xELW] crossbred pigs. The studies were conducted with four analogous group of 10 animals. Pigs in Group 1 (LWxELW) and Group 2 [(LWxSY)xELW] were fattened in a pigsty and analogous Group 3 (LWxELW) and Group 4 [(LWxSY)xELW] were raised outdoors in enclosures with fitted sheds on 8.5 area. The study indicated that crossbred pigs fattened both indoors and outdoors gained weight similarly. There were no significant differences for the growth rate, carcass and meat quality traits between three-way [(LWxSY)xELW] and two-way (LWxELW) crossbred pigs raised both indoors and outdoors, however, cooking losses of three-way crossbred pig meat were 3.99% (0.047) higher and tryptophan : oxyprolin ratio was 0.95 (P0.016) lower compared with two-way crossbred pig meat.

Key words: carcass quality, crossbreds, indoors, meat quality, outdoors

Introduction

Lithuanian white is a pig breed characterized as well-adapted to local conditions, undemanding as regards feeding, having good reproductive qualities but comparatively poor carcass traits breed. Currently, the genetic potential of foreign breeds characterized by high lean meat content is used for the improvement of the meatiness of Lithuanian white pigs (Džiaugys, Stikliūnas, 1998; Razmaitė, Jančienė, 2003). However, it cannot be forgotten that the higher the meatiness of pigs, the higher is the demand for high quality feeding and housing (Mikelėnas at. al., 2004; Witt, Müller,

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1988). Warris and other authors (1983) indicate that there are different reactions of pigs of different genotypes to various environmental factors. Therefore, the aim of the present paper was to investigate the fattening and some carcass traits of two-way (LWxELW) and three-way [(LWxSY)xELW] crossbreds raised in different environmental conditions.

Material and methods

The studies were conducted with 40 crossbred pigs. For experiments were formed 4 analogous groups: two Lithuanian White (LW) x English Large White (ELW) and two Lithuanian White (LW) x Swedish Yorkshire (SY) x English Large White (ELW) groups of crossbred pigs. Group 1 (LWxELW) and Group 2 [(LWxSY)xELW] pigs were fattened in a pigsty and analogous Group 3 (LWxELW) and Group 4 [(LWxSY)xELW] were raised outdoors in enclosures with fitted sheds on 8.5 area. The growth intensity of pigs was determined by individual weighing. The carcass quality was determined by control slaughter at the end of the experiment when four analogous animals (2♀2♂) from each group were selected. Meat quality was evaluated by the analysis of M. longissimus dorsi and backfat samples.

Results

The results from the study indicated that two-way (LWxELW) and three-way [(LWxSY)xELW] crossbred pigs fattened both indoors and outdoors gained weight similarly (Table1). In the first stage of the experiment, three-way growing crossbreds raised indoors gained daily 1.3% less and those raised outdoors 4.4% more than two-way crossbred pigs. In the second stage of the experiment, three-way crossbred pigs raised indoors and outdoors gained, respectively, 2.8 and 3.6% weight less than two-way crossbreds but the differences are insignificant.

Control slaughter data indicated that there was no difference for the carcass weight of two-way and three-way crossbred pigs raised indoors. The dressing percentage of three-way crossbred pigs raised outdoors was 2.4% lower ($P=0.081$) than that of two-way crossbreds. Backfat thickness was lower for the three-way pigs raised both indoors and outdoors in comparison with two-way crossbreds. The average backfat thickness of three-way crossbred pigs raised indoors and outdoors was lower, respectively, 4.7 ($P=0.098$) and 3.21 mm ($P=0.376$) at 6-7th rib and 0.96 ($P=0.756$) and 3.96 ($P=0.217$) behind the last rib in comparison with two-way crossbred pigs. The length of carcass and

bacon halves of three-way crossbreds raised indoors were, respectively, 3.4 (P=0.020) and 1.9 cm (P=0.137) higher compared with two-way crossbreds. Also no significant differences were found for the loin lean area of pigs raised indoors and outdoors.

Table 1. - PIG GROWTH DATA

Item	Groups			
	LWxELW		(LW x SY) x ELW	
	X	SE	X	SE
Indoors				
Pig weight, kg:				
at the start	26.17	1.740	27.81	1.566
at 5 months of age	53.44	4.612	54.74	2.971
at the end	81.35	6.141	85.65	4.059
Average daily gain, g:				
at 3–5 months of age	0.447	0.051	0.441	0.034
at 5–7 months of age	0.669	0.072	0.650	0.037
during the experiment	0.538	0.050	0.533	0.030
Outdoors				
Pig weight, kg:				
at the start	26.45	1.998	27.32	1.495
at 5 months of age	61.36	4.867	63.73	3.963
at the end	90.95	4.736	96.30	3.593
Average daily gain, g:				
at 3–5 months of age	0.572	0.049	0.597	0.050
at 5–7 months of age	0.720	0.031	0.694	0.035
during the experiment	0.632	0.034	0.637	0.029

The lowest content of dry matter was found in the meat of three-way crossbreds raised indoors. In this group, the DM content was 1.6% (P=0.112) lower than that in the meat of two-way crossbreds. There was no difference found for this trait between the groups of pigs raised outdoors. The intramuscular fat content in the meat three-way crossbreds was 0.56% (P=0.071) lower than that of two-way crossbreds raised indoors. The differences for the biological value of meat protein according to the contents and ratio of tryptophan and oxyptolin in the meat of two-way and three-way crossbreds raised indoors were insignificant. The tryptophan : oxyprolyn ratio in the meat of three-way crossbred pigs raised outdoors was 0.95 (P=0.016) lower than that of two-way crossbreds. Moreover, the content of oxyprolyn was

20.4% ($P=0.036$) higher in the meat of three-way crossbred pigs. There were almost no differences for the pH-values of meat of two-way and three-way crossbred pigs raised both indoors and outdoors. Higher cooking losses were found in the three-way group of pigs raised indoors. The cooking losses in this group were 3.99% ($P=0.047$) higher compared with two-way crossbred pigs. There were no significant differences found for this trait between two-way and three-way crossbred pigs raised outdoors. There were no differences found for the hydrolysis number the groups.

Conclusions

1. There was no significant difference for growth rate between two-way (LWxELW) and three-way [(LWxSY)xELW] crossbred pigs raised both indoors and outdoors.

2. There were no significant differences for the carcass and meat quality traits between three-way [(LWxSY)xELW] and two-way (LWxELW) crossbred pigs raised both indoors and outdoors, however, cooking losses of three-way crossbred pig meat were 3.99% (0.047) higher and tryptophan : oxyprolin ratio was 0.95 (P0.016) lower compared with two-way crossbred pig meat.

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