



Original Contribution

COMPARATIVE STUDY ON FATTENING AND BUTCHERING QUALITIES IN PURE-BREED GERMAN LANDRAS AND CROSS-BREEDS WITH BELGIAN LANDRAS

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ABSTRACT

The study included 4 groups of animals obtained under the following plans: group I (German Landras x German Landras), group II (German Landras x Belgian Landras) x Belgian Landras; group III (German Landras x Belgian Landras) and group IV (German Landras x Belgian Landras) x German Landras. Fifty animals from each group were fattened at the Centre for Controlled Fattening in our institution. Each pig weighed 30 kg at the onset of the study, and 100 kg at the end.

The results showed that pigs from group II demonstrated appreciable growth increase from 30 to 100 kg over the fattening period of 90.3 days. They showed an average daily growth of 775 g with the highest fodder consumption (per 1 kg growth) of 3.270 kg. These indices were higher than those found in the other 3 groups that had the following: 1.3 to 7.1 day, 11 to 60 g and 0.096 to 0.336 kg per group.

Pigs with 75% blood from Belgian Landras - group II - had 2.4 mm less fat over the backbone, 6.88 sq cm bigger muscle area, 3.93% more bone meat in the thigh and 5.19% more bone meat in the torso in comparison to the full-bred (group III) pigs and the hybrid breeds with 75% blood from German Landras - group IV.

Key words: Pig; Slaughter and Fattening indices; fattening period; Average doiti gain

INTRODUCTION

The effective utilisation of pigs in modern pig-breeding requires the availability of animals with good fattening and butchering qualities. These requirements are mostly met by appropriate plans of cross-breeding and interline hybridisation. Since the selection process changes the level of the productivity signs in the major breeds and lines of pigs, the outcomes of the assessment of various plans of cross-breeding have a limited validity in time (Adam, 1992)

In countries with developed pig-breeding a profound and comprehensive research is being carried out at present for determining these combined effects among different breeds and lines of pigs (Molent, 1987; Jarczyk et al; 1988; Dziadek, 1989; Pellois and Runavot, 1991; Dziagis and Klimas, 1992; Berezovskii and Girya, 1993). No doubt, results obtained from these studies would impact positively the Bulgarian pig-

breeding as well.

On our part we decided to study this area of research with the following goals in mind: to examine and compare the fattening and butchering qualities of pure-breed pigs of the German Landras and the two-breed interbreeds obtained as a result of the cross-breeding of sows of German Landras with Belgian Landras and their rotational cross-breeding.

MATERIALS AND METHODS

At the station for controlled fattening in Yambol, Bulgaria, we carried out a comparative study of four groups with 50 pigs in each group. Each group had same number of sows in which uniformity in sex, live weight and age were taken into account. This was in compliance with the Rules for assessment of the breeding value, output and classification of pigs for breeding purposes (Shumen, 1984). The study pigs were produced in the tribal pigs-breeding farm of the Complex Experimental Agricultural Station in Yambol by using the scheme: group I (German Landras x German Landras), group

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II (German Landras x Belgian Landras) x Belgian Landras; group III (German Landras x Belgian Landras) and group IV (German Landras x Belgian Landras) x German Landras. The fattening involved pigs in the weight range of 30 to 100 kg live weight. The animals were raised in uniform conditions in separate boxes and were fed ad lib with a concentrated mixture having uniform contents. After reaching 100 kg the animals were reduced to starving for 24 hours before being slaughtered. The dissection and the butchering assessment were carried out on a cooled corpse using the methods for controlled fattening. The data on the fattening and butchering qualities were processed by using the variation statistical method included in the programme products of the Agricultural institute in Shumen.

RESULTS AND DISCUSSION

Table 1 presents the data on the fattening qualities of the pigs. The most intensive growth occurs in animals in groups II and III

having final live weights in 90.3 and 91.6 days, respectively. The longest fattening period of 97.4 days is characteristic of pigs with 75% blood of German Landras, followed by the pure-breed pigs from group I – 94.0 days. The differences between animals in groups II and IV are highly reliable with ($p \leq 0.001$).

The lowest fodder consumption per 1 kg growth is demonstrated by group II animals (3.270 kg), followed by group III animals (3.366 kg), and the highest – by pure-breed pigs and cross-breeds with 75% blood of German Landras (3.606 kg and 3.518 kg).

From the analysis of the data on the butchering qualities obtained in all pigs from the study, it is clear that, with respect to weight, the inter-breeds of the Belgian Landras produced the highest value, compared to values from those in the other two groups (**Table 2**). In this respect the differences between the pigs sired by Belgian Landras and those by German Landras are obvious ($p \leq 0.001$).

Table 1: Fattening indices

Groups	n	Fattening period in days		Average daily gain in g		Food used per 1 kg gain in kg	
		$\bar{X} \pm \bar{S}_x$	C	$\bar{X} \pm \bar{S}_x$	C	$\bar{X} \pm \bar{S}_x$	C
group I GL x BL	50	94.0±0.748	8.79	744± 0.018	13.03	3.606±0.092	10.00
group II (GL x BL) x BL	50	90.3±1.550	12.93	775±0.015	11.16	3.270±0.055	9.63
group III GL x BL	50	91.6±2.146	14.26	764±0.017	13.54	3.366±0.076	13.46
group IV (GL x BL) x GL	50	97.4±1.924	10.51	715±0.017	12.46	3.518±0.065	10.69

Table 2: Slaughter indices

Indices	Groups							
	GL x GL		(GL x BL) x BL		GL x BL		(GL x BL) x GL	
	group I		group II		group III		group IV	
	$\bar{X} \pm \bar{Sx}$	C	$\bar{X} \pm \bar{Sx}$	C	$\bar{X} \pm \bar{Sx}$	C	$\bar{X} \pm \bar{Sx}$	C
Slaughter output, %	78.56±0.363	1.89	81.47±0.480	2.83	80.7±0.389	2.48	78.9±0.375	1.84
Stall slaughter length, cm	78.73±2.739	3.48	79.94±2.412	2.91	80.85±2.451	3.35	81.9±2.712	2.48
Fat thickness average of three measurements, mm	27.06±3.154	11.65	24.83±2.451	12.94	25.3±3.108	13.23	27.2±3.510	15.05
Area of m. l. dorsi, cm ²	30.18±3.371	10.47	40.05±2.872	10.35	39.12±3.011	12.26	36.1±3.510	9.5
Meat with bones in ham, %	75.59±2.766	3.57	80.10±2.951	4.83	78.13±3.009	4.27	76.75±2.659	3.26
Meat with bones in carcass, %	67.59±2.622	3.95	72.97±2.947	3.85	70.61±2.638	5.9	67.98±2.731	3.55

The butchering length of half of the cross-breeds from groups III and IV is 0.95-3.17 cm greater than the pure-breed pigs and those from group II.

With respect to the thickness of fat on the average from the 3 dimensions, which is a fundamental selective indicator in pig-breeding, the animals with 75% and 50% blood of Belgian Landras surpass the others by 24.8 mm and 25.3 mm respectively. Benkov (1986) and Stoykov *et al.*, (1986) found similar values of the thickness of backbone fat. Benkov *et al.*, (1994) showed similar differences between hybrid obtained from the Danube white breed, with the positive correlation between the low average daily growth and the thickness of fat.

The surface of the cross-section of m.log.dorsi is the largest for group II animals (German Landras x Belgian Landras) x Belgian Landras - 40.05 mm, followed by those from group III (German Landras x Belgian Landras) - 39.12 mm. The larger area of the eye muscle of animals from these two groups can be explained by the fact that they were sired by Belgian Landras. We had similar outcomes in our previous studies

(Staykov *et al.*, 1993).

The data in this study show that cross-breeding of German Landras sows with Belgian Landras boars led to increase of the meat contents of bones in the body by 2.63 – 5.38% and in the hind limbs by 1.38 – 4.53%. The values of the variation coefficients for weight, small butchering length, meat with bones in the leg and the torso are very low for all groups included in the study. This makes us expect a standardised production of pure-breed pigs and cross-breeds.

CONCLUSIONS

The pure-breed pigs and the cross-breeds (German Landras x Belgian Landras) x German Landras) have a slower growth intensity and poorer fodder consumption in comparison to the cross-breeds (German Landras x Belgian Landras) x Belgian Landras and (German Landras x Belgian Landras).

The pigs with 75 and 50% blood of Belgian Landras have the following characteristics: 2.23 mm thinner backbone fat, 6.44 cm² larger area of the muscle eye and 4% and 3% more meat with bones in the torso and

hind limbs respectively, compared to the pure-breed animals and the cross-breeds (German Landras x Belgian Landras) x German Landras).

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