EFFECT OF IMPORTED DUROC BOARS ON MEAT QUALITY OF FINISHING PIGS IN ESTONIA

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AIM. To choose the best crossbreeding strategy for pork production, it is important to understand, that pig carcass and meat quality characteristics depend on the breeds used. Therefore, a study was conducted to evaluate the carcass and meat quality characteristics of Duroc-sired progeny utilized in commercial pig production.

ABBREVIATIONS. D – Duroc, L – Estonian Landrace, LW – Estonian Large White, FLA – fat layer area, IMF – intramuscular fat, LEA – loin eye area, WHC – water-holding capacity

Pigs total in Estonia 31.12.2014 – 360,000
Estonian Pig Breeding Association
Under testing – 31 farms 14,490 pigs (14,320 sows and 170 boars)
Estonian Landrace sows – 23.5%
Estonian Large White sows – 10.5%
Crossbred sows – 65.8%
Pietrain sows – 0.2%
Fertility 12.8 piglets (12.0 alive)
2.2 litters per year
Boars import:

1999	–	Hampshire	–	Sweden
2003	–	Pietrain	–	Austria
2009	–	Duroc	–	Canada

MATERIAL AND METHODS.

40 marketed pigs (20 gilts and 20 barrows).
4 genotypes (10 in each group).
Period: May to June 2014.
Control scheme: L♂ × L♀ and LW♂ × L♀ genotypes.
Test combinations: D/L♂ × LW/L♀ and D♂ × LW/L♀ genotypes.
White coloured pigs were born and reared in a top nucleus, and both genotypes Duroc-sire in it in a well-managed commercial herd.
The pigs were penned in groups and had ad libitum access to oat-corn-soybean meal based diet.
Statistical analysis. General Linear Model procedure of the SAS statistical package was used to estimate the effect of the genotype on carcass and meat quality variables. $\mathbf{Y_{ijk} = \mu + T_i + S_j + \varepsilon_{ijk}}$, where T_i – fixed effect of the pig genotype (i = 1–4); S_j – fixed effect of the gender (j = 1, 2).
abc - least square mean values in the same row with different superscript letters differ significantly (P < 0.05).

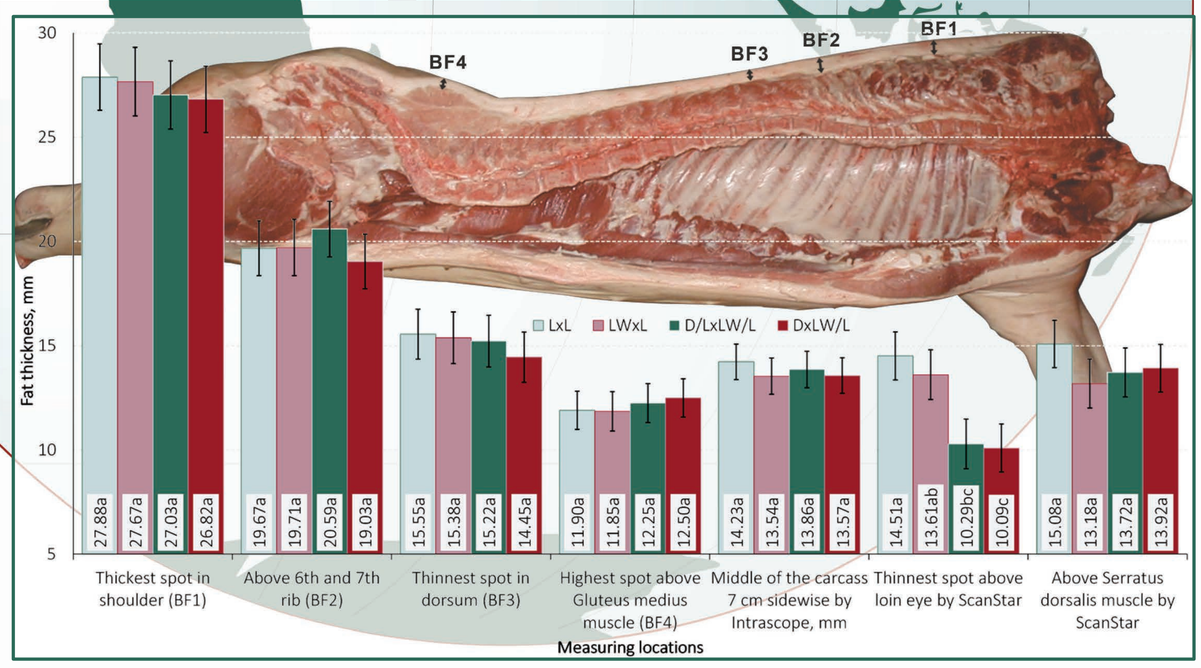

FIG. 1. Least square means (± SEM) of backfat thickness measured on the carcass of finishers at different locations

TABLE 1. Least square means (LSM) of fattening performance, carcass and meat quality traits of finishers (n = 40, 10 of each genotype)

Traits	Genotype (♂ × ♀)							
	L × L		LW × L		D/L × LW/L		D × LW/L	
	LSM	SE	LSM	SE	LSM	SE	LSM	SE
Slaughter yield, %	68.34[a]	1.09	69.22[a]	1.12	68.58[a]	1.12	70.55[a]	1.09
Daily gain, g	691.87[a]	16.16	697.26[a]	16.67	652.24[a]	16.67	651.33[a]	16.16
Carcass length, cm	101.12[a]	0.95	101.82[a]	0.98	**95.38[b]**	0.98	**96.88[b]**	0.95
Lean meat content, %	58.45[a]	0.63	58.96[a]	0.65	58.73[a]	0.65	58.94[a]	0.63
Loin eye area, cm²	46.35[a]	1.39	47.04[a]	1.44	**51.75[b]**	1.44	**52.24[b]**	1.39
Fat layer area, cm²	19.41[a]	1.48	17.31[a]	1.52	17.43[a]	1.52	16.73[a]	1.48
pH_{45min}	6.05[a]	0.06	6.14[a]	0.07	**5.84[b]**	0.07	6.00[ab]	0.06
pH_{24hr}	5.50[a]	0.03	**5.62[b]**	0.03	5.44[a]	0.03	5.49[a]	0.03
$Colour_{45min}$	83.95[a]	1.46	82.72[a]	1.51	**73.58[b]**	1.51	**75.25[b]**	1.46
$Colour_{24hr}$	74.94[ab]	1.17	**76.91[b]**	1.20	72.89[a]	1.20	73.16[a]	1.17
Water-holding capacity, %	61.70[a]	0.70	61.69[a]	0.72	60.57[a]	0.72	59.93[a]	0.70
Drip loss, %	4.00[a]	0.50	3.52[a]	0.51	3.28[a]	0.51	3.84[a]	0.50
Cooking loss, %	45.00[a]	0.64	43.99[a]	0.66	44.32[a]	0.66	44.52[a]	0.64
Dry matter content, %	26.04[a]	0.18	26.15[a]	0.19	26.53[a]	0.19	26.50[a]	0.18
Protein content, %	23.60[a]	0.16	23.23[ab]	0.16	**23.11[b]**	0.16	**22.58[c]**	0.16
Intramuscular fat content, %	1.23[a]	0.21	1.71[ab]	0.22	**2.19[bc]**	0.22	**2.71[c]**	0.21

CONCLUSIONS. The results of this study demonstrated that the genotype combination can affect carcass and meat quality traits. Carcass traits such as carcass length, LEA and leanness index were significantly affected by the Duroc sire line. Even in case of shorter carcasses, the weight of the carcass and slaughter yield were comparable with those of white-coloured genotypes. This is why we can presume that along with the significantly larger *Longissimus thoracis* muscle, other muscles of Duroc-sired pigs are also larger. Furthermore, Duroc sire had a consistent effect on meat quality traits such as protein and IMF content. Higher IMF content may positively affect the quality (taste and eatability) of pork that attracts consumers. Genotype combination had no effect on carcass fat deposition in different locations, which should refute breeders' fears about the negative effect of Duroc sires.

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