

GROWTH, FATTENING AND CARCASS TRAITS OF SEGHERS AND KAHYB PIGS IN TWO TEST STATION ENVIRONMENTS**P. Fľak, I. Bahelka, Ľ. Kováč, L. Hetényi****Summary**

Growth, fattening and carcass traits of Seghers and Kahyb hybrid pigs were studied in the conditions of upperstandard (Nitra) and standard (Bučany) control stations. The means of traits were as follows (Seghers or Kahyb): average daily gain (ADG) .858 or .873 kg, average feed consumption per 1 kg ADG (FC) 2.69 or 2.96 kg, weight of valuable meaty parts 21.10 or 20.13 kg, proportion of valuable meaty parts 52.97 or 51.22%, area of m.l.t 45.42 or 40.99 cm² and average backfat thickness (BT) 1.83 or 1.90 cm. The analyses of variance showed the existence of significant differences between stations and compared hybrids in all studied traits besides live weight before slaughter and weight of right carcass side after cutting between stations and ADG, FC and BT between hybrids. Analyses confirmed the significant and highly significant station x hybrid interactions for days of feeding test, consumption of metabolizable energy, live weight before slaughter and weight of right carcass side after cutting. Results confirmed the importance of genetic and environmental factors and their interactions for genetic evaluation of pig populations.

Key words: pigs, growth, fattening and carcass traits

Introduction

The growth, fattening and carcass traits are characteristics of high importance which decide about fattening of pigs from the point of view of optimum carcass composition of pig carcass sides. In the series of papers were analysed problems describing the growth process by the linear, quadratic,

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Schmalhausen and Brody functions and allometric growth analyses for pig breeding in Slovakia (Fl'ak et al, 1987; Fl'ak 1990; Fl'ak and Poltársky, 1980; Fl'ak et al, 1993, 1999; Hetenyi and Fl'ak, 1998). Seghers and Kahyb hybrid pigs (Fl'ak et al, 2000) were tested in conditions of new modern control station for fattening and carcass evaluation of pigs at SAU. Analyses of live body growth functions and its relations to the fattening and carcass traits of Seghers and Kahyb pigs showed the possibility to predict pork production in future. The similar results by evaluations of pig production in conditions of Hungary were obtained by Radnóczy and Fésűs (1993) and Trombetta et al, (1997) by evaluation of hybrid pigs in Italy for production of quality ham. The aim of presented paper is the analysis the of Seghers and Kahyb pigs in two station environments.

Material and Methods

The body growth and fattening and carcass traits were studied in Seghers and Kahyb hybrid pigs, with sex ratio (barrows:gilts) 1:1 at the upperstandard Control Station for fattening and carcass evaluation at SAU in Nitra and at the standard Control Station for fattening and carcass evaluation of Pig Breeding Association at Bučany, West Slovakia. The effects of stations, hybrids and interaction station x hybrid were evaluated by two-factor analyses of variance (Grofik and Fl'ak, 1990).

Results and Discussion

Means and standard error of means are presented in Table 1 for both hybrids and station environments and mean squares of two way analyses of variance with interaction stations and hybrids in Table2. Period of feeding from 30 to 100 kg live body weight in days was shorter for both hybrids in Nitra station 77.50 for Seghers or 77.58 days for Kahyb pigs, than in Bučany station, 92.44 or 86.03 days. The differences between stations and hybrids were statistically highly significant, but interaction term was only significant. Average daily gain (ADG) was greater in Nitra station 913 g for Seghers or 918 g for Kahyb pigs than in Bučany station 858 g or 873 g, but we observed only highly significant difference between stations. Average food consumption (FC) or metabolizable energy consumption (MEC) per 1 kg ADG were lower in Nitra station mainly in Seghers pigs 2.46 kg FC or 32.16 MJ MEC. The effects of stations, hybrids and interaction station and hybrids were statistically highly significant. The live body weight (BW) before slaughter was lower in

Kahyb pigs 99.00 kg in Bučany station man in Seghers pig, 100.47 kg. Similar results we observed for weight of right carcass side after cutting (WRCS). In both traits were observed significant (BW) or highly significant (WRCS) differences between hybrids, which were influenced with significant or highly significant interaction term of stations and hybrids.

Table 1. - MEANS AND STANDARD ERROR OF MEANS OF GROWTH, FATTENING AND CARCASS TRAITS

Trait	Seghers		Kahyb	
	\bar{x}	S _x	\bar{x}	S _x
Station Nitra				
	Seghers	n=60	Kahyb	n=38
Days of test from 30 to 100 kg live weight, DAYS	77.50	1.08	77.58	1.63
Average daily gain in kg, ADG	.913	.013	.918	.018
Average food consumption per 1 kg ADG in kg, FC	2.46	.04	2.96	.06
Average metabolizable energy consumption per 1 kg ADG in MJ.MEC	32.16	.56	38.35	.82
Live body weight before slaughter in kg, BW	100.36	.34	100.36	.37
Weight of right carcass side after cutting in kg, WRCS	39.66	.18	39.77	.16
Weight of neck in kg, WN	3.21	.04	3.15	.03
Weight of rib and rump back (loin) in kg, WRRB	4.47	.05	4.38	.06
Weight of shoulder in kg, WS	4.57	.04	4.32	.04
Weight of ham in kg, WH	8.51	.08	7.97	.10
Weight of lean meat cuts in kg, LMC	20.76	.17	19.83	.19
Eye muscle area in cm ² , MLT	44.45	.67	39.82	.63
Proportion of lean meat cuts in %, PLMC	52.34	.31	49.97	.41
Proportion of weight of ham in %, PWH	21.45	.16	20.08	.22
Average backfat thickness in cm, BF	1.87	.05	2.02	.05
Station Bučany				
	Seghers	n=34	Kahyb	n=31
Days of test from 30 to 100 kg live weight, DAYS	92.44	1.44	86.03	2.01
Average dairy gain in kg, ADG	.762	.014	.817	.018
Average food consumption per 1 kg ADG in kg, FC	3.09	.07	2.96	.07
Average metabolizable energy consumption per 1 kg ADG in MJ.MEC	40.70	.87	38.99	.88
Live body weight before slaughter in kg, BW	100.47	.32	99.00	.26
Weight of right carcass side after cutting in kg, WRCS	40.13	.23	38.84	.22
Weight of neck in kg, WN	3.05	.03	2.94	.03
Weight of rib and rump back (loin) in kg, WRRB	4.92	.06	4.64	.05
Weight of shoulder in kg, WS	4.95	.06	4.63	.04
Weight of ham in kg, WH	8.79	.12	8.28	.08
Weight of lean meat cuts in kg, LMC	21.71	.23	20.49	.16
Eye muscle area in cm ² , MLT	47.14	1.07	42.44	.85
Proportion of lean meat cuts in %, PLMC	54.09	.49	52.77	.32
Proportion of weight of ham in %, PWH	21.90	.27	21.34	.19
Average backfat thickness in cm, BF	1.76	.06	1.76	.04

Trait	\bar{x}	s_x	\bar{x}	s_x
	Seghers	n=94	Kahyb	n=69
Total				
Days of test from 30 to 100 kg live weight, DAYS	82.90	1.14	81.38	1.36
Average daily gain in kg, ADG	.858	.012	.873	.014
Average food consumption per 1 kg ADG in kg, FC	2.69	.05	2.96	.04
Average metabolizable energy consumption per 1 kg ADG in MJ.MEC	35.25	.64	38.64	.60
Live body weight before slaughter in kg, BW	100.40	.24	99.75	.25
Weight of right carcass side after cutting in kg, WRCS	39.83	.14	39.35	.14
Weight of neck to kg, WN	3.15	.03	3.06	.02
Weight of rib and rump back (loin) in kg, WRRB	4.63	.04	4.50	.04
Weight of shoulder in kg, WS	4.71	.04	4.46	.03
Weight of ham in kg, WH	8.61	.07	8.11	.07
Weight of lean meat cuts in kg, LMC	21.10	.14	20.13	.13
Eye muscle area in cm ² , MLT	45.42	.59	40.99	.53
Proportion of lean meat cuts in %, PLMC	52.97	.28	51.22	.31
Proportion of weight of ham in %, PWH	21.62	.14	20.64	.17
Average backfat thickness in cm, BF	1.83	.04	1.90	.04

Table 2. - MEAN SQUARES OF TWO WAY ANALYSES OF VARIANCE WITH INTERACTION STATIONS AND GENOTYPES OF GROWTH, FATTENING AND CARCASS TRAITS

Trait	Station	Hybrid	Interaction	Error
	S fs=1	G fg=1	SG fsg=1	e fc=159
Days of test from 30 to 100 kg live weight	5229.72**	382.87**	402.21*	87.78
Average daily gain in kg, ADG	.6059**	.0348	.0250	.0100
Average food consumption per 1kg ADG in kg, FC	3.74**	1.29*	3.77**	0.13
Average metabolizable energy consumption per 1 kg ADG in MJ	804.66**	191.19**	597.28**	22.96
Live body weight before slaughter in kg	14.85	20.85*	20.48*	4.87
Weight of right carcass side after cutting in kg	1.98	13.39**	18.82**	1.59
Weight of neck in kg, WN	1.36**	0.260**	0.025	0.054
Weight of rib and rump back (loin) in kg	4.66**	1.30**	0.352	0.122
Weight of shoulder in kg	4.47**	3.03**	0.053	0.079
Weight of ham in kg	3.38**	10.57**	0.011	0.369
Weight of lean meat cuts in kg	24.46**	44.10**	0.765	1.48
Eye muscle area in cm ²	270.62**	832.68**	0.055	25.66
Proportion of lean meat cuts in %	197.33**	130.16**	10.54	5.85
Proportion of weight of ham in %	27.85**	36.09**	6.26	1.72
Average backfat thickness in cm	1.287**	0.211	0.252	0.110

* a ≤ 0.05; ** a ≤ 0.01;

Weight of lean meat cuts were greater in both hybrids in conditions of Bučany station 21.71 kg for Seghers or 20.49 kg for Kahyb pigs, which were influenced mainly with greater weight of loin, shoulder and ham, but with smaller neck weight in this station. Differences between station and hybrids were in all parts and in total lean meat cuts statistically highly significant. Proportion of lean meat cuts (PLMC) in % and proportion of weight of ham (PWH) in % were greater in conditions of Bučany station for both hybrids, 54.09% PLMC in Seghers and 52.77% PLMC in Kahyb pigs or 21.90% PWH in Seghers 21.34% PWH in Kahyb pigs. Differences between stations and hybrids were statistically highly significant. The better results in Bučany station environment were obtained also for eye muscle area in cm² (MLT) and for average backfat thickness, with greater eye muscle area in Seghers hybrid. Differences between station and hybrids were statistically highly significant in eye muscle area, but in backfat thickness was observed only highly significant difference between stations.

The analyses of Seghers and Kahyb pigs hybrids showed the better growth intensity, with better food consumption per 1 kg in Nitra station but with better carcass traits in conditions of Bučany station. Obtained results correspond with our previously presented results of body live growth of Seghers and Kahyb pigs and its relations to the fattening and carcass traits (Fl'ak et al. 2000, 2001) and with results from abroad. Results confirmed the importance of study of genetic and environmental factors and their interaction for genetic evaluation of pig hybrids.

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RAST, TOV I ZNAČAJKE POLOVICA SVINJA SEGHERS I KALYB U UVJETIMA DVIJU STANICA ZA TESTIRANJE

Sažetak

Rast, tov i značajke polovica svinja Seghers i Kalyb istraživani su u uvjetima kontrolnih stanica gornjeg standarda (Nitra) i standarda (Bučany). Srednje vrijednosti značajka bile su (Seghers ili Kalyb): prosječan dnevni prirast (ADG) .858 ili .873 kg, prosječan utrošak krmiva na 1 kg ADO (FC) 2.69 ili 2.96 kg, težina vrijednih mesnatih dijelova 21.10 ili 20.13 kg, omjer dijelova vrijednog mesa 52.97 ili 51.21%, područje m.l.t. 45.42 ili 40.90 cm² te prosječna debljina leđne masti (BT) 1.83 ili 1.90 cm. Analize varijance pokazale su postojanje značajnih razlika između stanica i uspoređivanih hibrida u svim značajkama osim žive vage prije klanja i težine desnih polovica nakon rezanja između stanica i ADO, FC i BT između hibrida. Analize su potvrdile značajne i vrlo značajne interakcije stanica x hibrid za dane testiranja, hranjenja, utrošak rastvorljive energije, žive vage prije klanja i težine desne polovice nakon rezanja. Rezultati su potvrdili važnost genetskih i okolišnih čimbenika i njihove interakcije za genetsku procjenu populacije svinja.

Ključne riječi: svinje, rast, značajke tova i polovica

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