

THE INFLUENCE OF LIVE WEIGHT OF PIGS AT THE INITIATION OF FATTENING ON THE INTENSITY OF GROWTH AND THE LEVEL OF WEIGHT GAIN WITH RESPECT TO SEX

R. Stupka, M. Šprysl, M. Pour

Czech University of Agriculture, Faculty of Agronomy, Prague, Czech Republic

The results of this study indicate that stocked pigs of a higher initial live weight at the same age reached a statistically higher growth ability and thus also higher mean daily weight gains – 820 g or 923 g in experiment 1 and 814 g or 946 g in experiment 2. It is evident that the mean daily weight gain culminates during fattening at lower live weights in animals of a lower initial live weight at the initiation of fattening while in animals at higher live weights of a higher initial live weight at the initiation of fattening in dependence on the growth intensity since birth. A faster growth of barrows compared to gilts was found but it may be judged that no increase occurs in differences of daily weight gains between barrows and gilts in dependence on live weight at the initiation of the experiment. A variation of the growth intensity during fattening both between and within the groups of barrows and gilts was found too.

pig; age; growth; sex; fattening

INTRODUCTION

Like all physiological properties of live organisms the indicators characterizing the fattening ability of pigs are also influenced by a number of endogenic and exogenic factors. These factors influence the production characteristics both positively and negatively (Šprysl, Hovorka, 1986).

With respect to the performance reached in pig breeding compared to countries advanced in animal breeding it should be stated that we reach continuously lower results both in reproduction and production characteristics. As far as the partial fattening indicators are concerned the mean daily weight gain in pig fattening is 690 g in the Czech Republic and 800 g in the EU, and the mean feeding mixture consumption per 1 kg of weight gain is 3.40 kg in the CR and 2.80 kg in the EU.

On the basis of these facts it is evident that it is necessary to solve these problems intensively to catch up with the countries advanced in animal breeding as fast as possible.

One of the areas which are decisive of the general economics of pig fattening is reaching a high weight gain with a corresponding feeding mixture consumption and thus reaching a corresponding live weight of animals in relation to an optimum age. Animals of a corresponding live weight in relation to their age reach a higher growth ability at a better feeding mixture conversion (Pig Int., 1990).

The next area having an important influence on fattening indicators is the sex of animals together with the connected problems. The influence of sex and castration on production properties, mainly on the fattening ability, was discussed in the contributions by Blair, English (1965), Field (1971), Hansson (1974), Šprysl (1980) and Neupert et al. (1995).

The aim of this study was an assessment of the influence of the reached pig live weight at stocking for fattening on the select fattening ability indicators with respect to sex.

MATERIAL AND METHODS

The test was performed in two independent experiments at the testing station of hybrid pigs. Altogether 72 pigs of balanced sex groups (barrows and gilts) were stocked in each experiment. During the test one animal died in the second experiment. In the first experiment pigs from an age of 80 days of a mean live weight of 29.20 kg were tested, while pigs of an age of 83 days of a mean live weight of 32.08 kg were included into the second experiment.

The stocked pigs represented the common population of hybrid pigs kept in commercial rearing in the CR, i.e. (BU x L) x SL 92 in the first experiment and (BU x L) x ČVM in the second experiment.

Animals were placed in pens in pairs, always one barrow and one gilt. They were fed *ad libitum* using self-feeders (Duraumat) in six phases in the continuous way.

Nutrient	Feeding phase					
	1st	2nd	3rd	4th	5th	6th
	25-35 kg	36-45 kg	46-55 kg	56-80 kg	81-95 kg	96 and more
ME (MJ/kg)	12.81	12.84	12.90	13.00	12.89	12.99
Lysine (g/kg)	10.87	10.09	9.71	9.71	8.27	7.86
Tryptophane (g/kg)	2.07	1.99	1.97	1.98	1.88	1.84
Threonine (g/kg)	6.30	6.02	5.91	5.84	5.53	5.40
Meth + Cys (g/kg)	6.49	6.34	6.25	6.20	6.39	6.25

For the purpose of verification of the growth ability the pigs were weighed regularly from the time of stocking to the end of the test at 14 days' intervals and the mean live weight in kg and the mean daily weight gain in g/day were observed.

At the proper test assessment the animals were divided into five groups by their live weight at the initiation of fattening:

1st group = animals of a live weight 26 kg and less,

2nd group = animals of a live weight 26.1-29.0 kg,

3rd group = animals of a live weight 29.1-32.0 kg,

4th group = animals of a live weight 32.1-35.0 kg,

5th group = animals of a live weight over 35 kg.

The results found were processed by usual mathematic-statistical methods.

RESULTS AND DISCUSSION

Partial and final indicators of the growth ability, i.e. the reached live weight in kg and the mean daily weight gain in g/day of animals in individual groups created on the basis of the live weight at the initiation of fattening in experiment 1 and 2 are documented in Tabs. I and II.

From the results in Tabs. I and II (experiment 1 and 2) it is evident that statistically significantly higher live weight gains were reached by animals of a high live weight at the initiation of the experiment compared to animals of a lower live weight at the initiation of the experiment. There is an interesting fact namely that this trend was retained during the entire fattening period, i.e. from an age of 90 days to 168 or 182 days. The above mentioned conclusions were confirmed by the weight gain reached during the entire fattening in individual groups. From the results it is evident that groups of a higher with higher live weight at the initiation of the experiments reached statistically significantly higher values of the mean daily weight gain. Another fact to be noticed is that the level of the weight gain during fattening varies both between the groups and between the individual observation intervals, which results from the physiology of pig growth and is noticed just at testing stations at the regular individual weighing of pigs. These conclusions have been already published by Hovorka (1960, 1982). The results further reveal that the culmination of the mean daily weight gain appears in the live weight groups of 90-100 kg and that the weight gain in animals of a lower live weight at the initiation of experiment culminates sooner, i.e. at a lower live weight, while in animals of a higher live weight at the initiation of the experiment later, i.e. at a higher live weight, in dependence on the growth intensity since birth. This fact will probably have also a pronounced effect

I. The influence of live weight at stocking and reached age on the intensity of growth and the level of weight gain - experiment 1 (n = 72)

Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)
		90				105				119				
		live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s	
		$\bar{x} \pm s_1$	\bar{x}	$\bar{x} \pm s_1$		\bar{x}	$\bar{x} \pm s_1$	\bar{x}		$\bar{x} \pm s_1$	\bar{x}			
26.0 and less	11	31.09 ± 0.86	2.84	636 ^A	4.07	739 ^{AB}	4.07	52.09 ± 1.65	5.49	708 ^a	5.49	708 ^a	820 ^{AB}	
26.1-29.0	31	34.39 ± 0.29	1.63	629 ^{AB}	2.36	838 ^a	2.36	56.87 ± 0.64	3.54	707 ^{bD}	3.54	707 ^{bD}	839 ^a	
29.1-32.0	17	38.12 ± 0.38	1.58	711 ^a	2.76	827	2.76	60.12 ± 1.03	4.24	685 ^c	4.24	685 ^c	824 ^b	
32.1-35.0	9	41.22 ± 0.49	1.48	722	2.15	911 ^A	2.15	65.56 ± 1.14	3.43	762	3.43	762	888 ^A	
35.1 and more	4	46.75 ± 0.95	1.89	875 ^{AB}	1.71	933 ^b	1.71	73.25 ± 1.44	2.87	893 ^{abc}	2.87	893 ^{abc}	923 ^B	
Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)
		140				154				168				
		live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s	
		$\bar{x} \pm s_1$	\bar{x}	$\bar{x} \pm s_1$		\bar{x}	$\bar{x} \pm s_1$	\bar{x}		$\bar{x} \pm s_1$	\bar{x}			
26.0 and less	11	69.73 ± 2.39	7.93	840 ^{Aa}	7.96	1006 ^a	7.96	93.00 ± 2.82	9.36	656	9.36	656	820 ^{AB}	
26.1-29.0	31	74.65 ± 0.77	4.29	846 ^{bc}	4.84	959	4.84	98.10 ± 0.95	5.29	717 ^a	5.29	717 ^a	839 ^a	
29.1-32.0	17	78.06 ± 1.13	4.67	854	5.87	870 ^{aa}	5.87	99.77 ± 1.55	6.39	681	6.39	681	824 ^b	
32.1-35.0	9	85.00 ± 1.51	4.53	926 ^{Ab}	4.71	944	4.71	108.44 ± 1.96	5.88	730 ^b	5.88	730 ^b	888 ^A	
35.1 and more	4	93.25 ± 1.44	2.87	952 ^{bc}	3.95	1000	3.95	115.25 ± 2.56	5.12	571 ^{ab}	5.12	571 ^{ab}	923 ^B	

A, B P ≤ 0.01; ^{a, b, c} P ≤ 0.05

II. The influence of live weight at stocking and reached age on the intensity of growth and the level of weight gain - experiment 2 (n = 71)

Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)				
		90				105				119					140			
		live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s		live weight (kg)		weight gain (g/day)	s
		$\bar{x} \pm s_1$	\bar{x}	$\bar{x} \pm s_1$		\bar{x}	$\bar{x} \pm s_1$	\bar{x}		$\bar{x} \pm s_1$	\bar{x}	$\bar{x} \pm s_1$			\bar{x}			
26.0 and less	10	29.50 ± 0.31	0.97	629	1.59	611	1.59	38.05 ± 0.50	1.59	48.80 ± 0.74	2.35	768 ^{AB}	2.35	64.60 ± 1.66	5.23	718		
26.1-29.0	9	34.22 ± 1.12	3.35	841	4.35	639	4.35	43.17 ± 1.45	4.35	54.78 ± 1.84	5.52	829 ^C	5.52	69.44 ± 1.76	5.27	667 ^a		
29.1-32.0	22	36.05 ± 0.39	1.81	766	2.28	656	2.28	45.23 ± 0.49	2.28	58.43 ± 0.56	2.74	943 ^A	2.74	75.18 ± 0.77	3.61	761		
32.1-35.0	9	39.00 ± 0.54	1.70	771	2.73	629	2.73	47.80 ± 0.86	2.73	60.50 ± 1.28	3.82	877 ^D	3.82	77.33 ± 1.24	3.71	765		
35.1 and more	21	43.29 ± 0.35	1.59	857	2.38	673	2.38	52.71 ± 0.52	2.38	67.10 ± 0.73	3.35	1027 ^{BCD}	3.35	84.52 ± 1.22	5.60	792 ^a		
Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)				
		154				168				182								
		live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s	live weight (kg)		weight gain (g/day)	s		live weight (kg)		weight gain (g/day)	s
		$\bar{x} \pm s_1$	\bar{x}	$\bar{x} \pm s_1$		\bar{x}	$\bar{x} \pm s_1$	\bar{x}		$\bar{x} \pm s_1$	\bar{x}							
26.0 and less	10	72.10 ± 1.57	4.95	536	6.25	921 ^{Aa}	6.25	85.00 ± 1.98	6.25	100.00 ± 1.70	5.38	1071	5.38	814 ^{Aa}	5.38	814 ^{Aa}		
26.1-29.0	9	78.56 ± 2.64	7.92	651	9.11	889 ^{BCD}	9.11	91.00 ± 3.04	9.11	104.00 ± 3.14	9.41	929	9.41	822 ^{Bb}	9.41	822 ^{Bb}		
29.1-32.0	22	83.86 ± 0.81	3.78	620	4.84	1078 ^{ab}	4.84	98.96 ± 1.03	4.84	112.96 ± 1.04	4.89	1000	4.89	894 ^{abc}	4.89	894 ^{abc}		
32.1-35.0	9	85.00 ± 1.26	3.78	548	4.27	1048 ^b	4.27	99.67 ± 1.42	4.27	112.44 ± 1.20	3.61	913	3.61	857 ^D	3.61	857 ^D		
35.1 and more	21	94.38 ± 1.52	6.95	704	7.18	1105 ^A	7.18	109.86 ± 1.57	7.18	124.33 ± 1.79	8.20	1034	8.20	946 ^{abcd}	8.20	946 ^{abcd}		

A, B, C, D P ≤ 0.01; ^{a, b, c} P ≤ 0.05

III. The influence of live weight at stocking and reached age on the intensity of growth and the level of weight gain of barrows – experiment 1
($n = 34$)

Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)
		90			105			119			140			
		live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	
		$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	
26.0 and less	9	31.22 ± 1.05	3.15	644 ^A	42.78 ± 1.41	4.24	770	52.67 ± 1.90	5.70	706 ^a	770	94.89 ± 3.03	9.08	690
26.1–29.0	14	34.96 ± 0.32	1.21	693 ^a	47.14 ± 0.64	2.38	814	57.43 ± 1.00	3.74	735	814	99.93 ± 1.33	4.98	740
29.1–32.0	5	37.80 ± 0.37	0.84	680 ^b	50.00 ± 1.41	3.16	813	60.60 ± 2.32	5.18	757	914	101.20 ± 3.88	8.68	700
32.1–35.0	4	40.50 ± 0.87	1.73	675 ^c	54.25 ± 1.44	2.87	917	65.50 ± 1.85	3.70	804	1018	110.25 ± 3.33	6.65	732
35.1 and more	2	48.00 ± 0.00	0.00	950 ^{A,abc}	62.00 ± 1.00	1.41	933	75.00 ± 2.00	2.83	929 ^a	1036	109.00 ± 3.00	4.24	679
Extreme values for live weight at stocking (kg)	n	Age (days)												
		140			154			168			182			
		live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	
		$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	
26.0 and less	9	71.11 ± 2.66	7.98	878	85.22 ± 2.62	7.87	1008	94.89 ± 3.03	9.08	690	94.89 ± 3.03	9.08	838	
26.1–29.0	14	76.14 ± 1.12	4.19	891	89.57 ± 1.27	4.75	959	99.93 ± 1.33	4.98	740	99.93 ± 1.33	4.98	871	
29.1–32.0	5	78.60 ± 2.98	6.66	857	91.40 ± 3.61	8.08	914	101.20 ± 3.88	8.68	700	101.20 ± 3.88	8.68	825	
32.1–35.0	4	85.75 ± 2.06	4.11	964	100.00 ± 2.48	4.97	1018	110.25 ± 3.33	6.65	732	110.25 ± 3.33	6.65	920	
35.1 and more	2	95.00 ± 2.00	2.83	952	109.50 ± 3.50	4.95	1036	109.00 ± 3.00	4.24	679	109.00 ± 3.00	4.24	849	

A $P \leq 0.01$; a, b, c $P \leq 0.05$

IV. The influence of live weight at stocking and reached age on the intensity of growth and the level of weight gain of barrows – experiment 2
($n = 34$)

Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)
		90			105			119			140			
		live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	
		$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	
26.0 and less	3	29.33 ± 0.33	0.58	524 ^a	39.33 ± 1.20	2.08	714	50.33 ± 1.76	3.06	786 ^A	69.67 ± 2.96	5.13	879	
26.1–29.0	4	35.50 ± 2.53	5.07	1071 ^a	45.13 ± 3.17	6.34	688	57.50 ± 3.52	7.05	884 ^a	72.00 ± 3.49	4.98	659	
29.1–32.0	12	36.50 ± 0.62	2.15	845	46.04 ± 0.75	2.59	682	59.71 ± 0.71	2.45	976	76.50 ± 1.01	3.50	763	
32.1–35.0	4	39.20 ± 0.86	1.92	829	48.20 ± 1.32	2.95	643	62.50 ± 1.90	2.38	946	79.00 ± 1.29	2.58	750	
35.1 and more	11	44.00 ± 0.33	1.10	948	53.50 ± 0.61	2.01	679	68.91 ± 0.74	2.47	1101 ^{Aa}	86.64 ± 1.71	5.66	805	
Extreme values for live weight at stocking (kg)	n	Age (days)												
		154			168			182			Total weight gain (g/day)			
		live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	live weight (kg)		weight gain (g/day)	
		$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	$\bar{x} \pm s_1$	s	\bar{x}	
26.0 and less	3	76.33 ± 3.28	5.69	476 ^{ab}	90.33 ± 4.63	8.02	1000 ^a	104.33 ± 3.76	6.56	1000	85.5 ^{abD}	886 ^b		
26.1–29.0	4	83.75 ± 4.11	8.22	839 ^a	97.00 ± 3.98	7.96	946	109.50 ± 4.25	8.51	893	914			
29.1–32.0	12	85.75 ± 0.63	2.18	661	101.58 ± 0.90	3.12	1131 ^{abc}	114.67 ± 1.28	4.42	935	864 ^c			
32.1–35.0	4	87.75 ± 0.63	1.26	625	101.50 ± 0.65	1.29	982 ^b	113.00 ± 1.18	2.36	804 ^a	971 ^{abc}			
35.1 and more	11	97.55 ± 1.98	6.56	779 ^b	111.91 ± 2.23	7.38	1026 ^c	126.73 ± 2.46	8.15	1058 ^a	864 ± 1.71	5.66		

A $P \leq 0.01$; a, b, c $P \leq 0.05$

V. The influence of live weight at stocking and reached age on the intensity of growth and the level of weight gain of gilts – experiment 1 (n = 38)

Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)
		90				105				119				
		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)		
		$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s	
26.0 and less	2	30.50 ± 0.50	0.71	600	2.12	39.50 ± 1.50	2.12	600 ^{ABCD}	49.50 ± 3.50	4.95	714	4.95	714	
26.1–29.0	17	33.94 ± 0.44	1.82	576 ^{ab}	2.40	46.82 ± 0.58	2.40	859 ^A	56.41 ± 0.83	3.41	685	3.41	685	
29.1–32.0	12	38.25 ± 0.52	1.82	725 ^a	2.70	50.75 ± 0.78	2.70	833 ^B	59.92 ± 1.16	4.03	655	4.03	655	
32.1–35.0	5	41.80 ± 0.49	1.10	760 ^b	1.52	55.40 ± 0.68	1.52	907 ^C	65.60 ± 1.63	3.65	729	3.65	729	
35.1 and more	2	45.50 ± 1.50	2.12	800	0.71	59.50 ± 0.50	0.71	933 ^D	71.50 ± 1.50	2.12	857	2.12	857	
Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)
		140				154				168				
		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)		
		$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s	
26.0 and less	2	63.50 ± 3.50	4.95	667 ^{abcBC}	6.36	77.50 ± 4.50	6.36	1000	84.50 ± 4.50	6.36	500 ^{ab}	6.36	500 ^{ab}	
26.1–29.0	17	73.41 ± 0.99	4.09	810 ^{abc}	4.69	86.82 ± 1.14	4.69	958	96.59 ± 1.26	5.19	697 ^{ac}	5.19	697 ^{ac}	
29.1–32.0	12	77.83 ± 1.13	3.93	853 ^A	5.05	89.75 ± 1.46	5.05	851	99.17 ± 1.60	5.54	673 ^d	5.54	673 ^d	
32.1–35.0	5	84.40 ± 2.34	5.23	895 ^{Bb}	4.49	96.80 ± 2.01	4.49	886	107.00 ± 2.45	5.48	729 ^{bc}	5.48	729 ^{bc}	
35.1 and more	2	91.50 ± 1.50	2.12	952 ^{Cc}	1.41	105.00 ± 1.00	1.41	964	111.50 ± 1.50	2.12	464 ^{abc}	2.12	464 ^{abc}	

A, B, C, D P ≤ 0.01; a, b, c, d, e P ≤ 0.05

VI. The influence of live weight at stocking and reached age on the intensity of growth and the level of weight gain of gilts – experiment 2 (n = 37)

Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)				
		90				105				119					140			
		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)			live weight (kg)		weight gain (g/day)	
		$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s		$\bar{x} \pm s_1$	s	\bar{x}	s
26.0 and less	7	29.57 ± 0.43	1.13	673	1.08	37.50 ± 0.41	1.08	566 ^{ab}	48.14 ± 0.71	1.86	760 ^{abA}	62.43 ± 1.41	3.74	649 ^{Ab}				
26.1–29.0	5	33.20 ± 0.20	0.45	657	0.89	41.60 ± 0.40	0.89	600	52.60 ± 1.44	3.21	786 ^b	67.40 ± 1.21	2.70	673 ^c				
29.1–32.0	10	35.50 ± 0.37	1.18	671	1.40	44.25 ± 0.44	1.40	625	56.90 ± 0.74	2.33	904 ^{ab}	73.60 ± 1.01	3.20	759 ^b				
32.1–35.0	5	38.80 ± 0.74	1.64	714	2.77	47.40 ± 1.24	2.77	614	58.90 ± 1.89	4.22	821	76.00 ± 1.87	4.18	777 ^b				
35.1 and more	10	42.50 ± 0.54	1.72	757	2.55	51.85 ± 0.81	2.55	668 ^{ab}	65.10 ± 1.98	3.11	946 ^{Ab}	82.20 ± 1.50	4.76	777 ^{Ac}				
Extreme values for live weight at stocking (kg)	n	Age (days)												Total weight gain (g/day)				
		154				168				182								
		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)		live weight (kg)		weight gain (g/day)						
		$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s	$\bar{x} \pm s_1$	s	\bar{x}	s					
26.0 and less	7	70.29 ± 1.38	3.64	561	4.11	82.71 ± 1.55	4.11	888 ^{Ab}	98.14 ± 1.50	3.98	1102	797 ^{Aa}						
26.1–29.0	5	74.40 ± 2.29	5.13	500	7.33	86.20 ± 3.28	7.33	843 ^{Bb}	99.60 ± 3.70	8.26	957	772 ^{Bb}						
29.1–32.0	10	81.60 ± 1.31	4.14	871	4.73	95.80 ± 1.50	4.73	1014 ^{Cc}	110.90 ± 1.53	4.84	1079	871 ^{ab}						
32.1–35.0	5	82.80 ± 1.66	3.70	486	5.40	98.20 ± 2.42	5.40	1100 ^{ab}	112.20 ± 2.08	4.66	1000	852						
35.1 and more	10	90.90 ± 1.84	5.80	621	6.57	107.60 ± 2.08	6.57	1193 ^{Abc}	121.70 ± 2.47	7.81	1007	918 ^{Ab}						

A, B P ≤ 0.01; a, b, c P ≤ 0.05

on the general feed conversion during the fattening period for the benefit of pigs of a higher initial live weight.

The effect of sex on the growth intensity in groups of a different live weight at the initiation of the experiment is documented in Tabs. III, IV, V and VI.

Tabs. III and IV document these facts in barrows. It is evident again from the obtained results that a higher growth ability as well as daily weight gain were reached by animals of a higher live weight at the initiation of the experiment during the entire fattening period. It is further evident that the daily weight gain culminates in average around a live weight of 100–105 kg although it depends in individual groups on the level of live weight at stocking. Animals of a lower live weight at the initiation of the experiment reach the highest weight gain at a lower live weight (85–95 kg) while animals of a higher live weight at the initiation of the experiment at a higher live weight (100–110 kg).

A concurrent trend may be noticed also in gilts (Tabs. V and VI). It is evident that the daily weight gain culminates in the lower live weight group within a range of approximately 90–100 kg of live weight. The fact that with an increasing live weight at the initiation of fattening the weight gain culminates at a higher live weight and vice versa is not so pronounced here.

When comparing the growth of barrows to gilts (Tabs. III–VI) a lower growth ability of gilts than barrows is evident in all the weight groups. Also an earlier culmination of the mean daily weight gain of gilts (at a lower live weight) compared to barrows (at a higher live weight) may be found.

VII. Differences of mean weight gains reached in individual weight and age groups between barrows and gilts – experiment 1

Extreme values for live weight at stocking (kg)	Differences of weight gains $\bar{x}_{\text{barrows}} - \bar{x}_{\text{gilts}}$						total weight gain
	age (days)						
	90	105	119	140	154	168	
	(g/day)	(g/day)	(g/day)	(g/day)	(g/day)	(g/day)	
26.0 and less	44	170	-8	211	8	190	99
26.1–29.0	117 ⁺	-45	50	81 ⁺	1	43	58 ⁺
29.1–32.0	-45	-20	102	4	63	27	2
32.1–35.0	-85	10	75	-201	132	3	59
35.1 and more	150	0	72	0	72	215	-49

⁺ $P \leq 0.05$

VIII. Differences of mean weight gains reached in individual weight and age groups between barrows and gilts – experiment 2

Extreme values for live weight at stocking (kg)	Differences of weight gains $\bar{x}_{\text{barrows}} - \bar{x}_{\text{gilts}}$							total weight gain
	age (days)							
	90	105	119	140	154	168	182	
	(g/day)	(g/day)	(g/day)	(g/day)	(g/day)	(g/day)	(g/day)	
26.0 and less	-149	148 ⁺	26	230 ⁺	-85	112	-102	58
26.1–29.0	414	88	98	-14	339 ⁺	103	-64	114
29.1–32.0	174	57	72	4	-210	117	-144	43
32.1–35.0	115	29	125	-27	139	-118	-196	12
35.1 and more	191 ⁺⁺	11	155	28	158 ⁺	-167 ⁺	51	53

⁺ $P \leq 0.05$; ⁺⁺ $P \leq 0.05$

A lower growth ability of gilts compared to barrows is documented by Tabs. VII and VIII where the differences of the mean daily gains reached by individual weight and age groups in individual experiments are presented.

The obtained results confirm a higher growth ability of barrows documented also by a statistical significance of the differences at a level of $P \leq 0.05$. It is also evident that no increase appears in differences of the mean daily weight gains between barrows and gilts in dependence on the live weight at the initiation of fattening.

References

- BLAIR, R. – ENGLISH, P. R.: The effect of sex on growth and carcass quality in the bacon pigs. *Agric. Sci.*, 64, 1965: 169–174.
- FIELD, R. A.: Effect of castration on meat quality and quantity. *J. Anim. Sci.*, 32, 1971: 849–858.
- HANSSON, L.: Effect of sex and slaughter weight on growth, feed efficiency and carcass characteristics of pigs. *Lantbrukschöskolan*, 5, 1974.
- HOVORKA, F.: Výzkum zákonitostí růstu hospodářských zvířat. I. Studium vlivu výživy s ohledem na rytmické využití organických látek v průběhu růstu prasat (Research of regularities of the growth of farm animals. I. A study of the effect of nourishment with respect to the rhythmic use of organic substances during the growth of pigs). *Živoč. Výr.*, 9, 1960: 671–688.
- HOVORKA, F. et al.: Faktory ovlivňující výkrmnost, jatečnou hodnotu a kvalitu masa u prasat (Factors affecting the fattening ability, slaughter value and meat quality of pigs). Prague, AF VŠZ 1989, 148 p.
- NEUPERT, B. – CLAUS, R. – HERBERT, E. – WEILER, U.: Einfluss von Geschlecht, Fütterung und Leichtsprogrammen auf Mastleistung und Schlachtkörperwert sowie die Andosteron- und Skatolbildung beim Schweinen. *Züchtungskunde*, 67, 1995: 317–331.
- PIG INT.: 20, 1990, No. 2: 4.

PIG INT.: 27, 1997, No. 12: 40.

Statistická ročenka České republiky, 1997.

ŠPRYSL, M.: [PhD Dissertation.] Prague, 1980. 180 p. – University of Agriculture.

ŠPRYSL, M. – HOVORKA, F.: Vliv pohlaví a kontrastnosti plemen na výkrmnost a jatečnou hodnotu prasat (The effect of sex and contrast of breeds on the fattening ability and slaughter value of pigs). Sborník VŠZ Praha, Agronomická fakulta, Ř. B-44, 1986: 255–269.

Received for publication on December 12, 1997

STUPKA, R. – ŠPRYSL, M. – POUR, M. (Česká zemědělská univerzita, Agronomická fakulta, Praha, Česká republika):

Vliv hmotnosti prasat při zahájení výkrmu na intenzitu růstu a výši přírůstku s ohledem na pohlaví.

Scientia Agric. Bohem., 29, 1998 (1): 39–50.

Cílem práce bylo ověření vlivu počáteční hmotnosti prasat při zahájení výkrmu na intenzitu růstu a výši přírůstku s ohledem na pohlaví. Test proběhl ve dvou nezávislých pokusech při vyrovnaném pohlaví celkem na 144 zvířatech. Sledovaná prasata představovala běžnou populaci hybridních prasat používanou v užitkových chovech ČR, tedy (BU x L) x (ŠL x D) – pokus 1 a (BU x L) x ČVM – pokus 2.

Ze získaných výsledků vyplývá, že prasata s vyšší počáteční hmotností při stejném věku dosáhla statisticky vyšší růstové schopnosti a tedy i vyšších denních přírůstků. Tento trend byl zachován po celou dobu výkrmu, tj. od 90 do 168, resp. 182 dní věku.

Průměrný denní přírůstek během výkrmu kulminoval u zvířat s nižší hmotností při zahájení pokusu v nižší hmotnosti a u zvířat s vyšší hmotností při zahájení pokusu ve vyšší živé hmotnosti v závislosti na intenzitě růstu od narození. Nejvyšší průměrný denní přírůstek byl zjištěn u zvířat v 90 až 100 kg živé hmotnosti.

Byl prokázán rychlejší růst vepřích než prasniček, přičemž nedocházelo ke zvyšování rozdílu denních přírůstků mezi vepřiky a prasničkami v závislosti na hmotnosti při zahájení výkrmu. Naproti tomu je patrné, že ke kulminaci průměrného denního přírůstku došlo u vepřích kolem 100 až 105 kg živé hmotnosti a u prasniček již v 90 až 100 kg živé hmotnosti.

Během testu bylo prokázáno kolísání intenzity růstu během výkrmu, a to jak mezi skupinami, tak i uvnitř skupin vepřích a prasniček.

prase; věk; růst; výkrm

Contact Address:

Ing. Roman Stupka, CSc., Česká zemědělská univerzita, Agronomická fakulta,
Kamýcká 129, 165 21 Praha 6-Suchbát, Česká republika, tel./fax: 02/338 30 62,
e-mail: stupka@af.czu.cz
