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MEAT PERFORMANCE OF THE CZECH SPOTTED CATTLE BULLS BRED IN MOUNTAIN REGION

PRODUCȚIA DE CARNE A TAURILOR DE RASĂ BĂLȚATĂ CEHĂ CRESCUȚI ÎN REGIUNEA DE MUNTE

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Chosen indicators of meat performance of 98 bulls of Czech Spotted cattle bred in elevation above 720 m above sea-level in the mountain region of Šumava are presented in the article. The fattening was realized in a barn with a deep litter. The feed ration consisted of haylage throughout the year. The bulls were divided into three groups according to their genotype - C100, C75-85R (CxR) and C75-85A (CxA). The highest live weight at slaughter was achieved in the group C100 with 650 kg with the average age of 726 days and the weight of the carcasses of 363.8 kg. On the other hand, the worst results were achieved in the group CxA. For comparison a group of 14 bulls of the Holstein breed was created (H100), which was fattened in the same conditions. The bulls achieved their highest live weight before slaughter (664.6 kg), but at the highest age (743 days). Statistically significant differences were proven in the meat performance after individual fathers – the best results were documented with the offspring of the bull BO-837. After the separation of the set of bulls according to live weight at the end of fattening, the highest results were achieved by the group above 700 kg. The best class using the SEUROP method was achieved by the group with slaughtering live weight between 650 kg and 700 kg.
Key words: meat performance, SEUROP, LFA, Czech Spotted cattle

Introduction

The Czech Spotted cattle are contributing with the highest rate to the total production of beef in the Czech Republic (Prošková, 2007). The meat performance of this breed is very good with regard to the smooth rearing, to the ability of the bulls of high feed intake and utilization of roughage (Bouška, 2006). Nevertheless it is necessary to pay great attention to the meat performance and its genetic classification (Kučera, 2007). The present level of weight gain of fattened beef reflects that the genetic potential of 1.6 – 1.8 kg per head per day is still not being utilized. Without a significant increase of the level of weight gain, the fattening of cattle will never reach a profitable state.

The level of nutrition represents the most important factor in the fattening of bulls. It's mainly the matter of regulating the level and composition of weight gain

using the right dosage of hard fodder, choosing the right roughage and balancing the feeding rations (Čermák, 1999). In term of stabilizing the conditions for feed nutrition utilization it is optimal to choose a permanent feeding ration throughout the whole year (Kudrna, 1998).

One of the possible options of improving the quality of beef is the utilization of the method of classification of carcasses of cattle – SEUROP (Steinhauser, 2000). This method has been used in the Czech Republic since year 2002 with the purpose of most objective determination of the class of the fleshiness and fatness. According to Vrchlabský (1999) the classification into classes is affected mostly by the weight of carcasses (HJUT). Šubrt et al. (1999), Čuboň et al. (2000) presented some results of the classification of bulls of the breed Czech Spotted cattle.

Materials and Methods

In this work a total of 98 bulls fattened in the period between years 2005 and 2007 in a farm in the mountain region of Šumava in elevation above 720 m above the sea-level were observed. The fattening was conducted in a barn with group housing with deep litter. The feed ration consisted of haylage throughout the year. Data was collected for every observed bull – date of birth, genotype and livelong average daily gain and at slaughter – the live weight, age, the carcasses weight and classification into classes using the SEUROP method.

The bulls were divided into three groups according to their genotype - C100, C75-85R (CxR) and C75-85A (CxA). For comparison a group of 14 bulls of the Holstein breed was created (H100), which was fattened in the same conditions. For the verification of the influence of the father, the bulls were divided into three groups – MOR-051 (37 head), MKM-229 (11 head) and BO-837 (14 head). The next classification was done according to the live weight at slaughter into four groups – up to 600 kg, 601-650 kg, 651-700 kg, and above 700 kg. All classifications were completed with the results of the carcass classification using the SEUROP method. The differences between groups were verified with statistical significance.

Results and Discussions

Table 1 show the results of meat performance for groups divided according to the genotype. The difference between genotypes for every observed indicator was not statistically proven. The group of Czech Spotted cattle bulls C100 achieved the average live weight at slaughter at the level of 650 kg, which in comparison with other C groups was the highest (CxA 621.2 kg, CxR 642 kg) with an average slaughter age of 725.9 days, which is higher by 17.8 days than CxA and 40.3 days than CxR. The average daily gain was the highest in the CxR group at the level of 903 g. The CxA group had the lowest daily gain with 845 g. The carcass weight was highest in the C100 group (363.8 kg), then followed the CxR group (358.1 kg) and the lowest weight achieved the CxA group (347.2 kg). The

good fattening possibilities of Czech Spotted cattle bulls are also pointed out by Bouška et al. (2006).

For information, Table 1 contains also the results obtained from the bulls of the Holstein breed (H100). From all results especially the live weight at slaughter is interesting, which was at the level of 664.6 kg. It was the highest achieved live weight from all groups, but at the highest level of slaughter age (743.1 days). This group also achieved the highest carcass weight (370 kg). The average daily gain was at the same level as was in the C100 group.

At the classification of carcasses into classes using the SEUROP method (Table 2), the most carcasses of all monitored groups were classified for fleshiness into class R, the most in the C100 group (96.6 %). Only in the H100 group 21.4 % of the carcasses achieved the carcass class O for fleshiness. Contrary to other groups, the H100 group had no carcass classified into the class U. In the carcass class classification for fatness, most carcasses were classified into the class 2 (100% in the CxA group). In all other groups also the class 3 was achieved.

Table 3 contains the results for meat performance after the individual fathers. The results were statistically significant at $P \leq 0.01$. The best results were achieved in the group after the father BO-837, because at the average slaughter age of 657.4 days and daily gain of 968 g per head per day, the bulls achieved a live weight of 663.8 kg. The carcass weight was 369.1 kg. The worst results were achieved by the group after the father MOR-051.

The carcass classification (Table 4) for fleshiness in the group after the father MOR-051 shows that 5.4 % was classified as class O, in contrast to other groups, where all carcasses were classified into the class R. The carcass class for the fatness 3 was achieved only in the group after the father BO-837 (7.1 %).

One of the crucial economic factors is the live weight achieved at slaughter. After dividing the whole set of bulls after this indicator (Table 5), statistically significant differences were proven in all determined groups. With increasing slaughter weight also the slaughter age markedly increases. The lightest group up to 600 kg achieved an average slaughter age of 670.1 days (22 months) and the heaviest group above 700 kg it was achieved in 750.4 days (24.7 months). Also the average daily weight gain subsequently increased from 808 g in the lightest group (up to 600 kg) to 950 g in the group above 700 kg. With the increasing live weight, also, the carcass weight increased from 318.0 kg to 403.7 kg. Differences between all groups were statistically significant at the levels $P \leq 0.05$-0.001. The similar results show Šubrt et al. (1999) and Čuboň et al. (2000).

Table 6 contains the results of carcass classifications divided into groups after the live weight at slaughter. The two lightest groups showed insufficient muscularity and 14.3 %, respectively 6 % were classified into the class O. On the other hand with higher live weight at slaughter no carcasses were classified in this class. At high live weights above 700 kg a higher fatness expressed itself using the carcass class for fatness 3.

Table 1

Meat performance of slaughter bulls divided after the genotype

Group	Slaughter weight (kg)		Slaughter age (days)		Daily weight gain (g)		Carcass weight (kg)	
	$\bar{x}$	s_x	$\bar{x}$	s_x	$\bar{x}$	s_x	$\bar{x}$	s_x
C100	650.0	63.9	725.9	130.7	874	144	363.8	35.4
CxA	621.2	48.5	708.1	98.9	845	96	347.2	26.1
CxR	642.0	54.1	685.6	79.8	903	115	358.1	29.1
H100	664.6	62.1	743.1	122.8	870	129	370.0	32.8
Test	1.65		1.62		1.88		1.62	

Table 2

Classification of bull carcasses divided after the genotype

Group	Carcass class of the fleshiness (%)			Carcass class of the fatness (%)	
	U	R	O	2	3
C100	3.4	96.6	-	96.6	3.4
CxA	3.7	88.9	7.4	100	-
CxR	4.8	92.8	2.4	97.6	2.4
H100	-	78.6	21.4	85.7	14.3

Table 3

Meat performance of slaughter bulls divided after the fathers

Group	Slaughter weight (kg)		Slaughter age (days)		Daily weight gain (g)		Carcass weight (kg)	
	$\bar{x}$	s_x	$\bar{x}$	s_x	$\bar{x}$	s_x	$\bar{x}$	s_x
1. MOR-051	623.2	54.3	718.7	112.1	839	115	348.7	29.8
2. MKM-229	653.7	21.6	754.2	100.8	841	111	364.1	12.0
3. BO-837	663.8	50.4	657.4	51.0	968	85	369.1	27.7
Test	3.97^{*} 1:3*		3.03^{*} 2:3**		7.24^{**} 1:3***, 2:3**		3.33^{*} 1:3**	

Table 4

Carcass classification divided after the fathers

Group	Carcass class of the fleshiness (%)			Carcass class of the fatness (%)	
	U	R	O	2	3
MOR-051	2.7	91.9	5.4	100	-
MKM-229	-	100	-	100	-
BO-837	-	100	-	92.9	7.1

Table 5

Meat performance of slaughter bulls divided after the live weight

Group	Slaughter weight (kg)		Slaughter age (days)		Daily weight gain (g)		Carcass weight (kg)	
	$\bar{x}$	s_x	$\bar{x}$	s_x	$\bar{x}$	s_x	$\bar{x}$	s_x
1. up to 600 kg	566 9	19.7	670.1	64.9	808	78	318.0	11.2
2. 601 – 650 kg	625.5	13.8	703.4	79.6	858	100	349.4	7.3
3. 651 – 700 kg	669.9	14.9	740.5	138.2	888	134	373.5	8.4
4. above 700 kg	724.7	20.3	750.4	132.6	950	138	403.7	10.8
Test	413.29^{**}		3.38^{*} 1:3*, 1:4**		7.15^{**} 1:2*, 2:4***, 1:3**, 1:4***		401.52^{**}	

Table 6

Carcass classification divided after the live weight

Group	Carcass class of the fleshiness (%)			Carcass class of the fatness (%)	
	U	R	O	2	3
up to 600 kg	-	85.7	14.3	100	-
601 – 650 kg	3.3	90.0	6.7	100	-
651 – 700 kg	9.4	90.6	-	100	-
above 700 kg	-	100	-	81.8	18.2

Conclusions

The observed farm prefers the breeding of Czech Spotted cattle. The quoted values respond with the results achieved in the mountain regions all over the Czech Republic. Nevertheless bulls of the Holstein breed can be used in the fattening of bulls, like our results show. The selection of the right breeding bulls is a crucial zootechnical decision, because statistically high significant differences between fathers were proven. One of the advantages of the Czech Spotted cattle bulls is the ability of fattening into higher slaughter weights without markedly higher increasing of fatness. In term of classification and thereby realization the best achievable live weight at slaughter is at the level between 650 and 700 kg, like our results proved. Higher live weights above 700 kg correspond with worse carcass classifications.

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