

Analysis of fattening results of Polish Holstein-Friesian bulls and PHF × Belgian Blue crossbreeds bulls

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Abstract: *Analysis of fattening results of Polish Holstein-Friesian bulls and PHF × Belgian Blue crossbreeds bulls.* The aim of study was the comparison of fattening results of Polish Holstein-Friesian (PHF) and PHF × Belgian Blue crossbreeds (PHF × BB) bulls fattened in intensive system up to age of 18 months. Fattening results of 50 bulls in each genotype group were analyzed. Bulls were kept in freestall system at seven private farms located in Central Poland and up to about 60 days of life fed with milk replacement, hay and concentrates and since that maize-silage, hay-silage and concentrates were introduced to their diet. Animals were weighted on digital scale every 3 months. After slaughter the dressing percentage and the carcasses evaluation by EUROP method were collected from processing plant. Standardized averages of bulls body weight at 120th, 210th and 540th day of life were calculated as well as the average daily body gains in particular fattening periods. Results revealed that crossbreeds PHF × BB were heavier by 94.2 kg (11.61%) than purebreds PHF at age of 18 months. The average daily body gains were high and accounted 1081 g for PHF and 1183 g for PHF × BB bulls, respectively. Daily body gains of crossbreeds were higher by 10.94%. Observed dressing percentage was high for the both genotype groups but by 3.4 percentage points higher for crossbreeds which also obtained the better notes in EUROP carcasses evaluation.

Key words: fattening, commercial crossing, Belgian Blue, Polish Holstein-Friesian

INTRODUCTION

Belgian Blue is a double-muscled breed with the muscular hypertrophy caused by myostatin mutation (Grobet et al. 1997, Kambadur 1997, Grobet et al. 1998, Casas 1999, Albera 2006). The last decades, BB have met a worldwide development, wider than expected. The use of BB as cross breed all over the world is a major fact at the end of the last century (Hanset and Georges 1997). Belgian Blue crossbreeds are predisposed for the intensive fattening with the high daily body weight gain at the moderate feedstuffs use. Animals kept for slaughtering can be fattened to the high body weight without any risk of over fattening (Grodzki 1999, Grodzki and Przysucha 2004, Jasirowski and Przysucha 2004). The high performance of the modern BB as pure breed had caught attention of farmers to be used it as terminal sire (Albera et al. 2001). Similarly in Poland the role of BB in commercial crossing is growing up. There were 13,524 inseminations with BB semen in 2012, which was 4.4% of all commercial crossings (Przysucha et al. 2014).

The aim of the study was the comparison of fattening performance of Polish Holstein-Friesian and PHF × Belgian Blue crossbreeds bulls.

MATERIAL AND METHODS

The material for the analysis were fattening results of Polish Holstein-Friesian (PHF) and PHF × Belgian Blue crossbreeds (PHF × BB) bulls fattened in an intensive system up to age of 18 months. Crossbreeds mothers (PHF) were multiparous cows without any problems with delivery course in the past.

Fattening results of 50 bulls in each genotype group were analyzed. Bulls were kept in freestall system at seven private farms located in Central Poland and up to about 60 days of life fed with milk replacement, hay and concentrates and since that maize-silage, hay-silage (*ad libitum*) and concentrates (from 1 to 4 kg depending on age and body weight) were introduced to their diet. Animals were weighted on digital scale every 3 months. After slaughter the dressing percentage and the carcasses evaluation by EUROP method were collected from processing plant. Standardized averages of bulls body weight at 120th, 210th and 540th day of life were calculated as well as the average daily body gains in particular fattening periods.

Calculation of standardized body weight of the animal for the particular day of its life (120, 210, 540) was executed according to the following formula:

$$MCS = [(MCB - MCU) / WW] \times WS + MCU$$

where:

MCS – standardized body weight of the animal (kg);

MCB – real body weight of the animal in the day of weighing (kg);

MCU – real body weight of the animal at 48 h after birth (kg);

WW – age of the animal in the day of weighing (days);

WS – standardized age of the animal, 210 or 420 (days).

Average daily body weight gains of the animals were calculated in the periods:

- from birth up to 120th day of life;
- from birth up to 210th day of life;
- from birth up to 540th day of life.

Average daily body weight gains of the animals were calculated according to the following formula:

$$PDMC = (MCK - MCP) \times 1000 / (WK - WP)$$

where:

PDMC – daily body weight gain of the animal (g);

MCK – final body weight of the animal in the day of weighing (kg);

MCP – initial body weight of the animal in the day of weighing (kg);

WK – final age of the animal in the day of weighing (days);

WP – initial age of the animal in the day of weighing (days).

Statistical analysis of the study data was carried out by GLM procedure on IBM SPSS 21.0 (Statistical Product and Service Solution 2013).

RESULTS AND DISCUSSION

Results presented in Table 1 revealed that PHF × BB crossbreeds were heavier by 94.2 kg (11.61%) than PHF purebreds at age of 18 months. The average daily body gains were high and accounted 1081 g for PHF and 1183 g for PHF × BB bulls, respectively. Daily body gains from birth to the age of 540 days of the crossbreeds were higher by 10.94%. Observed dressing percentage was high for the both genotype groups but by 3.4 percentage points higher for crossbreeds which also obtained the better notes in EUROP carcasses evaluation. Hanset and Georges (1997) showed, that

average carcass yield of Holstein-Friesian bulls was 53.03% when BB × HF bulls was 59.19%. The same authors in the earlier studies obtained 55 and 60% of dressing percentage, respectively. The daily body weight gains of bulls were 1.3 kg for HF and 1.5 kg for BB × HF. Hanset and Georges (1997) gave according to Langholz and Gerardy studies, that 33% of HF carcasses were evaluated in EUROP scale as “R” grade and 67% as “O”. In case of BB × HF crossbred it was 38% as “U” and 62% as “R”.

CONCLUSIONS

Commercial crossbreeds bulls PHF × BB fattened in intensive system up to age of 18 months showed much higher daily body weight gains in every fattening period as well as higher dressing percentage and better EUROP grade than

TABLE 1. The results of experimental bulls fattening

Specification	Bulls PHF		Bulls PHF × BB		Difference (%)
	Average	SD	Average	SD	
Body weight at birth (kg)	38.4	1.15	39.2	1.73	2.08
Body weight at age of 120 days (kg)	142.4	2.56	152.1	2.98	1.07
Body weight at age of 210 days (kg)	220.5	4.32	277.3	4.12	12.58
Body weight at age of 540 days (kg)	583.8	5.43	678.0	4.77	11.61
Average daily body weight gain up to age of 120 days (g)	867	63	941	89	10.85
Average daily body weight gain up to age of 210 days (g)	987	84	1134	102	11.49
Average daily body weight gain up to age of 540 days (g)	1081	111	1183	132	10.94
Number of carcasses according to EUROP evaluation system	U	–		17	–
	R	17		31	
	O	33		2	
Dressing percentage (%)	57.20	1.34	60.60	1.12	

purebred PHF bulls. Therefore PHF × × BB bulls are significantly better fattening material than PHF one kept under intensive production systems.

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Streszczenie: *Analiza wyników opasu buhajków phf i mieszańców phf × belgijska bialo-błękitna.* Celem pracy było porównanie wyników opasu buhajków phf i mieszańców phf × belgijska bialo-błękitna opasanych w systemie intensywnym do wieku 18 miesięcy. Analizowano wyniki opasu 50 buhajków w każdej grupie genotypowej. Buhajki obu grup były opasane w siedmiu gospodarstwach prywatnych w centralnej Polsce. Buhajki były utrzymywane luzem w kojcach grupowych i żywione do ok. 60. dnia życia preparatami mlekozastępczymi, sianem i paszami treściwymi, a po tym okresie kiszonką z kukurydzy, sianokiszonką i paszą treściwą. Opas prowadzono w systemie półintensywnym do ok. 18. miesiąca życia. Zwierzęta były ważone co trzy miesiące na wadze elektronicznej. Po odstawieniu do uboju z zakładów mięsnych uzyskano dane dotyczące wydajności rzeźnej i wydajności poubojowej oceny tusz metodą EUROP. Wyliczono średnie standaryzowane masy ciała buhajków na 120., 210. i 540. dzień życia oraz średnie dobowe przyrosty w poszczególnych okresach opasu. Buhajki mieszańce phf × bbb uzyskały w wieku 18 miesięcy większą o 94,2 kg masę ciała, czyli o 11,61% od czystorasowych buhajków rasy phf. Średnie dobowe przyrosty za cały okres opasu

były bardzo duże i wynosiły 1081 g dla buhajków phf i 1183 g dla buhajków phf × bbb. Przyrosty mieszańców były o 10,94% większe niż cieląt czystorasowych. Wydajność rzeźna była wysoka w obu grupach genetycznych, ale o 3,4% wyższa w grupie mieszańców, które uzyskały również wyższe oceny uformowania tuszy w systemie klasyfikacji poubojowej tusz EUROP.

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