

Analysis of results assessment of growth of Charolais beef cattle in Poland

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Abstract: *Analysis of results assessment of growth of Charolais beef cattle in Poland.* The aim of the study was to assess the utility of selected results of the French Charolais breed with respect to their compliance with the goal of racial breeding and standards adopted by the Polish Association of Breeders and Producers of Beef Cattle (PABPBC). The subject of the analysis were recording results of the French Charolais beef cattle breed in Poland. The study was based on data for the years 2002–2013 of PABPBC and the National Center of Animal Breeding (NCAB) for 1996–2001. The data set included: *n* – the number of animals tested, *min.* – minimum values in the studied traits, *max.* – maximum value of the selected features, *average* – average values of the analyzed traits, *SD* – standard deviation. Evaluated properties are: average weight of cows (kg), the average body weight of calves after birth (kg), the average daily gains for age 210 days (g), the average body weight of calves at the age of 210 days (kg), the average milk yield (kg), the terms of cows and heifers calving aptitude, the distribution of the population according to the order of calving cows. One can observe a gradual decline in the share of Charolais breed in national beef cattle population, also shows a significant decrease in the number of crossbreds with Charolais breed. The average weight of cows in 2005–2006 amounting to 559.4 and 570.2 kg meet the standards for breeding of cows entered in the initial part of the herd book, which define the minimum weight of Charolais cows after first calving as 550 kg. The average weight at birth of heifer calves in each year assessment was similar, but

after 2008 began more than 40 kg. In purebred bull calves was seen a systematic increase in the average birth weight. The difference in birth weights between heifers and bulls ranged from 1 kg in 1999 to 3.6 kg in 2012. High average daily weight gains of bulls to 210 days of age, at short extra supplementary fattening period of about one month allow to export the animals weighing about 300 kg at a good price. The average daily gains of heifers (550–560 g), guarantee obtaining at 15 months of age body weight allowing the commencement of breeding. From 30.4 to 47.8% Charolais cows in recent years delivered in the relevant period.

Key words: beef cattle, Charolais, beef cattle recording

INTRODUCTION

Twenty years the Programme of Beef Cattle Breeding Development in Poland finished in 2014 (Jasiorowski et al. 1996). Due to the sparse pure-bred female population is difficult to talk about own national breeding program. Therefore, the maintenance of high standards of breed is the main task of PABPBC. Its implementation is, *inter alia*, beef recording conducted in cattle herds. The aim of beef recording is, in addition to collecting data on the relevant parameters of herd repro-

duction, potential growth and fattening traits and maternal characteristics, on the basis of which herds are improving by use of information processed in the current breeding advisory service to farmers, in order to improve the economic performance of stocks and the implementation of a breeding program in the herd breed and use this information in analytical studies on beef cattle breeding and research work and publications.

The weight of a cow by its relationship with a caliber, has a direct impact on the course of calving (more cows tend to have a larger area of the pelvis channel) and body weight of calf, which, along with nutrition, has a significant impact on daily gains of calves during rearing. The weight of the calf at birth has an influence not only on the course of calving, but also on the subsequent results of its rearing. Daily gains of calves to 210 days of age determine their body weight at weaning, this in turn has an impact on the profit from the sale of reared calves (mainly bulls), or the cost of winter feeding of heifers for breeding, which must receive the required, minimum weight at the moment their mating at the age of 15 months. Calving season has a direct impact on the cost

of maintaining the basic herd (maximum utilization of the entire grazing season) and the quality of breeding calves (health, growth rate). Distribution of cows calving aptitude in order of calving tells us about the longevity of cows, which particularly in the herds of beef cattle is one of the main factors affecting the reduction of costs of the herd.

The aim of the study was to assess the utility of selected results of the French Charolais breed with respect to their compliance with the goal of breeding standards adopted by PABPBC. Height at sacrum for females was 135 cm, and 145 cm for males at maturity and body weight for females 850 kg, 1300 kg for males. An important selection factor is to maintain a high level of milk production and the exclusion of breeding males with a tendency to transmit high weight of calves at birth. Charolais breed in terms of breeding is an excellent paternal line to be crossed and this aspect on a par with good results in pure bred breeding will be given special attention in the course of selection work. In the national beef cattle breeding program there are set out, inter alia, the following standards for breeding of cows entered in the Table 1.

TABLE 1. The following standards for breeding of cows (PZHiPBM, 2001–2014)

Breed	LIM	CHA	SAL	HEF	AAG	SIM	PMT	WBL	BDQ
Min. body weight gain from birth to 210 day of age (g)	850	950	870	800	800	900	830	780	950
Min. body weight after 1st calving (kg)	480	550	500	460	460	530	470	450	550
Delivery	easy, taking place by the nature forces, without human assistance								
Calves vitality	alive, without body building defects								
Evaluation of type and construction	min. 70 points								
The degree of massiveness and musculature	good	good	sufficient						good
Colour	in accordance with the breed standard								

MATERIAL AND METHODS

The subject of the analysis were beef cattle evaluation results for the French Charolais breed in Poland. With respect to their compliance with the goal of racial breeding and standards adopted by the Polish Association of Breeders and Producers of Beef Cattle (PABPBC). The subject of the analysis were recording results of the French Charolaise beef cattle breed in Poland. The study was based on data for the years 2002–2013 of PABPBC and the National Center of Animal Breeding (NCAB) for 1996–2001. The data set included: N – the number of animals tested, min. and minimum values in the studied traits, max. and maximum value of the selected features, average – average values of the analyzed traits, SD – standard deviation. Evaluated properties are: average weight of cows (kg), the average body weight of calves after birth (kg), the average daily gains for age 210 days (g), the average body weight of calves at the age of 210 days (kg), the average milk yield (kg), the terms of cows and heifers calving aptitude, the distribution of the population according to the order of calving cows.

The calculation of standardized animal body weight for given day in its life was done according to the following formula:

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

where:

- MCS – standardized animal body weight (kg);
- MCB – mean body weight of the animal on the actual weighing (kg);
- MCU – actual body weight set for 48 hours at birth (kg);

- WW – mean age of the animal on the weighing (days);
- WS – standardized age of the animal (s).

There were calculated the average daily weight gain of the animal from the day of birth to 210 days of age, according to the formula:

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

where:

- PDMC – mean increase in daily body weight (g);
 - MCC – final body weight of the animal on the weighing day (kg);
 - MCP – initial body weight of the animal on the weighing (kg);
 - WK – mean age of the animal on the final weighing (days);
 - WP – mean age of the animal on the initial weighing (days)
- is expressed in kg of milk per convention.

The conversion 210 day lactation and is calculated according to the formula:

$$WMM210 = (McOds \times 1700) / \text{calf age}$$

where:

- WMM210 – value of mother milk – milk yield for 210 day lactation conversion assuming calf birth weight 35 kg, per 1 kg body weight gain, which drank 10 kg milk a day during the first 3 months, and the remaining months of 8–9 kg a day;
- McOds – the actual weight of the calf at weaning (kg);
- calf age – actual age of the calf at the time of weaning from the mother (days).

RESULTS AND DISCUSSION

Table 2 presents the quantitative changes of the female purebred population of Charolaise cattle in the years 1996–2013. It should be noted that in 2000–2006 the data included both cows and heifers, and since 2007, the data relate only to cows and excluding heifers. One can observe a gradual decrease in the breed discussed in the national cattle population, also shows a significant decrease in the number of crossbreds with Charolais breed.

Table 3 shows the mean body weight of pure bred Charolais cows in the period in which this trait was evaluated. The average body weight of cows were much smaller than the predefined by PABPBC,

according to which the weight of adult cow of discussed breed should be about 850 kg. Average weight of cows in 2005 amounting to 559.4 and 570.2 kg meet the standards for breeding of cows entered in the initial part of the herd book, which define the minimum weight of Charolais cows after first calving as 550 kg. It should be noted that the average weight of the cow did not change significantly over 8 years of evaluation of this trait, but rather high standard deviations indicate the wide variety of cows of the breed body weight. Genotype and weight of the mother cows are always described among the many factors involved in normal growth and development of calves. Numerous studies have

TABLE 2. Quantitative changes of the female population of Charolais cattle in Poland*

Year	Beef breed female population			Charolais breed (purebred)	Charolais breed (crossbred)	Charolais breed (purebred + crossbred)	Charolais breed share in the population
	pure bred	cross bred	total				
1996	3 939	4 952	8 891	908	655	1 563	17.6
1997	6 063	5 772	11 835	1 162	565	1 727	14.6
1998	7 227	7 601	14 828	1 427	1 082	2 509	16.9
1999	8 375	8 243	16 618	1 417	1 118	2 535	15.3
2000	9 085	9 468	18 553	1 749	939	2 688	14.5
2001	9 129	9 748	18 877	1 821	770	2 591	13.7
2002	9 735	8 968	18 703	2 119	885	3 004	16.1
2003	11 768	9 382	21 150	2 201	1 007	3 208	15.2
2004	13 884	10 925	24 809	2 890	1 002	3 892	15.7
2005	17 130	11 710	28 840	2 793	1 057	3 850	13.3
2006	19 597	13 100	32 697	3 400	1 098	4 498	13.8
2007	14 541	11 676	26 217	2 512	983	3 495	13.3
2008	17 481	12 097	29 578	2 956	998	3 954	13.4
2009	15 435	7 711	23 146	2 417	490	2 907	12.6
2010	16 436	7 576	24 012	2 538	340	2 878	12.0
2011	16 216	7 459	23 675	2 335	302	2 637	11.1
2012	16 724	7 070	23 794	2 265	261	2 526	10.6
2013	17 481	6 633	24 114	2 253	248	2 501	10.3

*From 2007 the list includes only the cows.

TABLE 3. Body weight of purebred Charolais cows

Year	N	Cow body weight (kg)			
		min.	max.	average	SD
1999	560	340	1090	648.3	108.4
2000	846	400	1050	640.8	94.3
2001	951	470	1050	656.8	90.0
2002	944	450	890	634.7	81.5
2003	1017	480	910	626.0	78.8
2004	1190	460	940	630.0	82.4
2005*	302	500	680	559.4	45.3
2006*	534	400	770	570.2	36.2

*Body weight after first calving.

shown that the weight of the cow has a significant impact on calf birth weight and daily gains during the rearing (Przysucha et al. 2002abcd, Przysucha et al. 2003). Therefore, the weight of a cow in adulthood is an important trait to be considered for breeding programs (Andersen 1978, Brown et al. 1989). Breeding goals for most beef breeds are focused on massive cow with a high caliber.

Tables 4 and 5 show the average natal weight of calves. The average weight at birth of heifers in each year assessment was similar, but after 2008 began more than 40 kg. In purebred bulls a systematic increase in the average birth weight was noticed. The difference in birth weights between heifers and bulls ranged from 1 kg in 1999 to 3.6 kg in 2012. The birth weight of calves has a significant effect

TABLE 4. Average body weight of purebred heifers at birth

Year	N	Body weight (kg)			
		min.	max.	average	SD
1999	36	20	65	39.3	6.2
2000	448	17	63	38.6	6.1
2001	497	20	70	39.2	6.7
2002	426	18	60	37.8	5.8
2003	489	25	60	38.3	4.8
2004	582	21	55	37.8	4.8
2005	731	24	59	37.8	4.5
2006	795	20	71	39.0	8.0
2007	832	20	61	39.5	4.6
2008	960	20	64	40.9	6.2
2009	1063	20	59	40.3	5.3
2010	1143	20	64	40.5	4.9
2011	926	14	63	41.2	5.4
2012	1014	16	68	41.1	3.0
2013	896	25	70	42.1	5.6
Average	600	20.6	62.4	38.4	5.7

TABLE 5. Average body of weight purebred bulls at birth

Year	N	Body weight (kg)			
		min.	max.	average	SD
1999	400	15	50	40.3	4.4
2000	408	19	64	41.1	6.7
2001	435	17	70	41.1	7.8
2002	436	18	59	39.5	5.7
2003	494	27	62	39.9	5.0
2004	590	21	58	39.1	5.1
2005	769	25	65	39.7	4.9
2006	753	27	68	40.7	5.2
2007	826	23	68	41.7	5.0
2008	933	23	66	43.1	6.2
2009	980	26	69	42.4	5.6
2010	1023	20	70	42.6	5.8
2011	953	23	68	43.4	6.0
2012	1004	25	73	44.7	6.4
2013	916	27	70	44.9	6.2

on weaning weight of calves and usually the calf is heavier at birth the greater the weight at the time of weaning (Przysucha et al. 2002abc).

Tables 6 and 7 present data on the average daily gains of heifers and bulls from

birth up to 210 days of age. Average daily gains of heifers evaluated ranged from 897 to 1141 g in various years of assessment. While the average daily gains of bulls evaluated (1100 g) exceeded eight times during the 14 years of the assessment.

TABLE 6. Average daily gains of purebred heifers to 210 days of age

Year	N	Daily gains (g)			
		min.	max.	average	SD
2000	190	509	1478	896.6	187.9
2001	290	509	1496	1039.9	205.4
2002	166	527	1580	1057.2	188.3
2003	152	614	1571	1059.4	140.5
2004	429	629	1446	1036.3	135.3
2005	426	561	1576	1056.5	130.4
2006	384	457	1465	1049.8	116.9
2007	636	629	1531	1039.9	147.1
2008	900	1036	1204	1140.9	37.1
2009	1040	700	1793	1019.5	182.9
2010	1038	145	1585	1030.8	144.0
2011	891	664	1712	1055.1	105.0
2012	992	421	1861	1114.0	141.6
2013	897	387	1882	1057.0	105.6

TABLE 7. Average daily gains of purebred bulls to 210 days of age

Year	N	Daily gains (g)			
		min.	max.	average	SD
2000	157	504	1597	1054.7	199.4
2001	226	505	1492	1093.4	194.7
2002	136	520	1666	1088.3	210.9
2003	147	528	1485	1120.4	140.6
2004	426	540	1679	1109.9	169.0
2005	404	510	1690	1159.5	149.6
2006	385	714	1520	1145.0	126.5
2007	557	759	1612	1125.7	142.8
2008	860	494	1693	1073.1	183.9
2009	988	523	2010	1118.3	180.3
2010	922	309	1746	1081.6	161.1
2011	819	400	1861	1129.3	121.9
2012	955	607	1879	1146.3	49.8
2013	789	427	1548	1115.3	88.1

Analyzing the data presented, it should be noted the large difference between the minimum and maximum daily gains in both heifers and bulls. High average daily weight gains of bulls to 210 days of age. at short extra supplementary fattening period of about one month allow to export the animals weighing about 300 kg at an good price. Dobicki (1995) study showed that the average daily gains of heifers (550–560 g), guarantee obtaining at 15 months of age body weight allowing the commencement of breeding.

Table 8 includes the mean body weight of Charolais breed heifers at the age of 210 days in the different years of assessment. The average weight of heifers was evaluated 278 kg in 2012 and only 227 kg in 2000.

Table 9 presents the data on body weight of Charolais bulls at the age of 210 days. The average weight of bulls evaluated in this age was 241.1 kg in 1999 and 291.9 kg in 2012 (a difference of more than 50 kg).

Table 10 includes the average milk yield of purebred cows in different years of assessment. As can be seen from the following statement, the average milk yield of cows of the breed was about 2100 kg and has not undergone significant changes in subsequent years. Since 2010 PABPBC stopped evaluation of this trait because the data presented should be approached with great caution because milk yield was calculated based on the weight gain of calves and as we know in the herd calves can always be found that approach to other cows and choke or are additionally fed by the breeder.

Table 11 contains a summary of the terms of cows and heifers calving aptitude of analyzed breed in the following months of the year in 2000–2007. Seasonality in breeding beef herds calving aptitude is very important. because it allows more appropriate term of calving to receive in the future a very good quality breeding material with the least amount of cost of rearing (maximum

TABLE 8. Average body weight of purebred heifers at 210 days of age

Year	N	Body weight (kg)			
		min.	max.	average	SD
1999	206	120	394	231.1	47.0
2000	190	150	346	227.0	38.8
2001	285	152	349	257.4	41.8
2002	175	140	376	259.6	43.6
2003	152	165	372	262.6	31.2
2004	429	168	348	255.1	29.8
2005	426	151	375	260.1	28.1
2006	384	116	351	259.4	30.6
2007	636	178	380	256.7	33.7
2008	900	140	393	245.5	43.1
2009	1040	120	400	256.3	43.5
2010	1038	173	412	260.4	34.1
2011	891	178	389	265.1	32.0
2012	992	125	396	278.0	24.6
2013	887	120	410	259.6	23.4

TABLE 9. Average body weight of purebred bulls at 210 days of age

Year	N	Body weight (kg)			
		min.	max.	average	SD
1999	206	120	394	241.1	37.0
2000	156	174	375	263.6	42.8
2001	222	152	347	269.5	40.4
2002	139	141	396	270.0	46.7
2003	148	150	362	277.8	31.5
2004	426	144	396	272.1	37.2
2005	404	160	400	283.6	32.0
2006	385	180	357	269.0	28.6
2007	557	185	440	275.3	36.0
2008	860	55	425	267.3	45.1
2009	988	155	450	275.1	44.3
2010	922	110	452	271.7	39.6
2011	819	120	440	282.9	31.1
2012	940	145	450	291.9	20.8
2013	901	130	420	280.2	37.0

utilization of pastures). Many authors believe (Dobicki 1996, Jasiorowski 1999, Jasiorowski and Przysucha 2004), that the period of mating and the resulting of calving aptitude time should not be longer than 2–3 months. Beef cows,

maintained all year round in grazing system should make the best offspring in the winter. Calves born in the period after the completion of the first period of milk drinking are prepared to make full use of the pasture, then their growth rate is fast.

TABLE 10. The average milk yield of purebred cows

Year	N	Estimated milk yield of cows (kg)*			
		min.	max.	average	SD
2000	542	785	4365	2040.7	361.1
2001	517	1055	3422	2196.2	420.3
2002	289	1094	3206	2137.8	368.9
2003	300	1214	3011	2186.3	260.7
2004	261	1220	2744	1906.3	282.9
2005	804	1004	2510	2170.0	229.9
2006	769	1234	2980	2133.7	212.5
2009	2062	322	3829	2170.4	319.7

*Milk yield estimated based on calf weight gain from birth to weaning.

TABLE 11. Time of purebred cows and heifers calvings

Year	Unit	Months												Total
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
1999	N	95	70	144	121	91	63	43	18	21	19	34	51	770
	%	12.3	9.1	18.7	15.7	11.8	8.2	5.6	2.3	2.7	2.5	4.4	6.6	100.0
2000	N	83	92	193	160	81	65	48	24	24	49	43	47	909
	%	9	10.1	21.2	17.6	8.9	7.2	5.3	2.6	2.6	5.4	4.7	5.2	100.0
2001	N	91	80	158	143	122	71	56	48	48	57	57	52	983
	%	9	8.1	16.1	14.5	12.4	7.2	5.7	4.9	4.9	5.8	5.8	5.3	100.0
2002	N	67	69	176	150	108	92	56	56	56	50	55	23	958
	%	7	7.2	18.4	15.7	11.3	9.6	5.8	5.8	5.8	5.2	5.7	2.4	100.0
2003	N	71	74	128	162	124	102	81	64	76	45	55	36	1018
	%	7	7.3	12.6	15.9	12.2	10	8	6.3	7.5	4.4	5.4	3.5	100.0
2004	N	92	103	204	200	115	132	76	78	69	55	34	36	1194
	%	8	8.6	17.1	16.8	9.6	11.1	6.4	6.5	5.8	4.6	2.8	3	100.0
2005	N	121	177	187	218	145	167	86	91	87	65	56	89	1489
	%	8	11.9	12.6	14.6	9.7	11.2	5.8	6.1	5.8	4.4	3.8	6	100.0
2006	N	134	234	323	321	123	67	45	65	65	73	55	43	1548
	%	9	15.1	20.9	20.7	7.9	4.3	2.9	4.2	4.2	4.7	3.6	2.8	100.0
2007	N	132	126	272	296	218	221	170	140	92	122	133	127	2085
	%	6	7.8	13	14.2	10.5	10.6	8.2	6.7	4.4	5.9	6.4	6.1	100.0
2008	N	143	167	276	277	214	200	133	122	139	137	148	111	2087
	%	6.9	9.0	13.2	13.3	10.3	9.6	6.4	5.8	6.7	6.6	7.1	5.3	100.0
2009	N	147	214	254	333	221	171	161	162	114	86	142	103	2108
	%	7.0	10.2	12.0	15.8	10.5	8.1	7.6	7.7	5.4	4.1	6.7	4.9	100.0
2010	N	191	192	268	299	270	231	168	115	109	110	142	136	2231
	%	8.6	8.6	12.0	13.4	12.1	10.4	7.5	5.2	4.9	4.9	6.4	6.1	100.0
2011	N	133	170	237	291	202	254	129	144	115	106	121	99	2001
	%	6.6	8.5	11.8	14.5	10.1	12.7	6.4	7.2	5.7	5.3	6.0	4.9	100.0
2012	N	158	178	262	256	238	158	143	91	88	105	118	97	1992
	%	7.9	8.9	13.2	12.9	11.9	7.9	7.2	4.6	4.4	5.3	5.9	9.9	100.0
2013	N	216	177	259	242	174	147	162	99	101	94	114	170	1955
	%	11	9.5	13.2	12.4	8.9	7.5	8.3	5.1	5.2	4.8	5.8	8.7	100.0

Calves are healthy and good developed and breeder bear the smallest rearing costs. It should also be noted that in the winter calvings weaning calves moment coincides with the impoverishment of pastures in autumn. the consequence is natural dry-off pregnant cows. With winter calvings cows mostly deliver in the barn so that it is easier to monitor deliveries and possible assistance in the event of complications. Analyzing the obtained results and assuming that the most favorable period of cows calving

aptitude is the period from December to March. It should be noted that from 30.4 to 47.8% of the Polish Charolaise cows delivered in recent years during the relevant period cows. It follows that more than half of the calves born at other times of the year only to a small degree can take full advantage of the pasture.

Table 12 shows the percentage distribution of calving aptitude of purebred Charolaise cows according to calving order. The greatest number of cows calved in the years of evaluation was

TABLE 12. Distribution of the order of calvings

Year	Unit	Months												Total
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	≥ XII	
2000	N	145	310	160	173	79	16	6	14	4	1	1	–	909
	%	16.0	34.1	17.6	19.0	8.7	1.8	0.7	1.5	0.4	0.1	0.1	0.0	100.0
2001	N	191	128	269	162	137	57	17	5	7	2	–	–	975
	%	19.6	13.1	27.6	16.6	14.1	5.8	1.7	0.5	0.7	0.2	0.0	0.0	100.0
2002	N	207	137	114	217	122	97	33	14	7	7	2	–	957
	%	21.6	14.3	11.9	22.7	12.7	10.1	3.4	1.5	0.7	0.7	0.2	0.0	100.0
2003	N	252	180	115	94	173	97	73	22	5	3	3	1	1018
	%	24.8	17.7	11.3	9.2	17.0	9.5	7.2	2.2	0.5	0.3	0.3	0.1	100.0
2004	N	318	204	180	104	86	133	77	63	21	4	2	2	1194
	%	26.6	17.1	15.1	8.7	7.2	11.1	6.4	5.3	1.8	0.3	0.2	0.2	100.0
2005	N	412	285	188	163	84	87	106	64	66	24	7	3	1489
	%	27.7	19.1	12.6	10.9	5.6	5.8	7.1	4.3	4.4	1.6	0.5	0.2	100.0
2006	N	534	468	234	134	45	34	22	22	32	23	–	–	1548
	%	34.5	30.2	15.1	8.7	2.9	2.2	1.4	1.4	2.1	1.5	0.0	0.0	100.0
2010	N	505	462	402	327	227	156	75	34	25	14	1	3	2231
	%	22.6	20.7	18.0	14.6	10.1	6.9	3.3	1.5	1.1	0.6	0.0	0.1	100.0
2011	N	405	390	335	295	213	163	98	48	24	23	6	1	2001
	%	20.2	19.4	16.7	14.7	10.6	8.1	4.8	2.3	1.1	1.1	0.2	0.05	100.0
2012	N	427	334	339	288	227	150	98	71	29	10	15	4	1992
	%	21.4	16.7	17.0	14.4	11.3	7.5	4.9	3.5	1.4	0.5	0.7	0.2	100.0
2013	N	372	338	273	275	238	193	127	58	49	19	5	8	1955
	%	19.0	17.3	14.0	14.1	12.2	9.9	6.5	3.0	2.5	1.0	0.3	0.5	100.0

reported in primiparous cows and cows calving for the second time. It should be noted that in 2000 primiparous cows and the animals calving for the second time constituted more than 50% and in 2013 36.3% of the population. It means that the life of the cow increases, which is of particular economic importance. Long life of cows in herds of beef cattle is one of the main factors allowing for reducing the cost. so the breeders should try to use cows as long as possible.

CONCLUSIONS

One can observe a gradual decline in the share of the national Charolais beef cattle population. it also shows a significant decrease in the number of crossbreds with Charolais breed. The average weight of cows in 2005–2006 amounting to 559.4 and 570.2 kg meet the breeding standards for of cows entered in the initial part of the herd book. which define the minimum weight of Charolais cows after first calving as 550 kg. The average weight of heifers at birth in each year assessment was similar, but after 2008 began more than 40 kg. In purebred bulls it was seen a systematic increase in the average birth weight. The difference in birth weights between heifers and bulls ranged from 1 kg in 1999 to 3.6 kg in 2012. High average daily weight gains of bulls to 210 days of age, at short extra supplementary fattening period of about one month allow to export the animals weighing about 300 kg at an good price. The average daily gains of heifers (550–560 g), guarantee obtaining at 15 months of age body weight allowing the commencement of breeding. It should be noted

that the Polish Charolais cows in recent years during the relevant period from 30.4 to 47.8% of cows.

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Streszczenie: *Analiza wyników oceny wzrostu bydła charolaise w Polsce.* Celem pracy była analiza wybranych wyników oceny użytkowości francuskiej rasy charolaise w odniesieniu do ich zgodności z celem hodowlanym i standardami rasowymi przyjętymi przez PZHiPBM. Przedmiotem analiz były wyniki oceny użytkowości francuskiej rasy bydła mięsnego charolaise w Polsce. Opracowanie oparte jest na danych Polskiego Związku Hodowców i Producentów Bydła Mięsnego (PZHiPBM) za lata 2002–2013 oraz Krajowego Centrum Hodowli Zwierząt (KCHZ) za lata 1996–2001. Zbiór danych obejmował: N – liczbę badanych zwierząt, min. – minimalne wartości w badanej cechy, max. – maksymalne wartości badanej cechy, średnia – uśrednione wartości badanej cech, SD – odchylenie standardowe. Oceniane cechy to: średnie masy ciała krów (kg), średnie masy ciała cieląt po urodzeniu (kg), średnie przyrosty dobowe do wieku 210 dni (g), średnie masy ciała cieląt w wieku 210 dni (kg), średnia mleczność krów (kg), terminy oścień krów i jałowic, rozkład populacji krów według kolejności oścień. Można zaobserwować stopniowy spadek

udziału rasy charolaise w krajowej populacji bydła mięsnego. Widać również znaczący spadek liczby mieszańców z rasą charolaise. Średnie masy krów w latach 2005–2006, wynoszące odpowiednio 559,4 i 570,2 kg, spełniają standardy hodowlane dla krów wpisanych do części wstępnej księgi hodowlanej, które określają minimalną masę ciała krowy rasy charolaise po 1. ocieleniu jako 550 kg. Średnia masa ciała przy urodzeniu jałówek w poszczególnych latach oceny była zbliżona, ale po 2008 roku zaczęła przekraczać 40 kg. U buhajków czystorasowych widać systematyczny wzrost średniej masy urodzeniowej. Różnica średnich mas urodzeniowych między jałówkami a buhajami wynosiła od 1 kg w 1999 roku do 3,6 kg w 2012 roku. Wysokie średnie przyrosty dobowe masy ciała buhajków do 210. dnia życia pozwalają przy niedługim, dodatkowym, uzupełniającym okresie opasu, wynoszącym około jednego miesiąca, sprzedaż na eksport za korzystną cenę opasów o masie ciała około 300 kg. Uzyskane średnie dobowe przyrosty gwarancję dają gwarancję, że dalsze żywienie gwarantujące przyrosty dobowe w granicach 550–560 g pozwolą na uzyskanie przez nie w wieku 15 miesięcy masy ciała pozwalającej na rozpoczęcie użytkowania rozplodowego. W polskich stadach bydła charolaise cielilo się w ostatnich latach we właściwym okresie od 30,4 do 47,8% krów.

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