STUDY ON THE GENETIC PROCESS IN THE BOVINE POPULATION FROM AGRORA SRL FARM

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Abstract

Achieving higher production of high quality milk and meat with lower costs depends on the characteristics, characteristics and characteristics of the animals exploited. Therefore, the level of animal production depends on its genetic potential and the degree of its manifestation, under the influence of environmental factors that may be favorable or inhibitory.

The purpose of this paper was to assess the genetic process in the performance of the population of Aubrac in which the characters were followed birth weight, weight at 200 days and 365 days.

The research was carried out over a period of 3 years, the number of products analyzed annually being 60 as follows: in 2016 30 females and 30 males, in 2017 29 females and 31 males and in 201829 females and 31 males.

Key words: reproduction, genetic, Aubrac

INTRODUCTION

The need for beef in the European Union can be met by increasing the number of animals of specialized breeds for meat, but it is not enough, and then it is absolutely necessary to raise animals that are genetically superior in performance, in better and better conditions so that consumer requirements are met [3].

In order to improve these performances, improvement programs are used applied to meat breeds in our country, which are based on knowledge of field production, which are performed based on measuring and evaluating growth and conformity performance through Official Production Control. of Meat, in order to evaluate the genetic potential of the animals, to widen the selection base as well as to improve the management of the farm [1], [5].

The current breeds of cattle represent the result of a long process of transformation of the old populations, determined by the evolutionary character of the interrelations between the organism with the natural and the artificial environment created, of the direction of the selection and improvement process imposed by the increasing economic needs of the society [2], [7].

A special role in the formation of cattle breeds was played by the development and continuous technical-scientific process of agriculture, which by diversifying and substantially increasing production, contributed to expanding the possibilities of animal husbandry, improving and improving exploitation technologies, while requiring improvement characteristics of production and productivity of cattle [4].

The morphological type of cattle specialized for meat production, meets an appreciable number of breeds, of which the most important are those of English, French, Italian and American origin [6].

Specialized cattle breeds for meat production were introduced in Romania between 1958 and 1964, but the first imports were made after the First World War when Shorthorn cattle were brought [11].

The purpose of introducing meat breeds was to create a genetic fund adapted to the conditions in our country and the production of male breeders to be used for industrial crossbreeding with domestic breeds for the production of commercial crossbreeds [8].

Currently, in units where animals are bred for productive performance it is necessary to

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know to what extent they are passed on to offspring, and especially what is the superiority of product performance over the parental population when selection pressure is induced by the mother [9], [10].

For these reasons, through this paper we set out to conduct a study that aims to assess genetic progress in the performance of the population of Aubrac.

MATERIAL AND METHOD

The studied biological material was represented by Aubrac cows, exploited for meat production, within the Agrora S.R.L. farm, located in Bruiu commune, from Sibiu county and established in 2002.

The activity regarding the raising of Aubrac cows started starting with 2013 when 60 calves aged 12 months were purchased from France: of these, 26 were mounted with a purebred Aubrac bull also imported from France and the other 34 calves were artificially inseminated with semen from bulls authorized for artificial insemination also from France.

Currently in the patrimony of the farm there is a herd of 450 purebred Aubrac heads, the animals being kept on pasture for most of the year, being organized rationally grazing. During the winter, the animals are fed on hay and kept in two shelters with free maintenance, provided with outdoor paddocks and a common feeding front.

In terms of breeding technology, currently only natural mounting is practiced, through a system of mounts and group farrowing. Lots of 40 females are organized for a bull, isolating them in separate shelters with straw bedding.

In this way the breeding takes place between May and August and the calvings between February and March, when the cows are kept in the shelter.

In order to achieve the proposed goal, it was necessary to use farm documents so that genetic progress can be assessed in the performance of the population in which the birth weight, weight at 200 days and weight at 365 days were followed.

Regarding the documents used, they were represented by the breeding and calving registers as well as the control bulletins from where the necessary data were extracted which were processed and centralized statistically, calculating the arithmetic mean, variance, standard deviation of the mean and the coefficient. of variation.

With the help of the estimators mentioned above, conclusions can be drawn regarding the degrees of safety of the results obtained, if the results correspond to those mentioned in the literature and if the population is homogeneous or heterogeneous.

RESULTS AND DISCUSSION

Birth weight. This character was analyzed during three years (2016, 2017, 2018) on a number of 60 calves obtained in the Agrora SRL farm.

In 2016 the calves were rattled and recorded so that information on their weight could be obtained from the farm registers, the data obtained being processed, thus obtaining the estimators for this character studied in 2016. Therefore, it is found that the 60 of products had an average calving weight of 38.13 kg with a variation between 29 and 52 kg.

Of the 60 products, 30 were female and 30 were male. In table 1 it can be seen that the average weight of females at birth is lower compared to that of males, respectively 35.90 kg compared to 40.37 kg.

Table 1 Estimators for the character of birth weight (kg), by sex, in 2016

Sexul	n		V%	Limitation	
				Low	Maxima
Females	30	35.90±0.75	11.39	29	43
Males	30	40.37±1.13	15.35	30	52
Total	60	38.13±0.73	14.87	29	52

Regarding the studied character, it can be observed that for both females and males it was very homogeneous, the coefficient of variation being less than 20%.

Regarding the information obtained for 2017, it is found that the 60 products had an average calving weight of 34.05 kg, the variation being between 27 and 42 kg (tab. 2)

Table 2 Estimators for the character of birth weight (kg), by sex, in 2017

Sexul	n		V%	Limitation	
				Low	Maxima
Females	29	34.62±0.71	11.09	29	41
Males	31	33.52±0.75	12.39	27	42
Total	60	34.05±0.52	11.78	27	42

For 2017, of the 60 products, 29 were female and 31 were male; it can also be seen that the average weight of females at birth was higher than that of males, respectively 34.62 kg compared to 33.52 kg. The studied character also showed a good homogeneity (tab. 2).

For 2018, there is an average calving weight of 38.05 kg with a variation between 34 and 42 kg. Of the 60 products, 29 were female and 31 male, but it can be seen that the average weight of females at birth, and this year is higher than that of males (tab. 3).

Table 3 Estimators for the character of birth weight (kg), by sex, in 2018

Sexul	n		V%	Limitation	
				Low	Maxima
Females	29	38.34±0.37	5.18	35	42
Males	31	37.77±0.36	5.37	34	42
Total	60	38.05±0.26	5.29	34	42

It can also be seen that in terms of subjectivity it was homogeneous for both males and females (tab.3).

For the birth weight character, the heritability coefficient known in the specialty literature has values between 0.34 and 0.51 the value obtained in the present study being 0.4.

Thus:

- for the year 2017

ΔT = 34,05 kg – 38,13 kg = - 4,08 kg

ΔG = (-4,08 kg) x 5 years x 0,4 = -8,16 kg

- for the year 2018

ΔT = 38,05 kg – 34,05 kg = 4,00kg

ΔG = 4.00 kg x 5 ani x 0,4 = 8,00 kg

Therefore, in 2017 there was a regression that obviously did not lead to a genetic progress per generation but with the values obtained for the products from 2018 it is found that a genetic progress of 8 kg could be obtained in one genius.

Weight recorded at 200 days. Regarding this indicator, it is found that in 2016 the 60 products had an average weight per 200 days of 249.5 kg with a variation between 204 and 307 kg. Also, from table 4 it can be seen that the average weight of males at 200 days is higher than that of females.

For 2017, out of the 60 products, 29 were females where the average weight was 233.35 kg and 31 males had an average value for this indicator of 255.19 kg. The studied character showed a good homogeneity, the value of the coefficient of variation being 7.41% in the case of females and 7.38% in the case of males.

In 2018, out of the 60 products, 29 were female and 31 male; it can be observed that the average weight of males at 200 days is higher than that of females, respectively 273 kg compared to 264.62 kg (tab. 4).

For the weight character at 200 days, the coefficient of heritability known in the literature has values between 0.18 and 0.40. In this paper was used the average value of 0.30 which led to:

- for the year 2017

ΔT = 244,63 kg – 249,50 kg = -4,87 kg

ΔG = (-4,87 kg) x 5 ani x 0,3 = -7,31 kg

- for the year 2018

ΔT = 268,95 kg -244,63 kg = 24,32 kg

ΔG = 24,32 kg x 5 ani x 0,3 = 36,48 kg

And for this index we can say that in 2016 there was a regression that obviously did not lead to a genetic progress per generation instead, with the values obtained for products in 2018 it is found that a genetic progress of 36 could be obtained, 48 kg in one generation.

Table 4 Estimators for weight character at 200 days (kg), by sex, in 2016, 2017 and 2018

Sexul	n		V%	Limitation	
				Low	Maxima
Year 2016					
Females	30	246.93±3.50	7.77	206	286
Males	30	252.07±4.78	10.39	204	307
Total	60	249.50±2.96	5.91	204	307
Year 2017					
Females	29	233.34±3.21	7.41	208	263
Males	31	255.19±3.38	7.38	215	289
Total	60	244.63±2.72	8.61	208	289
Year 2018					
Females	29	264.62±3.19	6.49	220	291
Males	31	273.00±2.45	5.01	246	298
Total	60	268.95±2.05	5.91	220	298

Weight at 365 days. And this character was also studied during 3 years (2016, 2017 and 2018). From the data processed for 2016 it is found that the 60 products had an average weight at this age of 395.68 kg with a variation between 354 and 457 kg (tab. 5).

Also in 2017, for the weight character at 365 days, average values of males of 365 kg can be observed, which is higher than that of females, which reached an average of 402.94 kg. In 2018 it is found that the 60 products had an average weight at 365 days of 455.55 kg with a variation between 383 and 487 kg.

Table 5 Estimators for weight character at 365 days (kg), by sex, in 2016, 2017 and 2018

Sexul	n		V%	Limitation	
				Low	Maxima
Year 2016					
Females	30	392.52±4.28	5.97	356	436
Males	30	398.80±4.85	6.66	354	457
Total	60	395.68±3.23	6.32	354	457
Year 2017					
Females	29	383.83±4.95	6.94	346	442
Males	31	402.94±3.99	5.51	359	453
Total	60	393.70±3.37	6.63	346	453
Year 2018					
Females	29	453.86±4.76	5.65	383	485
Males	31	457.13±3.70	4.51	401	487
Total	60	455.55±2.98	5.06	383	487

Regarding the coefficient of heritability known in the literature, it has a value of up to 0.77, the value that was used in this paper, as follows:

- for the year 2017

ΔT = 455,55 kg – 393,70 kg = 61,85 kg

ΔG = 61,85 kg x 5 ani x 0,77 = 238,13 kg

-for the year 2018

ΔT = 455.55 kg – 393.70 kg = 61.85 kg

ΔG = 61,85 kg – 5 year x 0,77 = 238.13 kg

Therefore, as in the other cases in 2017 there was a regression that did not lead to a

genetic progress per generation. For 2018, the values obtained for the products reveal the fact that a genetic progress of 238.13 kg can be obtained in one generation.

CONCLUSIONS

About the birth weight, it can be said that it registered a decrease in 2017, returning in 2018, 34.05 kg (in 2017) and 38.05 (in 2018) compared to 38.13 kg (in 2016). Female products had a higher birth weight compared to males in 2017 and 2018. It can also be said that in 2017 there was a regression, which obviously did not lead to genetic progress per generation. Instead, with the values obtained for the products from 2018, it is found that a genetic progress of 8 kg could be obtained in one generation.

For the weight at 200 days it can also be said that it registered a decrease in 2017 and an increase in 2018, 244.63 kg in 2017 and 268.95 kg in 2018 compared to 249.5 kg (in 2016). Female products weighed less than 200 days at males, but with similar values. In 2017 there was a regression of performance that obviously did not lead to a genetic progress of the generation. Instead, with the values obtained for the products from 2018, it is found that a genetic progress of 36.48 kg could be obtained in one generation.

About the weight at 365 days, it can be said that it registered a decrease in 2017 and an increase in 2018, 393.7 kg (in 2017) and 455.55 kg (in 2018) compared to 395.68 kg (in 2016). Female products weighed 365 days less than males at the same age, but with similar values. In 2017, there was a decline in average performance, which obviously did not lead to genetic progress per generation. In 2018, the performances show that a genetic progress of 238.13 kg could be obtained in one generation.

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