

STUDY ON THE OFFICIAL PERFORMANCE CONTROL FOR MEAT PRODUCTION OF ABERDEEN ANGUS CATTLE BREED IN ROMANIA

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Abstract

It is well known that in order to increase progress on cattle farms it is necessary to monitor animals in order to determinate the genetic quality of animals, by assessing the quantitative and qualitative characters of the animals, estimating breeding values and setting up a database on these aspects. In our country, as a result of favorable factors, such as natural pasture potential, European subsidies, government programs for the purchasing animals, extensive-intensive growth technology systems, the price of bovine meat, population trends towards the consumption of meat obtained in ecological conditions, in Romania were imported a series of specialized breeds for meat production, including Aberdeen Angus, Galloway, Highland, Aubrac, Charolais, Limousin. Thus, in order to expand the database and monitoring the qualitative and quantitative characters of the animals, specific breeding programs to each breed were developed. Regarding the Aberdeen Angus breed, the genealogical register is held by the Aberdeen Angus Association from Sibiu county, which also leads the activity of official performances control on national level. Recordings are made in accordance with legislative framework, in herds of pure breed Aberdeen Angus cattle and also cross-breeding programs with Aberdeen Angus terminal bulls. The control purpose is to record the weights of calves between three and fourteen months old, observing the specific characters of Aberdeen Angus breed and managing all purebred bulls. Data is collected in order to provide farmers with information useful for herd management and raw data for genetic evaluations. Generally, in this paperwork it will be studied the legislative framework, the control technique, the control methods, the national evolution of performances, the stock evolution and the appreciation of the bulls.

Key words: Aberdeen Angus, breeding values, herds, official performance control, Romania.

INTRODUCTION

The evaluation of the main productions of the bovine species is made according to a series of quantitative and qualitative aspects. The tools for improving a population are represented from a general perspective by the official control of performance and by the herd book of the breed (Acatincăi et al., 2004; Georgescu et al., 1998; Velea et al., 2012).

The general objectives pursued by performing official performance control (OPC) are: expanding the selection base, genetic evaluation of animals, optimizing farm management. As for beef cattle, the OPC aim is to achieve the following objectives: expanding the selection base, evaluating animals performances, estimating breeding values, developing the database, optimizing farm management (Ivancia et al., 2007; Maciuc et al., 2006; www.anarz.eu).

Applying of genetic techniques and the use of advanced technologies to monitor animal

performances, classical animal husbandry is becoming a precision one, that allows the staff involved in the field to record large sets of information on animal welfare, economic efficiency of the farm, social trends or resource efficiency. (Orey et al., 2008).

The Aberdeen Angus breed was imported in Romania at the end of 2008, in Sibiu county when about 120 heifers were imported from Germany (www.karpaten-meat.com).

Due to a combination of favorable factors such as the natural grazing potential of the country, national and European subsidies programs, government programs for the purchase of purebred animals, extensive-intensive breeding technology, the price of meat per kg, population trends towards consumption of meat from animals raised in ecological conditions (Gociman et al., 2019).

The manner of carrying out the official control of performances of the beef cattle on national

level is carried out in accordance with a set of national, European and international laws:

- O.M. 19 from 2006, looking the rules for the assessment of breeding bovines;
- O.M. 619 from 2015, eligibility criteria, specific conditions and how the payment schemes conditions and how the payment schemes are implemented;
- Aberdeen Angus Breeding Program in Romania, chapter 8, page 20;
- E.U. regulation 1012/2016, zootechnical and genealogical conditions applicable to the breeding of pure breed animals;
- ICAR (International Committee of Animal Recording), Guidelines for Beef Cattle Production Recording.

MATERIALS AND METHODS

In accordance with the specific legislative framework, the activity of OPC it can be performed by three specific methods: Method A, all checks are carried out by an official representative of an accredited association to carry out official performance monitoring for meat production (figure 1); Method B, all checks are carried out by the breeder or his representative; Method C, all checks shall be carried out by the breeder or his representative and by a representative of the accredited inspection association.

At the Aberdeen Angus breed, OPC is coordinated by the Romanian Aberdeen Angus Association, which at the beginning of 2022 has in control about 1253 farms, as well as by three other companies accredited by ANZ for this activity, which have in control about 44 farms. Due to the infrastructure conditions, the 100% applied method is represented by method A - all controls are performed by an official representative of an accredited association to perform the official performance control for meat production. In order to carry out the control, the accredited association has, according to the law, specialized technical personnel, respectively zootechnical engineer and equipment for weighing and restraint of animals approved metrologically annually by the National Institute of Metrology.

In order to carry out the official performance control, the department responsible for the association's database must collect, archive,

update and manage the information coming from the farmers, notifying all the events on the farm, through a set of specific documents, respectively: Annex 3 (artificial breeding / seeding), Annex 4 (embryo transfer) Annex 8 (calf registration), Annex 10 (outputs / inputs). Hierarchically, this activity is followed by the actual activity of the OPC, through which the zonal responsible controller generates the control bulletins at the farms to which he is going to go (Gociman et al., 2018; www.aberdeenangus.ro).



Figure 1. Method A of OPC

At the national level OPC on Aberdeen Angus cattle it is carried out on two type of farms, the suckler herds from birth to weaning and on finishing farms. In this sense, three types of weighing are performed, systematized according to the age of the verified young bovine:

- Weight at 7 months (G200) - minimum age 90 days - maximum 250 days;
- Weight at 10 months (G300) - minimum age 251 days - maximum 319 days;
- Weight at 12 months (G365) - minimum age 320 days - maximum 410 days.

The categories of animals weight are young calves, both males and females of both with the age between 90 and 410 days, and the interval between two consecutive weighing has a minimum value of 60 days and a maximum of 210 days.

The calculation of performance involves in the first stage the determination of a weight at a reference age and then the calculation of the average daily gain according to the reference weight (www.icar.org).

Calculation method in suckler herds from birth to weaning

$$A.D.G. = (WW - BW) * 1000 / AW$$

A.D.G. – average daily gain

WW – live weight at weaning

BW – birth weight

AW – age of weaning

Calculation method in finishing herds after weaning to slaughter

$$A.D.G. = (W_{n-1} - W_n) * 1000 / (A_{n-1} - A_n)$$

A_{n-1} – age at weight recording *n-1*

A_n – age at weight recording *n*

W_{n-1} – live weight at weight recording *n-1*

W_n – live weight at weight recording *n*

With the outsourcing of the herdbooks by ANZ (National Agency for Animal Husbandry), the monitoring activity as well as the analysis of the breed and possibilities of amelioration, became the responsibility of the Romanian Aberdeen Angus Association, based in Sibiu, which was accredited on 11/18/2015, as the leader of the herdbook of the breed at the national level.

Through the assumed responsibility, they resorted to the development of a computer software for the centralization, storage and evaluation of specific data such as: information about farms, animals, performances, controls, breeding values, etc. The activity was initially carried out on the computer software provided by the state institutions called SICASA, and later, out of the desire to be able to develop the software, they transferred the activity to a new software called BIDAA (Informatic Database of Aberdeen Angus).

The OPC in beef cattle involves the weighing of cattle by an approved association, the calculation of the evolution of their performances at different youth ages, as well as the genetic evaluation of cattle according to the evolution of the average daily gain at different ages (Gociman et al., 2020).

Scales used to determine weight meet the following conditions: ensure the welfare and safety of animals, ensure safety in transport, ensure the contention of animals, checked metrologically annually, have a minimum limit (0 kg) and an upper limit (1500 kg), are disinfected daily.

In order to achieve the specific objectives of the Romanian Aberdeen Angus Association, the aim is to achieve technical coefficients at

national level for a maximum period of 15 years according to the Aberdeen Angus Breeding Program in Romania (table 1).

In order to observe the influence of the official performance control on the Aberdeen Angus cattle population at national level or analyzed the following parameters: evolution of farms in the OPC, evolution of the herds in the OPC, average weight at calving, average weight at 7 months, average weight at 10 months, average weight at 12 months, average daily gain at 7 months, the average daily gain at 10 months, the average daily gain at 12 months.

The period in which the data for this study will be analyzed will be between 2018-2021.

Table 1. Technical parameters of the Aberdeen Angus breeding program in Romania

Specification	Unit	Value
B.W.	Kg	35
G7 months (200 days) - heifers	Kg	220
G7 months (200 days) - males	Kg	260
G10 months (300 days)	Kg	410
G12 months (265 days)	Kg	490
A.D.G. 7 months (200 days) - heifers	g	900
A.D.G. 7 months (200 days) - males	g	1000
A.D.G. 10 months (300 days)	g	1000
A.D.G. 12 months (365 days)	g	1200

RESULTS AND DISCUSSIONS

At the national level, the official performances control activity for meat production at Aberdeen Angus cattle, at the beginning of the year 2022 is carried out in proportion of 96.6% by the Romanian Aberdeen Angus Association, the remaining 3.4% being carried out by other three associations accredited by ANZ for performing this activity.

Romanian Aberdeen Angus Association performs the OPC twice a year in each member farm, according to an annual control schedule. If in 2018 the association operated organized on three zonal routes (figure 2), at present the OPC is performed on six specific routes (figure 3).

According to statistical data provided by the Romanian Aberdeen Angus Association in 2018, they were registered with the OPC a total of 640 farms, 77% of which were under the control of the Romanian Aberdeen Angus

Association. At the beginning of 2022, the same institution records a total of 1297 farms under control, of which a share of 3.4% of farms being verified by other associations (table 2).



Figure 2. Territorial organization of the OPC in 2018

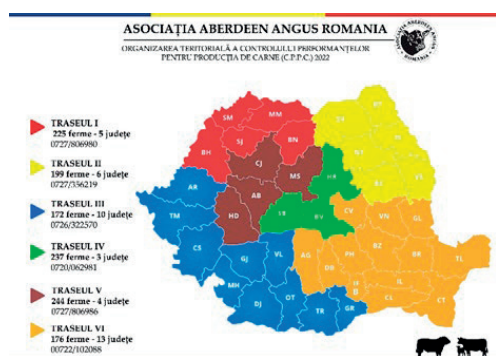


Figure 3. Territorial organization of the OPC in 2022

Table 2. Evolution of the number of farms per year and by associations

Association	Total number of farms / per year				
	2018	2019	2020	2021	2022
AAARO	493	783	869	1110	1253
ANGUS-RO	91	0	0	0	0
SOMEȘ ARIEȘ	5	12	6	12	16
NARCISA	11	17	20	20	20
ARAD	35	5	5	8	8
ACBCR	5	0	0	0	0
TOTAL	640	817	900	1150	1297

Regarding the evolution of Aberdeen Angus cattle stocks at national level, according to the data registered in the genealogical register department of the Romanian Aberdeen Angus Association, at the end of 2015 our country registered a total of 10,276 purebred heads. Since then and until now, the numbers have seen continuous increases reaching the end of 2021, to have at national level only in purebred 59,343 heads (figure 4).

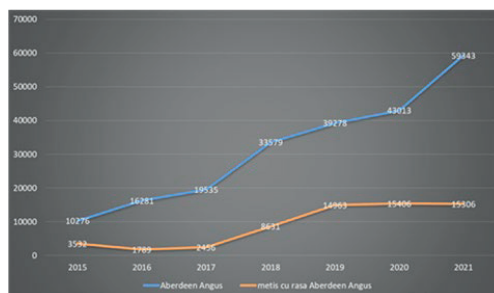


Figure 4. The evolution of Aberdeen Angus cattle in Romania in purebred and crossbreeding programs

Also, according to the data of the same institution, regarding the cross-breeding programs, at the end of 2015 in Romania were registered 3532 heads, while at this moment, respectively at the end of 2021 were registered 15,306 heads (www.bidaa.ro).

The capacity of farms in terms of total heads is also very variable, which is important in terms of increasing the level of technology and intensification. It is obvious that farms with more than 40 heads have a much greater capacity to increase the level of technology of all the factors involved in determining the level of economic profitability.

Also, that farms with a herd of 10-30 heads have a share of 40% nationally, over time at the opposite pole are the farms that have in the total structure of the herd over 100 heads with a national share of 16% (figure 5).

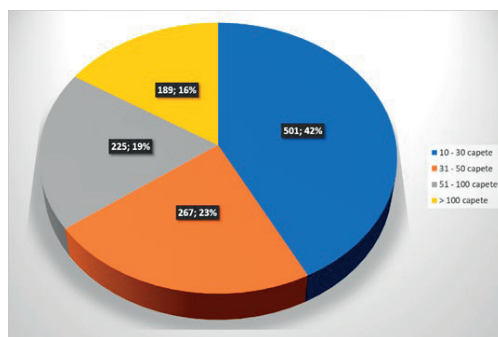


Figure 5. Share of farms at national level according to total number of heads by farm

In terms of the total number actually weighed at the end of 2018, about 9,859 heads were weighed, compared to the following years when the numbers reached 19,135 in 2019 and about 29,934 heads at the end of 2021. Regarding the

parameters of achieved by analyzing the data recorded at the OPC during the years 2018, 2019, 2020 and 2021 a number of conclusions regarding the evolution of the breed at national level can be drawn (table 3).

Table 3. Evolution of average weight and daily gain per years

Specification	Unit	2018	2019	2020	2021
B.W.	kg	28	29	30	30
G7	kg	208	208	214	215
G10	kg	278	278	281	280
G12	kg	327	315	311	313
A.D.G. G7	g	892	887	917	929
A.D.G. G10	g	816	828	880	834
A.D.G. G12	g	791	780	770	775

Thus, from 2018 to 2021, a continuous increase in average weight and daily gain at the age of 7 months, from 208 to 215 kg, respectively from 892 to 929 grams / day. And in the case of the 10 months category, an increase in both weight and daily gain from 816 to 834 grams / day. The 12 months category is the one that has a continuous decrease from 791 to 775 grams / day, a fact which is influenced by certain technological factors such as: age at weaning, method of weaning, weight at weaning date, allotment, feeding before and after weaning.

CONCLUSIONS

The results of the investigation show us the strengths of this sector respectively: the number heads at national had increase constantly which is favorable for future selection work and in terms of performances we also observe a continuous evolution which approaches to the standards set by the breeding program of Aberdeen Angus breed at national level. In conclusion, we can say that due to the high standard of living, the constantly growing population, as well as the consumer preferences for high quality animal food, it is unanimously necessary to raise beef cattle, as the demand at European level is increasing and growth opportunities in other European countries are

low, which puts Romania in a favorable position for developing this activity. Thus, in order to achieve these goals is unanimously necessary to constantly monitor the evolution of animal performance through this activity of OPC.

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