“ION IONESCU DE LA BRAD” UNIVERSITY OF AGRICULTURAL SCIENCE AND VETERINARY MEDICINE FROM IAŞI
DOCTORAL SCHOOL OF AGRONOMIE, HORTICULTURE AND ANIMAL SCIENCE
FIELD: **ANIMAL SCIENCE**
SPECIALIZATION: **GENETICS AND IMPROVING THE ANIMALS**

Eng. DASCĂLU Dan - Lucian

CONSERVATION OF GREY STEPPE BREED IN ROMANIA

Scientific Leadership:
Prof.univ.Dr. Ştefil CREANGĂ

IAŞI, 2014

ABSTRACT

Key words: variability, parameters morpho-productive, genetic, breeding value, genetic structure.

The thesis is divided into two main parts:

- Data from the literature (Chapter I, II and III)
- Owns research (Chapters IV-IX)

Research from the literature describe the formation of this breed in our country current teritory, documentary attestations and the importance of the Grey Steppe breed agrarian economy of our country.

The study continues with description of morphological parameters, productive and genetic of the race, with reference data since the interwar period to the present.

Also the issue of conservation is studied of breeds of cattle worldwide, regional (by describing and highlight conservation work of podolic breeds - races that are part of the same strain as the Grey Steppe breed) and locally (by describing the of conservation work which has been applied with regard to the Grey Steppe breed in Romania).

The thesis aims to identify herds of Romanian Grey Steppe breed and variability analysis of the morpho-productive, reproductive and genetics of the breed.

Also was watched production of milk and meat, by specific methods of analysis, to a nucleus of Grey Steppe breed.

Was analyzed genetic structure, the degree of relatedness and kinship to the main parameters of genetic conservation program.

The research was conducted in the following units:

- Research and Development Station for Cattle Breeding Dancu-Iaşi
- University of Agricultural Sciences and Veterinary Medicine Cluj

- SC 3 Brazi –Zănești farm
- SC Roua-Grup – Ialomița farm
- Individual population households from Neamț and Tulcea county

Biological material studied was represented by 134 animals of Grey Steppe breed grouped in 9 lots: 4 lots in bovine breeding units: SCDCB Dancu Iaşi (38 heads), 3 Brazi farm (12 heads), USAMV Cluj (4 heads), Roua-Grup Ialomiţa (3 heads) and 5 lots in the farms of the population from Neamţ county (Tazlău – 6 heads, Tupilaţi - 7 heads) and Tulcea (Chilia Veche - 39 heads, Letea - 18 heads and Pardina - 7 heads), which have been highlighted inter and intra population variability for morphological parameters productive, reproductive and genetic.

For the study proposed biometric measurements were performed on a total of 9 animals (4 females and 5 males) Grey Steppe breed at birth, 3 months, 6 months, 9 months 12 months and body indices were calculated and growth for each period and for each category of animal, results were statistically interpreted.

Determining the genetic structure, degree of relatedness and kinships, to conservation program parameters were made for the 48 Grey Steppe breed females at SCDCB Dancu.

Values of the height to withers has registered variations between 128 and 133.39 cm. At present, following results, this parametre reaching average values by 129.5 cm at S.C.D.C.B. Dancu, 119 cm at U.S.A.M.V. Cluj, 123 cm at Roua-Grup, 123 cm and 119.42 cm for cattle from Neamt country, and 120.45 cm, 121.16 cm, 120.35 cm for cattle from Tulcea, being determined a reduction of the value of this feature up to a level situated under the minimum value of data registered by the specialty literature.

The statistical analysis of differences (ANOVA) for this feature is insignificant, both between the values of this feature for animals from bovine breeding units as to private owners.

The horizontal length of the body currently registers average values between 141.99– 157 cm, which are within the variation limits previously reported by the specialty literature, except for the animals from Pardina locality, with body dimensions decreased for this feature (130.85 cm).

Among the specialized units in breeding bovines are not determined statistically significant differences as the horizontal length of the body is concerned, unlike the batches of individual owners, significant difference occurs.

The thoracic perimeter registers average values, by the specialty literature: 167.13 cm (year 1925) and 189 cm (year 2009), at present values of this feature variations between 168.42 cm at Pardina and 194.3 cm at SCDCB Dancu which are higher in comparison to the previously reported variations. The differences being statistically insignificant.

As the body weight is concerned, higher average values are registered, ranging between 393.42–500.3 kg, compared to the previously reported variations, mentioned in the specialty literature (372 kg in 1961 and 415 kg in 1982).

Comparing the levels of milk production realized at gray cattle with those reported by different authors in different periods along time, it was determined that higher values are registered at present, the increases being from 1244 kg milk in 1961 to 2535 kg milk in 2009. This fact shows the productive potential of the breed, which can be improved through better conditions of breeding and feed.

The average percentage of fats shows values comprised between 4.48 and 4.63 % in specialized units with statistically insignificant differences between values and lower values of 4.15 – 4.33 % in the farms of the population, also with statistically insignificant differences between values.

The average percentage of protein shows values of 3.45 – 3.86 % in specialized units (statistically insignificant differences) and 3.36 – 3.62 % (statistically significant differences), for animals from the population.

Grey Steppe breed population is in numerical decline continues, such in 1935 the gray cattle had a proportion of about 57.3 % of the total number of bulls and only 0.6 % in 1977.

Official statistics presented by FAO on the situation numerical strength of Grey Steppe breed indicates that in 1986 there were over 500 animals of this breed, and in 1996 contains only 200 animals.

Concerning this breed structure, it was showed that the population is ranked 8 (0.03%), in pure breed, with a total number of 83 cows in two districts, Iaşi with 59 head (0.19%) and Neamţ with 24 head (0.06%), and in half-breed is ranked 5, with a population of 592 animals (0.33%), localized in the same districts Iaşi and Neamţ.

Nucleus of the Grey Steppe breed that is in genetic conservation at SCDCB Dancu is divided into 10 genetic groups.

Overall analysis of the value of improvement for the amount of milk Grey Steppe breed bulls used for breeding shows that 4 of the 9 bulls are enhancers studied for this purpose (with positive values between 6.87 and 178.71 kg), a bull is indifferent (0 12 kg) and 4 are worsened for quantitative milk production (negative values between -59.14 and -101.93 kg).

Breeding value for morphology, respectively for the height at the withers of the Grey Steppe breed bulls used for breeding indicates that 4 of the 9 bulls are enhancers studied for this purpose (with positive values between 0.74 and 2.88 cm), an indifferent bulls (0.18 cm) and 4 worsened for the height at the withers (negative values between -1.10 and -2.62 cm).

Regarding the weight of the Grey Steppe breed bulls used for breeding analysis shows that 6 of the 9 bulls are enhancers studied for this purpose (with positive values between 3.99 and 19.15 kg) and 3 worsened for (negative values between -2.75 and -48.72 kg).

The research carried out proves a high degree of relatedness between the bulls used at reproduction and their bloodline, wherefrom results that these were repeatedly used for reproduction in the succession of generations. From the total of cows from S.C.D.C.B. Dancu, only 26.61 % present relatedness reports, with an average of 0.17 of the relatedness factor.

Analyzing the frequency of the values of kinship factors within the studied population, it was determined that 22.91 % of the population show values of over 0.1, these being a value of reference in the conservation of endangered breeds, in order to avoid the negative effects of kinship.

Potential breeding value of the nucleus of the Grey Steppe breed from SCDCB Dancu is 2048.59 kg for the amount of milk and 4.59% for fat content , which shows the potential of this breed decreased for all analyzed morpho-productive.

Also for the main morphological indicators analyzed potential improvement value shows: height at withers: 123.73 cm, chest area: 183.65 cm, horizontal length of the trunk: 152.34, while the weight is 513 kg for breeding value.

The paper proves his utility by results and conclusions which can serve to continue of conservation work of Grey Steppe breed.

Variability of morpho-productive characters described in this paper contributes to assess the evolution of the Grey Steppe breed on these indicators over time, the only major study on this.

The demographic study conducted highlighted the situation numeric and percentage of participation of the national livestock breeds.

Genetic research (genetic structure, the improvement of the bulls, the degree of relatedness and inbreeding to, the probable breeding cows) made the nucleus of the Grey Steppe breed from SCDCB Dancu (the largest core in the country) bring their contibuţia knowledge of the current state of this breed and morphological and productive potential of this breed of cattle.