

## MORPHOPRODUCTIVE FEATURES OF THE ROMANIAN GREY STEPPE BREED

*SCDB Dancu Iasi has been efficiently functioning* from the viewpoint of production parameters and economic indices, since it has very good conditions of raising, feeding and exploitation of the members of the Bovidae family, a fact justifying for its hope to occupy an important place in the country in the **preservation of the Romanian Grey Steppe breed**. The healthy economic-financial situation of the unit (according to annex) is a guarantee of the existence of funds necessary for the development of IT and material logistics so as to monitor this population of members of the Bovidae family as well as qualified and specialized personnel able to execute all the selection works related to the preservation of this population.

*SCDB Dancu Iasi has the capacity to correctly register the data in the genealogic register* since it has optimal conditions of selection and reproduction bookkeeping: artificial insemination register, young stock register, milk yield register and a genealogic register for the entire country. Every female has a CERTIFICATE OF ORIGIN AND PRODUCTIVE VALUE FOR MEMBERS OF THE BOVIDAE FAMILY, registered at ANARZ Bucharest and a GENEALOGICAL SHEET. We have also drawn up an INDIVIDUAL SHEET containing: the registration number, origin (mother-father), weight and body measurements by age categories; reproduction data (no. of littering, no. IA, date IAF, the code of the bull used, littering date, the obtained product – sex, registration number, weight at birth); production data (milk yield by normal and total lactations, percentage and quantity of fat and protein). The animals have been taken under the official control of milk yield by UARZ Iasi, in the control system A4 (28 days).

*SCDB Dancu Iasi has a sufficiently large livestock to continue the improvement and preservation programmes for this breed*. At present, there is a population made of 59 heads, out of which 29 are heifers (according to annex).

The Research development station for the bovine growing Dancu-Iasi (SCDB) currently has the most numerous livestock of cows from the Romanian Grey Steppe breed, a breed on the verge of extinction.

At SCDB Dancu, the Romanian Grey Steppe nucleus (the Moldavian variety) was set up in 2002 through purchase from SCDB Margineni, Neamt county, the initial population being made of 20 heads of young females over 12 months and 2 heads of males over 18 months.

This nucleus has been included in a national preservation programme of the breed on the verge of extinction by two methods: “in vivo”, live animals in normal life conditions and “in situ”, embryo preservation. The preservation of this breed shall be made by raising a clean breed so as to establish the gene reserve using breeding diagrams that avoid genetic drift.

*SCDB Dancu Iasi has logistic conditions, qualified personnel that may use the data resulted from the registration of animals' performances so as to carry out the improvement and preservation programmes for the Romanian Grey Steppe breed*.

*SCDB Dancu Iasi has an IT database regarding the features of the Romanian Grey Steppe breed*.

The importance of this nucleus consists in the scientific interest related to the preservation of the genetic patrimony possessed by this breed as well as its special historical role in the formation of improved breeds from our country. Once this breed would disappear, a series of special features such as adaptability, special resistance to sickness, high percentage of milk fat would also disappear.

Due to the fact that this breed grew in the middle of the nature, both in summer and winter, the environment gave it exceptional features such as hardiness, capacity of adaptation and turning to good use the fibrous fodder, health, special resistance to diseases and bad weather. If, from the productive viewpoint, it no longer meets the current requirements, this breed might play in the future a historical, tourist and genetic role (as a valuable gene reservoir), all these being a serious argument to preserve the Romanian Grey Steppe breed. In time we might need to use some characters such as: high content of milk fat, hardiness, adaptability, resistance to diseases, bad weather and traditional raising systems.

The finality of the preservation action is to obtain a distinct population as closer or even identical as possible to the original Romanian Grey Steppe from this part of the country and all the effectuated studies might let us know more deeply the characters specific to this breed.

For 2007, by the research project started, we have the following objectives:

- *Identification of the individuals belonging to the Romanian Grey Steppe breed;*
- *Registration of the existing data for the identified individuals;;*

Activities consisted in the analysis of the Romanian Grey Steppe nucleus from SCDCB Dancu – Iasi, namely the analysis of the individuals from the former raising area of the breed. We have also registered data regarding the origin and we identified the morphological and productive particularities of the breed.

The data obtained so far highlight several aspects:

**Breed origin** - the *Romanian Grey Steppe breed* was formed under the exclusive influence of the natural conditions coming directly from its wild ancestor *Bos Taurus primigenius* and having a common origin with other European breeds (Andalusian, Romagnola, Zamorana, Salers, Podolic, Ukrainian Grey Steppe, etc.).

This breed, raised up to the second half of the 19<sup>th</sup> century in a very large geographic area, lays at the basis of formation of local improved breeds: *Baltata romaneasca*, *Bruna*, *Baltata cu negru romaneasca*. It could be encountered in the entire country, except the mountainous area, under different forms of ecologic varieties.

At present, it may be found in very small populations, isolated and crossbred, in counties: Iasi, Vaslui, Neamt, Bacau, Vrancea, Buzau, Braila, Galati, Arges, Valcea, Olt. Due to the fact that this breed raised in a natural environment both in summer and winter, it presents exceptional features such as hardiness, capacity of adaptation and turning to good use the fibrous fodder, health, special resistance to diseases and bad weather.

From the productive viewpoint, this breed meets the current requirements, and we must preserve this biological source due to the historical, economic and genetic role that it might have in the future in terms of valuable genes.

The formation and evolution of this breed is similar to that of other breeds being tightly connected to the natural environment.

As for the origin of the breeds of members of the Bovidae family and generally of the *Romanian Grey Steppe breed*, three theories stand out: monophyletic, dyphyletic and polyphyletic.

*The monophyletic theory* sustains that the today's members of the Bovidae family come from a single form - *Bos taurus primigenius* (the auroch). This theory is sustained by Bojanus, Herre and Cuver.

Herre (1968) shows that the oldest representative of the members of the Bovidae family is *Bos planifrons*, which lived in India being also encountered in Asia; *Bos primigenius trochoceros* in Europe and *Bos primigenius* in North Africa. The auroch lived in Central and Eastern Europe, including in our country (it was mentioned by Dragos Voda and described by Dimitrie Cantemir in „*Descriptio Moldaviae*” being also represented on the Moldavian coat of arms). **The auroch was a massive animal (125-185 cm), dynamic, strong, with very strong hind legs, solid limbs, and short uniform hair of grayish colour.**

*The dyphyletic theory* sustains that the today's members of the Bovidae family come from two forms: *Bos taurus primigenius* and *Bos taurus brachyceros* or “the Illyrian auroch” (Adametz and Antonius). Researchers showed that it was probably tamed at the same time as the auroch from the north of the Alps or north-western Asia and disappeared before the auroch. **It is small (110-115 cm), fine skeleton, small head with prominent cranial outlines, crown-shaped small horns, large forehead, thin neck, fine limbs and grayish colour.**

The *Romanian Grey Steppe* is thought to have derived from the auroch and the other European breeds from the Illyrian auroch.

*The polyphyletic theory* admits the existence of six wild original forms from where other four derive, such as the Swiss *Baltata*, *Pinzgau*, the hornless members of the Bovidae family from northern Europe and the south-east of Russia. The members of the Bovidae family may be found on all continents thriving in temperate areas with warm and moist climate.

**The formation and spreading of the Romanian Grey Steppe** occurred in the general formation framework by taming the wild forms of the animals on the globe. Following some researches, G.K Constantinescu reached the conclusion that the taming and spreading of animals took place in several points and not in just one place; thus we may consider an Asian-European domestication center, an Indochinese nucleus, an African and an American center.

In Europe and northern Asia, people domesticated species such as the rein, the dog, the ox, the goat, the pig and the horse. In south-east Asia, the Indochinese area, they domesticated the buffalo, the zebu, the camel, the yak, the hen, the peacock and the pheasant. In Africa they domesticated the donkey, the cat and the guinea-hen and in America the lama, the alpaca, the guinea-pig and the turkey. The horse and the ox did not exist in America at the moment of its discovery by Columbus and they were brought by the Europeans.

Studies reveal that between 6000-2000 B.C., they domesticated the sheep, the goat, the ox and the pig, the process being long and continuous for other animal species.

*The consequences of domestication* may be seen in the modifications suffered by the animals, modifications that were diverse and extremely various and differentiate the domestic animals from the wild ones from which they derived.

Modifications influence both the morphological and physiological characters (body conformation, waist, skeleton, hair, colour or certain body parts such as head, withers, tail etc).

The colour of the domestic animals is one of the features having a very high variability by the change of life style, and by domestication pigmentations at skin level appeared. Some theories say that the wild ox and the wild horse had initially the same colour. Modifications occurred in two different directions: either the disappearance of the colour or its intensification. Albino spots appeared frequently alternating with more

intensely coloured areas and so the variegated colours appeared. It was also noticed that not all species suffered modifications to the same extent by domestication, the most obvious ones being the horse, the ox and the rabbit.

The physiological modifications produced by domestication consist in the reduction of animals' resistance as compared to the wild ones, the diminution of fecundity and the loss of agility specific to the breed. The conservation instinct was also modified becoming weaker and the genesic instinct became permanent. Otherwise, mutations are continuous processes for the domestic animals and the wild ones and there is also the reverse phenomenon of the already domesticated animals that get wild again and return to their wild life.

The livestock of members of the Bovidae family represents 56.3% from all bovines having the largest share on earth. It is the breed contributing to the peoples' supply with food of animal origin.

**Formation and spreading of the Grey steppe in Romania** – The Grey Steppe cow occupies entirely the Former Kingdom. It could also be found in Bessarabia, especially in the center of this province, in the north and south its number being low due to the crossbreeding with animals from other breeds, such as Simmental (in the north) and Schwitz (in the south).

Looking at several representative moments from the evolution of the members of the Bovidae family livestock from our country, we may notice that in the census from 1955 almost half (47 %) from the members of the Bovidae family livestock belonged to the Grey Steppe breed, 32 % to Bălțată românească breed, 6 % Brună and Roșie dobrogeană the breeds and Pinzgau breed represented 9 %. Today, 50 years later, four basic breeds stand out: Bălțată românească – 37 %, Brună – 26 %, Bălțată cu negru românească – 35 % and Pinzgau with crossbreeds – 2 %. The first three breeds are populations with a normal status whereas the Pinzgau and Grey Steppe livestock have entered the category of vulnerable populations due to their continuous annual numeric decrease.

In Transylvania, the Grey Steppe individuals could be found in the center and west of the province, but in almost all regions breeders practiced crossbreeding with other species of the members of the Bovidae family.

In Banat and Bukovina, the Grey Steppe individuals were completely replaced by other breeds.

Diversification of the members of the Bovidae family occurred so strongly in time that they felt the need for a systematization of the existing breeds and started classifying them according to different criteria.

**Classification of the members of the Bovidae family breeds** according to partial or unique criteria did not have good results since the economic criterion was mostly used:

- *unimproved breeds* : Grey Steppe, Vaca de Munte
- *mixed breeds, variegated in yellow*: Siemmental, Baltata romaneasca, Baltata germana, Baltata austriaca
- *brown mixed breeds* : Schwyz, Bruna de Maramures, Bruna austriaca, Bruna germana
- *Holstein-Friesian breed*: Dutch Friesian, Danish Friesian, Holstein
- *Pinzgau breed and Vaca de Dorna*
- *Red breeds and Jersey breed*: Dobrudjan red members of the Bovidae family, Red Steppe, Danish Red
- *breeds for meat production*: Hereford, Aberdeen-Angus, Charolaise

The Grey Steppe breed belonging to the primigenius type has several varieties: Moldavian variety, bucsana variety, Transylvanian variety, Ialomita variety, Askeri variety.

#### **Morphologic and productive features of the Grey Steppe members of the Bovidae family**

*Conformation* is that specific to the animal for milk, the mammary gland being small and covered with rough quite long hair.

*Waist*: the animals from this breed are usually tall.

*The head* is elongated, fine with a linear profile sometimes slightly convex especially in bulls and they have horns more developed than the females.

The usually long *horns* have variable shapes, more frequently lyre-shaped. In rare cases, the horns are horizontal or backwards oriented. Ears are proportional in size and nicely worn.

*The hindquarters* are long; the chest is a little sharp having a proportional croup, generally oblique, the forequarters being more developed than the hindquarters, the buttocks are concave and the muscles in this region are little developed. In bulls, fat deposits in larger quantities on the superior sideways. In the animals well taken care of, the body is nicely covered in muscles.

*Colour* varies, sometimes it is black, white or intermediate between the two, silver, dark grey or light grey, but almost all cases have a darker nuance up to black on certain areas of the body, especially at the level of ears, back, head, around the eyes, the area between ears. Sometimes these nuances also spread on other regions such as ribs, sideways and limbs. This situation is more frequently met in bulls. Horns are bicolor, their basis is white with a black spot. Nostrils are black. The animals' head is almost black and the area around the muzzle is lighter. The calves' color is red that will turn into grey around the age of 2 months.

*Limbs* are tall, the bones and tendons are well developed.

*The skin* is quite thick, the hair is thick and one may notice quite long tufts in diverse areas (forehead, between horns).

**The breed's aptitudes** – The Grey Steppe has the aptitudes of the breed for work due to the long resistant limbs, with a large rapid step and a special vivacity, very strong and resilient to long efforts. For these reasons, in the Former Kingdom, the field labour was executed mainly with the bulls from this breed.

**Weight at birth** is small ranging between 20-25 kg, and the weight of an adult reaches 400- 500 kg, in conditions of good care. Thus, we found individuals having at birth 28 kg, variations ranging between 22- 41 kg, and the maximum weight of the adult animals was 515 kg (Popauti Station). The killing out percentage was 51.55 % for bulls and 47.23 %, with an average of 59.8 – 62.22 %. The calves well taken care of may develop quite well almost to the level of the ones from the precocious breeds.

By all its ecologic varieties imposed by the environmental factors from different areas, the Grey Steppe participated to the formation of the current breeds of members of the Bovidae family from Romania representing a valuable material due to the good adaptability and special resistance as well as the combinative capacity in the crossbreeding with other species.

Depending on the spreading areas, the individuals from the Grey Steppe breed have some morphologic and productive particularities.

#### **Morphologic and productive particularities of different varieties of the Grey Steppe breed**

**The Moldavian variety** is considered the most valuable variety of the breed having in the past the largest spreading on the entire surface of Moldavia.

The animals from this variety stand out by their grey colour with different darker or lighter nuances on certain body parts, the pigmentation being more intense on the head, limbs and flanks. In summer, the hair is long whereas in winter it is long and thick. At birth calves are yellow-reddish and after the first molting taking place around the age of 3 months they get the colour characteristic to the breed. The cows' skin is thick with a good density and resistance.

The body conformation is characterized by a relatively long and expressive, well contoured head, the neck is well proportioned with the body and head. The withers are high and narrow, the back and loins are narrow and with little muscles, the croup is narrow at ischia, the sacrum is prominent and roof-shaped, the tail is long and thick, the ribs are slightly arched, the chest is narrow but sufficiently sharp, the udder is small with little glandular tissue and the hairy cover on the udder is abundant. The limbs have well developed regions, strong articulations, and resistant nails with numerous leg weaknesses.

The built of this variety is predominantly robust – compact, and the temperament is quite dynamic. In terms of physiologic aspect, the respiratory type predominates.

The body development of the cows from this variety situates them among the medium size members of the Bovidae family with average values of: - 128.14 cm - withers height; - 151.14 cm – oblique length of body; - 173.62 cm – thorax perimeter ; - 29.06 cm – croup width at ischia;

The average body weight of the animals from this variety is 415 Kg, the bulls reaching weights between 650-850 Kg.

At birth, calves weigh 27-30 Kg, with a daily weight gain between 500-700 g, meaning an average body weight of 140-160 Kg at 6 months and 260-280 Kg at one year.

The aptitudes for meat production do not meet the current requirements due to the weak development of muscles, the reduced body weight, the killing out percentage of 45-50%, the carcass quality inferior to other breeds and the quite large consumption of food.

The annual milk yield is 800-1200 Kg, but it may also reach 2000 Kg, the individual record being 4500 Kg. The milk fat percentage varies between 3.8 – 4.5, the average being 4.2 since lactation is shorter as compared to other improved breeds.

The Moldavian variety was well appreciated for draught due to the development of bones and articulations as well as the general resistance of the body.

This variety of the breed was considered as being very well adapted to the less favorable raising conditions since it turns to good account the fibrous fodder from the area and is resistant to different diseases; in exchange the productive capacities are low. At present, it is no longer raised in the pure breed.

The specialized literature presents numerous data related to the values of different morphologic parameters registered for the Grey Steppe members of the Bovidae family (tab. 1)

Table 1

**Morphologic parameters registered for the Grey Steppe members of the Bovidae family from the Moldavian variety (according to different authors)**

Specification	According to different authors		
	FILIP and MANOLESCU	DUMITRESCU	TURCAN
Withers height	141	128	131.0
Ischia height	139	126.6	130.5
Croup height	143	132.9	134.47
Chest width			42.12
Thorax width		34.2	38.9
Thorax height		66.9	69.5
Thorax perimeter	208	172.7	180.1
Croup length	52	49.5	50.29
Croup width	57	48.5	49.92
Width of coxofemural articulation	48	41.9	40.9
Ischia width	24	27.6	29.5
Body length	184	151.9	153.0
Head length		49.5	49.0
Forehead length	23	16.5	22.0
Forehead width		18.6	18.9
Shinbone perimeter		17.0	17.3
Horn length	35	40.2	

**Bucșana variety** – Within the Moldavian variety, we described *bucșan* type which was frequently encountered in the Moldavian area as well as other areas such as: Walachia, Oltenia and even Bessarabia.

This variety is characterized by a smaller waist, a shorter head, a larger forehead, a bigger body more developed and harmonious, larger hindquarters, the croup and buttocks more muscular, shorter limbs and more developed muscles than the average of the variety, a darker grey colour and with better aptitudes for the meat production than for milk.

The colour is that of a wild pigeon. At extremities, the colour is darker.

These animals are raised for meat, their killing out percentage being better than that of the Moldavian variety; in terms of milk, there are no differences between the two varieties. As labour animals, they are very resistant, their hindquarters being well developed and the thorax capacity is large.

**Bessarabian variety** – These animals were considered by Kulechov as belonging to the Pontic varieties living at south of Ukraine round the Aegean Sea. They are similar to the steppe animals, the Podolic variety, very widely spread in Russia with the difference that they have a smaller waist, they are thicker and less tall. The colour is darker like that of iron. In some studies (Cardache), they appreciate that the animals from this variety belong more to the Moldavian variety. In other studies, it is said they occupy an intermediate place between the Moldavian variety and the Pontic one, closer to the Pontic one but with some features similar to Bucșan variety (G.K. Constantinescu, 1924). It is a more compact type and better for the meat production. It has aptitudes for labour, secondly for meat and finally for milk.

The bones and muscles are much more developed in the Bessarabian variety as compared to the Moldavian one; the colour is clearer than that of Bucșana variety and darker than that of the Moldavian variety.

**Transylvanian variety** – in the 19<sup>th</sup> century, it was also called the Hungarian-Transylvanian variety because it could be equally encountered in Hungary and Transylvania.

It is the variety having the largest waist according to Monostori, 155 – 158 cm for cows and 160 cm for bulls. The body shape is dolichomorphous, the animals are thin, vigorous, their head is long, the horns are very long reaching 1.65m and they have resistant nails.

The colour is lighter, clear silver up to white.

The aptitude for work stays on the first level followed by the aptitude for meat whereas the aptitude for milk is almost inexistent, the calves being most times fed with integral milk.

Before the war, many breeders tried to make their animals have a certain level of precociousness achieving this by an abundant feeding. This improvement manner was good for the meat production but has as a consequence a reduction of the aptitudes for draught. After the war, the large herds of steppe cattle were decimated and they could be found only to the small breeders who exploited their work.

The measurements effectuated on the members of the Bovidae family from this variety highlighted the following values of the morphological features characteristic to the analyzed type (tab. 2).

Table 2

**Morphologic parameters registered for the Grey Steppe members of the Bovidae family from the Bessarabian variety**  
(according to G.K. Constantinescu, 1924)

Specification	Animal categories subjected to body measurements	
	cows	bulls
Withers height	120.14	140.30
Ischia height	119.00	138.60
Croup height	124.00	143.30
Head length	142.00	158.44
Chest width	34.72	42.40
Thorax width	30.86	51.70
Thorax height	65.70	77.40
Croup width at ilium	46.13	53.77
Croup width at coxofemoral articulation	38.00	47.20
Croup width at ischia	26.14	30.80
Thorax perimeter	167.14	154.90
Shinbone perimeter	15.84	99.94
Head length	46.80	51.88
Forehead length	21.06	24.66
Forehead width	20.00	23.00
Horn length	28.00	32.85
Perimeter of Horn basis	15.10	20.31

The Grey Steppe breed is considered a vulnerable breed on the verge of extinction that is continuously registering numeric decreases due to the fact that it does not resist in the productive competition with the active breeds. For this reason, the breeds on the verge of extinction must make the object of preservation of the genetic fund, an action generally sustained by the state, non-governmental organizations or amateurs. Normally, this process must be supervised by governmental entities and at international level it is supervised by FEZ and FAO.

The Romanian preservation programme must focus on a measure plan referring at:

**1) The risk status** (the normal situation, vulnerable, in danger, extinct, with chances of recovery or not) of all the breeds existing in the country.

**2) Breeds that must be included in the subsidized preservation programme and the invoked argument.** As a rule, they preserve the autochthonous unique breeds that are no longer active or preserved in other country, with a biological, cultural-historical importance etc.

**3) Subsidy to be given for every breed.** This must recover the difference between the profit or loss given by an medium individual from the respective breed and the average profit per capita given by the active breeds.

**4) Preservation method and the number of individuals for which the subsidy is given.** In Romania they practice an in situ preservation – live animals in normal life conditions or in vivo preservation – by embryo preservation. Literature indicates a minimum number of animals recommended for each species (Draganescu, 1975-1979). For mammals, we propose a subsidy for a double or triple number of animals existing in the field. This subsidy must be given only to those breeders abiding by a certain programme of selection and breeding, they recommending the intrafamilial stabilizing selection and the interfamilial breeding.

The autochthonous breeds from every country are generally related to the genetic resources from the neighboring countries. The continuously or recently imported breeds are connected to the genetic resources from the exporting countries. Thus, the use of animals is more or less an internal issue of every country, but the efficient improvement and preservation of the genetic resources requires an international cooperation.

Knowing the relations between its breeds and those from other countries, for Romania it is important to establish cooperation relationships in terms of breed testing, improvement and preservation.

Cooperation is achieved at several levels:

- cooperation for the preservation of the endangered breeds may increase the efficiency of preservation and decrease expenses
- cooperation for the improvement of autochthonous breeds
- cooperation in terms of characterizing, systematizing and cataloguing breeds
- cooperation with companies exporting breeds, hybrids and seminal material.

Romania is interested and it acted for the cooperation with the neighboring countries in the improvement of the endangered breeds and there are dialogues for a larger cooperation so as to achieve a correct management of the genetic resources at national level with the possibility for international cooperation. For this purpose, it is necessary that:

- the agency for the management of genetic resources and their use be well organized
- the preservation of genetic resources receive a material, legislative and moral support from the part of the national coordinator so as to harmonize with the international norms
- a cooperation system among all the national institutions involved in the preservation of biodiversity be created
- affiliation of the non-governmental national organizations for preservation of genetic resources to similar international organization so as to benefit from their material and scientific support.

*SCDB Dancu Iasi has a system for the identification of animals and ascendance registration* by ICAR system (marking) and the keeping of data related to the ascendance in special registers.

*The objectives pursued within the preservation programme of Grey Steppe breed refer to:*

- the numerical increase up to an optimal level of 50 heads of heifers and the application of a breeding diagram that may avoid the genetic drift. At the same time, they will follow that the Grey Steppe gene reserve population should have a minimum size and be genetically stable
- studying the quantitative and qualitative characters specific to this breed (protein polymorphism, blood groups, reproduction and production characters).
- elaboration of models for the management and preservation of the genetic resources for the endangered members of the Bovidae family;
- making a gene reserve for the Grey Steppe breed that will be used in the future improvement programmes of the current breed

*The improvement of the Grey Steppe breed focuses on:*

- a) the selection of the existing livestock to maintain the morphologic features specific to the breed. From the phenotypic viewpoint, the nucleus is made of individuals that fall into two categories:
  - one category represented by thin well developed animals with a conformation specific to the labour animals, dark colour skin, average weight at adult age of 500 kg, waist 128- 130 cm ;
  - the second category represented by light purplish animals of small waist with the conformation specific to milk animals, the average weight at adult age of 410 kg and a waist of 120 cm .

The milk yield per normal lactation ranges between 1400 – 2200 kg of milk with 4.2 – 5 % fat and 3.7 – 4.1 % protein. The selectively applied reform (10%) aims at eliminating from the livestock of the individuals not corresponding phenotypically to the Grey Steppe breed.

The length of lactation ranges between 240 – 305 days, a longer duration as compared to the traditional Grey Steppe (150 – 180 days). This longer lactation is influenced by the modification of the exploitation system going from the extensive one (free stalling on pasture) to permanent stalling. The age at first littering characterizes the nucleus by a weak reproduction precociousness given by the advanced age of the first littering which is, on average, 1360 days. The average interval between litters for the livestock under analysis is 414 days.

b) reproduction

For the insemination of cows and the young females over 18 months, we use frozen seminal material coming from 8 bulls: 79004 – Navod ; 79005 – Naut ; 79006 – Nufar ; 79008 – Namol ; 79009 – Naiv existing at U.A.R.Z. Iasi ; Surafort -1 ; Surafort -2 and Surafort -3 from ANARZ, Bucharest.

*The goals and activities for 2007 year have been fully accomplished.*

**PROJECT MANAGER,  
A/P Creangă Șteofil, Ph.D.**