

PROTECTION AND MANAGEMENT OF ANIMAL GENETIC RESOURCES IN ALBANIA

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Abstract

Livestock is considered as a very important activity in Albania. Its production occupies about 50% of agriculture production structure. At the end of the last century the political system has changed in Albania like in the West Europe. These changes have had a direct reflection on the economy of the country, bringing it to a total transformation. This was an opportunity for the creation and development of new business in agricultural sector. Consequently the state farms were replaced by about 350.000 individual farms. About 290.000 farms are livestock farms. Livestock private businesses are exposed from the risk and competition, which makes their economic activity difficult. Productivity and quality of production remain the most important elements in livestock sector. In this context, protection and management of animal genetic resources (local races) have a very important role. In this paper we will try to treat the problems of the National Action Plan for protection and management of these local races, like an important document for sustainable development. Implementation of this plan is a complex process and involves public institutions, policy-makers, academic staff and the farmers themselves.

Key words: animal genetic resources, livestock, farmer, sustainable development, national action plan, animal races

INTRODUCTION

Albania is one of the post-communist countries that began the path toward a market economy at the end of last century. Moving from an economic model to another is associated with a wide range of problems which were met in all the sectors of the Albanian economy, including agriculture and livestock sector.

As a result of the privatization of the economy small size farms were created with an average of 1.2 ha. of agricultural land, with flocks of 20-50 heads of small animals or farms composed from 10-50 milk cows. These small farms face a large number of problems of economic and technological character but also they suffer as well fierce competition in the market which is growing day by day.

Under these conditions, farmers are increasingly interested in introducing new techniques and technologies in manufacturing in particular animal breeds with high production potential.

Moreover these conditions have led in neglecting races, ecotypes of the local

populations of farm animals, impinging biodiversity in these animals. This is a very serious problem, considering the fact that 80% of farms in Albania deal with livestock breeding.

The demand for increasing livestock production for each unit of invested input is one of the underlying factors that cause the replacement of local breeds' populations of farm animals with improved breeds. This replacement is one of the main causes of reduction of biodiversity in farm animals and the extinction of the local population of breeds with the improved ones. In the global level, current rates of this extinction are in threatening boundaries. According to FAO, it is estimated that currently in every month in the world, disappears a race, among farm animals.

Albania is classified in the group of countries with insufficient capacity to sustain the local genetic fund of farm animals. At the same time, Albania is a country where the level of genetic erosion in local breeds and populations is at high risk levels. Rates for

replacement of local breeds and the populations of the new breeds are quite high, while the measures for monitoring and reporting of this phenomenon are at insignificant levels.

Under these conditions preservation and development of biodiversity is an important commitment as well as big issue. Consequently this activity exceeds the size of individual commitment of farmers for several reasons:

1. It is an activity where a number of factors are combined such as technical, biological, economic etc.
2. Albanian farm itself does not have the necessary technical capacity to meet such activity
3. It is a problem that has an extension beyond the farm boundaries.

In order to prevent the phenomenon of genetic erosion and loss of diversity was drafted the National Action Plan, for the preservation and sustainable economic use of some breeds/local populations of farm animals, who are at high risk of extinction, in Albania.

This is a very important activity initiated under the present conditions which livestock is, as well as the lack of opportunities by the farmer side. The problem of the conservation of races or local populations is a process that takes time and requires considerable financial resources, this is why as a problem arises at a national levels for solutions.

The main objectives of this National Action Plan are:

1. The submission of livestock development level in Albania

2. Identification of the main factors that condition the importance and necessity of preservation and development of biodiversity on farms oriented in livestock.
3. Identification of the entire necessity of technical operations, scientific, economic, legislative necessary for the fulfillment of a long-term program for the preservation and use of genetic resources on animals.

MATERIAL AND METHOD

- It is analyzed the whole situation of livestock production sector in Albania by reference to statistical data of state and private institutions in the country.
- Are carefully analyzed all the studies conducted for the problems of biodiversity in farm animals by Research Institutions of Agriculture System as well as those of Agricultural University of Tirana.
- Are carried out direct observations in many livestock farms in the country analyzing the structure of farm livestock breeds that are bred, manufacturing capabilities, production standards, etc.
- Specific data have been taken for some of the indigenous breeds which are considered in risk in Albania and are analyzed their chances of preservation in farm conditions.
- To assess the level of risk of extinction, for a race / population of farm animals have been used the criteria recommended by FAO under the tab. No. 1.

Tab. 1 The minimum number of livestock reproductive females in the population [FAO]

Hazard rate	Cattle	Horses	Sheep and Goats	Pigs	Rabbit	Poultry
Very Critical	<150	<300	<300	<100	<100	<100
Critical	250	500	500	200	250	250
At risk	450	900	900	300	500	500
On the eve of danger	750	1500	1500	500	1000	1000
Not in Danger	1500	3000	3000	1000	2500	2500

RESULTS AND DISCUSSIONS

After carefully collecting and analyzing the data and after discussions with all stakeholders, is designed a National Action Plan for

managing resources and preserving genetic resources of animals in Albania. The development of the National Action Plan as mentioned above has passed through a long

process of discussion with farmers, farmer associations groups, public institutions, different levels of policy-makers, academic staff, technicians, as well as all other interest groups'.

Based on the real situation of indigenous breeds of animals in Albania is estimated that a considerable number of them can be classified in "critical" or "very critical" situation.

Some of the key elements of this Action Plan are:

First action

It will begin with the identification of species, races and populations of indigenous animals in the country. This implies the evaluation of population size, trend of development, geographic expansion, the number of farms and their size, production management, production system and evaluates the degree of risk at extinction.

Second Action

Listing of breeds or local populations, in accordance with standards adopted by the FAO, are declared "population at risk of extinction" Evaluation of conditions and factors that contribute to the decline in the farmers' interest for breeding of races / local animal populations declared at risk of extinction and development of programs for the conservation Ex-situ and In-situ.

Third Action

Identification of farmers who may be involved in programs for *In-situ* preservation. This means a careful survey to all farms engaged in breeding of indigenous breeds in Albania and the identification of those which may serve for on-farm preservation of these breeds or indigenous population.

Fourth Action

Provision of funds for the compilation of programs and their implementation. This requires the mobilization of all possible funding sources ranging from state to various donors who are interested in this problem.

In the context of these proposed actions to be taken for the implementation of National Action Plan, the storage methods to be applied are:

1. Foundation of Cryo-National Genetic Bank for the preservation of somatic

cells (somatic cell in Cryogenic Conservation-SCCC) of all indigenous genetic fund of the farm animal

Conservation of somatic cells, it is recommended to be developed as an important component of the Strategy for the conservation of animal genetic resources in countries with insufficient capacity. In this way even in these countries, it becomes possible to establish a genetic reserve which could potentially be used, in the distant future, as the basis for the renewal of indigenous genetic fund. Conservation of somatic cells is realized through a simple biotechnology and with low financial cost. Its implementation is done in a short time and does not require major commitments of the human and the infrastructure.

In these conditions, the development of alternative strategy for the conservation of indigenous genetic fund, which supports the establishment of national genetic bank where will be stored somatic cells of farm animals, is an appropriate option for Albania.

Priorities of the National Genetic Cryo Bank somatic cells:

- somatic cells can be obtained from any species of animals and poultry.
- Collection of samples can be done with a relatively low cost. It can be realized as a national action and can be performed within a short time
- Collection of a large number of samples is possible even in remote areas and in regions with poor infrastructure.
- Manipulation of samples and their storage in liquid nitrogen is a very simple technique and with low cost. During transport, samples should be kept in cooler container
- The establishment of this bank will pass through several stages:

Phase One: Identification of races, ecotypes and / or indigenous populations

Descriptive data for indigenous genetic fund in farm animals are currently available. Several studies have been conducted and the results are published for identification, characterization and classification of this fund.

Phase Two: Collection of samples of somatic cells

Based on information generated during the first phase of the project, then it should be preceded with the setting up groups for sampling. These groups will be instructed about the technique to be used for obtaining samples of somatic cells and the conditions that the animal, from which the sample is taken, must meet. For every one of these groups will be drafted a work plan, in which shall be determined:

- The species, races, ecotypes or local populations that will be part of the program *Ex-situ* preservation *in vitro*.
- The farms in which will be carried out the sampling and the number of heads (male and female) for each farm.
- The time when the sampling will take place.
- Information for all collected samples, which are stored in liquid nitrogen, will be recorded in Data Base.

2. Saving *Ex situ-in vivo* of local populations at risk of extinction

This way of preservation means the creation of some herds which will be stored in the form of living collections *in-vivo* for those populations or races that according to criteria established by the FAO are considered at risk of extinction. The realization of this preservation procedure passes through several stages:

Phase One: Identification of races, ecotypes and/or populations at risk of extinction

Based on the criteria set out by FAO, the National Network for the management of farm animal genetic resources, determines the list of races, ecotypes and / or populations that are classified in "critical" or "very critical" situation. In this list it is necessary to attach the data for the number of farms that breeds these animals, the location of the farms, the total number of heads, the number of male and female reproducer and the farmer's statements about the structure and gender proximity of the animals in the herd that he breeds.

Phase Two: Investment for capacity building necessary for the breeding of collection flocks

In order to preserve the *Ex situ- in vivo* of the genetic indigenous fund, announced at risk of extinction, animal collection flocks will be created and they will be reared in the same environment. Creating flocks collection seeks to follow these steps:

- Determination of species, races, ecotypes and / or population which will be included in the fund of flock collection.
- Determination of the number of heads, male and female, that will form the flock collection
- Determination of the farms from where the animals will be selected for the flock collection
- The purchasing of the animals from private farms
- The compilation of the breeding plan of the flock collection.

3. *In-situ* preservation of indigenous breeds.

This method of preservation consists on determining the races or the populations which will preserve their origin or natural habitat where they are bred for centuries. Practically, this is the way in terms of farm conservation.

Activities that are planned to be performed for the realization of *In-situ* conservation.

- Organization of expeditions for the collection of information that will serve for morph-biological and zootechnical description of the animals.
- Selection of farms, according to the criterion - the size of the flock "not less than 50 to 60 heads"
- Selection of individual males and females who clearly express phenotypic characteristics of the ecotypes.
- Matriculation of animals, the opening of the Ana -graphic register and conception of the database.
- Selection of the male reproducer and the compilation of the natural controlled copulation scheme

- Selection of the new generation, male and female candidates for reproduction, with the objective: the establishment of 10 to 15 male reproductive lines and 40 to 50 families during a 5 year period.
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- Compilation and implementation of the Veterinary Protocol

CONCLUSIONS

In the end, based on the above arguments we may conclude that:

1. Because of the variability of geographical and climate conditions, Albania has a very great diversity in genetic resources of indigenous breeds of agricultural animals.
2. Studies conducted by state and private institutions in the country have shown that some breeds and indigenous populations of agricultural animals in Albania are at high risk for extinction. In these conditions a National Strategy and Action Plan for preserving these species in threat is very urgent.
3. Sustainable development in some areas of the country, in particular in the remote mountainous areas is associated with preservation and breeding of indigenous breeds of animals.
4. Preservation and effective management of animal genetic resources in these areas remain the best option for the

utilization of environmental conditions that characterize these areas.

5. In these conditions, the development of an alternative strategy for the conservation of indigenous genetic fund, which supports the establishment of national genetic bank where will be stored somatic cells of farm animals, is a convenient option for Albania.
6. Appropriate alternatives of preservation which must begin immediately are *Ex situ in vivo* through flocks collection and the preservation *in situ* on farms selected for this a purpose.
7. In all ways of preserving, the main condition remains the accurate identification of races, ecotypes or indigenous animal populations of the farm to be preserved, and the selection of individuals that fully and clearly express the characteristics of race, ecotype or indigenous population.

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