Agrobiodiversity in Southeast Europe - Assessment and Policy Recommendations

REPORT - KOSOVO*

South Eastern Europe SWG RRD Regional Rural Development Standing Working Group

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LIST OF ABBREVIATIONS

ADA	Agriculture Development Agency
AnGR	Animal Genetic Resources
ARDP	Agriculture and Rural Development Programme
EDF	Experimental Didactic Farm
EULEX	EU Mission for Rule of Law in Kosovo*
FAV	Faculty of Agriculture and Veterinary
FVA	Food and Veterinary Agency
GB	Gene Bank
GBK	Gene Bank of Kosovo*
IPA	Instrument for Pre Accession Assistance
IPARD	Instrument for Pre Accession Assistance for Rural Development
KAI	Kosovo* Agriculture Institute
KAMP	Kosovo* Association of Milk Producers
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MEI	Ministry of European Integration
MESP	Ministry of Environment and Spatial Planning
PA	Paying Agency
PGR	Plant Genetic Resources
SDC	Swiss Agency for Development and Cooperation
SEEDNet	South East European Development Network on Plant Genetic Resources
SIDA	Swedish International Development Cooperation Agency
UNMIK	United Nation Mission in Kosovo*
UP	University of Pristina
VCU	Value of Cultivation and Use

FOREWORD
AND ACKNOWLEDGMENTS

The three-year project "Rural Development through Integrated Forest and Water Resource Management in Southeast Europe (LEIWW)" is jointly implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Standing Working Group for Regional Rural Development (SWG RRD).

The project aims to improve the regional capacities for sustainable management of natural resources for the development of rural areas of Southeast European countries: Albania, Bosnia and Herzegovina, Kosovo*, Macedonia, Montenegro and Serbia.

As part of the EU (pre-) accession process, the countries of Southeast Europe (SEE) are committed to the harmonisation of their strategies, policies and legislation with the acquis communautaire of the EU and to build the conditions and capacities for their implementation.

Therefore, one of the main objectives of the LEIWW project is to create preconditions for evidence-based, EU-compliant policy formulation regarding the conservation and sustainable use of genetic resources in agriculture (agrobiodiversity). Agrobiodiversity is essential for the sustainable development of agricultural production, nature conservation and adaptation to climate change, as well as for the welfare of the people living in rural areas.

In line with this objective, evidence-based policy assessments and gap analysis related to agrobiodiversity were performed in a regional process involving leading experts and institutions of all SEE countries and entities aiming to identify priorities and to formulate recommendations for mainstreaming agrobiodiversity in agriculture and rural development policies, strategic plans, programmes and relevant legislations.

On this occasion, SWG and GIZ would like to express our appreciation to the Ministries of Agriculture and Rural Development from the SEE region for their dedication and active contribution to the process.

The appreciation particularly includes the regional coordinators Prof. Sonja Ivanovska and Prof. Sreten Andonov from the Faculty of Agricultural Sciences and Food, St. Cyril and Methodius Universityof Skopje, all participating experts and institutions, as well as the team of international experts from the Environment Agency Austria (Umweltbundesamt, GmbH).

The coordination of the process by Ms. Irena Djimrevska, GIZ and Ms. Katerina Spasovska, SWG, as well as the technical assistance of Ms. Jana Vasilevska, GIZ and Mr. Oliver Pop Arsov, SWG is highly acknowledged.

We would like to thank you all for having contributed to this major work!

On behalf of the SWG Secretariat
Mr. Boban Ilic
Secretary General

On behalf of GIZ LEIWW
Mr. Benjamin Mohr
Team Leader

INTRODUCTION

Southeast European (SEE) countries are rich in agrobiodiversity. Farming systems are built on a broad range of divergent local and autochthonous plant varieties and animal breeds of international importance. In times of ecological and economic pressure the treasure of diversity is at risk, distinction is irreversible and hinders today's and tomorrow's welfare, resilience and adaptive capacity. Strong links between agrobiodiversity, traditional knowledge, cultural diversity and local innovations are evident in the region and are part of its unique and rich character. In contrast to the developed countries, often less rich in agrobiodiversity, but equipped with strong policies for supporting preservation, sustainable use and promotion of genetic resources, Southeast European countries still struggle to establish an adequate framework for conservation and sustainable use of plant and animal genetic resources.

Moreover, the public, political and scientific awareness on the essential role of agrobiodiversity is on very different, mostly low levels, followed by (in-)different legislative, low institutional and financial support. Finally, all countries of SEE are facing two strong factors leading to inevitable loss of the still existing valuable genetic resources in agriculture: aging and migration of the rural population.

Conservation and sustainable use of genetic resources in agriculture are essential for the sustainable development of agricultural production, food security, adaptation to climate change, as well as for the socio-economic development and welfare of rural areas. Strong international governance structures, such as the Convention for Biodiversity (CBD) are in place, while the EU countries developed support mechanisms for safe-guarding agrobiodiversity. The SEE region, however, is lagging behind in defining and implementing support policies for conservation and sustainable use of its -still rich- agrobiodiversity.

National and regional policy assessments and gap analysis have been conducted in a process in ownership of the SEE countries (Albania, Bosnia and Herzegovina, Kosovo*, Macedonia, Montenegro and Serbia) in order to provide recommendations for EU compliant policy development relevant for the conservation and sustainable use of agrobiodiversity.

The assessment focuses on an analysis of the current national legislative and institutional status, trends of agrobiodiversity and its protection in the SEE countries. They also focus on identification of gaps, highlighting the necessary changes, reforms and harmonization of the legal base in respect to the Common Agricultural Policy (CAP), NATURA 2000, EU Biodiversity Strategy and Biodiversity Action Plan for Agriculture, Global Plan of Action for Plant Genetic Resources, Global Plan of Action for Animal Genetic Resources and Convention for Biodiversity (CBD).

Key problems and challenges requiring policy interventions are identified, and policy recommendations that will assist the EU integration process of the candidate and potential candidate countries are formulated and disseminated.

The work has raised awareness regarding the importance of agrobiodiversity in the SEE countries, in particular regarding the incentives for conservation and adding value to agrobiodiversity in order to enhance the rural welfare thus maintaining traditions, passing on the local knowledge and ensuring food security.

The assessments, gap analysis and policy recommendations were prepared by academic experts (one for animal genetic resources and one for plant genetic resources from each of the SEE

countries/entities), in cooperation with representatives of the respective Ministries of Agriculture and Rural Development, and coordinated by a team of experts from the Faculty of Agricultural Sciences and Food at the St. Cyril and Methodius University in Skopje.

Considering that the agrobiodiversity heritage of the SEE countries is without boundaries, shared, or mutually owned, while the EU accession process represents a common framework for the whole region, the issue of agrobiodiversity affects not only the national levels of each SEE country, but also touches upon the aspects of regional coordination and cooperation. Key challenges and reform priorities at regional level are presented in the Regional Synthesis Report prepared by the Environment Agency Austria, in their position as international backstopping institution.

The assessments were performed in the period between June 2017 and April 2018, through a process of research, consultations, peer learning and networking, both on national and regional level. During this period of time, four coordinative regional working meetings of the experts and Ministries were held.

All the information presented here are as of December 2017.

**This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence*

1. SOCIO-ECONOMIC, INSTITUTIONAL AND LEGISLATIVE CONTEXT

1.1. GEOGRAPHICAL AND POLITICAL CONTEXT

The Kosovo* is located in the centre of the continental part of the Balkan Peninsula and is part of the group of Western Balkan countries. Its territory lies between geographical latitudes 41°51' and 43°16'N, and longitudes 19°59' and 21°47', with a total area 10,905.25 km². The Kosovo* shares borders with the Republic of Albania to the southwest, the Republic of Montenegro to the west, the Republic of Macedonia to the southeast, and the Republic of Serbia to the northeast. Kosovo*'s rivers flow into the three seas: the Black Sea, Adriatic and Aegean. The River Nerodime with its bifurcation is a unique case in Europe, because its water flows into both the Black Sea and the Aegean Sea. The Kosovo*'s highest point is Gjeravica at 2,656 m; its lowest is Vërmica at 265 m. Depending on the altitude, Kosovo*'s climate is mountainous, continental and middle continental with the influence from the Adriatic Sea. Minimal and maximal extreme temperatures during the winter and summer reach -20C° and + 38C°, with an average annual precipitation up to 700 mm.

The Kosovo*'s population in 2016 was 1,783,530, living in 38 cities and 1,469 settlements with a population density of 163.50/km2. The average age in 2011 was 30.2 years; the average life expectancy was 76.7 years: 74.1 for males, 79.4 years for females. The ethnic population structure consisted of: Albanians (92.9%) and other minorities: Serbs, Turks, Bosniaks, Roma, Ashkalis, and Egyptians. According to the last population census of 2011, 61.7% live in rural areas, 38.3% live in the urban areas.

Since 12 June 1999 to the present day, Kosovo* is characterised by two periods:

I. Before independence (1999-2008) under the administration of UNMIK, under (UNS/RES/1244) and the provisional authorities of Kosovo*. Kosovo* (as former federal unit of Socialist Federal Republic of Yugoslavia).

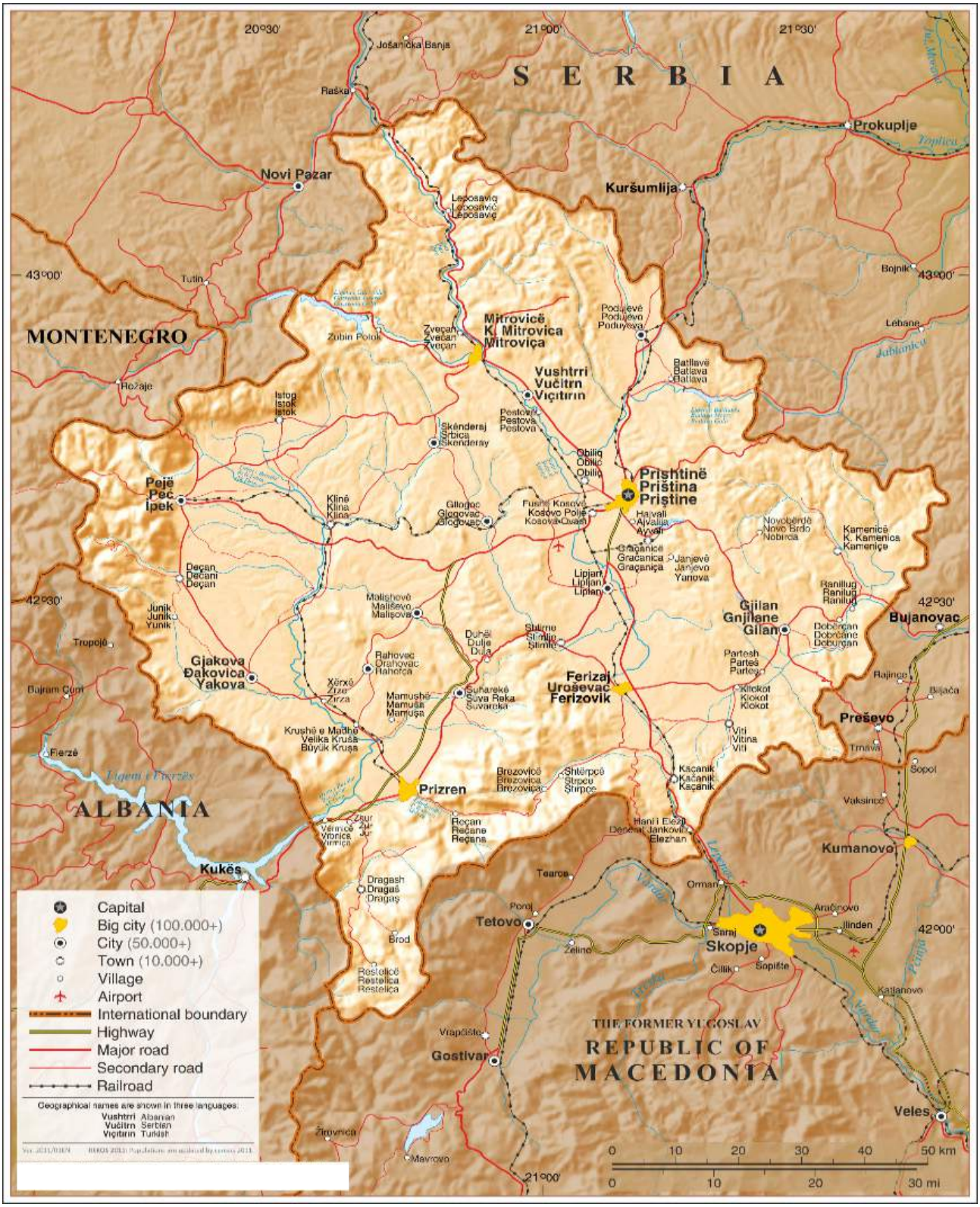
Kosovo* declared its independence on 17 February 2008.

II. The period after independence (2008 and onwards) has been administered by the Institutions of Kosovo*, EULEX and, UNIMK.

During the whole period mentioned above, peace and security in Kosovo* was guaranteed by KFOR under NATO's mandate. NATO has been leading a peace-support operation in Kosovo* since 12 June 1999, supporting wider international efforts to build peace and stability in the area.

Kosovo* is a parliamentary democracy, with separate powers: Assembly, President, Government and Independent Judiciary. Official languages are Albanian and Serbian; Turkish, Bosnian and Romani languages have official status at the municipal level.

Kosovo* is recognised by 114 different countries; however, 5 countries of the European Union (Cyprus, Greece, Romania, Slovakia and Spain) and 2 countries in the region (Serbia and B&H) still did not recognise Kosovo*. Such a situation creates difficulties and obstacles in many economic, social and political aspects in Kosovo*, and lack of availability for development similar to other countries in the region and beyond.



*Map of Kosovo**

GDP for 2010 was €4.4 billion or €2,479 per capita; while the active unemployed population was 40.6%. By 2016, GDP was €5.9 billion or €3,356 per capita, and the unemployment rate fell to 27.5% indicating the country's progress. A rural development programme and direct payments, advisory services and training for farmers and agro-processors are supported by: EC through IPA I, DANIDA, World Bank, and USAID. Agriculture contributes 11% to 12% of the GDP, employs 35% of the population and accounts for 16% of total exports.

Kosovo* has been a Potential Candidate Country, to be part of the EU Integration process since the Zagreb Summit in 2000 when the Stabilisation and Association Process (SAA) for the Western Balkans started. Relations between Kosovo* and the European Union (EU) are co-dependent. Over time, the issue of Kosovo*'s European integration has proven to be less legal and more political in nature.

Agriculture and forestry play an important role in providing employment opportunities for rural residents. The agricultural sector has the influence to improve the trade balance, reduce the unemployment, and improve food security, environmental protection and the life of its citizens in general.

Kosovo* has made reforms in its effort to reduce poverty, unemployment and migration of the population within and outside the country. During 2014 – 2016, the Government and Ministry of Agriculture, Forestry and Rural Development (MAFRD), set the following priorities:

- Increasing the competitiveness of farmers through the restructuring of agricultural farms and agro-processing industry, creating markets, collection centres and the rehabilitating irrigation systems.
- Sustainable use of forests and agricultural land through afforestation of bare areas, creation of cadastre for vineyards and the wine industry, and improving food safety and quality.

Fifteen years after the Zagreb Summit and seven years after Kosovo*'s Declaration of Independence, the European Union, signed its first contractual agreement with Kosovo* on 27 October 2015 – Stabilisation and Association Agreement (SAA). The SAA is a comprehensive agreement. It is a framework for political dialogue and extensive cooperation, including justice and internal affairs, trade, education, employment, energy, the environment and a set of other policy areas. For Kosovo*'s agricultural sector, the SAA requires farmers to be profitable, provide sufficient quality consumer products at affordable prices and encourage the population to continue living in rural areas.

Agriculture, rural development and diversification contribute to the overall economic development of the country and also provide real opportunities to alleviate poverty, create material goods, and generate new jobs and incomes for the welfare of rural residents. Kosovo* has the Strategy for Agriculture and Rural Development (2014-2020), and a programme of support schemes: rural grants and direct payments (subsidies).

The overall strategic objectives for agriculture and rural development for the period (2014-2020) are defined as:

I. Developing the agro-food sector based on competitiveness, innovation, increasing production and productivity, adhering to market demands.
II. Improving quality of life and employment opportunities in rural areas through diversification of activities, social inclusion and provision of training.

III. Protecting natural resources and rural areas through sustainable and efficient use of land and forest management, and through introducing methods of agricultural production for environmental protection.

During 2016, Kosovo* exported goods valued at €309.627 million, while imported goods had a value of €2.789 billion. The high unemployment rate of young people (15-24 years) is an additional problem that leads to migration of a new labour force from rural areas to urban centres and abroad.

Agrobiodiversity has the potential to contribute to the development of rural areas and tourism. Plant and animal genetic resources, especially domestic traditional varieties and breeds, can be used directly for food production and for breeding, as well as for implementing environmentally friendly agriculture.

Priorities:

1. Agrobiodiversity, namely plant and animal genetic resources.
2. Its use in the function of food production.
3. Protection of the environment from degradation.

Politics: rule of law, European integration and visa liberalisation (free movement).

Employment in Kosovo* is generally concentrated in the trade sector (17%), education (13%), public administration (10%) and construction (8%); whereas, in manufacturing works, about 10% of workers. Agriculture and forestry is the most important sector contributing to Kosovo*'s economy. However, in the next period, the agricultural and food sector and relevant institutions should significantly approach the level set out in the EU's Common Agricultural Policy (CAP).

The three main areas – policies, institutions and legislative – that will implement the reforms have an obligation to reduce any negative impacts on the agricultural and rural population during the process of approaching European standards.

Use of Instrument for Pre Accession Aid (IPA)

EU support covers institution building, grant schemes for farmers, and the food processing industry, and support for the NGO sector.

MAFRD uses the IPA project through Kosovo*'s main strategic document, the Agriculture and Rural Development Programme 2014-2020 (ARDP, 2014-2020), supports the agro-food sector competitiveness, alignment with EU veterinary, phytosanitary standards, food safety and environmental standards, as well as its restructuring and modernisation. The ARDP contributes to the development of sustainable land management practices by supporting organic farming and other agro-environmental practices, sustainable forest management and afforestation.

The EU has allocated €645.5 million for Kosovo* under IPA II for the period 2014-2020. It is expected that funding in this period will contribute to the following priority sectors: **Democracy & Governance** – reforming the civil service; more efficient public service delivery; establishing democratic institutions and strengthening the existing democracy. R**ule of Law & Fundamental rights** – strengthening the rule of law; fighting corruption and organised crime, and implementing human rights. **Energy** – reforming the energy sector to tackle major health and environmental problems; ensuring a reliable and sustainable energy supply; greater use of renewable energies; aligning with EU energy law. **Competitiveness & Innovation** – designing and implementing competitiveness policies; providing public services that meet private sector needs. **Education,**

employment & Social policies – improving the functioning of the labour market; raising education standards; promoting skills development; restructuring the social welfare system. **Regional and territorial cooperation** – improving regional and neighbourly relations through Cross Border Cooperation programmes.

Agriculture & Rural Development (IPARD II) – is increasing competitiveness in agriculture and food production, and raising food safety standards; improving living standards in rural communities, and building a climate-resilient rural economy.

IPARD II assistance supports Kosovo* in achieving alignment with the EU acquis, then improving data collection, processing and reporting to all sub-sectors of agriculture and rural development at the MAFRD. Therefore, it also facilitates the improvement of agro-food business operators and producers in the regional and EU market, employment and income generation in the agro-food sector and rural services, development of vocational training, farm management and farm accounting education and adoption of measures to improve resilience to the effects of climate change effects. In this regard, the ARDP follows four priority areas assigned by IPA (EC2014) under which specific measures were identified. For this component under IPA II, for the period 2014-2020, €79.5 million has been allocated for Kosovo*, divided in different amounts per annum. These financial means are dedicated for three measures of investment grants:

1. Investments in physical assets in agricultural holdings (measure 101),
2. Investments in physical assets in agro-processing industry (measure 103), and
3. Diversification of farms and business development (measure 302).

1.2. AGRICULTURAL PRODUCTION

The total area of Kosovo* is 1.09 million hectares, out of which 53% is agricultural land and 41% is forest. The total area of land used in Kosovo* is 512,000 ha, with an average of 3.9 ha of land per agricultural household.

In 2015, the total used area of agricultural land was 410,427 ha, of which more than half is meadows and pastures with 216,481 ha or 52.7% (Graph 1 - Annex 1). Such areas represent an excellent basis for providing feed for the existing animal stock. It is used fresh for livestock during the growing season and dry during the winter season.

Cereals - are of particular importance in providing food and feed. In 2015, 134,886 ha, in total, were cultivated with cereals. Crops, areas and quantity produced are presented in Table 1 of Annex 1.

Based on the sown areas and annual production quantity, wheat is the most important cereal as raw material for grains and food industries, but it also contributes to the local economy. Maize is mainly cultivated for silage, less for grains, due to summer drought. The areas planted with maize two decades ago compared to those planted now, are reduced by 60%. Barley is cultivated as raw material for the beer industry in Peja. Rye and oats are cultivated in high altitude areas for livestock feed.

Vegetables - are very important plants, and are cultivated for grains, fruits, tubers and leaves. In Kosovo*, a total of 14,642 ha were planted with vegetables in 2015, while the areas and production by specific crop are presented in Table 2 of Annex 1.

Potato cultivation has reached its highest production in Kosovo*, is used in households and as raw

material for the processing industry. Potato processing has been transformed into a food industry. Its products are exported overseas. Peppers, cucumbers and tomatoes are important both as fresh produce and as raw material for processing in the food industry. Cucumbers, cabbages and onions have an approximate output of 13,000 to 17,000 metric tons/year.

Fruits and Vineyards – The total area of planted orchards in 2015 marks an increase of 16%, compared to 2014. In 2015, the area planted with fruit was 7,998 ha, dominated by crops like apples with 1,972 ha, plums with 1,518 ha, followed by other crops such as strawberries, raspberries, etc.

Industrial crops (sunflower, rape-seed, sugar-beet and tobacco) - once were cultivated in an area of 28,192 ha. The transformation of the socio-economic system, privatisation without criteria of industrial facilities (for oil, sugar and tobacco processing) directly led to a complete removal of industrial crops from production.

The total value of agricultural production in 2015 was €629.7 million, i.e. the value of plant products was €350.7 million and of livestock production was €278.9 million. From total production, vegetables and garden products participated with 30.5%, cereals with 25.5%, forage crops with 20.4%, fruits with 15.8%, potatoes with 6.6%, and 1.2% are shared by other plants. In general, plant and livestock production in 2015 increased by 7.9% compared with 2014. The increase of plant production value in 2015, compared with 2014, based on the increase of vegetables and garden products at 29.1%, forage plants at 6.5% and fruits at 1.1%. Entrepreneurial farm incomes in 2015 were 12.2% higher than in 2014.

The contribution of the agricultural sector in the Gross Domestic Product (GDP) is nearly 12%, while agricultural products account for about 16% of total exports. The agricultural sector provides about 25% of total employment, mainly in the non-formal sector.

Livestock production - has a high economic importance in the agricultural sector, also promoting other agricultural sectors like plant production, processing industry, etc. The average output generated from animal production was €278.9 million in 2015. Milk is the most important livestock product with a value of €132.6 million, followed by meat and eggs. Livestock production increased by 7.7% in 2015 compared to 2014.

Based on MAFRD data, the largest part of the livestock sector is cattle production (approx. 59%), followed by the small ruminant livestock sector (goats and sheep) with 28%. Poultry and pig production have fewer shares. According to MAFRD data in Kosovo*, there are around 151,000 milking cows or 52% of the cattle fund (2015). The predominant size of cow dairy farms is five - nine heads, which comprise most cows in milk production (72%). Farms with five and over five heads of milking cows are the main suppliers of the processing industry with raw milk. The domestic milk production of Kosovo* is 381,896 tons which means a yield of 2,520 litres of milk per head. The major part (49%) of milk is used on farms for consumption or for feeding calves covering the needs of the household. Another large part (41%) is sold in green markets and only 10% is processed.

Cattle breeding is the main source of meat production. About 127,449 head of cattle are slaughtered each year in Kosovo*, out of which 112,294 (88%) are calves and 15,155 or 12% are cows released from milk production. 28,832.55 tons of cattle meat is produced each year. Most livestock production is done in an extensive way in rural households. Semi-commercial and commercial farms have a more intensive livestock production with higher quality animal breeds. Apart from cattle, small ruminants (sheep and goats) have economic importance as well. The poultry sector has started to increase production. The livestock sector shows an emerging production trend for cattle, pigs and sheep, while the number of goats and horses are declining. Other livestock sub-sectors in Kosovo* are aquaculture and beekeeping.

1.3. INSTITUTIONAL AND ADMINISTRATIVE SET UP

Governmental institutions

Kosovo* as a new state, for political reasons, is not yet a signatory party of any convention or agreement in the field of nature protection, and has no obligations. The state of agrobiodiversity in Kosovo* is closely related to the organisation of the state institutions in an administrative aspect. There are two ministries that, according to legal obligations, directly relate to agrobiodiversity.

The Ministry of Environment and Spatial Planning (MESP) is responsible for the protection of nature and biodiversity, the preservation and sustainable use of natural heritage, without legal obligation to Conventional Biological Diversity (CBD), and other agreements. MESP, in its structure, has nine departments, three institutes, one agency and 15 different divisions, but four departments and one institute are directly related to nature protection.

The MESP has drafted a Strategy and Action Plan for Biodiversity (SAPB) for the period 2011-2020. SAPB is a fundamental document for the protection of nature, which determines long-term objectives for the conservation of biodiversity and landscape diversity, and also the manner of implementation in harmony with the general economic, social and cultural development of Kosovo*. Agrobiodiversity in SAPB is integrated with only 14 lines of text. MESP, regarding the agrobiodiversity in Kosovo*, has no plan or budget for research and conservation of plant and animal genetic resources. Legal basis for the adoption of SAPB, 2011 - 2020, derives from Article 140 of Law on Nature Protection.

Ministry of Agriculture, Forestry and Rural Development (MAFRD)

MAFRD is divided into nine departments, one agency, 31 divisions and one institute. Departments and divisions related to plant and animal production and agrobiodiversity include: 1. Department of Rural Development Policies (Managing Authority), responsible for programming and coordination of rural development. This Department annually drafts the Rural Development Programme (Investment Grant Programme), which receives approximately half of the MAFRD budget. In the framework of the Agriculture and Rural Development Programme 2014-2020, agro-environmental measures are foreseen as well. Implementation of these measures began in 2017. 2. Department for Agricultural Policies and Markets with Divisions: Direct Support, Trade Policy & Market; Plant Production and Irrigation; Plant Protection; Land Use and Livestock Division. This department draft proposes and implements procedures related to plant and livestock production, quality standards of agricultural products, plant protection, registration of varieties of cereals and potatoes, etc. This department annually drafts the Programme for Direct Payments in Agriculture, which receives approximately half of the MAFRD budget, foreseen by private sector support. 3. Department for Viticulture and Winery with its divisions both drafts and implements agricultural policies and development strategies for vineyard and wineries. 4. Department for European Integration and Policy Coordination with its divisions coordinates the European integration process, strategic planning and policy development process and external assistance. MAFRD has neither a programme nor budget contribution intended for agrobiodiversity conservation and sustainable use.

Paying Agency – Agriculture Development Agency (ADA)

Paying Agency implements all duties, responsibilities and competences deriving from the law and the administrative Instructions, but its priority are the implementation of the programme for agriculture and rural development compliant with IPARD rules.

Food and Veterinary Agency (FVA)

FVA is under the responsibility of the Prime Minister. The FVA is the competent authority for maintaining public health, animal health and welfare, and food safety. Within its scope, it is also the Sanitary Inspectorate for field inspections and seed certification.

Both above-mentioned ministries, with respective departments, have not expressed interest and have no activities or contributions regarding inventorying, collection and conservation of national heritage values, namely the PGR and the AnGR.

Research institutions

Kosovo* Agriculture Institute (KAI), located in Peja.

KAI is the oldest institution in Kosovo* in the field of agriculture. It was originally established as an agricultural station in 1947, and later became the Biotechnical Institute with headquarters in Peja. Since 2000, KAI has operated under the authority of MAFRD. KAI possesses equipped analytical laboratories and 170 ha of fields for conducting research trials. KAI provides technical and scientific support to MAFRD departments for the quality of agricultural inputs and outputs. It has laboratories for analysing seeds, seedlings, mineral fertilizers, soil, various plant diseases, etc. In the experimental field, the test for Value for Cultivation and Use (VCU) is carried out for cultivars and hybrids (wheat, barley, maize and potatoes). Several decades ago in this institute, activities related to agrobiodiversity were initiated. The largest collection of fruit trees, together with a nursery (which no longer exists) was established. Recently, KAI established the 'GenKOS' centre for bovine artificial insemination. Semen of three of 'Simmental' bulls, non-native can be stored there in cryo-conservation form for a short time.

University of Prishtina - Faculty of Agriculture and Veterinary (FAV)

FAV is the largest and most important educational and research institution in Kosovo*. Its mission: education, research and application in the field of agricultural and veterinary sciences. The Faculty of Agriculture was established on August 26, 1973, by a decision of the Kosovo* Assembly. Establishment of this educative-scientific institution was based on high needs for superior, educated and qualified experts, in order to contribute to faster development of agriculture in Kosovo*. During 2006/07, the Faculty of Agriculture was renamed to the Faculty of Agriculture and Veterinary. Master's studies in agricultural sciences started in 2007. Currently, FAV offers 11 study programmes at two levels, BSc and MSc. Such programmes are mainly oriented to plant sciences, crop protection, livestock, veterinary medicine, food technology and agribusiness. A special course or module with elective status, for PGR is part of the Master's studies curricula. FAV, with two to three programmes, regularly participates in the Prishtina International Summer University (PISU) with participation of international professors. Such courses are developed in English for local and international students. FAV is organised in seven departments according to the field of study: Crop production, Horticulture, Plant Protection, Livestock, Veterinary Medicine, Food Technology and Agribusiness. FAV possesses an experimental didactic farm (EDF) with an area of 12 ha. In EDF, the programme of wheat crossing and breeding is being developed. In 2016, after a hard work, FAV has managed developing and registration of the first wheat cultivar in Kosovo*. In EDF there is a modest collection of apple varieties, as well as the nursery for rootstocks. The farm possesses specimens of cows of different breeds and local breeds of sheep and goats for the needs of FAV students and clinical issues.

There are currently 106 full-time and engaged personnel of academic staff, including 55 professors with different degrees, 37 assistants in various fields and 22 administrative employees. Currently

1,850 students attend studies at different levels.

In 2007, the University of Prishtina, FAV respectively, established the Gene Bank for PGR, where seed samples are stored as active and base collections, in short- and long-term storage conditions. The Department of Genetics and Breeding, continues with the activity for *in-situ* conservation of different types of fruit trees. All activities are undertaken jointly with students, because the government institutions do not support any activities related to PGR.

1.4. NON-GOVERNMENTAL SET-UP

The Union of Agricultural Associations of Kosovo* has in its structure agricultural associations organised according to agricultural products, e.g. Association of Fruit Producers, Association of Vegetable Producers, Association of Egg Producers, Association of Meat Producers, Association of Milk Producers (KAMP). None of these associations nor their Union has the objective to conserve plant genetic resources, respectively animal. These associations can be mobilised to contribute to the preservation of the country's genetic resources.

Other NGO's/CSO's, part of which are listed in Annex 3, are not active. They existed for a certain time, mostly only when foreign support was given through projects but ceased their work as soon as project aid stopped.

1.5. LEGAL FRAMEWORK FOR PROTECTION OF AGROBIODIVERSITY

Kosovo* has recently begun to establish and consolidate the legal and policy framework for biodiversity and agrobiodiversity respectively. The *Ministry of Environment and Spatial Planning (MESP)* and the *Ministry of Agriculture, Forestry and Rural Development (MAFRD)* are responsible for drafting the legal and policy base for the conservation of agrobiodiversity (PGR and AnGR). Since 2010, the *Ministry of European Integration (MEI)* has been contributing in this direction through the adoption of EU legislation and policies. Within the legal framework of Kosovo*, there are 14 laws, eight regulations, two strategies and one programme that directly or indirectly address the issue of agrobiodiversity (PGR and AnGR) (Annex 4.) as follows:

The *Law on Nature Protection* – regulates the protection and sustainable use of Nature (Article 2, point 1), by preventing excessive use of endangered species of flora and fauna, and especially those of particular importance, rare and endangered, as well as their habitats (Article 2, point 1.4.). Articles 66 and 67 define the issue of conservation and use of genetic resources, while Article 68 emphasises the role and function of the gene bank in the conservation and management of the genetic fund.

The *Law on Environmental Protection* – Article 2 defines Nature protected values; while point 2 of this Article states that in the protected part of Nature, no activities that endanger biodiversity can be developed.

The *Law on Plant Variety Protection* – regulates procedures for the protection of all plant varieties as well as the granting and protection of the plant breeder's right (Article 1 and 2).

The protection and conservation of animal genetic resources is regulated with ***Law*** *No. 04/L-191* ***on Livestock*** which in Chapter I, article 1 defines:

1. The objective of this Law is the protection, improvement and preservation of quality animal genetic resources with an aim to incite farmers to increase animal production, to improve the quality of livestock products and to protect the animals' genetic variability.
2. This Law determines the conditions and practice of rearing farm animals, it governs the methods and technology of rearing, conditions for establishment and approval of breeding programmes, change and preservation of animals' characteristics, conservation of genetic variability and indigenous breeds, professional and scientific service, genetic reserves, breeding enterprises, trading and marketing of breeding material, inspection and acquirement of funds for those objectives.

Article 2 Scope of the Law

1. This Law shall be implemented with a scope to determine the legal basis for breeding of cattle, pigs, sheep, goats, equidae, domestic rabbits and poultry, hereinafter referred to as farm animals, and that it provides:

1.1. Breeding, improvement of animal products, trade in breeding animals and genetic material;

1.2. Conservation of biological diversity of farm animals and gene banks of farm animals;

2.2. Conservation of genetic diversity and indigenous breeds.

The protection of animal genetic resources in Kosovo* is regulated by the Law on Livestock, but in practice, no steps have been taken until today to implement the first two articles of this law. The Register for Animal Registration and Identification keeps records by breeds. It is not difficult to identify farms with specific breeds, number of animals, and the farmer's name and address. Kosovo* has a paying agency that can implement direct payments for vulnerable breeds. Kosovo* also has an Animal Insemination Centre, which can carry out cryo-conservation of genetic material. The Agriculture and Rural Development Programme 2014-2020 has not foreseen a budget provision for the protection of animal genetic resources.

The Strategy and Action Plan for Biodiversity 2011-2020 – is a basic Nature protection document that defines long-term conservation objectives of biodiversity and landscape diversity, Nature protection values, and the way of implementation in harmony with the overall development of economic, social and cultural life of Kosovo*.

The goals and objectives of this strategy are:

1. Conservation of biodiversity;
2. Sustainable development based on sustainable use of natural resources;
3. Creating revenues; and equal benefits sharing by using of biodiversity.

For the implementation of the objectives of this strategy, the MESP has foreseen a budget allocation of over € 5.3 million. However, there is no information on how much has been spent for this purpose to date. Also, no money has been allocated for agrobiodiversity conservation in this strategy.

Strategy of Agricultural Advisory Services for Rural Development 2012-2016 – the specific objectives of this strategy are:

1. Advisory services for agriculture and rural development;
2. Increasing the number of farmers and other stakeholders receiving advice on agriculture and rural development;

3. Adaptation of advisory services according to the needs and requirements of farmers and other stakeholders;
4. Promotion, implementation of national development policies, and national and international programmes for support of agriculture and rural development.

For the realisation of these objectives, € 1,046,850 have been allocated. Currently, there is no information on how much of the fund has been spent so far for this purpose. In this strategy, there is also no single advice (incentive) for farmers or community training on conservation, using and use of the domestic traditional varieties of plants (PGR) or livestock breeds (AnGR).

Agriculture and Rural Development Programme is the most important document regarding agricultural policy of Kosovo*. This Programme was drafted in 2013, but never adopted by either the Government or the Parliament of Kosovo*, as it is foreseen by the Law on Agriculture and Rural Development. Therefore, this document is not officially published, but has been taken into consideration in this document, although PGR or AnGR are not mentioned.

All these documents constitute the legal framework for identification, conservation and use of PGR and AnGR. However, the level of implementation is not at a satisfactory level.

1.6. FOREIGN DONOR SUPPORT FOR CURRENT AND PREVIOUS ACTIVITIES RELATED TO AGROBIODIVERSITY

The greatest support regarding PGR conservation from international donors in Kosovo* has been donated by SIDA (Swedish International Development Agency) through the financing of the SEEDNet project (South East Europe Development Network for Plant Genetic Resources).

In 2004, the first co-operation agreement for the initial three-year period (2004-2007) was signed between the Nordic Gene Bank (NGB), Swedish Biodiversity Centre (CBM) and the Ministry of Agriculture, Forestry and Rural Development (MAFRD) of Kosovo*, at the level of Plant Production and Plant Protection Department. Kosovo* had institutional (MAFRD) obstacles in the first phase and did not score any noticeable results. However, with the support of the SEEDNet's Regional Steering Committee (RSC), the Kosovo* party participated in RSC meetings and trainings organised at the regional level, but did not undertake any field activities due to a lack of financing. After this period, a second agreement was signed for which the signatory party was the University of Prishtina, Faculty of Agriculture and Veterinary (UP-FAV). From that moment, the implementation of the project objectives began.

SEEDNet was established in 2004, to help SEE countries in identifying and addressing their specific needs and priorities in relation to PGR. The initial idea of the project was to develop activities for a ten-year period, which would be implemented in three phases. SEEDNet activities included PGR conservation (*ex-situ*, *in-situ* and on-farm conditions), institutional and human capacity building and public awareness. However, within the project programme, only the first two phases were achieved, as there was no continuation of financial support for SEEDNet by SIDA to continue the project. In the first phase of the project, partners in the network included Albania, Macedonia, Kosovo*, Montenegro, Serbia, Federation of Bosnia and Herzegovina, Republika Srpska of B&H, Croatia and Slovenia. In the second phase, the network included Romania, Bulgaria and Moldova.

Three ministries with their representatives were involved in this activity: (i) Ministry of Science and Technology (MEST), respectively UP-FAV and the Faculty of Mathematical & Natural Sciences –

Department of Biology, (ii) the Ministry of Agriculture, Forestry and Rural Development (MAFRD), respectively Kosovo* Agricultural Institute, and (iii) the Ministry of Environment and Spatial Planning (MESP). For the realisation of the 'SEEDNet' project programme, working groups (WG) were established at both country and region level: WG (Maize and Cereals), WG (Medicinal and Aromatic Plants), WG (Vegetables), WG (Fruits and Vines), WG (Fodder Plants and Industrial Crops), and WG (Documentation and Information). The role of the WG in the project was mainly on inventorying and collection of PGR. SEEDNet organised several training courses with a wide range of topics. A two-year international Master's Degree Programme in Biodiversity Management was organised as well. FAV reconstructed a facility dedicated for Gene Bank of Kosovo* (GBK) for plant resources. GBK was supplied with conservation equipment and facilities (storage capacities) for PGR collections. In terms of raising awareness, many activities were conducted targeting institutions, farmers and the general public through various media. This resulted in an increased awareness level regarding the role and importance of PGR.

In addition, partners in the project built and strengthened a solid partnership for co-operation in various joint projects. This has enhanced personal, institutional, national and regional cooperation. It can be freely stated that SEEDNet has greatly contributed to the construction, improvement and advancement of the general capabilities in the region and in Kosovo* regarding the PGR conservation issue. However, after termination of donor funding due to the lack of support from local institutions, the activities have significantly decreased. Some activities continued on a voluntary basis, mainly through personal efforts and in cooperation with students.

From 2008 – 2011, the SDC and the Danish Government supported a project for Horticultural Promotion. The main challenge of the project was to help in re-establishing the once-important horticulture sector after years of neglect and destruction, and to assist in its adaption to the open-market economy.

Supported conservation activities of PGR and AnGR at the national level should be based on two levels: law and finance, in addition to an adequate infrastructure (facilities, trial fields, greenhouses, laboratory equipment and staff). Two ministries (MAFRD and MESP) according to the legal competencies are responsible for agro-biodiversity in Kosovo*. They are obliged to review existing laws and eventually amend or draft new law on agro-biodiversity in Kosovo*. Therefore, these two ministries should define the institution with competences (administrative, professional and scientific) for the conservation and use of agrobiodiversity in Kosovo*.

The Strategy and Action Plan for Biodiversity of Kosovo* (2011 – 2020) is a result of sixteen months' work by the Ministry of Environment and Spatial Planning, supported by the European Commission through TAIEX. A large number of experts from governmental institutions, science and civil society have contributed in drafting the Strategy and Action Plan for Biodiversity of Kosovo* (2011 – 2020).

From August 2009 to July 2011, FAO and the Government of Luxemburg supported the project Development Assistance to Farmers in Remote Areas of Montenegro and Kosovo*, which aims towards increasing the livelihood of small farmers in mountain areas of Kosovo* and the North East of Montenegro. This objective should be achieved by increasing the productivity of traditional production systems and by introducing technical innovations, better product quality and improved marketing.

Regarding AnGR, the greatest work is done by the Monitoring Institute for Rare Breeds and Seeds in Europe from St. Gallen (Switzerland) in cooperation with SAVE Foundation. They published 'Rare Breeds and Varieties of the Balkan, Atlas 2009' and a report, 'Balkan Netzwerk für Agro-Biodiversität', 2006 (Balkan Network for Agrobiodiversity). This network established a webpage:

http://www.agrobiodiversity.net/balkan, which is a very useful tool for disseminating information.

Also GIZ has supported a project entitled Competitiveness of the Private Sector in Rural Areas in Kosovo* (COSIRA), related with rural area development indirectly was supported agrobiodiversity in Kosovo*. The project duration was 2014-2017. The project was active in five sectors and in some of the 37 Kosovar communities. The target groups were private sector entrepreneurs, their workforce, start-up businesses, and the economically active population in rural regions and selected business sectors in Kosovo*. The project promotes female entrepreneurs and women in management positions. The project ensures that the needs of marginalised and vulnerable social groups are taken into consideration.

2. GENETIC RESOURCES IN AGRICULTURE

2.1. OVERVIEW OF THE STATUS OF GENETIC RESOURCES IN AGRICULTURE

2.1.1. Plant genetic resources

Plant production in Kosovo* currently depends on imported cultivars and hybrids. Prior to cultivation, they must pass the field test of value of cultivation and use (VCU; whereas, for fruits and vegetables, they should be registered in the national catalogue published by MAFRD.

The exception of the formal system is cultivation of local populations (landraces) of various plants, such as: pepper, tomato, watermelon, melon, cucumber, onion, cabbage, bean, pumpkin, squash, garlic, maize, barley, rye, oats, etc. Agricultural production in small households is based on field gardens or plots. Farmers cultivate and conserve these landraces because of the specific taste and long tradition of cultivation, but also as part of the family heritage by their predecessors. However, most of the landraces are extinct or are threatened with extinction, taking into consideration the aging rural population and migration of youth from rural to urban areas and also abroad, especially to Western Europe.

The traditional way of production in small gardens is based on manual labour operations. Farmers mainly use stall manure and often do not use pesticide (e.g. manually remove the potatoes' insects, etc.). They usually produce more than their needs. They usually show with support of their relatives so; a large part of their production is given to their children and grandchildren living in cities. In Kosovo*, it is a tradition to visit parents living in rural areas during weekends. During these visits, the family is supplied with fresh products from the gardens of parents or relatives. During the autumn visits are traditional when vegetable supply is copious (peppers, tomatoes, cabbage, onions, beans, potatoes, squash, leek, etc.).

Vegetables and legumes

Landraces in Kosovo* have not yet been fully examined. They are not registered on the national list of varieties under the Law on the Protection of Plant Varieties (LAW NO. 02 / L-98). Onion and garlic landraces are planted by the farmers in autumn or spring, while leek is planted in the summer, when irrigation is possible. They are consumed fresh or processed. In addition to Prizren's onion (endangered status), there is no research or information for other landraces; there is no accurate information on garlic. The tomato landraces are traditionally used for salad, cooking and processing. Tomato landraces have different forms depending on the area of cultivation. They might be reddish 'Mollak' and 'Zemra e kaut', used for the preparation of sauces and 'ajvar' (Picture 1 & 13).

Many pepper landraces are cultivated in rural areas, but in small parcels only for family needs. The best known is the local population 'Somborka e Dukagjinit', where it is cultivated up to 70% in open fields, in areas up to 1,000 ha in rural areas of the Dukagjini Plane. Its fruit is sought both in the local and in European markets. The pepper fruits are used as fresh, processed and conserved. This fruit possesses three special characteristics: a slight spicy taste, it can endure salting when canned, and it retains consistency of the fruit at low temperatures in refrigerators. In the kitchen, it is used as fillings with cheese or meat, and a combined nourishing product, with new values

and flavour, is obtained. Another cultivated landrace is 'Spec i Ajvarit' for baking, conservation and preparation of ajvar, and also I 'bardhë i gjatë' as well as a landrace with the name 'zharadan' or 'çarra' that has long and/or short fruits with thick flesh. Its fruits have a high content of dry matter and a special flavour. They are used for preparation of a specific sweetness, milled pepper mixed with seeds, and then combined with salt. It is naturally preserved by drying on a string. The inundation of varieties of commercial peppers endangered these populations, so it is of the greatest interest to conserve these genetic resources (Picture 2 & 3).

Spinach, lettuce, zucchini squash, carrots or red beets are grown in smaller quantities.

Cabbage and other brassica crops are cultivated to a great extent. The autumn cabbage is mostly cultivated, freshly consumed for salad and canned for winter consumption. In the areas under irrigation, it is also planted as a second crop after wheat has been harvested. This gives agricultural production an intense character, with two harvests obtained from the same area.

A wide range of vegetables from local populations, like watermelon, melon, and cucumber, can be found in rural areas, with different characteristics: watermelon, with early to late vegetation (winter type, with yellow pulp), landraces with fruits which can be preserved (watermelon, green tomatoes and peppers). There are other varieties of watermelon and melon with different names: 'Shalqi i Kodrës', 'Shalqi i Moravës'. Landraces of melon that are splitting (with lots of sugar, and juicy) have a different shape and taste. A variety of winter watermelon is extinct, and there is no information as to whether farmers are still cultivating this landrace; although the GBK has an accession (Picture 4 & 5).

The zucchini, common pumpkin, and squash, are cultivated in gardens or fields, used for both human and animal consumption (pulp and seeds). The common bean has a great diversity of landraces, according to plant and grain characteristics. It is very important because bean production is based mainly (up to 90%) on the seeds of local populations. Its production and cultivation is based on regular consumption requirements, with an average market value ranging from €3 to €4 for 1kg of beans. In addition to the farmers' own consumption, beans are normally produced to meet local market needs. Bean landraces are known by many names: Fasule e Pejës, Fasule e Molliqit, Fasule e Nerodimes, Fasule e Tetovës, Fasule e bardhë, Fasule Laramane, Fasule kokërrmadhe, Fasule e vadës, etc. In most cases, they are planted in home gardens, associated with maize, so these two crops help each other. Beans are planted for their nutritional values, for plant-based protein content (20% to 25%), and also as part of the traditional cuisine. It can be said that maize and beans help and protect each other from extinction mainly because of production in home gardens. Farmers mostly grow runner beans in fields under irrigation conditions. Dwarf beans are cultivated without irrigation. In the field, the bean is planted with maize and commonly with pumpkin, so in one field there are three different plants species interacting with each other. They also plant green beans used for the fresh pods and for dry grains (Picture 6).

Pea and chickpea landraces are endangered, although once were cultivated on large areas.

The situation with the potato is similar to beans: local populations have not been subjected to any research regarding the extinction process. It is cultivated mainly for household needs and in small areas. Cultivation in high-altitude areas, over 1,000 meters, or even on plains is ideal for potatoes. It has a vertical spread with the expressive diversity of its local populations (from early to late). Landraces are threatened by the import of foreign potato varieties, mainly for commercial production for processing (Picture 7).

Cereals

Cereal landraces have not yet been fully explored; however, in remote rural areas only barley, rye and oats can be found. Such plant populations can be valuable genetic resources. Landraces of barley with early maturation were once used for bread in Kosovo*, because it matures and is harvested earlier than wheat. The older populations of rye and oats are cultivated in areas with greater altitudes and were used in feeding small livestock. Greater interest could be given to the rye populations, as added-value market demand is increasing for bread, especially for diabetics.

Before the 1960s, exclusively white maize landraces were planted in all areas. Currently, white maize is cultivated in 5% to 10% of the fields, mainly in small areas in association with beans, and is used for consumption roasted, cooked and as popcorn. Its local populations can be found with different names: Fara e Qerimit, Misri Tetë Rendsh, Misri i Hershëm, Misër i Bardhë and Misri i Kuq. Each farmer selects and keeps the seed for the next season; many forms of maize were created in this way – early maturation, different seed sizes, and colour. In large areas, maize is planted for grains and flour for both family needs and the market. Small amounts of maize and flour are commonly found in local markets for preparation of delicious meals. Maize landraces for flour production are different shades of white or yellow. They are cultivated for preparation of bread, pies and traditional dish with grits. In Kosovo*, a local population of maize was identified called 'Fara e Qerimit', and is over 100 years old. But the diversity of maize populations is much wider, because it's a crop with open pollination and can create different forms and subtypes (Picture 8).

Industrial crops

For the last three to four decades, the greatest losses of diversity, both at the level of cultivars and populations, have occurred in industrial crops. A few decades earlier, the most widespread crops were: sunflower, rape, sugar-beets and tobacco. Almost all landraces of these crops have been lost. In Kosovo*, five species of industrial plants cultivated in a total area of 28,192 ha (VSK, 87) have been lost. They were used as raw material for the food industry (oil, sugar and bread), and tobacco as raw material for the tobacco industry.

Fruit crops

Old local fruit varieties are still cultivated in rural areas and are of interest for conservation, especially for their fruits. Some of them, such as apple and pear genotypes, are older than 100 years, but are still present in fruit production. Their fruits, under normal conditions without a refrigerator, can be stored until May the following year without suffering any decaying process. Rare cultivars of apple and pear are also singled out for their excellent aroma, because their fruit contain polyphenols. The fruit of some pear populations can also be conserved in traditional ways, but their fruit may be dried and cooked during winter in the way farmers prepare natural compotes, a usual drink in rural areas. They are also used in the food processing industry, from which various juices, jams, and other products are produced.

Therefore, some of these varieties with rare values have survived the extinction process. They are stored as a symbol of memory of family ancestors – for values and heritage reasons (spiritual values). Hence, they keep the names of grandparents or even parents who have planted them in the past. This is part of folk tradition and culture that contributes in conservation and protection of the diversity of plant genetic resources.

In folk traditions, there are different terms for these plant resources, which were named according to the taste, the title of persons, topographical origin or any other distinctive character: Molla

Sherbete, Sherbete e Pashës, Sherbete e Pejës, Molla e kuqe, Molla Lakne, Molla Vizajke, Molla Kokërrvogël, etc. Intensive fruit production is based on registered varieties. Increasingly, farmers are replacing old varieties with commercial ones. The old fruit tree varieties still present in many villages in mountainous regions are mainly found as single trees in gardens and fields. Often along the roads, cords of walnut trunks can be found.

The apple diversity is represented by old varieties, such as: Idared, Golden and Red Delicious, Jonathan, Tetovka, Gjyle, Kulaçe, Xufke, etc. The most common are: Red and Golden Delicious.

Similar phenomenon is also present with old varieties of pear: Dardha Ujse, Dardha Turke, Dardha Turshi, Dardha e Bekës, Dardha Erebasme, Dardha Maslarka, Dardha Kakiçke, Dardha vojëse, Dardha topke, which are still found in rural areas. The most widespread are Dardha Turke and Dardha ujëse. The old plum varieties also have various local names, such as: Çaçanka, Pozhegaca, Stanley, Kumbulla e bardh, Magareshka, etc. The most famous cherry is Bojlia, yellow or red, while the sour cherry variety is known as Oblaçinka (Picture 9 & 10).

Grapevine

The tradition of grapevine cultivation is many centuries old. Wine production is based on the cultivation of many varieties of grapes. Local populations of grapevine that ought to be mentioned are: Rrush i Rahovecit, Thançe i kuq, Rrush i kuq, Rrush i bardhë, Sulltania, Kardinal, Hamburg, Gotovush, Vranac, Prokupec, Smedervka, etc. (Picture 11).

Based on a comprehensive analysis of genetic plant resources in Kosovo*, it may be found that the main factors that have contributed to their endangerment and extinction include the following:

a. Migration of rural population, economic, political and wars crises.
b. Intensification and advancement of agriculture, increasing use of hybrids and cultivars with high production potential and improved resistance to diseases and pests, biotechnological developments and innovations.
c. Liberalisation and globalisation of trade, a process in which Kosovo* was opened to international trade markets.

The total diversity of crops cultivated in Kosovo* is 62. The structure according to the agronomic classification is: 12 field crops + 32 vegetables + 10 fodder crops + 18 fruits + 1 grapevine. Field crops include: wheat, rye, barley, malting barley, oats, maize, maize (mixed), potato, rapeseed*, sunflower*, sugar beet and tobacco*, while vegetables diversity is consisted of tomato, pepper, pumpkin, pumpkin (mixed), cucumber, water melon, melon, cabbage, cauliflower, spinach, lettuce, beetroot, parsley, leek, onion, carrot, radish, garlic, beans, beans (mixed), peas, and other legumes (Picture 12).

The diversity of fodder crops includes: hay (meadow), grass, lucerne, trefoil, vetch, fodder wheat (green), fodder rye (green), fodder barley (green), fodder oat (green) and fodder maize (green).

Regarding fruits and grapes, there are 16 fruit crops and 2 of grapevines: apple, pear, quince, medlar, plum, apricot, peach, cherry, sour-cherry, walnut, hazelnut, chestnut, strawberry, raspberry, blackberry, chokeberry, table-grapes and wine-grapes.

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* *These four industrial crops, which were used mainly in the processing industry, as well as the barley that was used for food, were cultivated on a total area of 28,192 ha annually. Actually, they have been lost and are not cultivated at all (VSK, 87).*

2.1.2. Animal genetic resources

The conservation of agrobiodiversity is a vital component of global biodiversity. Autochthonous livestock breeds are a result of selection and creative work of farmers over many generations. Thus, autochthonous livestock breeds must be seen as a living cultural heritage and protected accordingly. The preservation of autochthonous livestock breeds also ensures the preservation of genetic diversity. This, in turn, ensures further development and safeguarding of the diet for future generations. Breeding and keeping livestock is an important economic activity in the Balkan countries. For many farms, livestock and their products are the most important source of income. Autochthonous livestock breeds are usually smaller, and, in any case, less demanding and more robust than introduced ones. As a result, areas of low productivity, such as are found widely in the Balkans, can be used sustainably.

In this document, the autochthonous breeds of animals still present in Kosovo*, their population and distribution are treated. We did not find any data about any livestock breeds which are extinct.

Busha – is a breed of cattle widespread throughout the Balkan Peninsula. The most widespread cattle in Kosovo*, up to the middle of the last century, have been the different strains of Busha. After WWII began, high-productive breeds were introduced. Crossbreeding Busha with these breeds began. However, there are still animals that are kept in remote areas of the country that are a good source of genetic resources that should be preserved as soon as possible. Until today, no concrete measures have been taken to preserve them apart from the studies, which undertook the description, characterisation, evaluation and inventorying. The performance of Busha cattle is well adapted to mountain regions and hard living conditions. Using this as a basis for this account, Bushas are long living, used to small amounts of feed, resistant to illnesses and parasites, have high fertility and are easy in calving. Cows produce up to 1,000 kg milk per lactation; one calf each year is standard. Because of the harsh conditions, Bushas are small cattle (on average 114 cm) with a light finishing weight (on average 260 kg) and late precocity (24 to 36 months). Because of their small weight, Bushas are optimal for pasturing on the sensitive grass landscape of mountains (Bytyqi H., 2006). Different strains of Busha exist in Kosovo*, but here we will limit ourselves to two strains that are typical for Kosovo* (Picture 16).

Dukagjini Busha – has higher production and is bigger in comparison with other Busha strains. Area of distributions is Dukagjini plain in southwest Kosovo*. Estimated population size in Kosovo* is less than 1,000. Risk status: endangered.

Sharri Busha – has been in the Balkans since the Neolithic age. Adapted to harsh environment, extensive grazing on low-quality forage, excellent maternal traits and easy calving, survives well under minimum levels of management in mountainous and hilly areas, very resistant to diseases, and internal and external parasites. Area of distribution is Sharri Mountains with a population of less than 1,000. Risk status: endangered.

Bardhoka Sheep – is a breed of the Pramenka type, has been in north of Albania and the southwest of Kosovo* for centuries. The name originates from (Albanian language) ‘Bardhe = white’, as the colour of the sheep is completely white. Well suited to a grazing production system, calm, easily milked and easy to work with. No crossbreeding or any other structured breeding programme has happened. Breeding rams are usually selected between the breeds from the same or different flocks. There is a risk of genotypic inbreeding and deviation from the standard breed because of mating with the same or neighbour flock. Area of distribution: SW-Kosovo*, Prizreni, Gjakova, Peja, Istogu and Klina. Size: 18,432 (2009) (Picture 17).

Balusha Sheep – this breed is well known for its high amount of milk production. No crossbreeding or any other structured breeding programme has been implemented. Breeding rams are usually selected between the breed from the same or different flocks. There is a risk of genotype disequilibrium and deviation from the breed standard because of mating in the same or neighbouring flock. Area of distribution is Dukagjini plain in southwest Kosovo*. Population size: less than 2000 (2009). Risk status: vulnerable (Picture 18).

Sharri Sheep – one of the smallest breeds of Zackel Sheep in Kosovo*, well suited for grazing and brush environment, with a long tail. For many years, a crossbreeding programme has been conducted, mostly with Wurttemberg, in order to improve production characteristics. The pure Sharri sheep is now a rare breed; about 20,000 are crosses of Sharri sheep with Merino Landschaf. The name of the breed is linked to the Sharri Mountain, which stretches into Macedonia and Albania, too. The sheep is a cross-border breed. Population size is estimated to be about 1,000 (2009). Risk status: endangered (Picture 19).

Kosovo* Sheep (local name: Delja e Kosovës) – long tail and well suited for grazing and brush environment. Crossed with Merinolandshaf, Sharri X Merinolandshaf, etc. to increase production. Purebreds are rare. Area of distribution is Kosovo*. Population size less than 1,000. Risk status: endangered.

Balkan Goat – no breeding programme in Kosovo* as yet; increasing interest by farmers to crossbreed with Alpine goat, etc. to increase production. Area of distribution: almost all parts of Kosovo**. Population size: less than 5,000 (2009). Risk status: vulnerable.

Buffalo – Mediterranean Water Buffalo
Buffalo population in Kosovo* belongs mainly to the Mediterranean type, spread over many countries in the Balkan Peninsula. In the past (up to the 1980's), this species played a significant role in the lives of rural families of Kosovo* who mainly used it for its products (milk and meat) and work. Over the last decade, as in other countries of the Europe, the development of this species seems to have a negative trend without being able to be competitive against other species with high productivity, such as cattle, sheep and goats (Borghese, 2004). Population size is estimated to be less than 500 mature females, less than 20 mature males. Risk status: critical (Picture 20).

Kosovo* Singer Rooster (local name: Gjeli Këndues) – This breed, which is not very well known, is common in Kosovo* and in some places in Sandzak (South Serbia). The hens are poor layers. The average egg-laying ability in a year is no higher than 160 eggs. The eggs are white and weigh 55-60 g. Hens are often broody; they incubate the eggs well and chicks hatch well. A cock starts crowing at the 6th or 7th month, and a hen starts laying eggs at the 8th month. This chicken uses the food efficiently. A cock might weight up to 4 kg and a hen up to 3 kg. No data about population.

Livestock farms in Kosovo* can be categorised into three groups: a) Subsistence farms (households), b) Semi-commercial farms, and c) Commercial farms. The characteristic of subsistence farms is that they produce mainly for family needs and only small quantities of their production are sold to neighbours or the nearby market. These farms are most interesting for the purposes of this study because at these farms one can find mostly autochthonous animal breeds. These farms are usually in remote mountainous areas of the country. Semi-commercial farms produce for their own needs plus a significant amount of their production (more than 50%) goes to market. These farms mainly keep hybrid animals, cross breeds of high-productive breeds with native breeds. Commercial farms are specialised farms with high productivity animals, best observed in the case of cattle. These farms mostly keep Simmental but rarely Holstein-Frisian- cattle. An exception to this description is a buffalo farm in central Kosovo*, with the owner having gathered 400 buffaloes in a barn.

All species, breeds and strains presented in this report, with exception of Bardhoka Sheep and Balkan Goat, have a population of less than 2,000 head. Although the numbers do no not immediately indicate a critical situation, it is safe to say that without any measures put in place for their protection and conservation, all these breeds could extinct in a very short time.

2.2. CONSERVATION EFFORTS OF GENETIC RESOURCES

2.2.1. Plant genetic resources

Contribution to the conservation of PGR on one hand depends on the existing diversity of local varieties and plant populations in Kosovo*, and on the other hand by efforts undertaken by state, professional and scientific institutions. Plant production in Kosovo* in the past was based mainly on local and traditional varieties; sadly, most of them have already been lost.

According to verbal statements by some professors of the Faculty of Agriculture in Prishtina regarding the efforts for the collection and conservation of PGR during the period 1970-1980, activities for the collection of PGR were carried out in the territory of the former Yugoslavia. Within these activities, PGR were also collected in Kosovo*, coordinated by the Gene Bank of the former Yugoslavia. Therefore, it is considered that such materials and information are available at the Gene Bank in Belgrade.

In Kosovo*, the first professional and institutional efforts in organising the PGR collection and conservation activities began during the period 2004-2011, with the financial and professional support of the regional project SEEDNet, funded by SIDA. The project was planned to take place in three stages, but only two were realised. The first phase of the project for the Kosovo* partner ended with no particular result, as explained in Chapter 1.6. However, the Gene Bank of Kosovo* (GBK) for plant resources was established. The establishment of GBK filled the gap institutional and professional gap in the function of the identification, protection, and conservation of national heritage of PGR. In the second phase (2007-2010), within the SEEDNet project, the activities were carried out with an increased dynamic in two directions – technical-organisational and professional:

1. By the decision of the University of Prishtina, at the Faculty of Agriculture a facility for GBK was assigned, as a separate unit. This facility was re-constructed and an administrator for the GBK was employed.
2. Action plans for the organisation of exploration and collecting expeditions for different types of crops were set up, according to the project activities.
3. The National Committee (NC) appointed professional staff for six different working groups to conduct the field research.

Despite institutional difficulties and obstacles, GBK managed to consolidate as an institution and to contribute towards the creation of laboratory spaces, supply laboratory equipment, and implement standards for conservation of PGR. During this period, collection expeditions of different plant landraces were organised. All of the collected accessions are stored in the GBK and conserved in the form of base and active collections. Some of them are characterised and documented. Also, various activities have been developed to raise awareness of the scientific, governmental and public opinion concerning the PGR (by organising workshops, trainings, distributing leaflets and posters, creating a GBK website which, in the absence of requisite funds, has expired). As a result of the SEEDNet project, a total of 209 accessions were collected and inventoried. After the project was terminated, financial support stopped. A large gap was created in the development of activities facing two challenges:

1. An unenviable reality was the significant reduction (or completely cancelled) of work and activities.
2. Human population from rural areas is rapidly migrating, while the population left behind is aging, so the PRG of the relevant areas is significantly endangered by extinction.

Therefore, seeing such a situation, professors in the area of plant production, and the Department of Genetics and Plant Breeding (GPB) at FAV, continued the activity in collecting and storing PGR, engaging students to accumulate plant accessions. The idea and goal of collecting PGR was also in-line with the students' goals, related to their master's research thesis, mainly plant production. Academic staff, students and the administrators of GBK continued to work in the experimental fields of the FAV's didactic farm. The results of such research were presented at various conferences and symposiums at the national and international level.

Therefore, as a result of the ten-year work of GBK, despite many difficulties, 410 accessions, have been collected and inventoried with the following structure: 150 of wheat breeding material, 1 of einkorn, 1 of Emmer wheat, 3 of barley, 8 of oat, 2 of common wild oat – Aegilops, 8 of different grasses, 50 of maize, 68 of common beans, 5 of alfalfa, 1 of lentil, 7 of chickpea, 2 of onions, 7 of leek, 11 of peppers, 20 of potatoes, 3 of tomatoes, 3 of squash 12 of field pumpkin, 3 of wild sunflower, 10 of apple, 23 of pear, 1 of sour cherry, 1 of cherry, 1 of apricot, 1 of basil, 4 of sage, 1 of cowpea and 1 of common grape.

Regarding the *in-situ* and on-farm conservation, the GBK has signed a five-year financial agreement (2011) with a farmer for the conservation of an autochthonous cultivar of maize, over one hundred years old, located in the Kamenica region, in the village of Busovate. The farmer now voluntarily continues to maintain and conserve this rare maize landrace.

In spite of different kinds of challenges and problems faced during a decade, successful work has been achieved and a valuable contribution to the function of conservation of plant genetic resources has been made.

2.2.2. Animal genetic resources

Autochthonous animal breeds, important as genetic resources of Kosovo*, population estimates are described in Chapter 2.1.2. There is also a population and the degree of their endangerment. In this chapter, we must first conclude that, to date, no measures have been taken in Kosovo* for the conservation of endangered species. When we say no measures, we mean both '*in-situ*' and '*ex-situ*' measures.

The only example worth mentioning is the private farm of buffaloes in Krajkova by Drenas. On this farm, the company "R&Rukolli sh.p.k" has collected 400 buffaloes. They produce products, such as cheese, yogurt and so on, from the buffalo milk. Kosovo* has an insemination centre, but there are only three Simmental bulls. This centre could also preserve the genetic material of endangered species, but this has not been done so far. Kosovo* has not established a gene bank for AnGR. Farmers in remote areas still have animals belonging to the autochthonous breeds, but they have no incentive to keep these animals. The risk of their cross-breeding with the high- productive breeds increases every day. Kosovo* has an Agriculture Development Agency, which carries out the functions of Payments Agencies, but the Direct Payments Programme does not foresee additional direct payments for vulnerable or endangered breeds. So, for a dairy cow in 2017, farmers are paid €70/head, regardless whether it is an autochthonous breed or a high-productive breed; for sheep, €15/head without distinction whether it is an endangered native breed or new breed. Therefore, it cannot be considered that livestock farmers are involved in the preservation of endangered autochthonous breeds.

Bardhoka Sheep is the only breed that represents a significant number (about 10% of total number of sheep) and has importance in agricultural production. The number of other autochthonous breeds is small; therefore, their participation in total agricultural production is negligible.

2.3. SOCIO – ECONOMIC ASPECTS OF AGROBIODIVERSITY PROTECTION

The socio-economic relationship of agrobiodiversity has evolved over time, and its role has changed. Agrobiodiversity, besides fulfilling nutritional needs, is also an economic factor and traditional local culture in Kosovo*. Therefore, local knowledge and culture are considered an integral part of agrobiodiversity, because the human activities forms and preserves this agrobiodiversity.

Economic developments, technological innovations, production of hybrids and cultivars with high production potential, use of fertilizers and pesticides, application of modern agricultural machinery, and globalisation of trade, have influenced agrobiodiversity, and traditional agriculture has changed and has been fundamentally transformed. So, socio-economic and agrobiodiversity relations are, undoubtedly, interdependent in many aspects of life, not just in rural areas. It is now well known and verified that hybrids of different formulas have a narrow genetic basis and are massively used in plant production. Such intensification has not only influenced the narrowing of diversity but also the refutation from regular production of many varieties and local plant populations or animal breeds. Kosovo*, as a small territory with other limited capacities, cannot claim it can produce commercial products for export in regional or European proportions from its existing agrobiodiversity. Therefore, existing agrobiodiversity needs to be protected, and its products can then be capitalised and transformed into rural economic development.

Socio-economic transformations in Kosovo* have had negative effects on agrobiodiversity, both for PGR and AnGR. At present, there is a growing demand for local and organic products. Such an approach has dual effects: the use of agrobiodiversity values and economic effects in rural areas. They are a source of significant agricultural incomes for small farmers, especially in rural areas where traditional foods are offered.

In addition to fields, the majority of families have household gardens and greenhouses where they produce food for family needs. This contributes to the welfare of the inhabitants, saves family budgets, and also generates incomes.

In agrobiodiversity activity, men and women's activities are not completely separate. However, their responsibilities are distinct. Women care more about cooking and cultivating vegetables in small gardens, while men tend to fields and animals. Women contribute in particular to PGR diversity by selecting seeds of different plant species. They also take-care about meat and milk conservation and products deriving from them. This enables them to autonomously preserve traditional culinary habits without being dependent on the market.

Therefore, women in rural areas with the knowledge of agricultural production (PGR and AnGR) have unique experiences with values of national traditions, based on the experience gained over the centuries. These empirical experiences allow the rural community to contribute in two ways: ensure survival with their products and preserve centuries-old traditions in rural areas.

Recently, there have been efforts to assist rural development, from low-to-high altitude areas, mainly during weekends and holidays, which would also generate income for the farmers. In essence, it is rural tourism; the proffered menu is mainly traditional food of plant and animal

origin combined. Among the many traditional food items, 'Flija' is a cooked product and is served accompanied with cheese and fried peppers.

2.4. STATUS OF PUBLIC AWARENESS

The method for raising public awareness is a two-way approach: to provide and receive information and to promote communication and exchange of information on a particular phenomenon. Public awareness for PGR, which can be considered as part of the agrobiodiversity conservation, has started with activities undertaken within the SEEDNet project. GBK was once a new institution and unknown in Kosovo* public opinion. So, public information of the goals, role and importance of GBK for PGR were distributed.

At the initial stage, SEEDNet activities were focused on training researchers regarding the collection, characterisation, evaluation and documentation of collected samples as well as the conservation process and gene bank management. Since the establishment of GBK, information leaflets, posters, presentations at conferences, scientific meetings, scientific publications of various levels, but also professional and scientific training and research were prepared as professional opinion. GBK has occasionally made efforts to inform the public through radio and national TV about the results and successes of the Gene Bank of Kosovo*. Disseminating information about GBK, especially its location within the UP-FAV facilities, has created advantages for academic staff and, in particular, for FAV students to visit and be informed about GBK and PGR. This advantage has been provided by the location for local and international visitors. The largest contribution to the awareness of professional opinion and institutional promotion of PGR has been made by the students involved in PGR collection and research activities.

University courses and modules for PGR conservation are integrated into FAV curricula, at the Master's degree level. While conducting researches for their Master's thesis, students are oriented to develop research activities for the following: beans, maize, potatoes, pumpkin, peppers, etc.

Academic staff and students have presented and published research results in various national and international journals and conferences. The GBK is regularly visited by students from the Department of Biology, Faculty of Mathematical and Natural Sciences, as well as students from Pristina International Summer University, high school students, etc.

The results obtained from the inventorying to date show farmers' interest in cultivation of local plant populations of beans, maize, and also in the old pepper variety Somborka e Dukagjinit, etc.

However, the Ministries have not taken any action to protect the values of national agrobiodiversity. MESP, with the biodiversity project, has organised information campaigns for the protection of land, water and air but not for agrobiodiversity. Various ministries in Kosovo* have not organised professional public debates on agrobiodiversity with the general public at the country level, farmers from the specific rural areas, and professional and scientific structures in the country. Such promotions are of interest to agrobiodiversity in general, but there is no promotion of PGR and AnGR, so that others can recognise their values and incorporate local genetic resources into cultivation. Such workshops should be used for dissemination of the practical guidance for all participants and in particular for the farmers.

It is worth mentioning that since the 2001, it has become a tradition that the local government of Rahovec organises a festival called 'HARDHFEST' ('Grapefest') for the promotion of agricultural production. For the past four years, the village Krusha e Madhe, Rahovec has organised 'days

of pepper' under the name 'AGROFEST'. And there are also other promotions like 'Potato Day' in Vushtrri, 'Apple Day' in Istog, etc. In Gjakova, 'Bovine Day' is organised, which has become a tradition. Organisation of fairs and field days gives an opportunity to exchange material and knowledge with attendees in local markets that can increase farmers' interest in cultivation of plant landraces and breeding native animals. A national budget programme lasting at least ten years can recover lost resources in production or even those that are endangered. During this period, local and organic food production industries can also be developed from some populations or old varieties, as is the case with Somborka e Dukagjinit pepper populations (Picture 14 & 15).

3. CONCLUSIONS

Plant and animal genetic resources are part of the world heritage. We are responsible for their preservation. Genetic resources should be preserved not only for their inheritance values, but also because they represent a source of genes for new crossbreeding to receive or renew positive characters. Kosovo* has a rich agrobiodiversity that also contains native plant and animal genetic resources. Most of them are endangered.

The ten-year work of GBK achieved collecting and inventorying 410 accessions of different crop landraces, including: wheat, maize, barley, aegilops, grasses, beans, alfalfa, lentil, chickpea, onions, leek, pepper, potatoes, tomatoes, squash, pumpkin, sunflower, apple, pear, cherry, apricot, basilicum, sage, cowpea and grape. Whereas, regarding the '*in-situ*' and 'on-farm' conservation, the GBK has signed a five-year financial agreement (2011) for the conservation of an autochthonous cultivar of maize, over one hundred years old, located in the Kamenica region, in the village of Busovate. This is achieved with the support of SEEDNet Project, financed by SIDA. The farmer now voluntarily continues maintaining the conservation of this rare maize landrace. Whereas there is no information of any action undertaken by state institutions regarding genetic plant resource conservation. Also, there are no legal measures or budgetary allocation for this purpose.

Current laws (Law on Environmental Protection, Law on Nature Conservation and Law on Protection of Plants Varieties) defining the issue of biodiversity conservation are incomplete. They neither clearly define nor address the issue of conservation of agrobiodiversity. Not one article of existing laws defines the issue of agrobiodiversity conservation.

In the Strategy and Action Plan for Biodiversity 2011-2020, no budgetary value for agrobiodiversity conservation is foreseen.

The Strategy of Agricultural Advisory Services for Rural Development 2012-2016, of which the main objective is advising farmers and other stakeholders to promote agricultural and rural development. This strategy does not foresee any advice for farmers or community training on conservation, using and use of domestic traditional varieties of plants (PGR) or livestock breeds (AnGR).

Therefore, either existing laws should be amended or new laws should be drafted for providing a legal basis and budget for GBK according to programmes and projects. In this regard, competent institutions (MESP and MAFRD) need regulations or administrative instructions on conservation of PGR.

Regarding international agreements, Kosovo* has not yet been able to sign and ratify any international agreement or convention related to the conservation of PGR.

Most of the existing PGR remain unexplored, uncollected, uncharacterised, unevaluated and unmanaged. Existing accessions in GBK should be regenerated, investigated, analysed, evaluated and characterised. Inventorying should be performed of old varieties of fruits and grapevines found *in-situ*, present on farms and in gardens. Rare plant populations that have rare nutritional and usable values are not just the interest of science, but are also of practical interest. They are and may become a resource for continued survival in rural areas. Their evaluation and use can be transformed into an opportunity to produce seed and seedlings, depending on the species.

Collection of local populations of crops, in particular maize, rye and barley, would be of interest.

After evaluation and characterisation, they can be registered in the MAFRD register list as autochthonous varieties. For example, the autochthonous maize landrace 'Fara e Qerimit', which has a high content of nutrients, especially proteins, and good-quality flour for preparation of delicious foods, should be registered as an autochthonous variety. Registering rye and barley landraces will also be of interest due to their nutritional value, especially for diabetics, and also for preparing special integral flour.

Vegetable landraces, especially pepper 'Somborka e Dukagjinit', must be registered on the MAFRD register list due to valuable traits: used fresh, cooked, conserved, and in the food processing industry. The onion landrace, 'Qepa e Prizrenit', should be collected and regenerated to avoid extinction. Cabbage landraces are also very important for preservation and conservation of their nutritional values and use as fresh and conserved.

It is important to establish field collections for different fruit species and grape varieties. These collections could be used as source material for grafting and production of seedlings, because their fruits can be stored in a low-temperature room. All these varieties would be used in organic production. Their qualities are mentioned in detail in previous chapters.

The preservation of animal genetic resources and autochthonous breeds is regulated by the Law on Livestock. The first two articles of this law prescribe the protection and preservation of animal genetic resources, creation of reserves, creation of a gene bank, etc. This law is not accompanied by any by-law or any measures for its implementation. The Agriculture and Rural Development Programme 2014-2020, which is the main document defining the country's agriculture policies, does not foresee any measures for the protection and conservation of animal genetic resources. All that has been done in their preservation, to date, are many studies and researches by foreign and national experts. The Paying Agency implements an investment grant programme and a direct payments programme, but neither of the programmes foresees special or additional support for autochthonous breeds.

Some of the indigenous breeds of farm animals are characteristic only to Kosovo*. In such cases, responsibility for their preservation is even greater. For example, Dukagjini Busha or Red Busha is the strain of Busha located only in the Dukagjini Plain and distinguished from other strains of Busha because of its larger size and higher milk yield. Balusha Sheep is a strain of Pramenka breed not found in other countries and is distinguishable for its high milk yield compared to other strains of this breed. Kosovo* has several institutions that could give their contribution in the conservation of genes of endangered autochthonous breeds. The Genetic Centre 'GenKos' in Peja practices cryo-conservation, but only semen from high-productivity breeds (Simmental) is preserved.

4. PERSPECTIVES AND RECOMMENDATIONS

4.1. RECOMMENDATIONS FOR CREATION AND UPGRADE OF POLICY AND LEGISLATION

Despite the fact that most of the plant and animal genetic resources in Kosovo* are endangered, government policies over the past two decades have not paid much attention to the conservation of these resources. All institutional engagement is oriented towards increasing production, increasing competitiveness, introducing varieties and modern high-yielding hybrids, varieties and breeds.

Most of the PGR and AnGR can be found *in-situ* in remote rural areas. The young population is abandoning these areas, leaving an aging population still living there; therefore, the risk of the extinction of the still existing PGR and AnGR is increasing.

There is a great need for inventorying and evaluating PGR that should be registered in the Register of Agricultural Varieties and should be protected by law as part of Kosovo*'s national heritage. Preliminary research has identified farmers' interest in maintaining them due to their value and good basis for organic farming. After inventorying and registration, there is an opportunity to continue cultivating cultivars and to protect them professionally and legally. By promoting the values of these landraces, they can be produced both for personal needs and for the local and international markets.

The existing Gene Bank for PGR within FAV is the most important institution for the preservation of PGR, which is supported by a foreign project (SEEDNet) and maintained by a professor (who was involved in establishing it) and an administrator (curator) for PGR. This institution should be functionalised in an institutional way and supported professionally, legally and financially.

Biodiversity of farm animal genetic resources is essential for animal food production and for conservation of landscape diversity: it is a source of income for farmers and an important part of Kosovo*'s natural and cultural heritage. Despite engagement of a limited number of national and foreign experts who have conducted studies in which they have described autochthonous breeds of farm animals and have made their assessment, public awareness of this issue remains still low. Locally adapted breeds of ruminants in Kosovo* are well adapted to conditions of natural and semi-natural grasslands in marginal lowland and mountain areas. Diverse breeds and strains of sheep, cattle, buffalo and goats are suitable for using grasslands in areas not possible to convert into arable land. Pasture maintenance is currently a global issue, but especially in developed countries. ARDP 2014-2020 has foreseen the agro-environmental measure that has not yet started to be implemented. This measure, among other things, foresees pasture maintenance and conservation of plant diversity. It is recommended to begin implementation of this measure.

The Law on Livestock prescribes the preservation of animal genetic resources, creation of a gene bank and conservation of native breeds. Kosovo* has the majority of institutions and personnel needed to implement this part of the Law on Livestock. Kosovo* has main umbrella organisations needed for protection and conservation of plant and animal genetic resources. In MAFRD, a livestock and a plant unit exist, but no person is responsible for the protection and conservation of plant and animal genetic resources.

Cryo-conservation of genetic material (semen, oocytes and embryos) can easily be implemented by 'GenKos' Genetic Centre in Vitomirica, Peja. This Centre has equipment and staff prepared for cryo-conservation. The only additional work is to get and preserve a sufficient number of semen doses of the indigenous and endangered breeds. Staff training is required to store oocytes and embryos of these breeds.

The Paying Agency could introduce and implement additional direct payments for each animal head for '*in-situ*' protection and conservation of endangered indigenous breeds.

Presentation and promotion of plant and animal genetic resources requires professional expertise because, as a field, little is known in public opinion. Existing NGOs mainly deal with the cultivation and promotion of investment programmes for agricultural crops that are produced and traded in Kosovo*. Therefore, these NGOs address other issues in their programmes and not agrobiodiversity protection. Through the Advisory Department, MAFRD should raise interest and stimulate engagement of existing NGOs for the protection and conservation of genetic resources.

Institutional interest of governmental bodies is missing in this regard, as has been addressed in the previous chapters. To interrupt migration of the rural population, investments in rural areas should be a priority, thus contributing to the use of genetic resources as well as the conservation of plant and farm animal genetic resources.

This situation also results in a lack of laws and regulations addressing this issue. Therefore, it is necessary that relevant ministries draft and implement laws and bylaws enabling the protection of agrobiodiversity, in general, and PGR and AnGR, in particular.

4.2. RECOMMENDATIONS FOR IMPROVEMENT OF INSTITUTIONAL CAPACITIES

The Government of Kosovo* or the Ministry of Agriculture Forestry and Rural Development (MAFRD) should establish a National Consultative Committee (NCC) with the task of conducting a study on the state of agrobiodiversity in Kosovo* and drafting the Country Strategy for the Agrobiodiversity Management. Based on this strategy, action plans in agrobiodiversity, namely in the conservation of PGR and AnGR, will be foreseen. The following concerned parties should be represented in the NCC: relevant national planning authority (responsible persons from the plant and livestock units in the MAFRD); governmental agencies responsible for genetic resources, their use and conservation (Food and Veterinary Agency, Paying Agency); experts from Agriculture and Veterinary Faculty of the University of Prishtina and the wider range of stakeholders, including the private sector, non-governmental organisations, farmers' organisations, agricultural organisations and breeding associations, research and training organisations and international organisations located in or active in the country which may be able to contribute.

MAFRD should reorganise the existing Gene Bank for Plant Genetic Resources within the Faculty of Agriculture and Veterinary and rename it as the **Gene Bank of Kosovo* (GBK)**. In this regard, we recommend that the existing Gene Bank for Plant Genetic Resources (that functions within UP-FAV since 2007) and 'Gen Kos' for animal genetic resources (that operates in Peja) should be expanded and merged into a joint institution with separate roles and functions. Within this, there will be two organisational units: one for plant genetic resources (PGR) and the other for animal genetic resources (AnGR). For GBK, the legal status (with laws and administrative instructions) within the MAFRD should be established that will provide monitoring and annual budget for activities

and payments according to planned and realised activities for both units. The establishment and maintenance of the GBK is a necessity for the protection and conservation of endangered autochthonous genetic resources. The main task of the GBK will be collection, inventorying, evaluation, description, characterisation and registration, as well as using autochthonous varieties and breeds.

4.3. RECOMMENDATIONS FOR IMPROVEMENT OF AGROBIODIVERSITY CONSERVATION

In order to improve the conservation of agrobiodiversity there should be a proper and sustainable organization of several institutions, in particular competent institutions dealing with the issue of agrobiodiversity conservation, in particular Gene Bank of Kosovo*.

The actual GBK for PGR currently operates with only one coordinator and one administrator (curator), with minimal financial support from FAV, while current technical and laboratory capacities has begun to deteriorate and are not fully functional. Therefore, to achieve these goals and objectives, it is recommended to take some steps:

1. The actual Gene Bank for plant genetic resources should be reorganised (restructured) and expanded in a technical and professional aspect by:

a. increasing technical capacities: a separate annex facility, supply with functional laboratory equipment for sample (accessions) quality assurance in storage, deep-freezing refrigerators (-18°C to -25°C) for long-term storage of samples, cold rooms (-18°C to +10°C) for medium and long-term storage of samples, supply with agro-technical equipment for the realisation of field work and activities);

b. increasing professional capacities (increase the number of professional and managerial staff, including a database administrator, an expert for maize and cereal crops, an expert for industrial crops, an expert for forage crops, an expert for vegetables crops, an expert for fruit and vitis crops, and an expert for medicinal and aromatic plants);

c. financial support and independent. This could be achieved by creating a regular annual budget fund through a single budget line or code, either from the MAFRD, the MESP or the UP-FAV.

2. The GBK unit for PGR will be responsible for protection and conservation of PGR accessions *ex-situ* and *in-situ*. *Ex-situ* will be stored seed samples as active and base collection, in short- and long-term storage conditions and field collection for vitis and fruit crops will be established, while *in-situ* on farm conservation will be organized. Every conservation programme for endangered old varieties and landraces should have a component that includes educating consumers about the quality of food, healthy diets and characteristics of traditional and sustainable farming practices. In order to promote public awareness, the MAFRD should publish yearly data on the significance and state of PGR conservation.

3. In order to monitor PGR and AnGR diversity, a unique information system should be set up in Kosovo*. The system must be scientifically comparable to other global information systems and adapted to the needs in Kosovo*. Databases by respective varieties and breeds should be established and serve as a source of data for implementation of national measures and as a mode of cooperation with other databases – especially international databases – in the field of PGR and AnGR diversity. The information system should be managed by the GBK. The database for PGR should be linked with the EURISCO database to upload all data on collection accessions. MAFRD

allocates the budget necessary for the sustainable operation of the GBK.

4. Introducing possible measures for *in-situ* protection and conservation: Paying Agency will contract farmers from the Register of Farmers of Indigenous PGR and AnGR to keep these resources under specific conditions laid down in the contract and give them additional direct payments. Additional direct payments for this purpose should be included in the Direct Payments Programme, only for PGR and AnGR that are maintained by farmers with whom the contract is concluded.

5. *Ex-situ* protection and conservation of AnGR should take into consideration two methods: a) *in-vitro* - Genetic Centre 'GenKos' takes the required amount of semen, oocytes and embryos of endangered animals and saves them by the cryo-conservation method. Reserves of male semen that ensure reproduction and insemination of females in emergency conditions should be able to meet the needs for insemination of at least two subsequent generations of females of each specific breed. b) in vivo – Natural Park (reserves), farms, vocational schools, research institutes with sufficient number of live animals that ensure genetic variability. Genetic variability should be considered sufficient if the numbers of animals in a population enable mating of animals that are not related. Every conservation programme for endangered, locally adapted animal breeds should have a component that includes education of consumers about the quality of food, healthy diets and characteristics of traditional and sustainable farming practices. In order to promote public awareness, MAFRD should publish yearly data on the significance and state of the conservation of farm animal genetic resources.

6. Kosovo* is part of 'Balkan Network for Agrobiodiversity' and other regional and international projects. Regional cooperation is necessary for efficient evaluation and conservation of specific varieties and breeds, which appear in several neighbouring countries. MAFRD and GBK should cooperate with international organisations in the field of plant and farm animal genetic resources, especially with the Commission on Genetic Resources for Food and Agriculture at the FAO.

4.4. RECOMMENDATIONS FOR INCREASING OF THE SCIENTIFIC AND PUBLIC AWARENESS

In order to increase the importance and value of the local varieties (landraces) and breeds, their perception in society respectively, there is a need to carry out different activities for the promotion of their traditional, environmental, agronomical, commercial and cultural values.

Increasing public activities for presentation of traditional products in different radio, TV media of events (fairs, field days for specific species) with the meaning of increasing information and knowledge, and demand by consumers.

Activities in education and training of farmers knowledge with best practices has to be supported for the possible benefits of maintaining local varieties/breeds and producing traditional products with high nutritional values.

Promotion of traditional knowledge and in particular the role of woman in conservation should be emphasized to the farmers, in particular in rural areas.

Promotion of PGR and ANGR products with specific brends (domestic products) in the entrance of different trade centers to attract the conssumers for giving them a visual advantage.

Raising public awareness should be started by specific education programs in kindergartens and primary schools. Education of farmers, high school students, and researchers in terms of PGR and AnGR use would be greatly beneficial.

Profesional staff should organize events for the awareness level of policy makers through trainings and workshops.

For specific landraces and breeds, scientific research projects are also beneficial in order to increase the knowledge for the genetic value. Information about general and specific ability for adaptability to specific local environment, as well as the promotin of their role in high nature value areas protection, potential diseases tolerance or specific composition of the PGR and AnGR products for food consumption. The results of those research projects can be broadly used in promotions of local varieties/breeds' importance and value added products.

Promotion, education and public awareness needs be continuous, as most of the activities conducted for PGR and AnGR protection (identification, registration and description of landraceas and local breeds) have a scientific approach.

Public presentation of PGR and AnGR products can significantly increase the knowledge and demand by consumers.

Developing a national long-term programme for linking and bringing together the success triangle of producers, traders and consumers is essentia, as a way of providing benefit for all parties involved.

4.5. RECOMMENDATIONS FOR IMPROVEMENT OF REGIONAL COOPERATION

Regional cooperation is necessary for efficient evaluation and conservation of specific varieties and breeds grown in several neighboring countries. Some of the fruit crops, grapevine and vegetables varieties are commonly found in more Balkan countries.

Collection, characterization and evaluation of such varieties have to be performed through regional projects and published in a regional catalogue.

Traditional products should be also promoted on a regional basis, as many of them are prepared in a similar way in several countries.

It is the only way towards providing higher quantities of the products for commercial sale and export. Exchange of practical and scientific information through the Centre of Agrobiodiversity will potentially enforce the collaboration and participation of the countries in joint research projects and attract higher support by foreign donors.

The cooperation will be more efficient through a regional agrobiodiversity network involving various participants in the process of agrobiodiversity use and conservation.

Results and activities should be disseminated through a web portal created by the network.

In addition, regional cooperation will help the conservation efforts for the varieties/breeds that are common for this region, as well as promote exchange of experience, knowledge and expertise.

Kosovo* is not a contracting party of any international body or agreement, meaning that it cannot apply for various supporting funds. Providing a membership to these bodies is crucial for Kosovo's* participation in regional and international projects.

It's in Kosovo's* interest to be part of regional and international programs and projects focusing on exploring, developing and use of its plant and animal genetic resources, in order to support the promotion of the values of genetic resources.

5. CASE STUDIES

Case study - 'Somborka e Dukagjinit'

'Somborka e Dukagjinit' is the name of an old autochthonous variety of pepper with unknown exact origin. The fruit colour in technical maturity is white with yellowish nuances, while in botanical maturity, it turns red. The fruit is without emphasised grooves, with enough space to fill it with meat or cheese. Its aroma is light spicy and short lasting. Somborka e Dukagjinit is cultivated almost all over Kosovo*, in gardens and fields up to 1,000 ha. Its fruit is well-known and sought after throughout Kosovo*, in families or in restaurants. It is used for conservation in traditional and industrial ways. The cultivation and seed selection is made by farmers themselves according to the criteria they wish, mainly according to the regular size and form of fruit. The fruit is used for fresh consumption, scrambled, and traditionally preserved (filled with ground meat and rice, cheese, ground cabbage, etc.) and industrial processing (filled with cheese and milk cream). Its fruit can be stored in a refrigerator or frozen, where it can be stored for a long time and maintains the consistency of the fruit. The fruit is also exported to Europe, both fresh and canned. In this regard, the food industry is also established by combining the pepper fruit and cheese as a dairy product. On September 16, 2017, the village of Krusha e Madhe organised the inaugural fair, 'Agrofesta', to celebrate successful harvesting of the pepper, where local products of pepper and other products were also on display.

Industrial preservation of the pepper is done via the private dairy company, 'Bylmeti', in Fushë Kosova. In 2017, the food industry's private enterprise, Dairy 'Bylmeti', located in a rural area, Miradi e Epërme Village, in the Fushë Kosovë municipality, collected over 160 tons of processing pepper – all dedicated to export, mainly to Europe and to countries in which Kosovars live and work. Such a preserved product is served as a snack food in most of the restaurants in Kosovo* and is considered a delicacy.

Case study - 'Water Buffalo'

Since 2011, the company, "R&Rukolli Shpk", has been involved in the agricultural sector with its water buffalo farm, where the animals are kept in a rented facility in Krajkova village, Drenas municipality. The buffalo farm, Rukolli, was established with its own funding. Currently the number of buffaloes is 400, of all ages with some 250 producing milk. The owner bought a significant number of the buffalo from farmers in Kosovo* and some of them in Romania and Bulgaria. Outside of the buffalo stable, a water pond has been built since the buffalo's natural instinct is to wallow in ponds of water. The company receives direct payments of €70/head per animal. The same amount farmers receive for one cow, regardless of breed. During the last six months, the company moved 60% of the herd to an open field in the village of Gusare, municipality of Istog to improve their welfare and ensure better feeding. R&Rukolli buffalo farm employs 11 people on the farm, including a veterinarian on a part-time basis. In order to produce enough animal fodder, the company rented land and purchased animal fodder from at least five different farmers, but not regularly and without contracts. Since its establishment, R&Rukolli has a very positive attitude toward agriculture and the agro-food sector. In that regard, it has linked a buffalo farm to new dairy plant 'Drena' (belongs to the same owner) for diversification purposes and to process more specific products from buffalo milk. The company sells raw milk to a dairy every second day. At this point, the farm is producing around 600 litres of milk per day. 'Drena' is producing Mozzarella and White Buffalo Cheese by a Kosovarian recipe. R&Rukolli and Drena are good examples of conservation of rare breeds and making profit at same time. It is a sustainable solution to preserve farm animal genetic resources.

ANNEX 1

STRUCTURE OF AGRICULTURAL PRODUCTION

Agricultural area by categories of use (in '000 hectares)

	Agricultural area	Cultivated land					Ponds, reed beds and fishponds
		Total	Arable land and gardens	Orchards	Vineyards	Meadows and Pastures	
2011	584	408	165	3.5	3.1	236	
2012	584	425	178	3.8	3.2	238	
2013	584	441	191	5.0	3.1	240	
2014	584	416	183	4.2	3.2	224	
2015	584	410	183	4.9	3.1	216	

Arable land by categories of use (in '000 hectares)

	Arable land and gardens	Sown area						Fallow land and other arable land
		Total	Cereals	Industrial crops	Vegetable crops	Fodder crops	Plant nurseries	
2011	165	125	115	:	9.6	:	:	137
2012	178	143	134	:	9.1	:	:	137
2013	191	147	138	:	8.8	:	:	132
2014	183	126	116	:	9.3	:	:	134
2015	183	140	135	0.346	14.6	28.5	0.178	137

Livestock, poultry and beehives (in number)

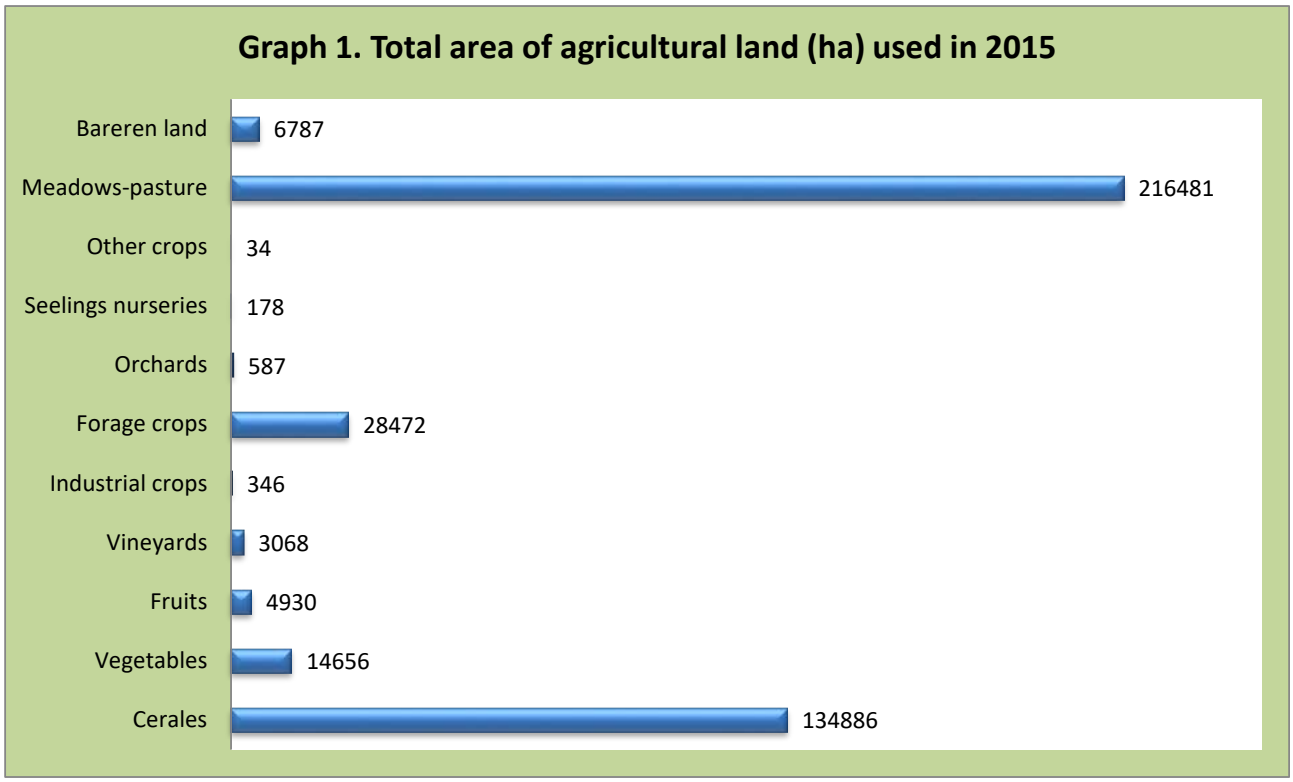
	Cattle		Pigs		Sheep				
	Total	Cows and heifers in calf	Total	Sows and first farrow sows	Total	Ewes for breeding	Horses, donkeys and mules	Poultry	Beehives
2011	361,888	200,547	50,580	No data	206,528	163,490	4,429	2,347,000	44,634
2012	329,213	187,691	55,775	No data	221,438	175,293	2,138	2,318,000	46,486
2013	321,113	184,343	49,198	No data	193,458	153,144	2,929	2,244,000	93,533
2014	261,689	148,313	34,188	No data	183,584	146,924	2,980	2,692,000	116,172
2015	258,504	147,939	44,149	No data	193,703	148,956	2,577	2,576,000	157,005

Table 1. Land use and cereals production, 2015

Cereals	Ha	%	MT	%
Wheat	89,942	66.68	304,443	68.63
Maize	41,492	30.76	131,486	29.64
Barley	1,141	0.85	3,061	0.69
Rye	396	0.29	809	0.18
Oat	1,790	1.33	3,415	0.77
Other grain crops	125	0.09	371	0.08
Total	**134,886**	**100.00**	**443,584**	**100**

Table 2. Land use and vegetable production, 2015

Vegetables	Ha	%	MT	%
Potatoes	3,353	22.90	70,678	28.74
Tomatoes	791	5.40	24,333	9.89
Peppers	3,090	21.10	55,469	22.55
Cucumbers	317	2.17	17,365	7.06
Mellon	781	5.33	17,404	7.08
Cabbage	594	4.06	16,694	6.79
Onion	1,079	7.37	13,795	5.61
Beans	2,945	20.11	9,018	3.67
Other	1,692	11.56	21,191	8.62
Total	**14,642**	**100.00**	**245,948**	**100.00**



ANNEX 2

LIST OF INSTITUTIONS AND GOVERNMENTAL BODIES

Institution	**Ministry of Agriculture, Forestry and Rural Development (MAFRD)**
Contact details	http://www.mbpzhr-ks.net/
Role in agrobiodiversity protection	Responsible institution for creation of policy and legal documents, and their implementation.
Capacity assessment (human and infrastructure)	Department for Rural Development Policy has a division for agro-environment with one official employed. Measure for agro-environment is foreseen in ARDP 2014-2020, but not implemented until 2017. The Division for Livestock and Division for Plant Production exist within the Department for Agriculture Policies and Markets. Neither in the plant production division nor in that for livestock is any person responsible for protection of genetic resources.
Important specific actions undertaken by the institution	There are no important actions undertaken by this institution regarding the protection of genetic resources.
Requirements for further enhancement of capacities	There exists the need to establish the Unit for Agrobiodiversity with at least two officers, one for AnGR and another one for PGR.

Institution	**Ministry of Environment and Spatial Planning of Kosovo* (MESP)**
Contact details	Ismajl Hetemi, http://mmph-rks.org
Role in agrobiodiversity protection	Responsible institution for creation of policy and legal documents, and their implementation for biodiversity. Included within these regulatory responsibilities relating to the creation and implementation of general management legislation in the field of environment, water, housing spatial planning and construction. In order to do such a thing, the Ministry has set up departments, institutes and the Environmental Protection Agency. MESP is responsible for the protection of Nature and biodiversity, and for the preservation and sustainable use of natural heritage.
Capacity assessment (human and infrastructure)	MESP is comprised of (nine departments, two institutes, one agency, and 15 different divisions. Only four departments and one institute are directly related to nature protection.
Important specific actions undertaken by the institution	Administrative instruction on protection of Nature, according to the EC regulative. Drafts the 'Strategy and action Plan on Biodiversity' Creation of National Parks, sanctuary for wild animals.
Requirements for further enhancement of capacities	There needs to be a critical debate between the two Ministries (Agriculture and Environment) to clarify their roles regarding agro biodiversity. They should assume responsibility for drafting the laws on Agrobiodiversity.

Institution	**Faculty of Agricultural and Veterinary**
Contact details	Shukri Fetahu & Avni Behluli: shfetahu@hotmail.com & avni_beh@hotmail.com
Role in agrobiodiversity protection	Inventorying, collecting, missions, characterisation, phenotypic and molecular characterisation, evaluation, documentation and conservation of PGR, research projects for use of PGR, education with course programmes on PGR on undergraduate and postgraduate level (MSc.).
Capacity assessment (human and infrastructure)	FAV is the largest and most important educational and research institution in the field of agriculture in Kosovo*. Its mission is: education, research and application in the field of agricultural and veterinary sciences. Currently, FAV has 11 study programmes at two levels of BSc and MSc studies. Such programmes are mainly oriented to plant sciences, crop protection, livestock, veterinary medicine, food technology and agribusiness. A special course or module with elective status, for PGR, is part of the master studies curricula. FAV, with two to three programmes, regularly participates in Prishtina International Summer University (PISU), with an international co-professor. FAV is organised into seven departments, according to the field of study: Crop production, Horticulture, Plant Protection, Livestock, Veterinary Medicine, Food Technology and Agribusiness. FAV possesses an experimental didactic farm (EDF) with an area of 12 ha. There are currently 106 full-time and engaged personnel of academic staff, including 55 professors with different degrees and 37 assistants in various fields and 22 of administrative staff. Currently the number of students attending studies at different levels is 1,850.
Important specific actions undertaken by the institution	In 2007, University of Prishtina, FAV respectively, established the Gene Bank for PGR, where are stored active and base collections, but also accessions in long-term storage conditions. Department of Genetics and Breeding, continues with activity for *in-situ* conservation of different fruit crops.
Requirements for further enhancement of capacities	The existing gene bank for plant resources that function within the UP-FAV should be expanded and become an institution with separate roles and functions, and renamed as the Gene Bank of Kosovo*. Our recommendation is that the GBK should have its legal status as defined (with laws and administrative instructions) within the MAFRD, which provides monitoring and annual budget for activities and payments according to planned and realised activities. The plant genetic resource unit will develop activities and will be responsible for: inventorying and collection, regeneration, evaluation, characterisation and registration of PGR. Indigenous plant varieties should be registered in the MAFRD register list for plant varieties and cultivars.

Institution	**Kosovo* Institute for Agriculture (KAI)**
Contact details	IFehmi Geci, fehmi.geci@rks-gov.net
Role in agrobiodiversity protection	It is located in Peja and since 2000 has operated under the authority of the MAFRD. KAI possesses well-equipped analytical laboratories, as well as 170 ha of fields for conducting research.
Capacity assessment (human and infrastructure)	The number of employed professional and expert staff is 17. In different laboratories, the following are analysed: seeds, seedlings, mineral fertilizers, soil, various plant diseases, etc. KAI has nine different laboratories: soil, crop production for VCU trials, plant protection, sector of field experiments, microbiology, and analytics for food products).
Important specific actions undertaken by the institution	KAI provides technical and scientific support to MAFRD departments, for the quality of agricultural inputs and outputs.
Requirements for further enhancement of capacities	There exists the need to establish grape and fruits field collection.

ANNEX 3

LIST OF NGOS, CSOS, FARMERS' ORGANISATIONS

No.	Name	Contact address
1	Union of Agriculture Associations in Kosovo*	Agim Sahiti, Tel. +377-44 120 615
2	Agricultural Recovery	Tel. +377 44 184-416 & 044 / 128-108 Suharekë, rimekembjab@hotmail.com
3	Initiative for Agriculture Development in Kosovo* (IADK)	http://www.iadk.org
4	Foundation for the Protection of Nature and Environment of Kosovo*	Tel. +383 38-46 100, Prishtinë, Dardania, Kurrizi 5, Lamela 8, No. 32
5	Kosovo* Association of Milk Producers	
6	Regional Livestock Farmers' Association - Blegtoria	Qendra Tregtare Burma, No. 51, Pejë, Tel. +383-39/20 043
7	Kosovo* Association of Sheep and Goat Keepers	Emin Kolloni, Tel. +377 44 210 040
8	Kosovo* Association of Poultry Keepers	Zef Pjetri, Tel. +377 44 504 040
9	Group of Young Ecologists	Prishtinë, Surcini No.5, Tel. 0383 38 23 330
10	Aquila Association of Ecologists Pejë	Qendra e Demokracisë Kati IV no. 26, Pejë, Tel. +377 44 152-354/044 223 446
11	Kosovo* Hunters Association	Rr.Nazim Gafurri, Nr.18 Prishtine, Tel. +383 38 235-178; f.gj.k@hotmail.com
12	Association for Development of Agriculture in the Farms of Kosovo* - Agrari	Robert Gajdiku str. No. 20, Prishtinë
13	Association of Agricultural Engineers - Agricultura	Prizren Jasenova str. No.15, Tel. +383 29/ 23 871

ANNEX 4

LIST OF LAWS AND ADMINISTRATIVE INSTRUCTION:

Law on Agriculture and Rural Development, Official Gazette 56/2009

Law on Livestock Official Gazette 25/2013

Law on Plant Protection, Official Gazette 1/2013

Law on Agricultural Land Official Gazette 13/2007

Law on Spatial Planning, Official Gazette 30/2013

Law on Seedling Material, Official Gazette 22/2008

Law on Seeds, Official Gazette 8/2206

Law on Organic Agriculture, Official Gazette 28/2012

Law on Protection of Environment, Official Gazette 50/2009

Law on Protection of Plant Varieties, Official Gazette 40/2008

Law on Veterinary, Official Gazette 18/2007

Law on Food, Official Gazette 49/2009

Law on Nature Protection, Official Gazette 85/2010

Law on Environmental Protection, Official Gazette 50/2009

Administrative Instruction on Reproduction of the Farm Animals, MAFRD No.16/2013

Administrative Instruction for determining the criteria on protected areas for strategic goals, MESP - No. 12/2015

Administrative Instruction for Procedures of Inspecting Control, MAFRD No.13/2014

Administrative Instruction on Duties, Responsibilities, and Composition of the Commission on Organic Farming MAFRD No. 10/2013

Administrative Instruction on the Measures and Criteria of Support in Agriculture and Rural Development for 2017, MAFRD No. 02/2017

Administrative Instruction on Direct Payments in Agriculture for 2017, MAFRD No. 03/2017

Administrative Instruction on Animal Identification and Registration No.12 /2012

Administrative Instruction on Proclamation of the Ecological Network GRK No. 18/2013

Administrative Instruction on the Manner of the Development and Implementation of Risk Assessment Study for the Introduction, Re-Introduction and Cultivation of the Wald Species, No. 14/2013

Administrative Instruction on the Cross-Border Movement and Trade in Wild Protected Species, No. 26/2012

Administrative Instruction on the Content and Manner of Keeping Nature Protected Values Register, NO. 07/2012

Administrative Instruction on the Keeping Conditions, the Manner of Marking and Evidencing of the Protected Animals in Captivity, No. 01/2012

Administrative Instruction for the Sources of Natural Habitat Types, Natural Habitat Map, Threatened and Rare Natural Habitat Types, as Well as Safeguard Measures for Conservation of Natural Habitat Types, No. 12/2011

LIST OF NATIONAL STRATEGIC AND PROGRAMME DOCUMENTS

Programme for Agriculture and Rural Development 2007-2013, http://www.mbpzhrks.net

Programme for Agriculture and Rural Development 2014-2020, not yet adopted and not published

Strategy and Action Plan for Biodiversity 2011 – 2020, http://www.ammk-rks.net

ANNEX 5

LIST OF REFERENCES FOR GENETIC RESOURCES IN AGRICULTURE

1. *Aliu S., I. Rusinovci, S. Salihu, Sh.Fetahu, A.Kika and D. Zeka(2016)*: Nutritive values and seed chemical variability of pumpkin (Cucurbita pepo L.) populations. Journal of Food, Agriculture & Environment, Vol.14 (2), April 2016.
2. *Aliu S., I. Rusinovci, Sh. Fetahu, K. Bislimi (2013)*: Morpho-physiological traits and mineral composition on local maize population growing in agroecological conditions in Kosovo*. Not. Sci. Biol., 2013, 5 (2): 232-237.
3. *Aliu S., H.-P. Kaul, I. Rusinovci, V. Shala-Mayrhofer, Sh. Fetahu and D. Zeka (2016)*: Genetic diversity for some nutritive traits of chickpea (Cicer arietinum l.) from different regions in Kosova. Turk J Field Crops 2016, 21(1), 155-160. DOI: 10.17557/tjfc.57905.
4. *Anila HODA , Hysen BYTYQI, Petrit DOBI, Hajrip Mehmeti* . 2009.Genetic Diversity of Bardhoka Breed in Albania And Kosova Analyzed by Microsatellite Markers. The International Symposium ‘ Trends in the European Agriculture Development ‘ Third Edition, Romania
5. *Borghese, A., 2004*. Recent developments of buffaloes in Europe and Near East. Proc. of the Seventh World Buffalo Congress, Manila, Philippines 20 to 23 Oct
6. *Bunevski Gj., Jelena Nikitovic, Saltamarski Z., (2016)*: Conservation of the genetic material of Macedonian Busha cattle, 1Institute of Animal Biotechnology, Faculty of Agricultural Sciences and Food-Skopje, RM, Republic of Macedonia
7. *Bytyqi H. (2006)*: Animal genetic resources in the Kosovo*, University of Kosovo* – Agriculture Faculty of Prishtina
8. *Bytyqi, H, Muji, S., Ardita, A., Aliu, S. 2011*. Buffalo population (Bubalus bubalis), characteristics in Kosovo*. International Journal of Livestock Production Vol. 2 (12), pp. 182-187, 5 November, 2011.
9. *Bytyqi, Hysen & Hajrip Mehmeti*, Buffalo Populations and their Breeding in Kosovo*, Buffalo Newletter, Number 29 – December 2014, Editor: Antonio Borghese
10. *Bytyqi, Hysen, (2009)* Animal Genetic Resources in Kosovo*
11. *Cryoconservation* of Animal Genetic Resources, Rome, 2012, Food and Agriculture Organisation of the United Nations, ISBN 978-92-5-107306-3
12. *Department of Animal Breeding and Genetics*, School of Veterinary Medicine, Hannover (2007):Breed description: Busa - cattle in Yugoslavia
13. *Fetahu Sh., I. Rusinovci, S. Aliu, A. Behluli, Q. Shabani, E. Thörn (2014)*. Characterisation of genetic diversity and morphological evaluation among Common bean landraces (Phaseolus vulgaris L.). IXth International Symposium Biodiversity Conservation and Sustainable Use for Rural Dvelopment. Procedings Book, 27 November, 2013 pp 113-117, Tirana, Albania
14. *Fetahu Sh., S. Aliu, I. Rusinovci, A. Beluli, B. Kelmendi (2014)*. Genetic diversity for micronutrients contents in some common bean landraces (Phaseolus vulgaris L.). 49th Croatian & 9th International Symposium on Agriculture, Dubrovnik, Genetics, Plant Breeding and Seed Production. paper pp 219-23. www.sa2014_p0305.pdf.
15. *Fetahu Sh., I. Bajraktari, S. Sylanaj, A. Behluli, K. Bislimi, A. Maçi (2014)*. Macronutrients contents and genetic diversity in some Common bean landraces (Phaseolus vulgaris L.). AKTET Journal of Institute Alb-shkenca, ISSN 2073-2244. www.alb-shkenca.org 09/2014;

16. *Fetahu Sh., S. Kaçiu, S. Aliu, I. Bajraktari, D. Zeka, I. Rusinovci, S. Salihu, I. Haxholli, S. Sylanaj, A. Shala, A. Beluli (2012)*. Genetic and phenotypic diversity among some Common bean landraces (Phaseulus vulgaris L.) in Kosovo*. Proc. V Balkan Symp. on Vegetables and Potatoes. Eds.: Acta Hort. 960, ISHS 2012. Pp 169-74.

17. *Fetahu Sh., I. Bajraktari, S. Aliu, I. Rusinovci, S. Salihu, I. Mulaj, A. Behluli (2012)*. Genotype variability for some landraces of maize and production capacity. Journal of Institute Alb-Shkenca: AKTET. V, 3: 505 – 509, 2012.

18. *Fetahu Sh., I. Rusinovci, S. Aliu, I. Bajraktari, A. Behluli (2012)*. Evaluation of genetic diversity for reproductive and production ability among maize landraces (Zea mays L.) in Kosova. International Journal of Ecosystems and Ecology Sciences, Vol. 2 (4): 321-326 (2012).

19. *Katharina Faukal*, The Busha cattle – a breed originated in middle ages made for the 21st century

20. *Kugler Waltraud, (2009)*: Atlas, Rare breeds and varieties in the Balkan, Monitoring Institut for rare breeds and seeds in Europe in collaboration with SAVE Fondation

21. *Kume K., Papa L. (2006)*: Animal Genetic Resources - Rare Breeds – ALBANIA - State of the Monitoring Efforts, Pernik, Bulgarien

22. *M.Cinkulov,Z.Popovski,K.Porco,B.Tanaskovska,A.Hodjic,H.Bytyqi,H.Mehmeti,V.Margeta, R.Djedovic,A.Hoda,R.Trailovic,M.Brka,B.Markovic,B.Vasic,M.Vegara,I.Olsaker,and J.Kantanen .2008*. Genetic diversity and strukture of the West Balkan Pramenka sheep types as revealed by microsatellite and mitochondriale DNA analysis. Journal of Animal Breeding and Genetics,Volume 125, Issue 6,417 – 426

23. *Mehmeti. H. 1997*. Karakteristikat kryesore të eksteriorit dhe prodhimtarisë së qumështit dhe leshit tek Bardhoka. Punimi i magjistraturës, Shkup

24. *Mehmeti. H. 2000*. Profili viziv gjenetik si dhe parametrat dhe korrelacionet e treguesve fenotipik sasior dhe cilësor të races Bardhokë. Disertacioni i doktorantures, Tiranë

25. *Mehmeti. H. 2005*. Karakteristikat zooteknike dhe prodhimtaria e mishit tek delja Bardhokë, Dardania Sacra, nr. 3, Prishtinë

26. *Mehmeti. H., H. Bytyqi, & S. Muji.2008* Managerial and morphological characteristics of Busha Cattle Breed in Kosova. International workshop. Shorthorn cattle in the Balkans ,Pogradec,11-13 september.Albania

27. *Mehmeti. H., H. Bytyqi., S. Muji., B. Imeri., V. Salihu. 2008* Karakteristikat racore dhe prodhuese të Deles Balushë në Kosovë. Buletini shkencor, nr. 15. Korçë.

28. *Rusinovci I., S. Aliu, Sh. Fetahu, P. Sedlak, D. Zeka (2015)*: The mineral composition in some local potato (Solanum tuberosum L.) populations growing in Kosovo*. Agriculture & Forestry, Vol. 61, Issue 2: 93-100, 2015, Podgorica.

ANNEX 6

LIST OF REFERENCES FOR CONSERVATION EFFORTS OF GENETIC RESOURCES

Activity	Topic	Participants from Kosovo*	Place	Organisator	Date
International Training	'Genetic Resources and Intellectual Property Rights'.	Avni Behluli, Administrator for Plant Genetic Resources at GBK	Sweden	SIDA (Swedish International Development Cooperation Agency) and Swedish University of Agriculture, Sweden	2013
International Training	'Documentation, management and administration of gene bank data - system GRIN-Global'.	Avni Behluli, Administrator for Plant Genetic Resources at GBK	CBM (Swedish Biodiversity Centre)	Sweden	2011
Workshop	'Gene bank management, utilisation and policy awareness'.	Prof. Dr. Shukri Fetahu (GBK Coordinator) Prof. Dr. Imer Rusinovci (Coordinator of WG for fodder crops) Prof. Dr. Sali Aliu (Coordinator of WG for Industrial Plants) Avni Behluli	Prishtina	GBK- FAV	2011
Round table	'Ruajtja dhe perdorimi i resurseve gjenetike bimore në Kosovë'.	MAFRD, MEST, MESP, UP-FAV, FSHMN, GBK	Prishtina	GBK-FAV	2008
Study visit	Wheat breeding, germ plasma resources, pre - breeding activity, conventional breeding methods and marker-assisted selection.	Prof. Dr. Shukri Fetahu	Hungary	Sent Istvan University-Godolo and Agricultural Research Institute of the Hungarian Academy of Sciences, Martonvásár. Hungary, Godolo and Martonvásár.	2010
International Training	Application of genetic and molecular markers in gene bank.	Prof. Dr. Shukri Fetahu	Sweden	Nordic Gene Bank. Alnarp, Sweden	2009
Project	'Broadening the genetic basis of winter wheat germ plasma of Kosovo*'.	Prof. Dr. Shukri Fetahu	Ljubljana & Sofia	Austrian Sciences and Research Liaison Offices	2009
Project	Genotype characterisation and evaluation of diversity and variability for common bean (Phaseolus vulgaris L.) Landraces in Kosova.	Prof. Dr. Shukri Fetahu	BOKU University, Austria	With partners: Hermann Burtsmayer, University of Natural Resources and Applied Life Sciences, Vienna. Department for Agro biotechnology, IFA- Tulln	2010

Project	Project coordinator for the establishing: 'Gene Bank of Kosovo*- Plant Resources 'project funded by SIDA-Swedish and CBM. Establishing new Institution for PGR, in Kosova.	Prof. Dr. Shukri Fetahu	Kosovo*	SEEDNet	2004-2011
Project	Regional project: Collecting local landraces of maize and cereals (wheat, barley, rye, oat, millet and buckwheat) in South Eastern Europe.	Prof. Dr. Shukri Fetahu	Kosovo*	Regional 'SEEDNet' project WG Maize and Cereals. Project funded by 'SIDA' Swedish and CBM.	2007-2011
Workshop	Buffalo Population (Bubalus Bubalis) and Breeding Characteristics in Kosova.	Bytyqi H, Tahiri T, Muji S, Mehmeti H, Hoxha A	-	Annual Meeting 2010 of SAVE Foundation and the European SAVE Network 4th European Seminar on Agro-Biodiversity: 'AgroBiodiversity – a crucial part of Biodiversity'	2010
Invited speaker	Mission of Gene Bank of Kosova, collecting, conservation and regeneration of plant genetic resources.	Fetahu Sh. et al.	International Conference Prishtina	'On the Move to Sustainable Agriculture on the Balkan Peninsula'	2016
Workshop	Balkan Netzwerk für Agro-Biodiversität, Abschätzung des Handlungsbedarfes zur Agro-Biodiversität Tiere Aufbau eines Netzes von Erhaltungsinitiativen und -massnahmen, Schlussbericht.	Hysen Bytyqi Kugler Waltraud, Grünenfelder Hans-Peter		Monitoring Institut for rare breeds and seeds in Europe in collaboration with SAVE Fondation, http://www.agrobiodiversity.net/balkan/	2006
Workshop	Rare Breeds of the Balkan.	Hysen Bytyqi	Pernik, Bulgarien	SAVE Focus 2005 Special Edition Balkan - Transboundary occurring breeds and breed groups of the Balkan	2006

ANNEX 6a

LIST OF NATIONAL COLLECTIONS IN GENE BANK OF KOSOVO* FOR PLANT RESOURCES (GBK)

National/entity collection		Conservation status						
		No of samples		Completely documented	Characterized	Evaluated	Multiplicated	Duplicates in other GB
CROPS		*ex-situ*	*in-situ*	approximate % of the total crop samples				
CEREALS								
Corn	*Zea mays*	51	1	100	25	25	100	0
Barley	*Hordeum vulgare*	3	0	100	0	0	0	0
Oats	*Avena sativa*	8	0	100	50	50	100	0
Millet	*Triticum aestivum*	150	0	100	100	100	50	0
Wheat	*Triticum monococcum*	1	0	100	0	0	0	0
	Triticum dicoccum	1	0	100	0	0	0	0
	Triticum polonicum	1	0	100	0	0	0	0
Aegilops	*Aegilops ovata*	2	0	100	0	0	0	0
LEGUMES								
Beans	*Phaseolus vulgaris*	85	0	100	50	50	100	0
Chickpea	*Cicer arietinum*	7	0	50	0	0	0	0
Lentil	*Lens culinaris*	1	0	100	0	0	0	0
FODDER CROPS								
Alfalfa	*Medicago falcatae*	5	0	100	0	0	0	0
Grass	*Dactylis glomerata*	8	0	100	0	0	0	0
INDUSTRIAL CROPS								
Sunflower	*Helianthus annuus*	3	0	100	0	0	0	0
Tobacco	*Nicotiana tabacum*							
VEGETABLE CROPS								
Leek	*Allium porrum*	7	0	100	0	0	0	0
Onion	*Allium cepa*	2	0	100	0	0	0	0
Potato	*Solanum tuberosum*	20	0	100	50	50	100	0
Watermelon	*Citrullus lanatus*	1	0	50	0	0	0	0
Pumpkin	*Cucurbita sp.*	12	0	100	0	0	50	0
Squash	*Cucurbita maxima*	3	0	100	0	0	50	0
Basil	*Ocimum basilicum*	1	0	100	0	0	50	0
FRUIT CROPS								
Cherry	*Prunus avium*	1	1	100	0	0	0	0
Grapevine	*Vitis vinifera*	1	1	100	0	0	0	0
Peach	*Prunus persica*	1	1	100	0	0	0	0
Pear	*Pyrus communis*	3	3	100	0	0	0	0
Sour Cherry	*Prunus cerasus*	1	1	100	0	0	0	0
MEDICINAL AND AROMATIC PLANTS								
Sage	*Salvia officinalis L.*	4	0	100	0	0	0	100
Cowslip	*Primula veris*	1	0	100	0	0	0	0

ANNEX 6b

LIST OF ANIMAL GENETIC RESOURCES NATIONAL COLLECTIONS

	Current Total		At Risk		Widely used		Lost (last 20 years)		At population level			At individual level		
									Baseline survey	Genetic distance	Protection status	Performance recording	Genetic evaluation	Molecular evaluation
	L	I	L	I	L	I	L	I						
Cattle	2	3	2	N/A	1		N/A	N/A						
Water Buffalo	1	N/A	1	N/A	N/A	N/A	N/A	N/A						
Sheep	3	2	2	N/A	1	2	0	0						
Goats	1	2	0	N/A	1	2	0	0						
Horses	1	N/A	1	N/A	1	0	N/A	N/A						
Donkeys	1	N/A	1	N/A	1	0	N/A	N/A						
Pigs	N/A	N/A	1	N/A	0	N/A	1	N/A						
Chicken	1	N/A	1	N/A	0	N/A	N/A	N/A						
Turkey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
Ducks	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
Geese	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
Honey bees	1	N/A	0	N/A	1	N/A	N/A	N/A						

- L = Locally Adapted or Native; I = Introduced/Imported (Recently Introduced and Continually Imported).
- Breeds at risk use FAO classification (http://www.fao.org/docrep/010/a1250e/a1250e00.htm).
- Consider breed characterisation during the last ten years.
- Baseline survey summary data describing the identification and observable characteristics, location, uses and general husbandry of the AnGR for each species used in the country for food and agricultural production.
- Genetic distances among breeds computed from molecular analyses.
- Protection status: *In-situ* (includes all measures to maintain live animal breeding populations, including those involved in active breeding strategies in the agro-ecosystem where they either developed or are now normally found, together with husbandry activities undertaken to ensure the continued contribution of these resources to sustainable food and agricultural production, now and in the future); *Ex-situ* conservation (genetic material within living animals but out of the environment in which it developed - *Ex-situ in-vivo*, or external to the living animal in an artificial environment, usually under cryogenic conditions including, the cryo-conservation of semen, oocytes, embryos, cells or tissues - *Ex-situ in-vitro*.
- Performance recording is based on individual animal data for milk yield, growth, reproduction, etc.
- Genetic evaluation refers to estimation of breeding values.
- Molecular evaluation includes information of markers, DNA, blood type, protein alleles, etc.

ANNEX 6b

PHOTOGRAPHS

Tomato landrace "Mollak" (Photo by Sh. Fetahu, 2016)

Pumpkin and Squash landraces (Photo by Sh. Fetahu, 2010)

Pepper landrace "I gjatë" seed collection (Photo by Sh. Fetahu, 2011)

Pepper landrace "Somborka e Dukagjinit" processed (Photo by Sh. Fetahu, 2017)

Different common bean landraces (Photo by Sh. Fetahu,2015)

Potato tubers landraces (Photo by Sh. Fetahu, 2015)

Diversity of maize landrace "Fara e Qerimit" & "Bardhosh"(Photo by Sh. Fetahu, 2009)

Different grape cultivars (Photo by Sh. Fetahu, 2017)

Different apple cultivar “Molla e thartë” dhe “Molla e bardhë” (Photo by S. Sylanaj, 2016)

Traditional rural fair “Agrofesta”, “Pepper day” (Photo by Sh. Fetahu, 2017)

Onion landrace (Photo by Sh. Fetahu, 2009)

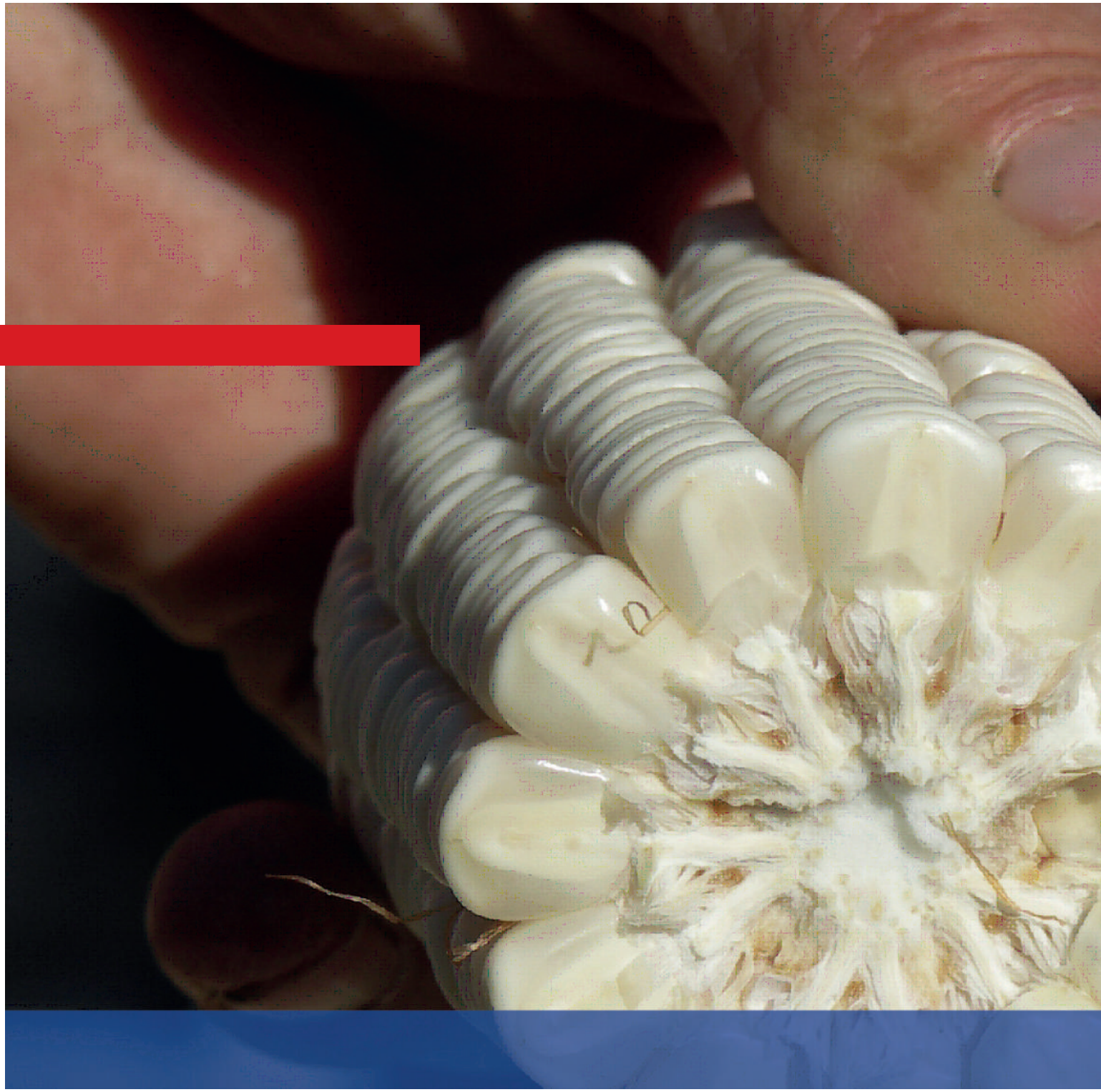
The traditional way of preparing ajvar from peeper (Photo by Sh. Fetahu, 2017)

Typical Busha in mountain region in the southwest of Kosovo (www.agrobiodiversity.net/balkan/pogradec/pdf/submitted_papers/busha_breed*

Sharri Sheep (Source: Hysen Bytyqi, "ANIMAL GENETIC RESOURSEC IN KOSOVO" 2006)*

Balusha Sheep (Source: Hysen Bytyqi, "ANIMAL GENETIC RESOURSEC IN KOSOVO" 2006)*

Water Buffalo type in Kosovo (Source: Hysen Bytyqi, "Buffalo Newsletter", 2014)*



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