



UEAA NEWSLETTER

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LATEST NEWS

Establishment of the **FIRST Cryobank in Albania for cryopreservation of important autochthonous plant germplasm**

ASA's CRYOBANK

1. CURRENT STATUS ON MICROPROPAGATION AND *IN VITRO* CONSERVATION OF AUTOCHTHONOUS PLANT SPECIES IN ALBANIA

SITUATION...

Among the Mediterranean countries with a vast diversity of landscapes and climate, Albania is considered one of the most concentrated and rich areas in fruit species, with a wide range of varieties and populations. About 70 species and subspecies, with over 1200 forms and populations of native fruit trees and shrubs, are present in the Albanian territory. However, a severe regression of Albanian biodiversity has been observed in recent years due to climate and socio-economic changes and environmental exploitations. This causes a gradual and disturbing loss of autochthonous genetic resources of particular importance, like plums, apples, pomegranates, and blueberries. This results in a risk of losing precious genes (wild gene pools) with potential beneficial characteristics of resistance to biotic and abiotic stresses.

More than *in situ* conservation strategies must be needed to conserve plant genetic resources. For this reason, it is necessary to develop short-term and long-term strategies for the conservation of plant genetic resources using *in vitro* techniques and to establish genetic banks in the long term. Preserving plant genetic resources under *in vitro* conditions is among the priority issues of today.



Experience so far...

The team of researchers has about 25 years of experience in micropropagation and *in vitro* conservation using slow-growth technologies, for short or mid-term conservation, initially at the Biological Research Institute near the Academy of Sciences and later at the Plant Tissue Culture Laboratory in the Department of Biotechnology, Faculty of Natural Sciences, University of Tirana, which is a close collaborator of the Academy of Sciences of Albania. This last laboratory plays the central role in realizing the new project of 2022, "**CRYOFRUIT**", supported by the Academy of Sciences and coordinated by acad. Efigjeni Kongjika and prof. Valbona Sota.

2. THE NEED FOR ESTABLISHING LONG-TERM CONSERVATION STRATEGIES

Albania needs to implement cryopreservation strategies, which are effective methods for the long-term conservation of desired germplasm. Cryopreservation of plant genetic resources is a reality that effectively overcomes the complications presented by traditional preservation in seed banks, clonal collections in the field, and those preserved *in vitro* through minimal growth techniques. ASA's Cryobank will serve as a service for public and private institutions to preserve and use a modern approach to the propagation of fruit tree species with high dietary and therapeutic characteristics for local farmers, especially for the enrichment of the eco-tourism capacity in mountainous areas and hills in Albania.

3. ESTABLISHMENT OF THE FIRST CRYOBANK BY THE ACADEMY OF SCIENCES OF ALBANIA AND INTERNATIONAL COOPERATION

This is why the Academy of Sciences of Albania has granted "CRYOFRUIT" project because it has become necessary for implementing and applying such strategies for the first time. ASA, by its legal status, is the highest scientific institution, independent in its activities and able to create multidisciplinary scientific groups based on the agreements with Universities and other research national and international institutions. ASA also aims to cooperate with the business to apply innovative research products in economic activities and organize scientific debates in conferences, workshops, etc., to include innovations in various branches of the economy.

Through this project, it is intended to realize the optimization of the conservation of autochthonous genetic resources of fruit tree species, initially for the varieties of apple, plum, pomegranate, and blueberry, as among the important plant genetic resources of Albania with the ultimate objective of creating the first Albanian Plant Cryobank, (ASA's Cryobank). The experience of the Institute of BioEconomy-CNR, Florence, Italy, for cryopreservation has helped the conception of the new project. With its results, the project is expected to have a significant impact on the territory of Albania, as it will enable the activation of autochthonous germplasm preservation procedures, exposed to high genetic erosion, with a modern approach and following the trend of biotechnological developments nowadays. Furthermore, the 'ASA's Cryobank' will remain available to the country to conserve endangered plant species even after the project's completion.

On the framework of the above, ASA has founded national networks working on Plant Biotechnology and is strongly cooperating internationally with scientific research centers and universities working on plant

tissue techniques.

A significant event was the organization of the 'Information Day' (September 2022), aimed the need to exchange the most positive experiences in the field of *in vitro* culture research between Albanian researchers, prominent foreign researchers, collaborators in joint projects, conferences, and articles is felt; to encourage the start of the establishment of a Balkan and Mediterranean Network for the qualification of scientific staff to projects for the establishment of the joint *in vitro* gene banks and for the use of innovative methods to help preserve and utilize autochthonous plant genetic resources. The main objective of this event was to face the achievements and challenges so far with those of research groups in scientific institutions and universities of the Balkan countries (Greece, Northern Macedonia, Bulgaria, Kosovo, Turkey) and the Mediterranean (Italy, Egypt) for the conservation and use of autochthonous plant genetic resources by biotechnological methods.