

Plant Collections *in vitro* and Cryobanks - a way of the Conservation and Rational Use of Plant Biodiversity

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Aim of the study: Plant biotechnology use collections *in vitro* to produce sterile test-tube plants, to culture organs, tissues or plant cells, and to isolate protoplasts and the biotechnologies are divided into two groups: first produces intact economically-useful plants, in the second group the end products are biomass cell cultures and/or phytochemicals. Thus, the aim of this article is to review two collections from RF and RB in its broadest sense and to explore its use across many fields of application: from the conservation of endangered species to the storage of economically important crop plants and industrial plant cell culture collections.

Material and Methods: A wide range of biotechnological methods were utilized including: 1) tissue culture; 2) cell culture techniques; 3) molecular genome analysis; 4) cryopreservation for the collection long-term storage 5) documentation, 6) microclonal propagation, 7) patenting, 8) storage, 9) techniques to deposit of rare and endemic plants species, including medicine; 10) exchange of plant genetic resources.

Results: Plant *in vitro* collections of wild flora of Russia and Belarus on the basis of natural sources and existing collections in EurAsEC countries and the experience of their creation were analyzed. Russian collection of the cell cultures was established in the Timiryazev Institute of Plant Physiology Russian Academy of Sciences in 1978. In general this collection has about 100 different cell culture strains and lines. Currently, it contains 242 taxa from more than 20 families of angiosperms. Plant biotechnologies (from plants in the test-tube to protoplasts) are directed toward creating new plant forms, simplifying selection processes, and effectively reproducing and improving valuable genotypes. Seeds and meristem of several rare species from Belarus were deposited to cryobank of the Timiryazev Institute of Plant Physiology of Russian Academy of Sciences for the long-term storage. Common platform concerning creating, maintaining, and utilizing of biotechnological collections was developed: protocols of preservation of genetic resources and deposition at low temperatures of *in vitro* plant banks; protocols for plant clonal micro propagation to obtain high quality planting material; protocols of plant cell and tissue culture using for BAS production: protocols for industrial production of natural herbal remedies for various purposes; protocols for assessing the genetic diversity (GD) parameters of natural populations of protected natural flora for including in the collection.

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