

Use of plant genetic resources of Botanic Garden of SUA in Nitra in education

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Abstract: The basic mission of each botanical garden is first of all construction and maintenance of plant collections. Created collections serve as irreplaceable educational tool. The Botanical Garden of the Slovak University of Agriculture is not exemption in this sense. The garden has been closely related to educational process since it was established in 1982.

Keywords: botanical garden, collections, genepool, education

Introduction

Botanical gardens are scientific-educational institutions the aim of which is comprehensive study of plants. Besides the study they gather, register, explore, describe and present professional knowledge and plant world curiosities to a public (MOCHNACKÝ 2000).

The first botanical gardens in history which had merit in forming of environmental attitude with great didactic, scientific and social importance came into being in Greece. Ancient Greeks established botanical garden in Alexandria in 3rd millennium b.c..

Gradually new and new botanical gardens were established – in ancient China, Mesopotamia, and Egypt. The process slowed down in the Middle Ages when mostly monasterial gardens and private parks were being established. Establishing of botanical gardens with definite didactic and scientific mission started in XVI century, in the Renaissance period (MOCHNACKÝ 2000).

First botanical gardens were established in that period also in in Slovakia, and there are 15 botanical gardens and arboreta in the country nowadays. The

botanical garden of The Slovak University of Agriculture (SUA) was established in 1982 and is among youngest botanical gardens in Slovakia. Being a purpose-built facility, after its creation it took over the care of park areas within the campus of SUA as well as buildings in the process of construction in the centre of its campus. Position of the campus was determined by the original layout of the university campus designed by Ing. arch. V. Dedeček, CSc.. The author of the project of the Botanical garden – garden architect A. Glaus adhered to requirements of the Department of Botany of the Faculty of Agronomy when designing the share of individual collection expositions (GÖBÖ et al. 1983).

When determining the contents of collections the mission of the botanical garden as a purpose-built facility of the university oriented on agriculture was regarded. Besides carrying out didactic, scientific, research, cultural, and educational tasks typical for botanical gardens the mission of agro-botanical garden was important (Göbö, Řehořek, Knoll, 1983). The main mission of any botanical garden is to build and preserve plant gene pool collections. The collection may serve as an irreplaceable visual tool in educational process. The Botanical garden of SUA in Nitra is not an exception of this. From its establishing in 1982 it has close connection to the education as well as practice. There is no other botanical garden in Slovakia with this orientation.

Exposition collections are divided into three groups, e.g. general, special and decorative ones. This division is realised with collections planted in open as well as with collections in glasshouses.

General exposition collections in open are presenting natural flora taxa of temperate zone of the Northern Hemisphere with regard to their systematic classification, biological and ecological peculiarities and grouping in plant communities. These collections are arranged in three expositions. General glasshouse collections include only the representatives of those classes, series, families, and species which cannot be grown in exterior, for example *Cycas*, *Laurus*, *Piper*, *Pilea*, *Citrus*, *Phoenix* and other genera represented with many interesting species.

The other group of plant collections (special collections) is represented mostly with tropical and subtropical plants that are grown as crops in countries of their origin, while in our conditions, due to their appearance, they are used as decorative plants. There are many hybrids and cultivars among them apart from botanical taxa.

Within the third group of collections decorative plants are included. The group is embracing all the collections in open and interior plants grown in glasshouses that have decorative effect and create enjoyable and aesthetic atmosphere. Besides those plants the collections of different crops are part of the botanical garden – fruit trees and shrubs, grapevine, chestnuts and miscellaneous domestic and foreign crops with prospective of growing in changing climatic conditions (KUBOVÁ et al. 2005).

The close connection of the Botanical garden with educational process is illustrated by the fact that the director of the Botanical garden RNDr. Vladimír Řehořek, PhD. was participating in the pedagogical activity at the Department of

Botany. During 1990-1995 period he taught subjects Systematic Botany and Botany of Tropical and Subtropical Plants. Later, in 1999, the other director doc. RNDr. Tibor Baranec, PhD. taught subjects Botanical Gardens and Arboreta, and Collecting Expeditions.

Material and methods

The area of the SUA campus maintained by the staff of the Botanical Garden including built-up area is approximately 28 hectares. Only part of the total area belongs to the Botanical Garden which is divided as follows:

Park: 6 ha

Nursery producing decorative plants: 4 ha

Pomological and ampelographic collections – orchard and vineyard: 5,7 ha

Vegetable collection: 1,2 ha

Genepool of cultivated plants: 2 ha

Medicinal herbs: 0,3 ha

Nursery producing fruit woods: 0,5 ha

Glasshouse area: 0,17 ha

Vivarium and mini ZOO

Enormous number of genera, species and cultivars gathered in collections of the Botanical Garden serve first of all to improve the quality of teaching selected subjects at SUA. In the glasshouse collections of the Botanical Garden there are about 200 cacti species, 250 succulent species, 750 species and cultivars of orchids, tillandsias and bromeliads. Due to collecting expeditions to Nicaragua, Peru and Ecuador the Botanical Garden acquired valuable collections of genera from families Piperaceae, Moraceae, Orchidaceae, Begoniaceae, Araceae, and Bromeliaceae. Glasshouse division has rich collections of plants with approximately 4000 botanical taxa and cultivars of decorative plants.

The genepool of indoor plants creates strong basis for improving the quality of education. Plants serve as a complex practical aid in teaching of subject Interior Floriculture to students of study programme Biotechnics of Verdure of the Faculty of Horticulture and Landscape Engineering.

The collections of the Botanical Garden are used also in teaching of subjects General Botany, Systematic Botany, Special Dendrology, Ecology, Floriculture, Horticulture, Fruit Production, Viticulture etc..

On the earth of the BG there were realised two PhD. theses oriented on assessment of irises and decorative garlics. Final projects are oriented on genepool of irises, roses, ficuses, tillandsias, orchids, generative propagation of garden ferns, micropropagation of fruit woods in laboratory as well as growing technologies of various fruit and vegetable species.

Results and discussion

All the collections of the Botanical Garden of SUA in Nitra serve as very effective didactic aid and are involved in educational process directly. BG

cooperating with managements of individual faculties and in accordance with the curricula of study programmes within the pedagogical educational process guards realisation of practicals, lectures, practical stays, bachelor, diploma and PhD. theses, excursions and training courses.

The most important attribute of the BG of SUA in Nitra is direct connection to pedagogical process at the individual faculties of the University, and that of vocational and basic schools. All the collections, facilities, information basis, library and journals serve first of all for education including manual and expert practical training of students. The staff of the BG is involved in teaching of subjects for Third Age University students. Exhibitions, lectures, mass media outputs, special as well as scientific publications all serve for advertising of the BG and the SUA in Nitra also.

Training in the facilities of the BG is attended by about 200 students a year, of the Faculty of Horticulture and Landscape Engineering, the Faculty of European Studies and Regional Development, the Faculty of Agrobiolgy and Food Resources. The practical training (practicals) is organised in the BG according to training harmonogram of relevant departments.

- Faculty of Horticulture and Landscape Engineering
 - Department of Planting Design and Maintenance
 - practicals of subjects Interior floriculture, Garden floriculture
 - practical training in glasshouses and nursery producing decorative plants
 - practicals of subject Conifers and Broadleaved Woods in Landscape Architecture
 - production of young plants of annuals and bulb plants
 - Department of Vegetable Production
 - practicals of subjects Horticulture, Spices and Aromatic Plants, Field and Horticultural Crops, Basics of Horticulture, Propagation Technologies in Vegetable Production and Floriculture, Course of Intensive Vegetable Production
 - production of young plants of vegetable, spice and aromatic plant species for research activities and final works of students
 - Department of Fruit Production, Viticulture and Enology
 - practicals of subjects Training and Pruning of Fruit Woods, Fruit Production, Viticulture, Course of Grapevine Pruning, Course of Fruit Woods Pruning
- Faculty of European Studies and Regional Development
 - Department of Ecology
 - practicals of subject Basics of Ecology and Plant Ecology
- Faculty of Agrobiolgy and Food Resources
 - Department of Botany
 - practicals of subjects Systematic Botany, Botanical Gardens and Arboreta, Collecting Expeditions
 - Department of Plant Physiology
 - supplying plant material samples for practical training according to requirements of the department.

In the Botanical Garden yearly about 100 students of the SUA in Nitra and those of Vocational Veterinary School in Nitra perform operational practice.

The Vivarium of the University located in the BG is also involved in teaching process that are offered by the Faculty of Agrobiolgy and Food Resources and related to targeted protection of protected animal species within profiling subjects Zoology, Nature Protection, and Protection and Creation of an Environment.

The total number visitors - organised groups of children and students of preschool and school facilities, holiday camps, universities and public visiting the Botanical Garden is about 8000. This proves the fact that the BG of SUA in Nitra fulfils one of its main tasks – to serve as a practical show and didactic aid in educational process, serving for amateur public as well as specialists.

Conclusion

From its establishing in 1982 the Botanical Garden of SUA in Nitra has been always closely linked with teaching process and practice. The collected gene pool serves as an irreplaceable practical aid in educational process. Being a purpose-built facility of the Slovak University of Agriculture in Nitra the Botanical Garden fulfils a mission of an agro-botanical garden. There is no other garden of that type in Slovakia in present. All the collections of the Botanical Garden serve as highly effective didactic aid and are involved in teaching process directly. BG of SUA in Nitra cooperating with managements of individual faculties and in accordance with the curricula of study programmes within the pedagogical educational process guards realisation of practicals, lectures, practical stays, bachelor, diploma and PhD. theses, excursions and training courses.

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