THE EXPLORATION OF KOREAN SPONTANEOUS FLORA FOR INTRODUCING SOME INTEREST SPECIES IN ROMANIA

EXPLORAREA FLOREI SPONTANE COREENE ÎN SCOPUL INTRODUCERII ÎN ROMÂNIA A UNOR SPECII DE INTERES

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Abstract: *Republic of Korea enjoys similar climatic conditions to those in Romania; there are wide variations of temperature and precipitation. The mean temperature throughout the four seasons ranges from 5°C to 16°C and rainfall from 500 to 1.500 millimeters. Such an environment makes the land a diversified floral region. Lee Woo-tchul's Lineaments Florae Korea (1997) listed 190 families, 1.079 genera, 3.129 species, 8 subspecies, 627 varieties, 1 subvariety and 306 forms of higher plants, including pteridophytes. This means that more than 4.000 kinds of vascular plants, including about 570 endemics currently grow in the country. Known been do the diversity of flora in the both countries, namely Romania and Korea, a team of researchers from the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, and a team of researchers from the National Horticulture Research Institute Suwon, involved in the research project having the title "Investigation of ornamental plant germplasm and exchange of breeding technology" initiated shares knowledge and collection of spontaneous flora in the both countries, enabling them to conserve the novelties in collections and to recommend for use in some breeding programs. The present paper shows some areas of South Korea that have been explored and important species from this area.*

Key words: germplasm, ornamental plant, spontaneous flora, South Korea, Romania.

Rezumat: *Republica Coreea beneficiază de condiţii climatice asemănătoare celor din România, acolo există variaţii largi de temperatură şi precipitaţii. Temperatura medie pe tot parcursul celor patru anotimpuri variază de la 5°C la 14°C şi precipitaţii de la 500 la 1500 mm/an. Un astfel de mediu face posibil crearea unor condiţii prielnice unei flore foarte diversificate. Lee Woo-tchul's Lineaments, în „Florae Korea" (1997) citează 190 familii, 1.079 genuri, 3.129 specii, 8 subspecii, 627 varietăţi, 1 subvarietate şi 306 de plante superioare, incluzând Pteridophyte, inclusiv 400 de plante endemice care cresc în această ţară. Cunoscută fiind această diversitate a florei din cele două ţări, respectiv România şi Coreea, un colectiv de cercetători de la Universitatea de Ştiinţe Agricole şi Medicină Veterinară Cluj-Napoca, şi un colectiv de cercetători de la National Horticultural Research Institute Suwon în cadrul proiectului de cercetare cu titlul „Investigarea fondului de germoplasmă la plantele ornamentale şi schimburi de tehnici de ameliorare" au iniţiat acţiuni de cunoaştere şi colectare a florei spontane din cele două ţări, care să le permită conservarea acestora în colecţii şi recomandarea pentru utilizarea unora în lucrări de ameliorare. Lucrarea prezintă*

câteva zone din Coreea de Sud care au fost explorate şi speciile importante din arealul respectiv.

Cuvinte cheie: fond germoplasmă, plante ornamentale, flora spontană, Coreea de Sud, România.

INTRODUCTION

South Korea is located in the southern part of Korean Peninsula in East Asia and include an area predominant mountainous (73% of Korea), cumulate over 1100 plant species, of which over 150 species of trees, over 700 species of medicinal plants, 200 species of edible plants and 450 species used in industry. National flower of Korea is *Hibiscus syriacus*. Most species present medicinal properties and the most important species is *Panax ginseng*, the roots of ginseng the famous elixir of youth.

This paper presents some areas with prospected plants in South Korea, in the frame of international bilateral research project CB 18/06.06.2008 (project manager Prof. Dr. Maria Cantor), which was aimed to investigate spontaneous floral species from Korea, in order to improving the Romanian assortment.

The study visit took place between 14-24.11.2008 with a group of researchers from the USAMV, at the National Horticulture Research Institute Suwon, South Korea, in the following locations: Jeju Island, Seoul and Suwon. The visit was conducted under a program established by the Korean partners, leaded by project director Dr. Hyang-Young Joung, in collaboration with researchers Dr. Cho, Hae-Ryoung and Dr. Park Sang-Keune.

MATERIAL AND METHOD

For fulfill the aim of the project, the group of researchers from Romania made the first step of the visit (16.11.2008) in the area Hallasan Moorland (fig. 1) situated 1100 m altitude, at the foot of the volcano Halla, where grow 58 species of plants such as dwarf aquatic vegetation such as: *Allium, Iris, Orchis, Ilex crenata, Acer japonicum, Echinosophora koreensis, Sasa korean, Terauchi anemarrhenae folia.*

Fig. 1. Hallasan Moorland

Cymbidium is a basic genus of orchid industry from South Korea. The country has an area of 331,6 ha, which represent 25,7% of all plants grown in pots.

After followed a visit effectuated by the researcher's team at a private Orchid Farm, situated 30 km from the city of Jeju in Seogwipo, owned by Heo Jae Soon, which grow mostly genus like the above, in protected areas (fig. 2).

At this farm annually produces around 30.000 pots, using 20 varieties of orchids, with different colors, that are propagated in vitro. Cultures were set up for export to China and Japan. In the visit they had a discussion with Ki Seong-Cheol researcher, who works on improving the orchids breeding technology.

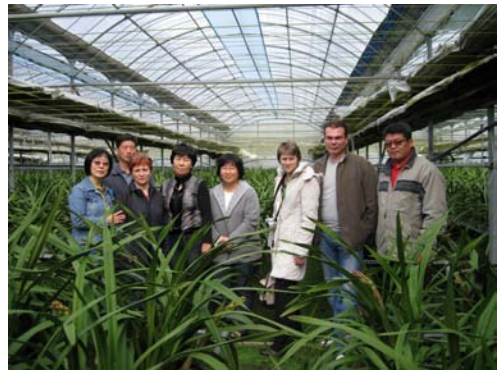

Fig. 2. Private orchid farm

The program were completed with the visit of Hallim Park (fig. 3), which was founded in 1971, and included the following sectors: Palm Tree Avenue (basic attraction of the park), Hyeopjae Cave, the Bonsai Garden, Village Museum, Birds Garden, exhibition of Jae - Am Stones, Water Garden (with many water lilies and lotus) and Subtropical Botanic Garden (including over 2000 exotic species), and the *Chrysanthemum* exhibition. Here we met many native species in Korea such as *Farfugium japonicum, Aster koraiensis, Cardamine violifolium* and *Hepatica maxima*.

Fig. 3. Hallim Park

Corresponding with the program, in 17.11.2008, the group visited and established new contacts, at the Rural Development Administration of the National Institute of Horticulture Subtropical Plants and the Center for Agricultural Research Plant.

The same day, the group had an impressive visit to a private Botanical garden "Banglimwon" with spontaneous plants which amounted to countless arrangements

with native plants from Halla Mountains area, a lot of orchids on tuff, fern and an exhibition of Bonsai. The president of the garden HanSuk Bang (fig. 4) has published a book with ferns from Korean flora which was presented and donated to the group of researchers from Cluj. The information about the 4000 species existing in this garden has been given by administrator of the garden, Song Pil, Lee.

Fig. 4. HanSuk Bang's the president of the Private Garden

Our visit continued on 18.11.2008, at the Botanical Garden Yeomiji (fig. 5) where the Romanian researchers were leaded by Ho Chang OH. This garden shows 2 major sectors: one with inside plants and one with outside plants.

The inside garden has an area of 12 ha, including 5 sectors: Floricultural plants garden, Water lily Garden, Garden of Cacti and succulent plants, garden with plants from the jungle and tropical garden species. The botanical garden offers space for 1200 species of plants and 800 inside and outside species.

Fig. 5. Yeomiji Botanical Garden

Here we encountered rare species such as *Cymbidium kauran*, *Hibiscus hambo*, *Neofinetia falcate* and over 1 million visitors come yearly in this garden, to see the gorgeous plants.

In the running program, the researchers from Cluj USAMV visited University of Jeju where they had a meeting and agree for a partnership bilateral agreement with the leadership of Jeju National University (fig. 6) and the teachers from the disciplines of the Floricultural and Biotechnologies. The following day (19.11.2008), they had a

meeting with the leadership of the National University of Horticulture and Medicinal Plants in Suwon.

On 20.11.2008, the group visited the headquarters of the Rural Development Administration (RDA) from Soeul, where they was greeted by the unit director Sang-Jo Kang, director Hyung Gwan Goh and many scientific researchers.

After that they went to visit the Wild Seed Center, which ended with a discussion at the Department of International Relations, RDA.

Fig. 6. Jeju National University

In the data of 21.11.2008 the group took part in the exchange of flowers and than they visited the largest flower market in Seoul "Yangae-Dong" (fig. 7).

In the last day, the Romanian group visit the laboratories and experimental fields for floral plant breeding: chrysanthemum, gerbera, carnations, freesia, lilies, cacti and some spontaneous species and they had meet and discuss with floral researchers about their research objectives, technology and the possibilities for the future collaboration.

Prospecting and monitoring the spontaneous flora of Suwon was carried out in 22.11.2008. In those visits were made some biological material exchanges and breeding techniques "*in vivo*" and "*in vitro*".

Fig. 7. Yangae-Dong flower market

CONCLUSIONS

During the visit, the group of researchers from UASVM Cluj Romania has received a lot of information consisting in books and leaflets of specialty CD with many floricultural plants.

There have been exchanges of biological material such as:

- 30 varieties of *Gladiolus*, some of which were created at NHRI Korea which will be studied and acclimatization in the didactical floral collection of UASVM Cluj;

- it was introduced a new floral specie - *Leucocoryne ixioides* (Glory of the Sun), which is native of Chille, scented and colored, that specie isn't cultivated in Romania yet;

- four species of orchids, multiplied *in vitro* - *Cymbidium virescens* var. Empero's Crown, *Cymbidium virescens* var. Golden Flower, *Calanthe syboldii*, *Lyparis* which were divided and acclimated at UASVM Cluj, to promote in horticultural production of Romania.

The received orchid species are endemic in Korea and will be multiplied for the first time in Europe.

REFERENCES

1. Cantor Maria, Pop Ioana-Delia, 2008 - *Floricultură – Baza date.* Ed. Todesco, Cluj.

2. Jung-Myung Lee, Geun-Won Choi, Jules Janick, 2007 - *Horticulture in Korea*. Korean Society for Horticultural Science, Korea

3. http://minsok.chonbuk.ac.kr/eng/teuksan/index.html

5. http://en.wikipedia.org/wiki/Hallasan