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EXPEDITIONS OF THE NATIONAL CENTRE FOR PLANT GENETIC RESOURCES IN 2004
SHORT COMMUNICATION

INTRODUCTION

In order to collect local crop plant populations and their accompanying species a collection missions are organized. Due to fragmented farming economy until contemporary times local forms of crop plants are still well preserved in Poland.

The idea of collecting, keeping and using of the plant genetic resources dates back to the beginning of the 20th century. The tradition of collecting genetic material in Poland is almost a hundred years old. It was initiated by Professor Miczyński, senior, the chancellor of the School of Agriculture in Dublany, and was then continued by Professor Lucjan Kaznowski, employed in the State Research Institute of Rural Economy in Puławy. Since 1915 he collected and examined national varieties of clover, vetch and other crop plants. In 1971 the collection of crop plants established by Professor Kaznowski was moved to the Plant Breeding and Acclimatization Institute (PBAI) at Radzików. In 1979 basing on an inter-department agreement and a network of previously founded leading collections located in different research centers the National Institute of Genetic Resources was established in PBAI (currently National Centre for Plant Genetic Resources, 'Bank of Genes'). The aim of the Program for Protection of Crop Plants Genetic Resources is to preserve the genetic material of the most important crop plants and their wild growing 'relatives' for the purposes of breeding protection and research. The role of gene banks is not only collecting and storing of genetic resource but also evaluation of the collected material.

Within the framework of the Program for Protection of Crop Plants Genetic Resources as many as 73 000 of plant genotypes are protected of which 64 000 seed samples that represent 245 species are located in the long-term storage of Gene Bank of the Plant Breeding and Acclimatization Institute at Radzików. Annually, the number of stored species increases by 3 – 4 thousand. Nearly a half (41%) of the collected specimens are cereal samples; one third is grass samples. The remaining 30% are legumi-

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nous, oil-bearing and industrial plants, as well as vegetables, small seed papilionaceous plants, medicinal and segetal plants.

In 2004 the PBAI National Centre for Plant Genetic Resources organized two expeditions in the territory of Poland: in Ponidzie, between 14 and 17 September, and in Kurpie between 28 September and 1 October.

THE PONIDZIE EXPEDITION:

The limit points of Ponidzie are the following coordinates: $50^0$18'–$50^0$34' N and $20^0$29'–$20^0$49' E. The biggest area of the region is arable land. It is dominated by individual form of farmland ownership. Therefore, basic purpose of the expedition was collection of local crop plant and weeds population as well as old fruit tree varieties (Table 1).

Table1

Accessions collected during expedition conducted on Ponidzie

Species	Number of accessions
1	2
Agrostemma githago	1
Allium sp.	3
Anagallis arvensis	1
Arenaria serpyllifolia	1
Arrhenatherum elatius	1
Bupleurum rotundifolium	1
Camelina sativa	1
Corylus avellana	4
Cucurbita pepo	1
Cuscuta sp.	1
Euphorbia exigua	1
Juglans regia sp.	1
Linaria arvensis	2
Linum usitatissimum	1
Lithospermum arvense	1
Lolium sp.	1
Lycopersicon	1
Malus sp.	3
Malva sp.	2
Medicago sp.	1
Melampyrum arvense	1
Melandrium nocitiforum	1
Nesila paniculata	1
Panicum miliaceum	2

Table 1

Accessions collected during expedition conducted on Ponidzie (continued)

1	2
Papaver rhoeas	2
Phaseolus coccineus	1
Phaseolus vulgaris	5
Phleum pratense	1
Pirus sp.	4
Pirus communis	3
Plantago lenceolata	1
Prunus avium	2
Ribes uva-crispa	2
Rosa sp.	1
Setaria sp.	2
Setaria glauca	1
Synapis sp.	1
Triticum aestivum	1
Total	61

Seeds of large seed false flax (*Camelina sativa*) were collected. It is an endangered species of the oil-bearing plants. It was a very popular crop plant around Europe back in the middle of the 20th century. Currently, it is present only in very few refuges in remote villages (Nowosielska & Podyma, 2000). The 2004 expedition came across cultivation of false flax in Chroberz village in Pińczów. *Linum usitatissimum* is another endangered crop plant that was found during the expedition in the village of Krzyżanowice. We should not forget about millet (*Panicum miliaceum*). It has been cultivated for 25 years in Kliszów village. Comparing to wheat, barley and rye the millet's seed contains more fat, cellulose and mineral salts. It is mainly used to manufacture millet groats. Moreover millet seeds are very rich fodder for poultry, whereas the green forage is willingly eaten by cattle and horses.

Plants of arable fields, which is the main component of Ponidzie landscape, has been recently undergoing violent changes due to intense human interference in the agricultural environment. This interference is a result of modifications of farming methods but also increased mechanization and devastation of natural environment. Apart from expansion, the process goes together with the recession phenomenon referring to many segetal plant species. Some of weed species are already deemed extinct; other are classified as endangered or exposed to endangerment. This year some rare species of weeds growing on limestone soil, which constitutes 1% of our country's soils, were collected. They included: *Bupleurum rotundifolium*, *Neslia paniculata, Euphorbia exigua*. Also seeds of *Agrostemma githago* were collected; a species that occurs in rye cultivations, extremely rare in Poland in the recent years. In 2000 the employees of the National Centre for Plant Genetic Resources commenced collecting weed species threatened by extinction. Preservation of certain species is very important in terms of cultural, historical and medical aspects. Weeds may also have a positive influence on the crop plant, e.g. they protect the top course of soil against hardpan, drying and erosion. They also contribute to enriching the soil in nitrogen compounds and calcium. Such plants may

also have allelopathic properties – they stimulate crop plants' growth. They are used as bio-indicators and make part of microclimate in agro-ecosystems. These are unquestionably the reasons for their protection against extinction and their seeds shall be stored in gene banks.

THE KURPIE EXPEDITION

The second domestic expedition covered the area of Kurpie. It is a region of the northeast Poland in the Mazowsze Plain. It is dominated by farming landscape with residues of the Green Primeval Forest. Sandy, light soils did not support the development of modern farming. Thus, interesting forms of crop plants may be found in the area. During the expedition local varieties of crop plants were the most frequently collected specimens (Table 2). It is worth to mention that for several two of the farms visited by the Centre have been preserving years their own, local vegetable varieties of carrot, parsley, tomatoes and cucumbers. Also buckwheat was found (*Fagopyrum esculentum*) – the plant has been cultivated since the times of the World War II. Taking into consideration the fact that nowadays cereals are exchanged once a year in seed distribution centers astoundingly many local varieties of rye (15 samples) and oat (9 sam-

Table 2

Accessions collected during expedition conducted on Kurpie

Species	Number of accessions
Allium porrum	1
Allium schoenoprasum	1
Anetum graveolens	8
Avena sativa	9
Beta vulgaris	3
Brassica napus	1
Brassica oleracea	1
Cucumis sativus	11
Cucurbita sp.	2
Cucurbita maxima	4
Cucurbita pepo	3
Dancus carota	2
Fagopyrum esculentum	1
Helianthum annuus	3
Hordeum vulgare	1
Lactuca sativa	3
Lycopersicon esculentum	7
Petroselinum sativum	7
Phaseolus coccineus	4
Phaseolus vulgaris	11
Pisum sativum	2
Secale cereale	15
Others	3
Total	103

ples) were taken. Furthermore, 9 samples of pumpkin (cultivated both for consumption and fodder purposes) were collected. During most of the expeditions (Nowosielska and Podyma, 2001) the most frequent samples included beans that is cultivated both for dry seeds and string beans.

CONCLUSION

During the two expeditions 164 samples of plants were collected. They were then forwarded to adequate keepers who identify the material, breed it and properly evaluate. The material was sent back to the National Centre for Plant Genetic Resources where each sample got its constant number before it was directed to long-term storage. The material is made available in our database at PBAI website: http://www.ihar.edu.pl/

The most proper and preferred is the protection of species *in situ*. However, sometimes the only chance to preserve a species is to collect it and protect it in gene banks. Even thought it is ever more difficult to find local crop plants varieties, it is still possible. Therefore, expeditions make an essential part of the work performed in the National Centre for Plant Genetic Resources.

Genetic erosion of crop plants and their accompanying species is quickly expanding. For that reason years ago collection and protection *ex situ* became our mission. Still, attempts must be made to protect plants *in situ*, i.e. in the natural place of occurrence of specific components.

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