



MAINTENANCE, ENRICHMENT AND UTILIZATION OF NATIONAL GRAIN LEGUMES COLLECTION IN BULGARIA

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THE NATIONAL COLLECTION OF GRAIN LEGUME CROPS IS REPRESENTED OF **9 GENERA** AND **36 SPECIES**

BY SPECIES DIVERSITY ON THE FIRST PLACE IS REPRESENTED VICIA - 13, FOLLOWING BY *LATHYRUS* - 6, *LUPINUS* - 4, *PISUM* - 3 AND *PHASEOLUS* - 2.

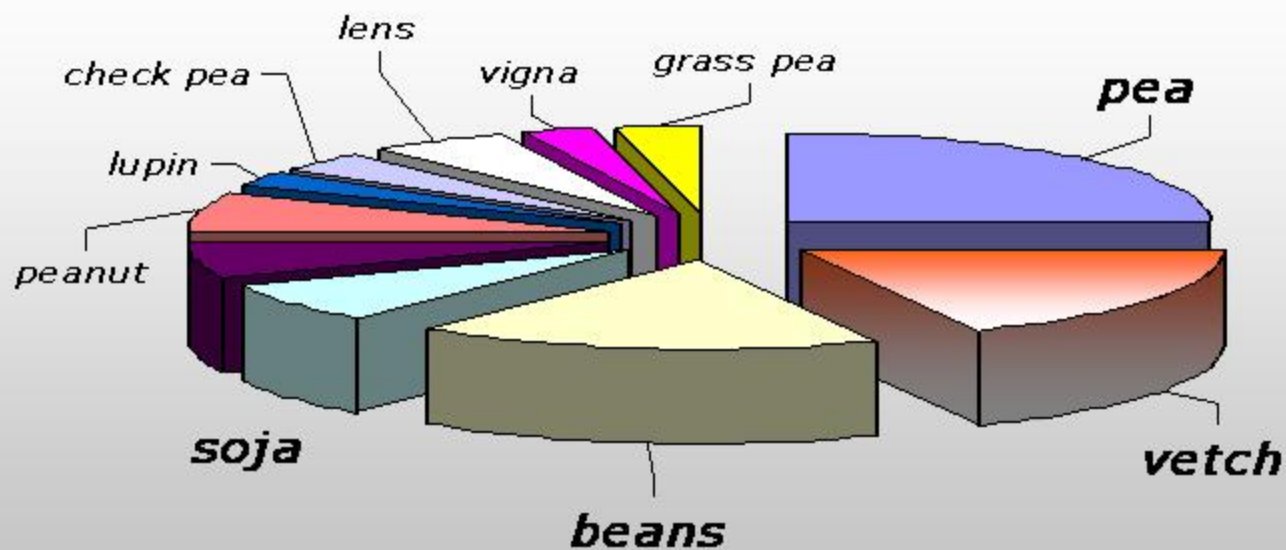
The origin of the collections are quite different. With most bulgarian origin is vetch collection (60%), where except of old varieties and populations, there are a lot of wild species collected from different habitats of bulgarian flora.

The other collections with more bulgarian accessions is beans .





Proportion between different collections



THE THREE LARGER COLLECTIONS –
PEA, BEANS AND VETCH, ARE REPRESENTED BY THE FOLLOWING
MORE IMPORTANT SPECIES *PISUM SATIVUM* L., *PISUM ARVENSE* L.,
VICIA SATIVA COMPLEX AND *PHASEOLUS VULGARIS* L.

COMPOSITION OF THE BULGARIAN GRAIN LEGUME COLLECTIONS

Genus	Total number	Long term conservation	Medium term conservation	Working collection
<i>Pisum</i>	2540	810	1150	1120
<i>Lupinus</i>	308	70	208	14
<i>Lathyrus</i>	344	270	100	57
<i>Phaseolus</i>	1883	777	1151	158
<i>Cicer</i>	353	234	160	107
<i>Lens</i>	532	385	237	94
<i>Vicia sp.</i>	1880	1170	734	178
<i>Soja hispida</i>	700	692	7	7
<i>Vicia faba</i>	702	467	220	35
<i>Vigna</i>	283	117	123	98
<i>Arachis</i>	1111	378	752	700
TOTAL	10 636	5 370	4 842	2 568

ACTIVITIES

- ▶ **Multiplication of new seed material**
- ▶ **Insurance of seeds for exchange**
- ▶ **Enlargement of the genetic basis with wild relatives of Bulgarian flora**
- ▶ **Characterization and evaluation data**
- ▶ **Introduction of the new germ - plasma**
- ▶ **Passport data for collecting material**



Peanuts



Main producer of peanuts in Europe was Bulgaria with 80% of the total area.

Years	Areas, da	Average yields, kg/da	Production, t
2000	97 486	82,5	8 047
2001	92 450	86,9	8 035
2002	14 880	141	2 098
2003	10 527	158	1 636
2004	9 420	141	1 322
2005	12 169	130	1 427
2006	10 329	106	989
2007	3 911	177	692
2008	3 325	227,4	756
2009	6 094	153,9	938

Advantages of the Bulgarian peanuts

- Bulgarian peanut varieties are high yielding and adapted to our conditions.
- The peanuts growing in Bulgaria belong to sortotip Valencia.
- They have excellent taste.
- The content of fat and protein is in the ideal limits for the cultural.
- The newest varieties - Stanko and Cvetelina are high yielding (450-500 kg/dka nut) and are with excellent taste.

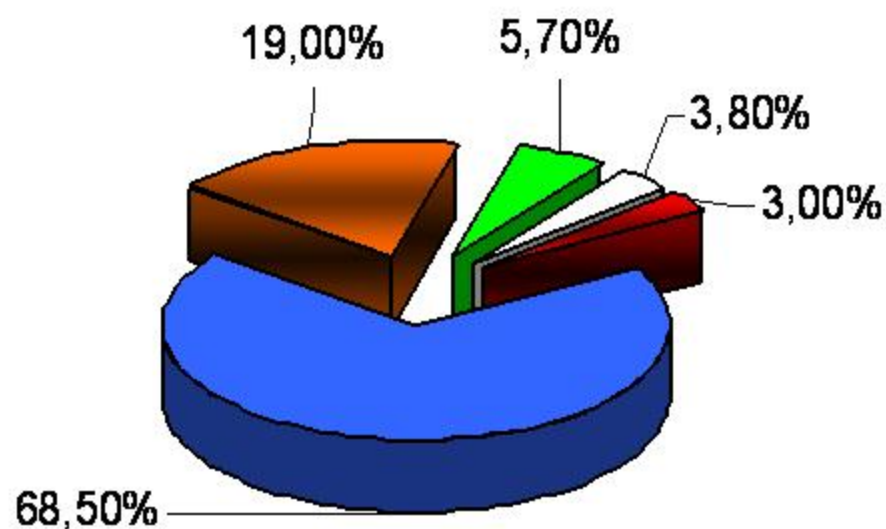
COLLECTING ACTIVITIES

Collecting local and old PGR

- Interviews with farmers about what they traditional growing.
 - Designation of routes and organizing expeditions for collecting old native populations and forms from grain legumes .
 - Registering a location (geographical coordinates).
 - Collecting seeds in the presence of quantities.
 - Passport information about new accessions
- (EURISCO).



Collected local PGR of Grain Legumes during the last 2 years – 105 accessions



■ Vicia faba- 72 accessions

■ Cicer arietinum – 6 accessions

■ Vigna unguiculata - 3 accessions

■ Phaseolus vulgaris – 20 accessions

□ Pisum sativum – 4 accessions

Local material from *Vicia faba*



- During the period 2010-2012 were traveled different parts of the country and was collected over 70 old varieties and forms populations of broad beans (*Vicia faba*), 20 accessions beans, 6-chickpea, 4-pea and 3-vigna which are still kept and maintained by the local people in private gardens and farms.
- The results are part of a systematic study of Bulgarian origin in the collection of grain legumes in international project SEELEGUMES - 168/01 - SEE-ERA.NET Plus Joint Call. It was created a database and stored seeds from local germplasm in the national gene bank in IPGR, Sadovo.
- In our country the farmers don't have interest towards broad beans and we have not breeding programme with *Vicia faba*.
- There have been made successful attempts to grow faba bean as a subculture in plum gardens, in the foothill regions of the country. This crop is also used for green manure in organic farms.

Local material from collecting missions



**LOCAL LANDRACES :
CENTRAL BALKAN
RHODOPI MNS.
TRACIA PLAIN**



Involving the farmers in *on farm* conservation.

Involving the farmers to produce seeds of cross pollinated species.



Rhodopi mns.- Arda village

EVALUATION ACTIVITIES

Morphological and economic evaluation in the collecting nursery is executed in accordance with International Union for Protection of New Varieties of Plants – UPOV

Each species is evaluated also on some specific indicators - important in our plant breeding programs:

- *Pisum sp* - winter resistance, resistance to lodging
- *Vicia faba* - disease resistance, low contain of tannins
- *Cicer arietinum* - disease resistance (*Ascochyta rabiei*, *Fusarium oxysporum* f. sp. *ciceri*), high yields
- *Lathyrus sp* - resistance to drought
- *Lupinus alba* - disease resistance
- *Phaseolus sp* - disease resistance
- *Vigna sp* - resistance to drought
- *Lens sp* - disease resistance
- *Soja hispida* - resistance to drought
- *Arachys hypogaea* - disease resistance, short period of vegetatsionen, high yields



The use of grain legumes in the following deriction:

- . - Directly from manufacturers
- . - Breeding objectives
- . - Learning objectives
- . - Research with other research centers

The national grain legumes collection in Sadovo contains plant genetic resources with different origin, level of breeding and botanical possessing, which gives opportunities for improvement of breeding program in different directions: food, cannery industry and forages.



Collecting wild relatives for *in situ* collection

➤ **Identification the sites:**

- *Eco-geographical survey – coordinates, altitude, slope.*
- *Description of the habitat– botanic composition and biodiversity.*

➤ **Collecting seed samples.**



Multiplied seed accessions were conserved in the gene bank, supplied with passport information (multi-crop-descriptors – EURISCO).



- Collecting wild relatives of the genus *Vicia*, *Lathyrus*, *Cicer monbretii*, *Pisum elatius*.



Habitat and population of *Cicer montbretii* in Strandza Mts.



3 expedition mission (2 identification-April-May and 1 collection of seeds-June)

Status: protected plant species

Populations: limited distribution and small populations; near a road; single individuals and small groups occupy small areas on the order of 10-20 m².

Habitat: dry, stony and grassy sites near oak woods on eroded slopes near a road



THANK YOU

