STATUS OF THE NATIONAL ALLIUM COLLECTION - PORTUGAL

Isabel Gomes da Silva

INIAV – BPGV (National Genebank)

Seventh Meeting of the Allium Working Group, 11-12 October 2022, Skierniewice, Poland

Banco Português de Germoplasma Vegetal

1977 - 2022

ECP/GR

Portugal and BPGV Collections

Portuguese Plant Germplasm Bank (BPGV), located in Braga *houses representative collections of germplasm of the more important agricultural resources of mainland Portugal and the Islands, Madeira and Azores.*

Group of Species	Total
Aromatic and Medicinal Plants	1 257
Cereals	27 086
Fibers	201
Forrages and Pastures	2 928
Vegetables	6 417
Grain legumes	6 876
Others	22
Total	44 752

As a result of 131 collecting missions

ECP/GR

Collecting Missions

Landraces




Crop Wild Relatives




ECP/GR

The Key point

1990 a 1994 - International collecting mission for vegetables (include *A. sativum* e *A. cepa*)

Dave Ashley, Horticulture Research Institute

During these collecting missions it was observed that, particular in the East of the country, local Allium populations were in danger of disappearing, owing to the fact that low-priced new cultivars of garlic produced across the international border have been flooding into Portugal. However, many Portuguese farmers continued to cultivate the traditional populations because they believe it tastes better than the imported cultivars and is better for sausage preparation.

[Rena Farias, Banco Português de Germoplasma Vegetal, European collection of vegetatively propagated Allium: Report of a workshop, 21-22 May 2001, Gatersleben, Germany.]

1994 – Systematic prospection and collecting missions for genus Allium

1996 - International collecting mission for genus Allium

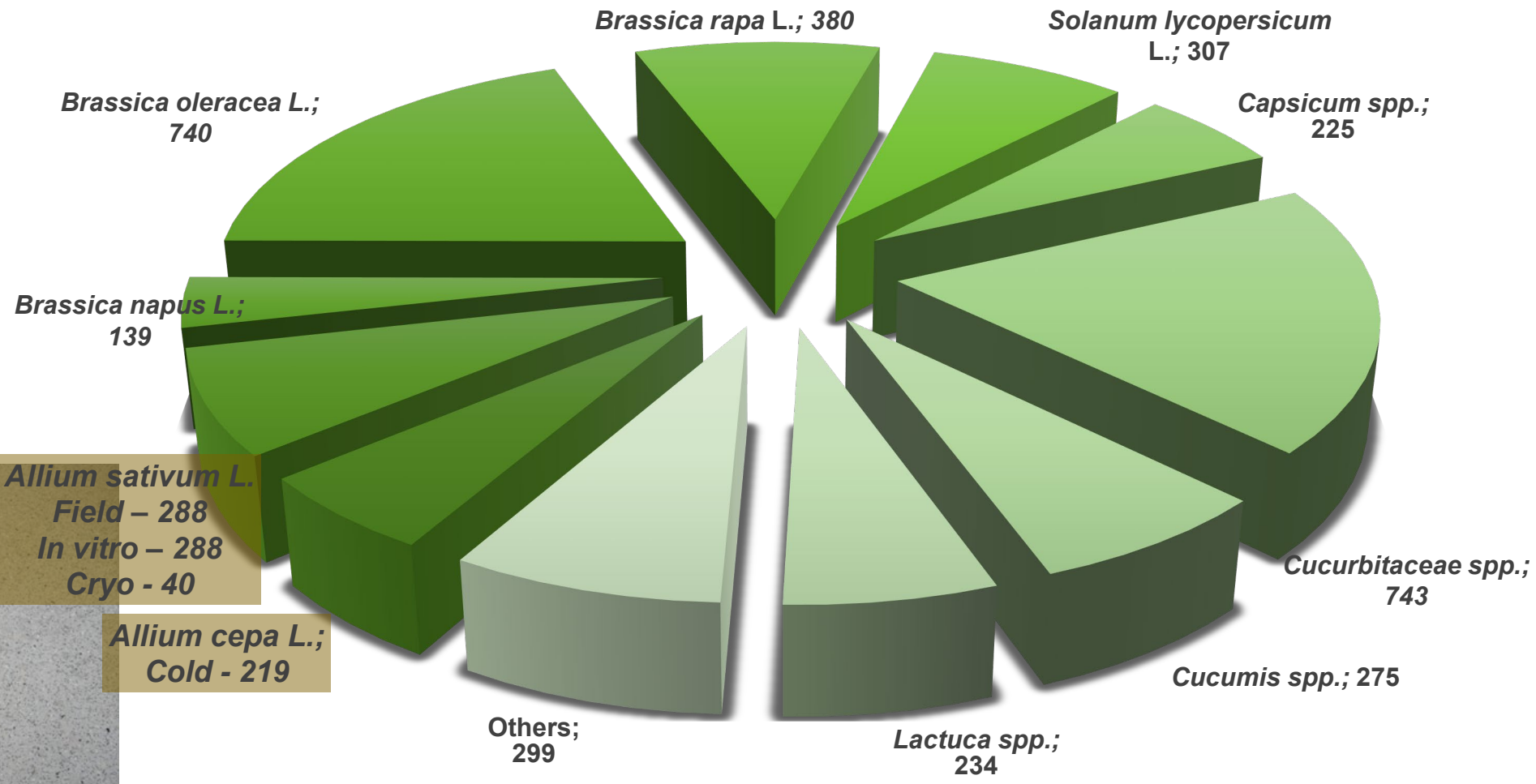
Takeomi Etoh, University of Kagoshima, Japan
(local varieties of A. sativum that produce seeds)

ECP/GR

Vegetable Collection

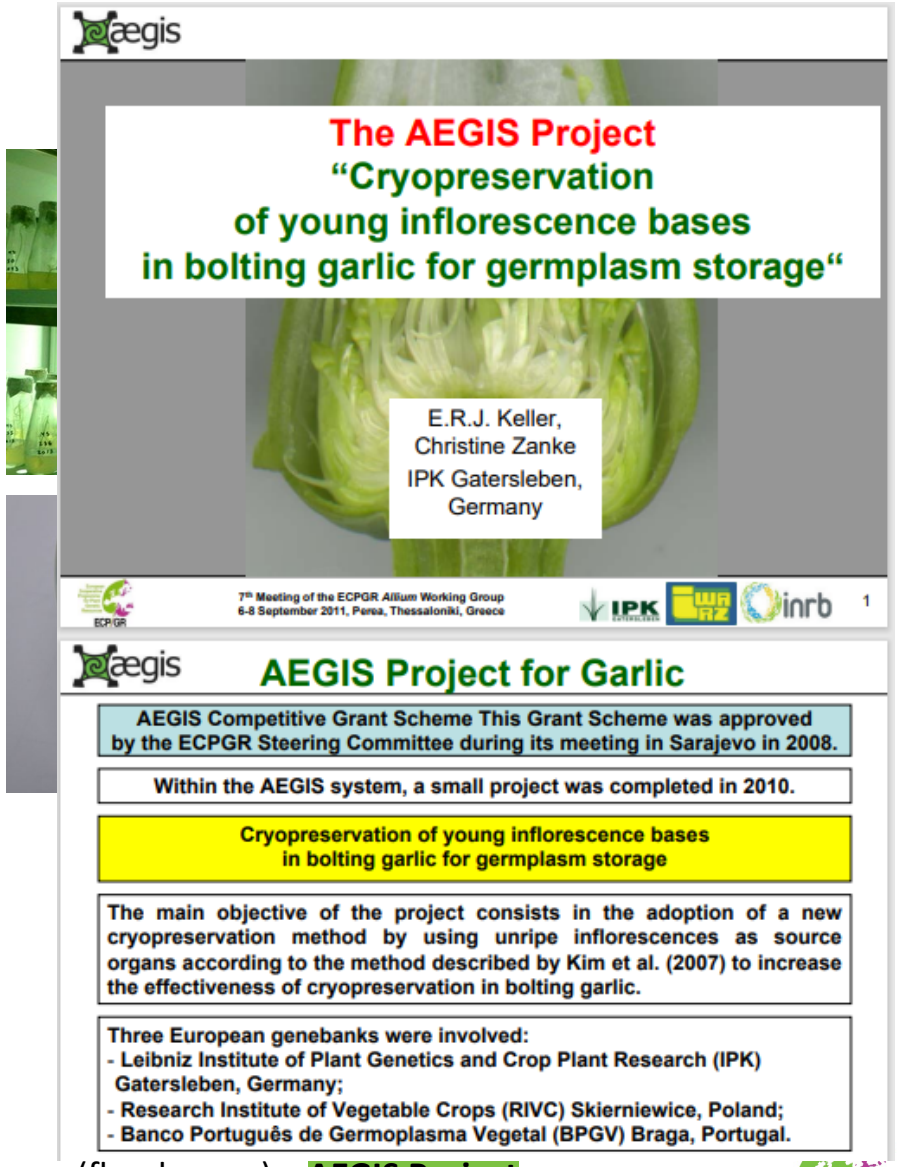
Allium sativum L.
Field – 288
In vitro – 288
Cryo - 40

Allium cepa L.;
Cold - 219



Number of accessions in collection - Portugal

Species/Crop	*Ex situ*	Field	*Cryo*	*in vitro*	Total
Garlic (*Allium sativum* L.)		288	40 *	288	616
Shallot (*Allium ascalonicum* L.)		1			1
Common onion (*Allium cepa* L.)	219				219
Leek (*Allium porrum* L.)	12	3			15
Wild Alliums					
Allium ampeloprasum		14			14
Allium roseum		1			1
Allium vineale		1			1
Allium scorzonerifolium	1				1
Allium spp.		6			6
TOTAL	232	314	40	288	**546**
TOTAL (with duplicates)					**873**



(floral scape) – **AEGIS Project**

ECP/GR

Safety duplication percentage

Species/Crop	%
Garlic (*Allium sativum* L.)	99
Common onion (*Allium cepa* L.)	32
Leek (*Allium porrum* L.)	7
TOTAL	70

Comments: We have made an effort to increase the safety duplication of onion increasing the seed multiplication. This activity is in progress.

ECP/GR

Structure of the collection - PORTUGAL

Landrace or Advanced cultivar

GARLIC

Country of origin	Number of accessions	Country of origin	Number of accessions
Portugal	275*	Germany	1*
Portugal	5**	Greece	1*
Bulgaria	2**	Poland	3*
Tunisie	1*		

ONION

Country of origin	Number of accessions
Portugal	206*
Portugal	3**
France	2**
Italia	3**

SHALLOT

Country of origin	Number of accessions
Portugal	4*
Portugal	1**

LEEK

Country of origin	Number of accessions
Portugal	15*

Wild *Allium*

Allium ampeloprasum

Country of origin	Number of accessions
Portugal	14***

Allium roseum

Country of origin	Number of accessions
Portugal	1***

Allium vineale

Country of origin	Number of accessions
Portugal	1***

Allium scorzonerifolium

Country of origin	Number of accessions
Portugal	1***

Allium victorialis

Country of origin	Number of accessions
Portugal	1***

Allium spp.

Country of origin	Number of accessions
Portugal	6***

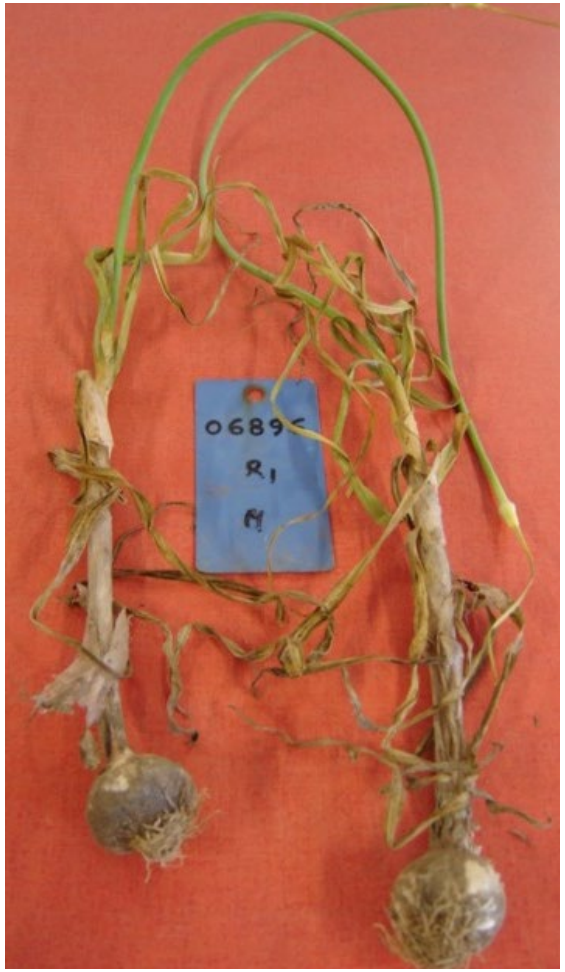
* Landrace
**Advanced cultivar
*** Wild material

ECP/GR

Biology status of the Garlic collection and ability to flower

Biological status	Number of accessions
Advanced or improved cultivar	7
Traditional cultivar/landrace	281

Ability to flower	Number of accessions
Bolting garlic	46
Non bolting	146



In 1999, the characterization and preliminary evaluation of garlic was based on the "minimum list of descriptors" published by the IBPGR (1992, 1996).

Since 2011, the characterization was based on the a more complete list of descriptors that was published by IPGRI, in 2001.

ECP/GR

Status of documentation

- Passport Descriptors used: FAO/IPGRI multi-crop passport descriptors (2015)
- Morphological Descriptors used: IPGRI Descriptors for *Allium* spp. (2001)

All the information (collecting, inventory and morphological characterization) of the *Allium* collection (546 accessions) conserved in the Portuguese Genebank is documented and is registered in the Grin Global.

Species/Crop	% Documented
Garlic (*Allium sativum* L.)	100
Common onion (*Allium cepa* L.)	
Leek (*Allium porrum* L.)	
Shallot (*Allium ascalonicum* L.)	
Wild Allium	

C&E data to EURISCO:

Not yet; Only passport data

Pictures available:

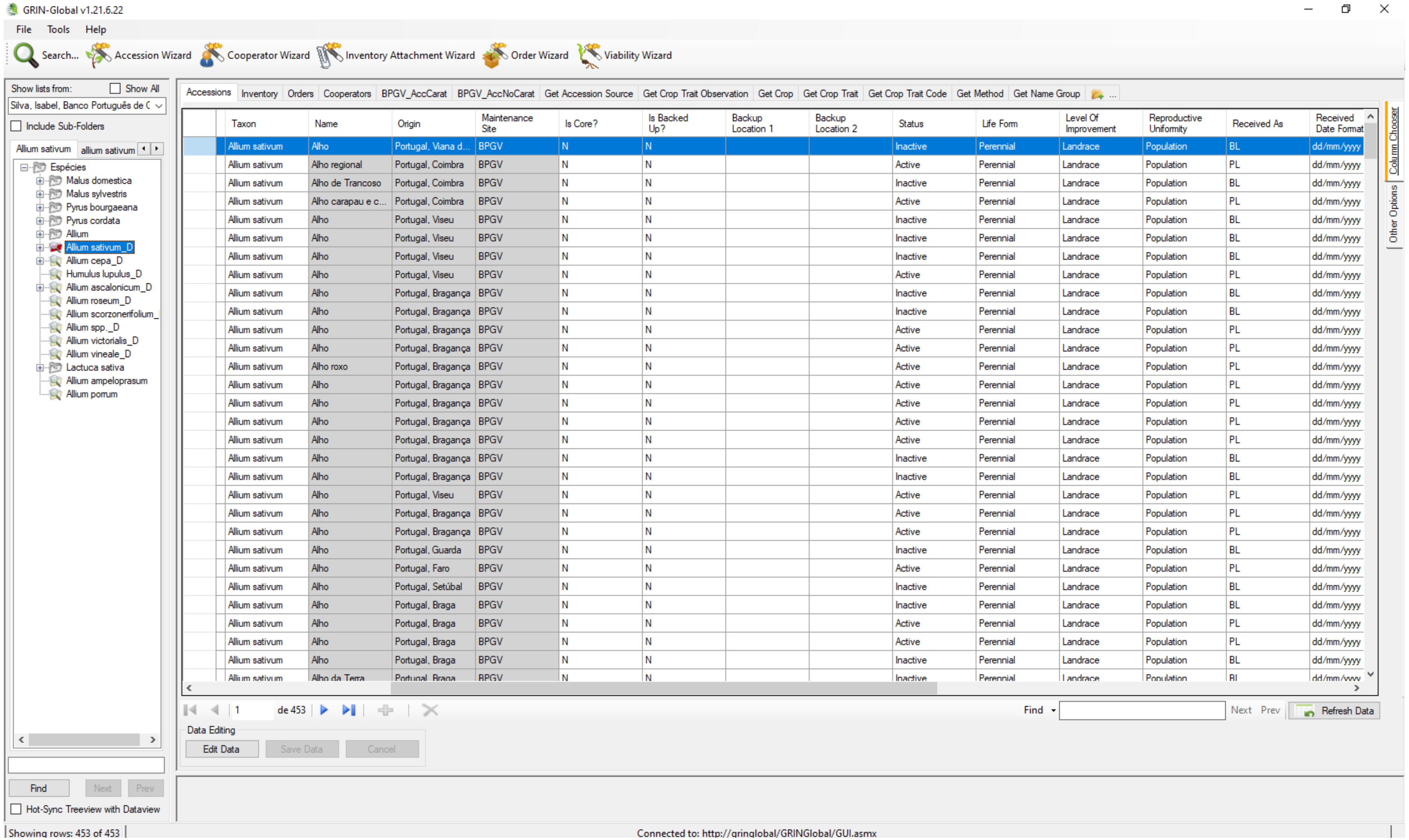
Not yet

Species/Crop	% Characterized		
	Morphological	Molecular	Chemical
Garlic (*Allium sativum* L.)	99 (285 of 288 accessions)	96 (280 of 288 accessions)	94 (273 of 288 accessions)
Onion (*Allium cepa* L.)	77 (169 of 219 accessions)	9 (20 of 219 accessions)	
Leek (*Allium porrum* L.)	7 (1 of 15 accessions)		

ECP/GR

Status of documentation

- Documentation system : **GRIN GLOBAL**



ECP/GR

Inseguro | bpgv.iniav.pt/gringlobal/search

GRIN-Glo

Version: 2.2.0

User

Simple Search | List Search | Advanced Search | Results

Your query included: **All accessions** allium sativum

View Observation Data

Selected item(s) below: Add to Cart | View Accession Details

Basic Info | Source Info | Show all columns | Show/hide columns | Show 10 rows | Excel

Search:

Showing 1 to 10 of 290 entries

Previous 1 2 3 4 5 ... 29 Next

ACCESSION	NAME	TAXONOMY	ORIGIN	REPOSITORY	IMAGE	AVAILABILITY
BPGV05195	Alho regional	*Allium sativum* L.	Coimbra, Portugal	BPGV		Not Available
BPGV05250	Alho carapau e couve	*Allium sativum* L.	Coimbra, Portugal	BPGV		Not Available
BPGV05312	Alho	*Allium sativum* L.	Viseu, Portugal	BPGV		Not Available
BPGV05394	Alho	*Allium sativum* L.	Bragança, Portugal	BPGV		Not Available
BPGV05401	Alho	*Allium sativum* L.	Bragança, Portugal	BPGV		Not Available
BPGV05416	Alho roxo	*Allium sativum* L.	Bragança, Portugal	BPGV		Not Available
BPGV05440	Alho	*Allium sativum* L.	Bragança, Portugal	BPGV		Not Available
BPGV05441	Alho	*Allium sativum* L.	Bragança, Portugal	BPGV		Not Available
BPGV05478	Alho	*Allium sativum* L.	Bragança, Portugal	BPGV		Not Available
BPGV05502	Alho	*Allium sativum* L.	Bragança, Portugal	BPGV		Not Available

ECP/GR

Inseguro | bpgv.iniav.pt/gringlobal/accessiondetail?id=9350

Instituto Nacional de Investigação Agrária e Veterinária, I.P.

Banco Português de Germoplasma Vegetal

Cart 0

Welcome!

GRIN-Global | Banco Português de Germoplasma Vegetal | Log in | New User

Version: 2.2.0

Accessions | Descriptors | Reports | GRIN Taxonomy | GRIN | Help | Contact Us | Your Profile

Details for: BPGV05502, *Allium sativum* L., Alho

Summary | Passport | Taxonomy | Other | Pedigree | IPR | Observation

Observations

Phenotype Data

Show/hide columns | Show 5 rows | Excel

Showing 1 to 5 of 30 entries

Search:

Category	Descriptor	Description	Value	Study	Inventory	Availability
FLWR-FRUIT	3.1 - Flowering stem	Ability to produce flowering stem	1 - absent			
GROWTH	4.7 - Bulb skin thickness	Visual observation on harvested bulbs with dry skin	5 - medium			
MORPHOLOGY	1.1 - Foliage colour	The trait should be made on fully developed plants at beginning of flowering	5 - medium green			
MORPHOLOGY	1.2 - Foliage attitude	The angle formed by the leaves with an imaginary axis	7 - erect			
MORPHOLOGY	1.3 - Cross section of	The trait should be	1 - strongly			

ECP/GR

Acquisitions

Strategy:

- Collecting Missions of traditional cultivar/landrace and/or crop wild relatives (financed by projects)

- Exchange between genebanks

- Offered by farmers

ECP/GR

Use of the collection

- **Availability of material**

Available, depending on the amount of material and under sMTA

- **Projects with Allium Group:**

PRODER (2011-2015) - Collecting, Conservation and Documentation of Genetic Resources of Agricultural and Horticultural Species

PRODER, PA 18618 (2011-2015) - Conservation, Characterization and Valorization of Horticultural Species

AEGIS (2008 – 2010) - Cryopreservation of young inflorescence bases in bolting garlic for germplasm storage

AGRO 238 (2001 – 2004) - Evaluation, conservation and acquiring of virus-free material from populations of regional Allium

PAMAF 1013 (1995 - 1999) - Collecting, evaluation, conservation and use of the germplasm of herbaceous species in the North Region

- **Ongoing projects**

PDR2020 – Genetic Resources Conservation of Vegetables

ECP/GR

Main problems

- Field collection

- **Climatic change.** Due to its geographical characteristics, Portugal is among the European countries with the greatest vulnerability to these changes. The temperature increases, water heats, evaporates faster, and the consequences translate into droughts and intense rainfall. This affects a good development of the Allium crops: periods of high humidity in the initial vegetative cycle and periods of less humidity/droughts in the middle of the vegetative cycle.

- **Productivity/Viability.** Generation after generation it's observed that the material is less productive. The age of material is fundamental to a good development of the plant.

- Cold conditions

- **Seed aging** decreases seed viability during storage, is a major problem for successful plant growth and productivity and leads to seed deterioration. For the Allium genus, the seed also loses viability very quickly. The storage time is short.

- In *vitro* collection

- **Viability.** Generation after generation it's observed that the material is less productive. In many cases, after many sub-cultures, the plant material does not develop in to a whole plant. This methodology is medium term conservation and this is visible the decrease in vaibility.

- Cryoconservation

- **Preliminary protocol.** This methodology is long term conservation and ideal for species of vegetative propagation. Until now, the % of regrowth is still not enough for the material to be safe. The protocol is still under testing.


BANCO PORTUGUÊS
DE
GERMOPLASMA VEGETAL
INSTITUTO NACIONAL
DE INVESTIGAÇÃO AGRARIA
E VETERINARIA, IP

THANK YOU!