



Result of Safeguarding of potato onion (*Allium cepa* L. *Aggregatum* group) and garlic (*Allium sativum* L.) crop diversity in North Europe - Baltic region - SafeAlliDiv

Fourth Call of the ECPGR Activity Grant Scheme, in Phase IX (2014-2018).

Helena Stavělíková



17 April 2023 Webinar

ECPGR Activity SafeAlliDiv

Duration of project was 24 months from June 2017 to June 2019

The main aim of project was:

- 1 - to promote active on-farm conservation of European *Allium* accessions.
- 2 - The genetic analyses of the accessions potato onion (*Allium cepa* L. Aggregatum group) from project partners

Sub-objectives

- to investigate the situation in Europe in *Allium* crops cultivation
- to clarify the scale of potato onion and garlic cultivation as part of the biocultural heritage



The partners were participated on the project

11 funded partners

1 self-funded partner Jaroslava Ovesná Crop Research Institute Czech Republic



1 Helena Stavělková - Crop Research Institute, Czech Republic - coordinator

2 Priit Põldma - Estonian University of Life Sciences, Estonia



3 Terhi Suojala-Ahlfors - Natural Resources Institute Finland (Luke) Horticulture, Finland

4 Liga Lepse - Institute of Horticulture, Latvia



5 Danguolė Juškevičienė - Institute of Horticulture, LRCFAF, Lithuania

6 Chris Kik - Centre for Genetic Resources, the Netherlands (CGN), Netherlands



7 Ingunn Molund Vågen - Norwegian Institute of Bioeconomy Research (NIBIO) Norway

8 Matti Leino - Nordiska - museet, Swedish Museum of Agriculture, Sweden



9 Külli Annamaa - Estonian Crop Research Institute (ECRI), Estonia

10 Dainis Rungis - Latvian State Forest Research Institute (LSFRI), Latvia



11 Smiljana Goreta Ban- Institute of Agriculture and Tourism, Croatia

The project partners and material analysed in project were mainly from **Scandinavia and Baltic region**.

The three exceptions were:

Cris Kik from the Netherlands –

as an expert on evaluating DNA analysis



Smiljana Goreta Ban from Croatia - we wanted to

have materials from diametrically different geographical area in the project, for comparison.



Helena Stavěliková from the Czech Republic –

the Czech Shallot collection is

specific in that it has many materials

from Finland, Norway and Sweden.



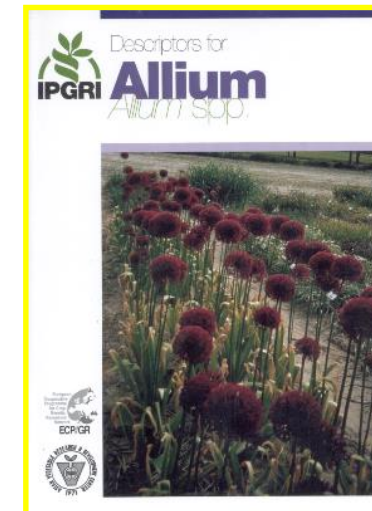
1st meeting was held 11-12 July 2017 in Tallinn, Estonia

Topic of the meeting

- Partners of project presented the situation in Allium crop cultivation and conservation in their countries, with emphasis on potato onion/shallot (*Allium cepa* L., *Aggregatum* group) and garlic (*Allium sativum* L.)
- Partners of project visited potato onion fields in the Lake Peipus area, where traditional cultivation is based on heterogeneous seed-propagated material
- It was agreed to perform also morphological characterization for the same accessions which were to send for molecular analysis
- A summary of the questionnaires filled out by the project partners before the meeting was presented.

| |
|--------------------------------------------------------------------------------|
| number of accessions |
| type of collection (field or seed) |
| type of conservation (ex situ, in situ, on farm) |
| source of new accessions (collecting missions, seed companies, breeders, etc.) |
| number of described accessions |
| number of accessions with chemical analyses |
| number of accessions with DNA analyses |
| safety duplication |
| cooperation with other genebanks in accession exchange |
| current projects related to particular species |
| other genetic resources-related activities |

| |
|------------------------------|
| number of national varieties |
| harvest area (ha) |
| production (t) |
| import (t) |
| home garden scale |



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| | Belgium | Bosnia and Herzegovina | Bulgaria | Croatia | Czech Republic | Denmark | Estonia | Finland | France | Germany | Latvia |
|------------------------------------------------|---------|------------------------|----------|---------|--------------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------|-----------------------------------------------|----------------------------------------|
| potato onion (Allium cepa L. Aggregatum group) | | 9 | | | 132 | 29 | 7 | appr. 25 (new ones will be added in 2017-2018) | 318 | 112 | 41 |
| type of collection | | field collection | | | field collection | field collection | field collection, seed | field collection | field collection | field collection, seed | field collection |
| type of conservation | | on farm | | | ex situ | | ex situ | ex situ | ex situ | ex situ | ex situ |
| in vitro (acc.) | | - | | | - | - | | | - | 0 | |
| cryo (acc.) | | - | | | - | - | - | 8 | - | 26 | - |
| source of new acc. | | collection missions | | | collection missions, hobby gardeners | collection missions, hobby gardeners | seed company, hobby gardeners - | calls for hobby growers | breeders, gardeners | collection missions, hobby gardeners, Genbank | collection missions, hobby gardeners - |
| description (acc.) | | | | | 132 | 29 | | much data from 1990's, also 7 accessions described in 2015 | 50 | 16 | 33 |
| Chemical analyses (acc.) | | | | | 89 - (DW, QDG - quercetin diglucoside, QMG - quercetin monoglucoside, sucrose, glucose, fructose | - | Dry matter yield, total sugars, vitamin C, total soluble solids, total polyphenols and total anthocyanins | quercetin analysed from a few accessions | - | - | - |
| DNA analyses (acc.) | | - | | | - | - | - | appr. 80 | - | - | 24 |
| safe duplication | | | | | Germany, Poland, NGB | - | Partly at the genebank of the ECRI (Estonia); NordGen (Sweden) | two collections in Finland | - | - | 7 in Latvia University of Agriculture |
| cooperation with others GB | | - | | | - | Cooperation with NordGen (Nordic Gene Bank) | Latvian GR Centre (molecular analyzes) | NordGen | - | - | - |

| | Lithuania | Macedonia | Netherlands | Norway | Poland | Portugal | Romania | Russia | Slovenia | Spain | Sweden | UK |
|---------------------------------------------------------------|--------------------------------------------|-----------|-------------|------------------|-----------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|----------|------------------|--------------------------------------|------------------|
| potato onion (<i>Allium cepa</i> L. <i>Aggregatum</i> group) | 21 | | | 20 | 256 | 5 | 10 | 32 | | 7 | 29 | 21* |
| type of collection | field collection | | | field collection | field collection | field collection | field collection | field collection | | field collection | field collection | seed (3 x bulbs) |
| type of conservation | ex situ | | | ex situ | <i>ex situ</i> | ex situ | ex situ | ex situ | | ex situ | ex situ | ex situ |
| in vitro (acc.) | | | | | - | 4 | - | - | | | | - |
| cryo (acc.) | - | | | | - | - | - | - | | | - | - |
| source of new acc. | collection missions, local market, growers | | | hobby gardeners | collection missions | collection missions, hobby gardeners | collection missions, hobby gardeners | collection missions, hobby gardeners | | | collection missions, hobby gardeners | - |
| description (acc.) | 12 | | | | 256 | - | 10 | | | | 29 | |
| Chemical analyses (acc.) | - | | | | 9 (quercetin, kaempferol and myricetin) | - | - | | | | - | |
| DNA analyses (acc.) | - | | | | 170 (SNP), 22 (AFLP) | - | - | - | | | 29 | |
| safe duplication | - | | | | Czech Republic, Germany | | | Leningradskiy region | | | | |
| cooperation with others GB | - | | | | - | | - | - | | no | - | |

The second SafeAlliDiv project meeting was held 17-18 April 2018 in Olomouc, Czech Republic

Topic of the meeting

The tasks from the first meeting and their fulfilment were discussed

Dainis Rungis, from the Latvian State Forest Research Institute, presented preliminary results of the molecular analysis.

The partners of project visited the Genebank of Vegetable and Specialty crops in Olomouc, where they could observe a collection of garlic and shallot and discuss the practical questions of maintenance of vegetatively propagated Alliums

We agreed that we use for morphological description these characters for 5 plants:

Foliage colour

Foliage attitude

Bolting

Bulb skin colour (brown, yellow, red)

Bulb flesh colour

Bulb hearting

Bulb shape at harvest (flat, round, elongated)

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Thank you very much for your attention