Alliums in Finland

Terhi Suojala-Ahlfors
Natural Resources Institute Finland (Luke)
terhi.suojala-ahlfors@luke.fi

Luke
NATURAL RESOURCES INSTITUTE FINLAND

Commercial growing of onions in Finland

- Onion is an important vegetable species, but mainly *A. cepa* is produced
  - 1 124 hectares, annual production 26 096 tonnes (in 2016)
  - Onions are mainly grown from sets (small onion bulbs)
- Other species grown commercially
  - Garlic – 27 hectares
  - Leek – 30 hectares
  - Shallots – area?
  - Chives – area? (largely grown in greenhouses in pots)

Collections of *Allium* genetic resources in Finland

- Potato onion – appr. 30 accessions (number has been reduced on the basis of genetic analyses)
- Garlic – 6 accessions
- *A. cepa* Proliferum group – 12 accessions
- Chives – 15 accessions stored in NordGen as seeds

Potato onion from Kuusamo

A. cepa Proliferum

Research on potato onions

- Potato onion used to be the most common onion type in Finland in the early 1900's, nowadays only grown in home gardens
- First research on the genetic resources of potato onion was done in 1960's by Klaus Aura
- More than 100 accessions were collected by Ms. Kirsti Osara in Helsinki University in 1980's
- Part of them were transferred to Agricultural Research Centre of Finland (now Luke)
  - Some new accessions have arrived to collection later
  - Two maintenance sites, Piikkiö in southern Finland and Rovaniemi/Sotkamo in northern Finland

Genetic analyses of potato onion in 2012

- In 2012, Kristiina Antonius made a DNA analysis (using microsatellites) on the accessions of the Piikkiö collection (30 potato onions and 5 shallots) and 38 new samples obtained from hobby growers
- Result:
  - Piikkiö collection included 16 different genotypes
  - 6 new genotypes found from hobby growers
- Piikkiö's collection was slightly reduced after the genetic analyses

From left: Kangasniemi, Kuusamo, Ärmätti

Genetic analyses of potato onion in 2017

- In 2017, Pirjo Tanhuanpää made new analyses with the material of the Sotkamo field collection to check the uniformity with Piikkiö field collection, some new accessions were still obtained from hobby growers
  - 35 accessions analysed
- Results:
  - 4 new genotypes found
  - Thus we have 26 different genotypes in our field collections at the moment

Other research with potato onions

- Virus diseases have been studied in 1980's and again in 2010's – very difficult to get rid of the viruses
  - Tolerance to viruses is an important characteristics
- Some work on cryopreservation has been done in Luke Laukaa
  - Aim is to store some of the accessions in cryo in the next years
- A project on the utilisation of genetic resources in 2015
  - Characterization of some of the accessions
  - A guidebook on the growing and propagation of potato onion (not published yet)
  - Usage of potato onion in restaurants – great interest exists!

The future of potato onion in Finland

- Will be maintained in field collections and hopefully in cryopreservation, too
- Will be grown in home gardens
- Hopefully also in small-scale commercial production
  - Challenges:
    - Production of propagation material
    - Delivery from PGR collections (contracts etc.)
    - Viruses
    - Mechanisation of the production
    - Profitability?

Thank you!

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