



Photos: T. Hietaranta
Luke Photo Archive



RIBESCO
**Multinational Approach for Conserving
the European Genetic Resources of
Currants and Gooseberry
2007 - 2011**

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RIBES species

Black and Red currants, Gooseberry

- some species grow wild in Northern Europe
- have long growing and breeding history
- high number of cultivars and local races
- national gene banks and collections available
- Northern Europe is the leading production area



RIBESCO

- Core Collection of Northern European Gene Pool of *Ribes*

A multi-national network to improve

- the level of characterisation (phenotypic and DNA-level)
- the level of documentation
- to establish a core collection
 - ✓ with the most important part of the collections
 - ✓ with optimal genetic diversity
 - ✓ to be preserved with special care and double collections

Participants:

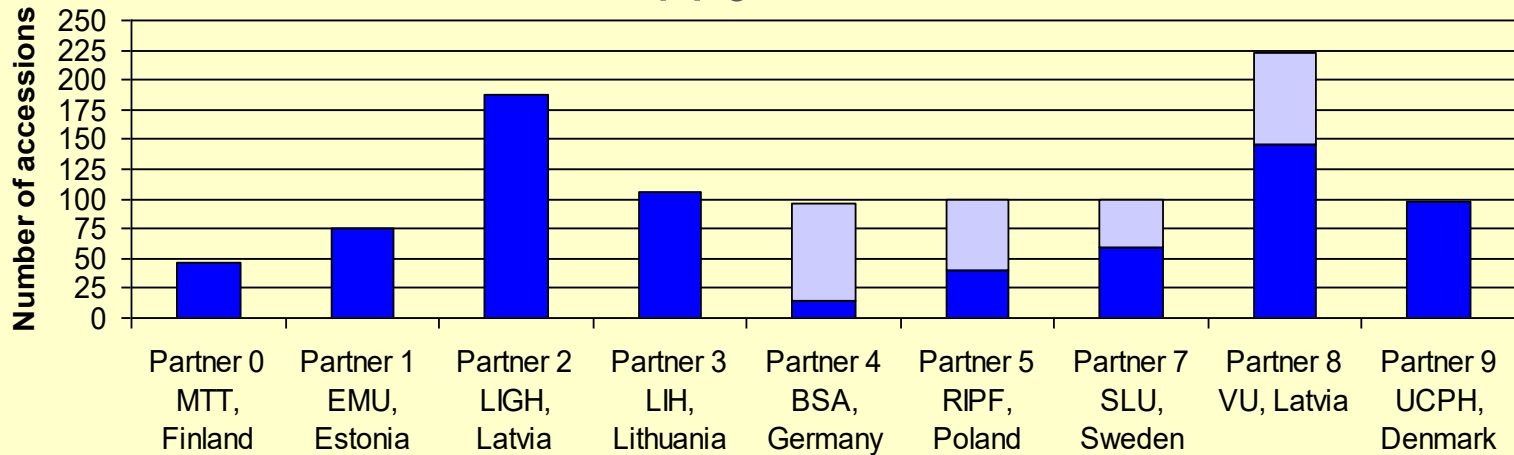
- MTT Agrifood Research Finland, Finland
- Estonian University of Life Sciences, Estonia
- Research Institute of Pomology and Floriculture, Poland
- Swedish University of Agricultural Science, SLU, Sweden
- Vilnius University, Lithuania
- Lithuanian Research Centre for Agriculture & Forestry, Lithuania
- Federal Office of Plant Varieties, Germany
- Latvian State Institute of Fruit Growing, Latvia
- University of Copenhagen, Denmark



RIBESCO accessions

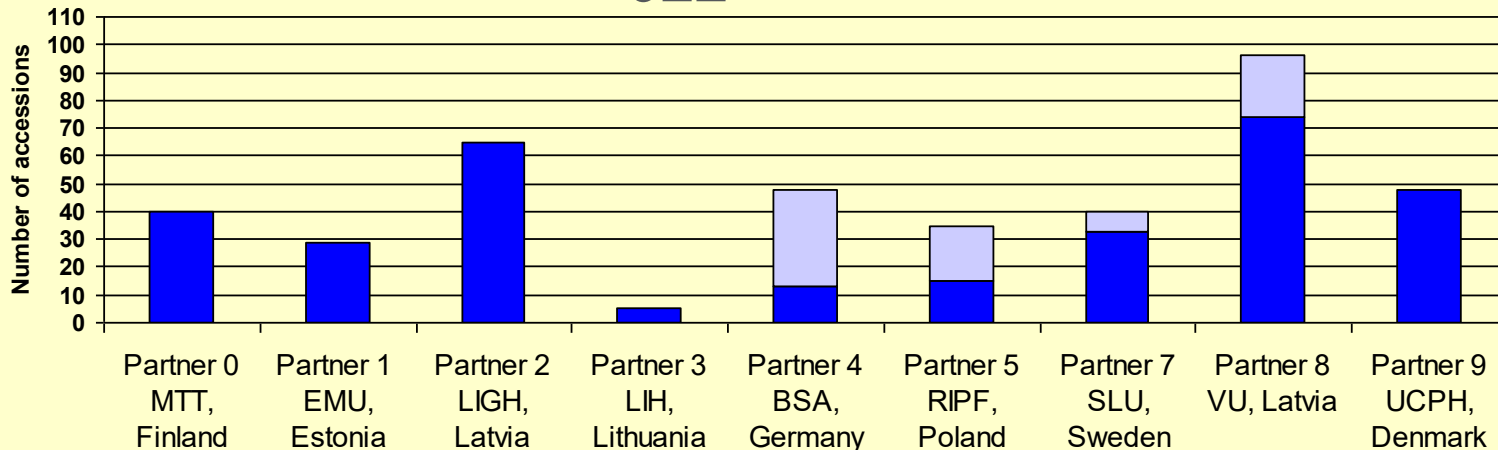
Number of accesions Black currant

Total
776

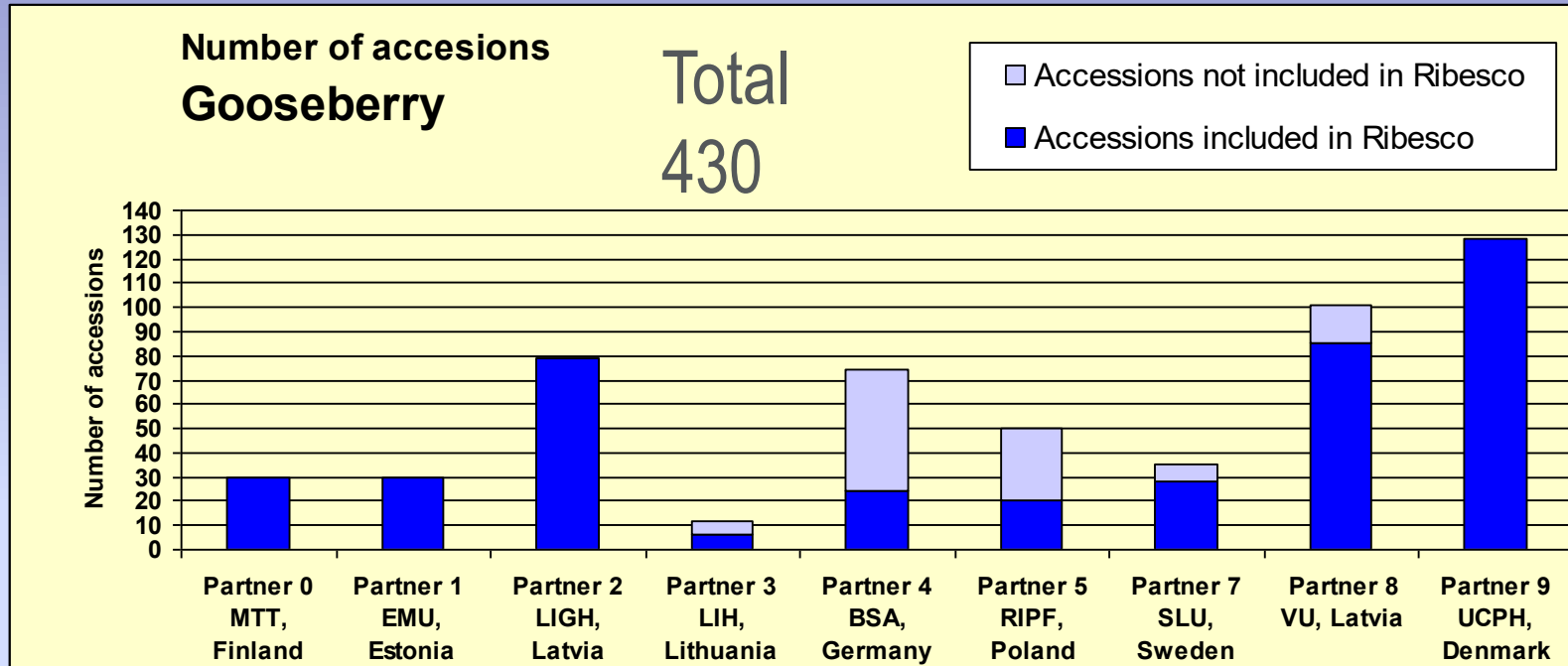


Number of accesions Red and white currant

Total
322

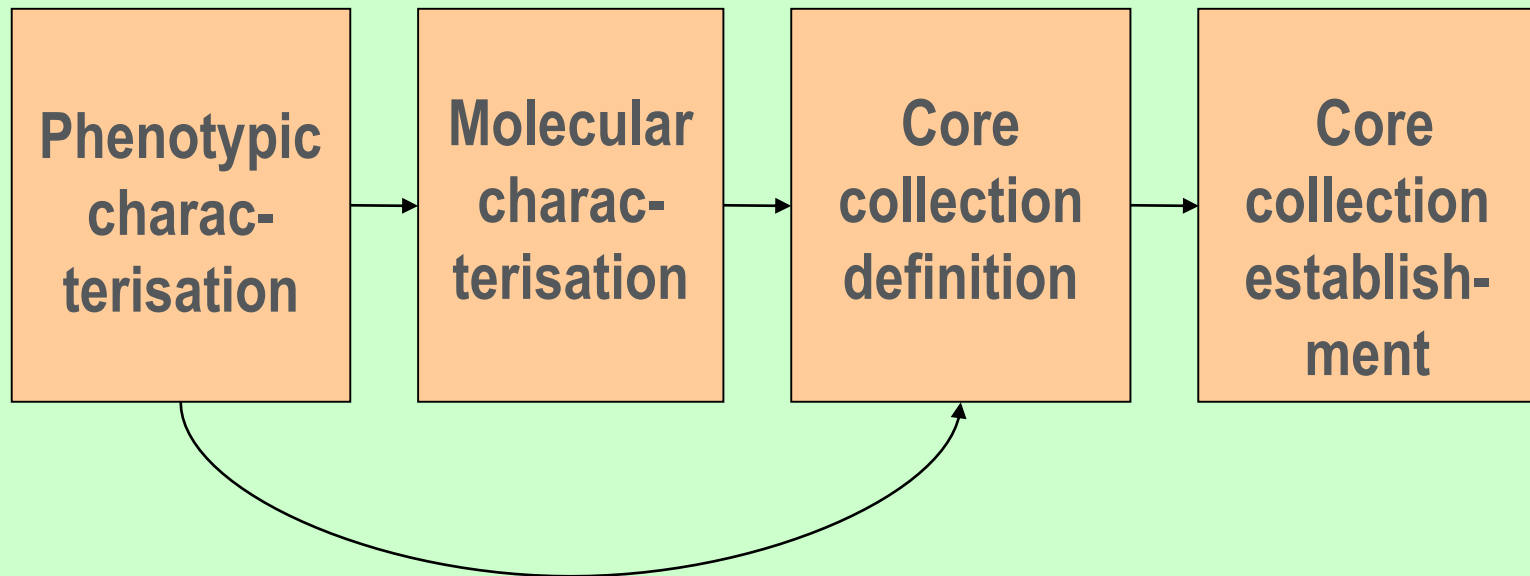


RIBESCO accessions



RIBESCO

The structure of the project



Phenotypic characterisation



- accessions conserved in *ex situ* collections
- common defined descriptors (EU Community Plant Variety Office CPVO; UPOV)
- phenological, morphological and agronomic characters
- some fruit quality analyses

ECP/GR Ribes-Rubus database

- passport data
- photos: 979 files linked
- phenotypic characterisation data:
 - ✓ 646 black currants: 18486 records
 - ✓ 342 red currants: 9060 records
 - ✓ 413 gooseberries: 17068 records



The ECP/GR *Ribes* and *Rubus* Database
Vilnius University Botanical Garden, Kairėnu 43, LT-2040 Vilnius, Lithuania
Tel +370 2 317944 Fax: +370 2 317429

Webmaster: [Dr. Darius Ryliskis](#)

Database manager: [Dr. Darius Ryliskis](#)



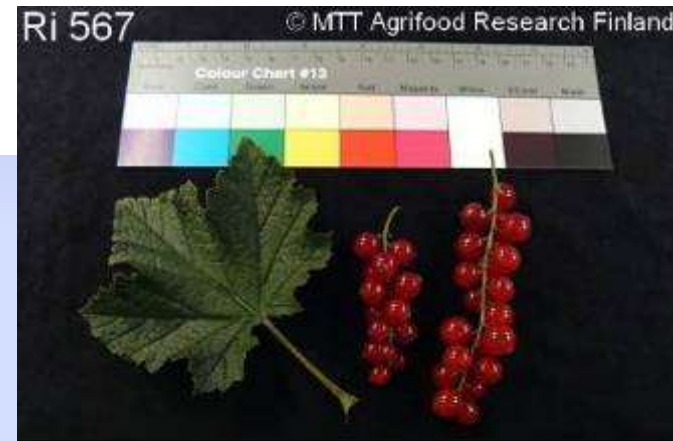
The *Ribes* database contains 2824 records of *Ribes* accessions held in 11 countries, namely Czech, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Romania, Sweden and U.K. in the meantime.

The *Rubus* database contains 665 records of *Rubus* accessions held in 6 countries, namely Poland, Czech, Germany, Lithuania, Romania and Sweden (Nordic Gene Bank) in the meantime.

[Download Ribes](#)

[Download Rubus](#)

Page last updated 19 May 2010



Molecular characterisation

- to estimate the genetic relationships among accessions
- microsatellite SSR marker technology
- to provide a suggestion for an optimal core collection with maximum amount of the genetic variation
- to uncover trueness-to-type of cultivars and duplicated accessions



Molecular characterisation

Step 1. Standardising and calibrating analysis methods in the participating laboratories

- 6 published black currant SSR markers
- 4 new SSR markers developed for red currants and gooseberries
- Leaf material of standard cultivars from one single source (5 blackcurrants, 3 red currants and 1 or 3 gooseberry)

Step 2. Running analyses

864 accessions: 400 blackcurrants, 202 red currants, 242 gooseberries

Major part done by Dr. Kadri Järve, Tallinn Technical University

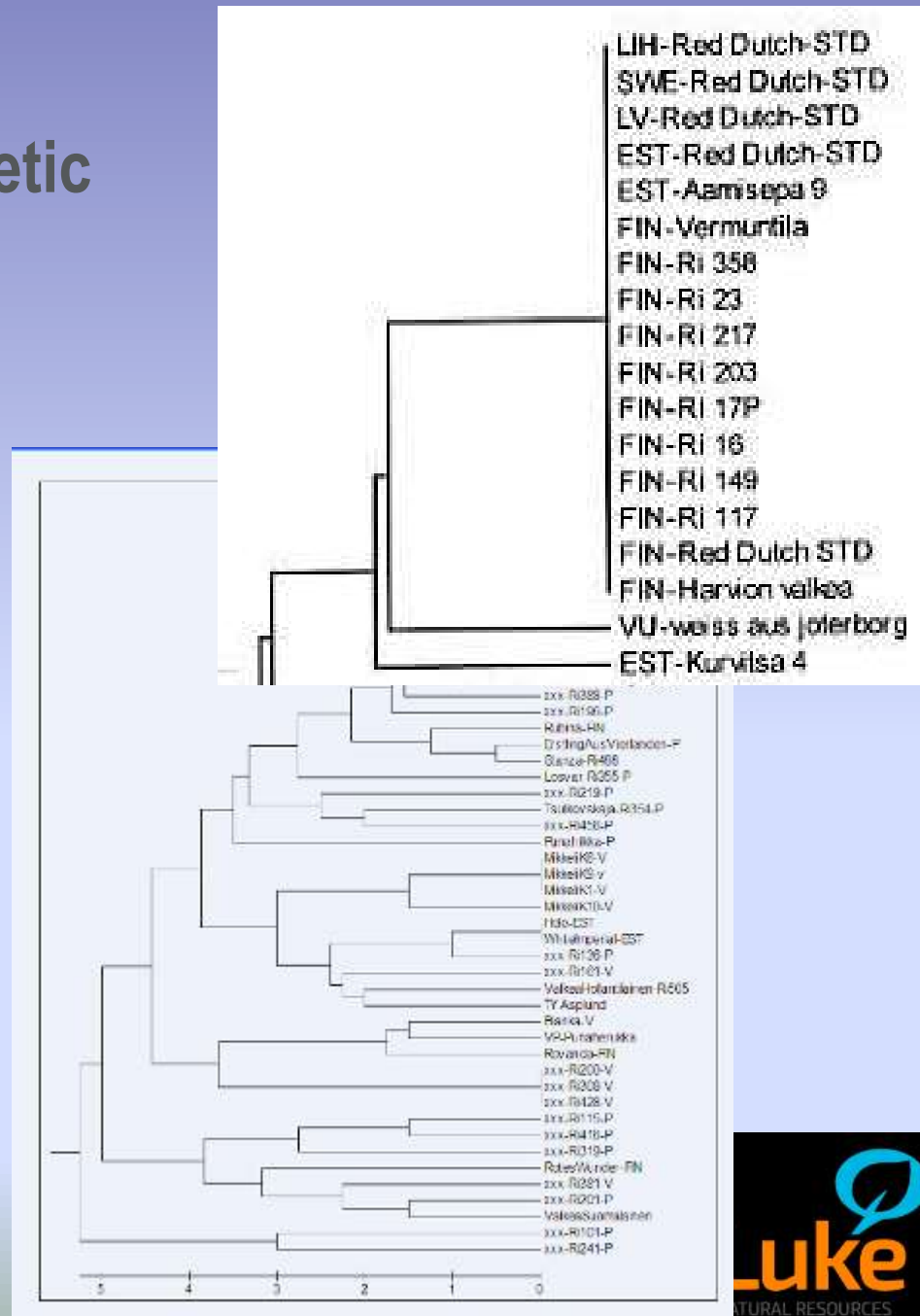


Step 3. Combining results & calculating estimates of genetic relationships

Some difficulties:

- obtaining good quality DNA from *Ribes* was challenging
- standardising of results not completely possible, amount of variation somewhat over-estimated in the combined results (additional alleles)

Estimates of genetic relationships could be provided



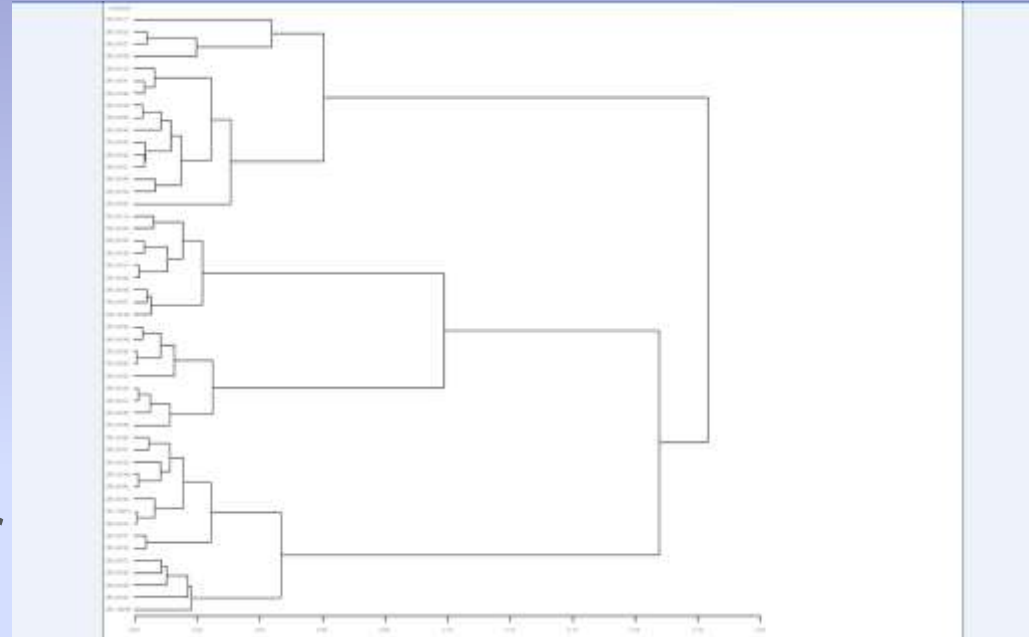
Defining Core collection

1. Defining the target number of accessions in the core collection.
2. Selecting accessions important from the national point of view (historical or present value, rareness, etc.)
3. Selecting accessions important for breeding and cultivation (resistance to stress, yield quality, etc.)



4. Assuring that $\geq 10\%$ of genotypic variability is selected by using molecular marker analysis results

5. Assuring that $\geq 10\%$ of phenotypic variability is selected by using the cluster analysis dendrograms of field evaluation data



Establishing Core collections

(New) field collections

Problem: Black currant reversion virus (BRV) infection

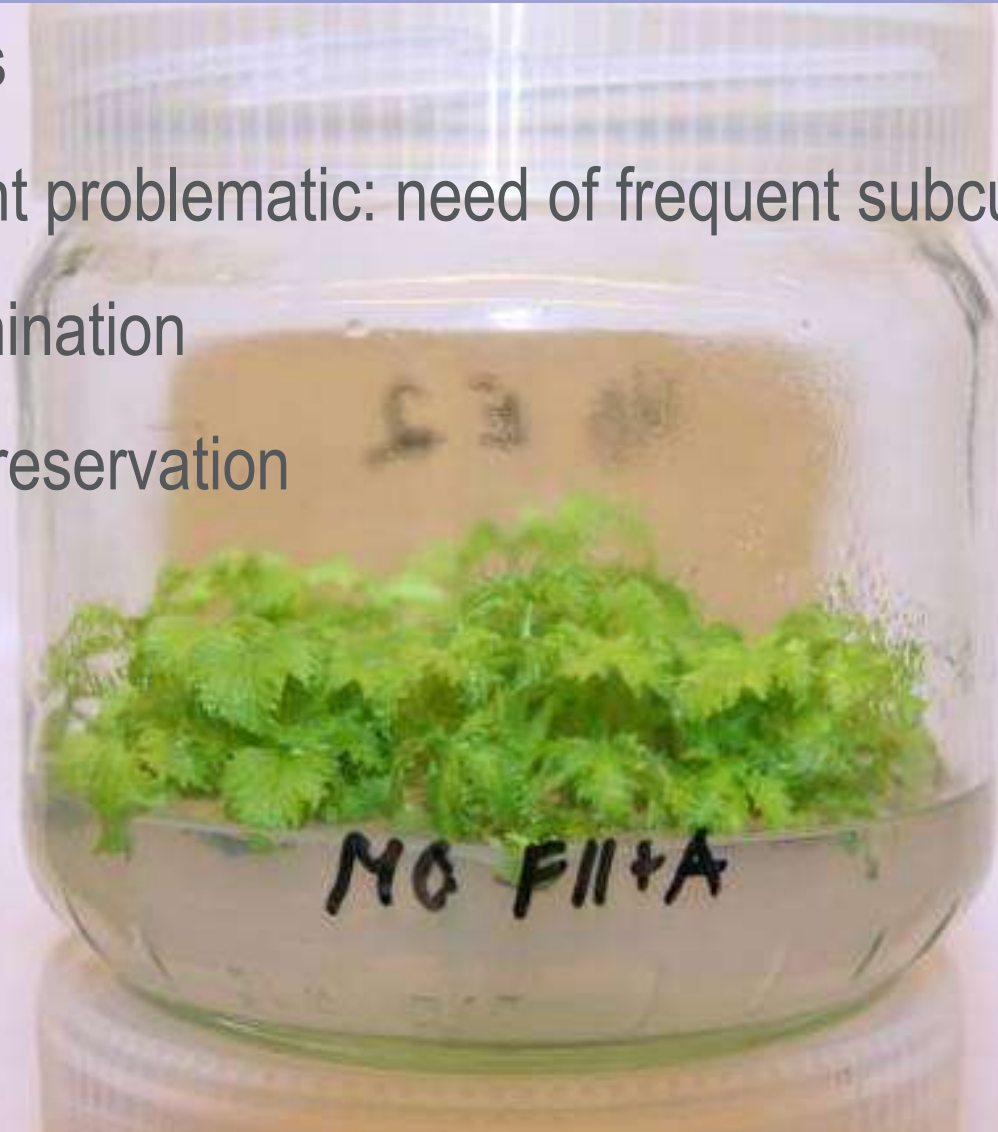
- virus indexing (60 black currants + national projects)
- virus eradication (national projects)



Insect-proof greenhouses

In vitro collections

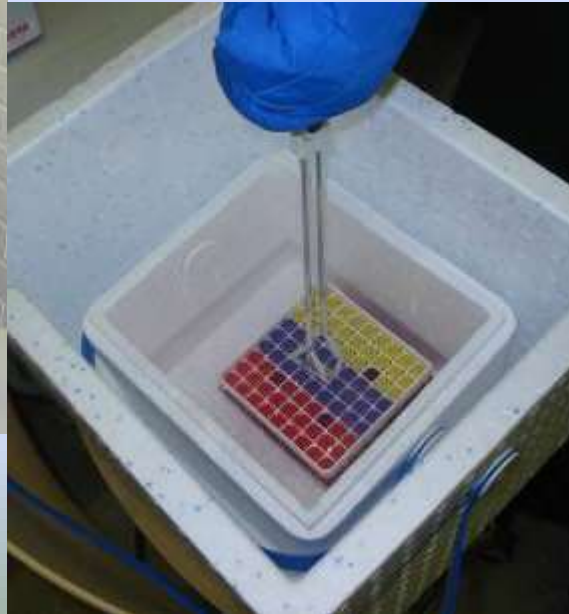
- 2 partners
- red currant problematic: need of frequent subculturing
- virus elimination
- for cryopreservation



Cryopreservation



- dormant buds (60 black currants, Partners 0-5, 8)
- Meristems (national projects)
- "cryotherapy"???



Core collections

•Partners selected 25% of all accessions:

- ✓ 123 black currants (23%)
- ✓ 92 red currants (27%)
- ✓ 123 gooseberries (30%)



Improved
conservation,
characterisation, data
availability, utilisation
of *Ribes* germplasm

A model for future
genetic resource
projects ?



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