

Diversity for present and future – Plant collecting missions in the Nordic region for conservation and utilization

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Summary of the oral presentation at the ‘Conference on garden plants for northern and maritime regions/ climates’, Reykjavik, Iceland, August 2011

What are plant genetic resources?

Genetic resources are living material that includes genes of present and potential value for humans, including all our agri- and horticultural plant crops and some of their wild relatives as they too can have valuable traits.

Why conserve plant genetic resources?

In modern agriculture only a few varieties of a crop are used, often they have a narrow genetic base and many are not really adapted to our northern climate. This contrasts with the large number of landraces with a substantial genetic variation used by earlier generations, well adapted to our conditions. Also, several crops used in earlier times are now forgotten, but may have unforeseen potentials in the future. We need to counteract the increasing genetic impoverishment, especially when facing a changed climate.

To conserve is our responsibility

Organized conservation of genetic resources is a prerequisite for future generations to be able to breed crop varieties and face new challenges. We do not as yet know everything about future demands for crop varieties, but we do know that they will have to be part of a more environmentally friendly cultivation system, be of better quality and have improved resistances, especially when it comes to meeting the challenge of climate change.

How do we conserve?

Seed propagated plant material is conserved as dried seeds, preferably frozen, in a seed genebank, with regular regeneration. Vegetatively propagated plants are conserved as plants or plant parts. In the Nordic region conservation of seed propagated plants is carried out by NordGen, whereas vegetatively propagated plants are conserved by national programs.

How do we collect material to the genebank?

There are several ways to get material into the genebank. For very old varieties and landraces it has been necessary to perform national inventories to try to save as much as possible before they disappear forever. An example is from families where it has been a tradition to grow and save seeds of certain old landraces for generations. For more modern varieties, breeding companies, organisations and research institutes are urged to donate high quality seed of the varieties they have developed. For crop wild relatives and for example plants of old meadows, conservation in their own natural habitat (*in situ* conservation) is preferred, but it is also wise to collect seeds for long-term storage. NordGen (in the past as the Nordic Gene Bank) have



organized and participated in collecting expeditions throughout the years. Some of these are described in this presentation.

Spice- and Medicinal Plants in the Nordic and Baltic Countries strategies for conservation of genetic resources in minor crops (SPIMED). The project was carried out during 2002-2005. A part of the project focused on 8 species which were collected and examined: *Acorus calamus*, *Arnica montana*, *Helichrysum arenarium*, *Origanum vulgare*, *Rhodiola rosea*, *Thymus praecox* ssp. *arcticus*, *T. pulegoides*, *T. serpyllum*, *Valeriana officinalis*.

Relic plants are plants that have survived for several hundreds of or even more than thousand years, from seed to see, generation to generation, for example located on old settlements, monasteries, ruins and other historical sites. These plants tell stories, connected to places and times, and may be a valuable input to local food development, tourism and livelihood. NordGen has made collecting missions in Norway, Denmark and southern Sweden, and to a minor extent on Iceland and Faroe Islands. More collecting missions are needed, and a Nordic network of knowledge in underway (a NordRegio project starting up autumn 2011).

The call for annual and biennial ornamentals. The NordGen working group for fruit, berries and ornamentals has initiated a project for making a call to private growers and organizations for tips and collection of annual and biennial ornamental plants that can be traced back to at least 1970. The project started in 2010 in small scale, mostly receiving collects from Sweden, and will continue over the next years with emphasis on the other Nordic countries.

Will the conserved material be utilised?

The main purpose of conserving plant material is that it can be utilized in the future. But what will be of future use is impossible to say today. The climate change can cause unforeseen effects that make it necessary for us to study and use old landraces and wild crop relatives with suitable traits, lost in the modern varieties. The food production trends will perhaps focus on properties only found in old landraces. Organic farming may find suitable traits in the conserved plants for better production. Science will perhaps find new or already known health beneficial traits found in higher quantities in the old varieties. Plants with a special cultural history linked to them can be new niches for nursery production and gardening. This is happening already today. A couple of inspiring activities are just now carried out in Norway (Plantearven) and Sweden (Old vegetables in cultivation and utilization anew), among other projects.

Do you want to know more about NordGen?

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