Cooperation between gene banks

The gene bank in Russia has material of Nordic origin and of Nordic relevance. Hundreds of relevant seed samples have been identified, including landraces and cultivars of grain, vegetables, oil crops, fiber crops and fodder crops collected from the 1920th an onwards. The most interesting material has been cultivated, described and analyzed by various methods to sort out duplicates and increase the knowledge of the material. So far such work has been carried out on barley, oats, rye, rutabaga, turnips, rapeseed, and timothy. Unique material is multiplied and stored. Some seeds are also stored at the Nordic Genetic Resource Center for distribution to Nordic users, including seed savers organizations, farmers and other food actors as New Nordic Food stakeholders. The original accessions will be found in the gene bank in Russia.

Future challenges

The Vavilov Institute and the Nordic Genetic Resource Center will continue to work together. We face the same challenges related to climate change and to a northern location. Neither Russia, nor the Nordic countries, can rely exclusively on varieties from countries further south; the varieties must be adapted to our day length and to our climate. As changes in climate towards milder and more humid weather conditions are likely to increase plant diseases, varieties need to be resistant. An outline of a closer cooperation between the gene banks in Russia and the Nordic countries, but also in Canada is the next step in this process. Such a process should include plant breeders and companies from the whole Northern hemisphere. Collaboration is the only way to solve the common future challenges.

Svalbard Global Seed Vault

NordGen is responsible for the operative management of the Svalbard Global Seed Vault. Seeds from all over the world are kept frozen in a gigantic security vault owned and founded by the Norwegian government. The management is divided according to a tripartite agreement among the Norwegian Ministry of Agriculture, the Global Crop Diversity Trust and NordGen.

Nordic co-operation with the Vavilov Institute in Russia.
One of the world’s largest gene bank, N.I. Vavilov Research Institute for plant industry (VIR) is situated in St. Petersburg. There are more than 300,000 seed samples preserved in the gene bank. The institution is named after the famous geneticist Nikolai Vavilov, who from 1920 onwards travelled around the world to collect seeds of cultivated plants and their wild relatives. Vavilov had early contact with researchers in the Nordic countries and received materials from them. This was more than 50 years before the founding of the Nordic gene bank.

N.I. Vavilov Research Institute for plant industry (VIR)

During the period 1923 to 1940 Vavilov and his colleagues conducted a total of 180 collecting expeditions around the world. The most important trips went to Afghanistan (1924), the Mediterranean countries and Ethiopia (1927) and America (in the 1930s). Between 1920 and 1940, the collection increased from 14,000 to 240,000 seed samples, today it includes 320,000 samples. VIR has 12 experimental stations, for example the "Polar Experiment Station" located in Siberia and research stations in the Caucasian region where regeneration and evaluation of the material takes place.

What is a gene bank?

A gene bank is a collection of seeds or plant material preserved for future use. In order to produce new varieties the breeders use materials from gene banks. Gene banks also provide the material for research and development projects. Future challenges are many, ranging from climate change and new plant diseases, to lack of nutrients and pollutants. To meet future challenges, it is important to have a large genetic variation to build on. Large variation is a precondition for a resilient system; when the large variation is no longer to be found in the farmer’s fields, it must at least exist in gene banks.

Nordic Genetic Resource Center

The gene bank cooperation in the Nordic region started around 1980 with the establishment of Nordic Gene Bank (now Nordic Genetic Resource Center). The Nordic countries were late in this context, nevertheless, there were seed collections, but these were at the universities or at plant breeding stations. Parts of these collections can now be found at the Nordic Genetic Resource Center. Today the Nordic collection includes approximately 32,000 accessions. Nordic Genetic Resource Center’s main objective is to secure the seeds of Nordic origin or of Nordic relevance. This includes plant varieties of food crops developed in the Nordic countries or varieties developed on farms or in rural communities through years of selection. The collection also includes wild collected material from the Nordic countries, including grass material from northern Scandinavia. The collection furthermore holds material collected in Afghanistan in the 1940’s, during an expedition conducted by Swedish researchers. Wild material is of interest to plant breeders, not least as a source of resistance genes. Resistant varieties make us less dependent on pesticides. Wild material can also be used for breeding new varieties that are hardy and better adapted to our winter climate or our long summer days.