

Historical seeds reveal unique barley grown in the Storsjö district

Local differences in long-distance trade can have significant effects on genetic diversity in agriculture. Unique local varieties can be developed when seed exchange instead takes place locally. This has been shown by a study of 120-year-old seed samples from Jämtland, carried out by researchers at Linköping University and Stockholm University.

“Agriculture may not be the first thing that comes to mind in relation to Jämtland, but barley was being cultivated there as early as the fifth century. The region is, however, at the limit of where it is possible to grow cereals, and crop failure occurred often. This is why long-distance trade has always been important for the inhabitants of Jämtland”, says Matti Leino, researcher in the Department of Archaeology and Classical Studies at Stockholm University. Towards the end of the 19th century, seed samples were collected from several farms in Jämtland for the large fair of art and industry held in Stockholm in 1897. The seed samples have been preserved at Nordiska museet, a Swedish museum for cultural history. By analysing the genetic make-up of historical seed samples, researchers can learn about historical agricultural practices. They compared the seeds from Jämtland not only with living material preserved in the NordGen, the Nordic gene bank, but also with historical material from other parts of Sweden and Norway.

“We can learn more about such things as the genetic changes that took place when unimproved landraces were adapted to cultivation under local conditions. Such knowledge may be important when developing climate-adapted varieties for modern agriculture”, says Jenny Hagenblad, associate professor in the Department of Physics, Chemistry and Biology at Linköping University.

The genetic analyses showed that two types of barley were cultivated in Jämtland towards the end of the 19th century. One of these was found solely in the district around Storsjön, and differed from barley from other parts of Sweden or Norway. Barley that was cultivated further away from Storsjön was, in contrast, of another type, which was more similar to barley from more easterly parts of southern Norrland.

“The genetic division agrees well with the relative importance of agriculture and long-distance trade. Agricultural conditions were better around Storsjön, and people probably exchanged seed with other farms in the area, where a unique and locally adapted barley variety was developed. Further from Storsjön, cultivation was more difficult, and long-distance trade was important for subsistence. If the crops failed, the farmers probably purchased new seed when travelling southwards in Sweden to trade,” says Martin Larsson, who carried out some of the analyses during his degree project for the biology programme at Linköping University.

Many of the crops that were cultivated in Sweden before the first part of the 20th century were lost during the modernisation of agriculture. However, the type of barley that was cultivated around Storsjön has been preserved by NordGen.

“One of the varieties in the gene bank that we studied, which was labelled ‘Unrefined Jämtland barley’, turned out to be very similar to the historical barley seeds from the Storsjö district. Anyone who wants to grow the same barley as was grown in Jämtland until the 19th century can do so”, says Jenny Hagenblad.

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