

# Finnish Network Model towards a User Gene Bank of Heritage Cereals

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## Heritage Cereals from Gene Bank to Cultivation

Spelt was the first old grain taken back into cultivation by biodynamic and organic farms in Nordic Countries in 1990s. New Nordic Food project ([www.newnordicfood.org](http://www.newnordicfood.org)) pushed forward the Nordic Heritage Cereal Seminar in the early 2000s. This network has enabled sharing experiences among farmers and crop processors and it has resulted in an increased interest in cereal landraces. During recent years the reviving interest in sourdough baking increases demand for cereal landraces. In addition to special products, heritage cereals can also offer possibilities to meet the challenges of climate change on cereals, the growth of organic production and hindering the decline of crop's biodiversity.

Today Finnish cereal landraces are rare in cultivation; less than 0,1 % of the cultivated area. Genetically diverse cereal material has been saved to the joint Nordic gene bank (NordGen); and a great deal of materials has been received from Finland. More than 200 samples of landrace cereals, representing 54 % of the all samples are of Finnish origin (Pictures 1 & 2). Furthermore, dozens Finnish old trade varieties are saved, and they may be suitable for today's organic cultivation due to their breeding history.

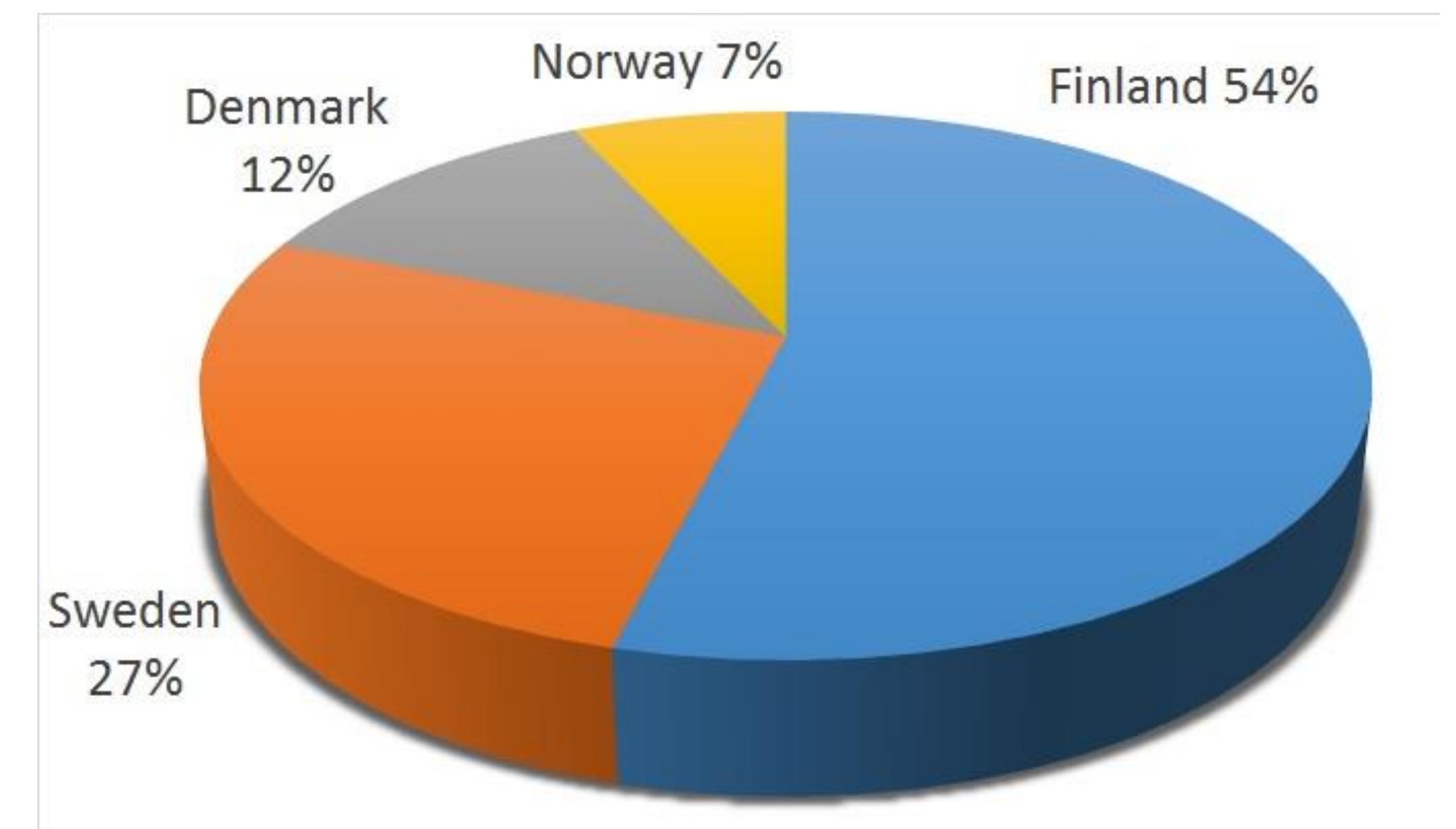
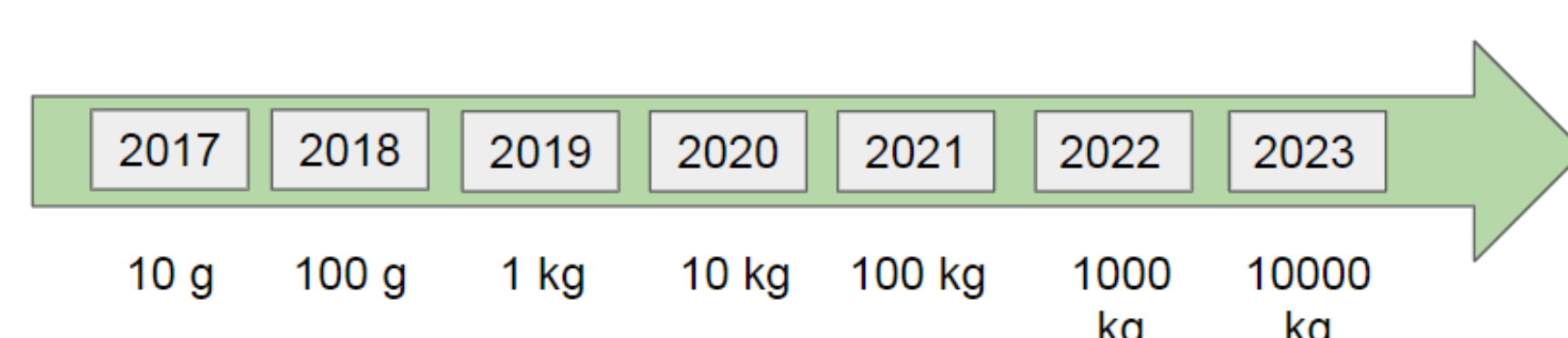
## Multiplying Network

Up till now only few farmers have been multiplying gene bank materials. In Norway one farmer took care of the multiplying process and in Sweden it has for a long time been carried out by a researcher. The Finnish multiplying network was established in 2017. In 2019 there are 59 farmers multiplying 124 landraces and old trade varieties, of which 70 are landrace cereals. (Pictures 2 & 3.) Professional and hobby farmers interested in multiplying seeds were gathered via social media and other networks.

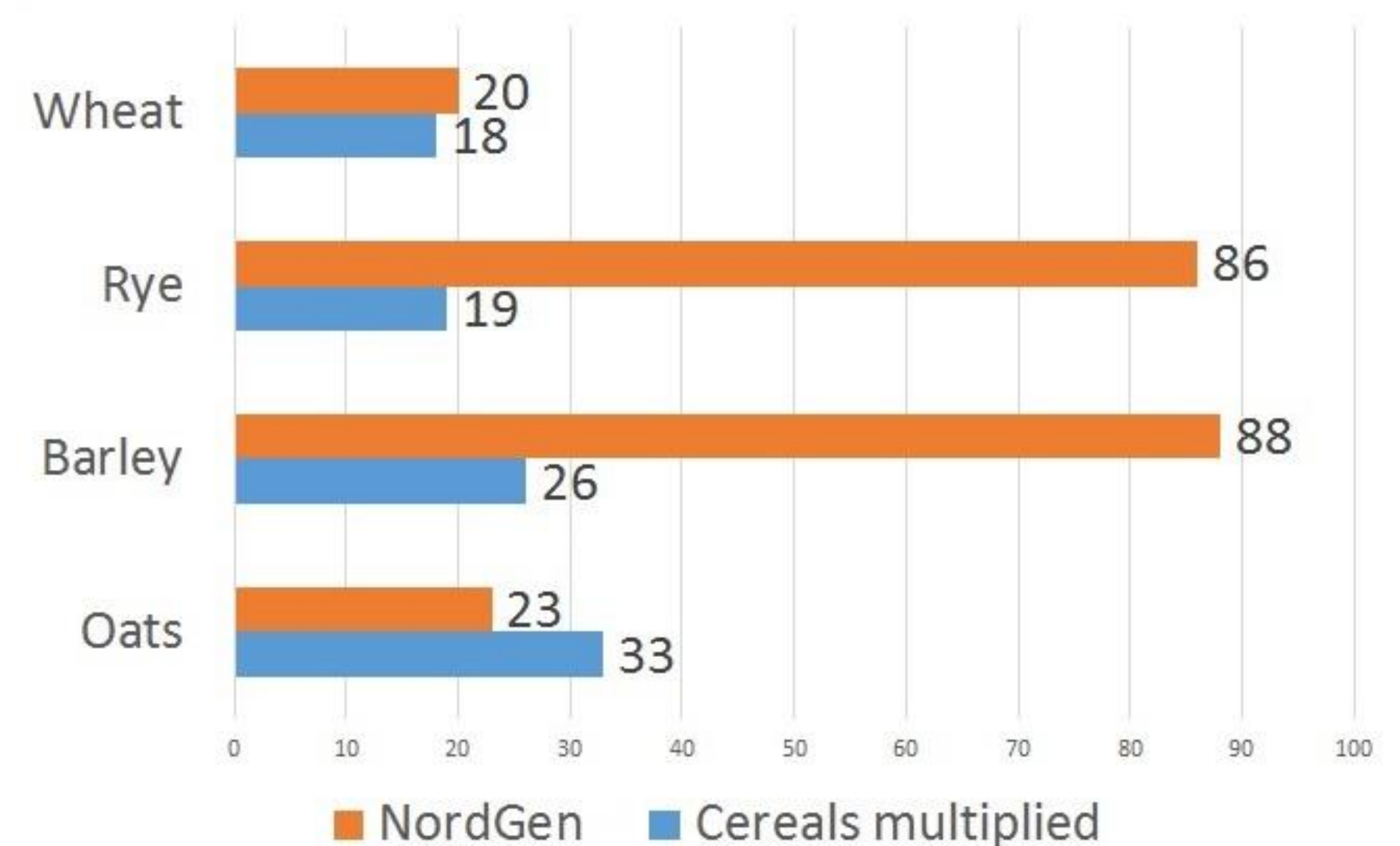
The network coordinator interviewed interested persons and chose the most suitable ones. Criteria were e.g. geographical location, available land and other resources. The first priority has been to multiply the seeds in the same geographical district from where they were originally collected. Since the beginning regular discussions has been ongoing with the national authorities (seed testing station, genetic resource program, ministry and gene bank) concerning the network model and its practical realization.

## Multiplying Materials

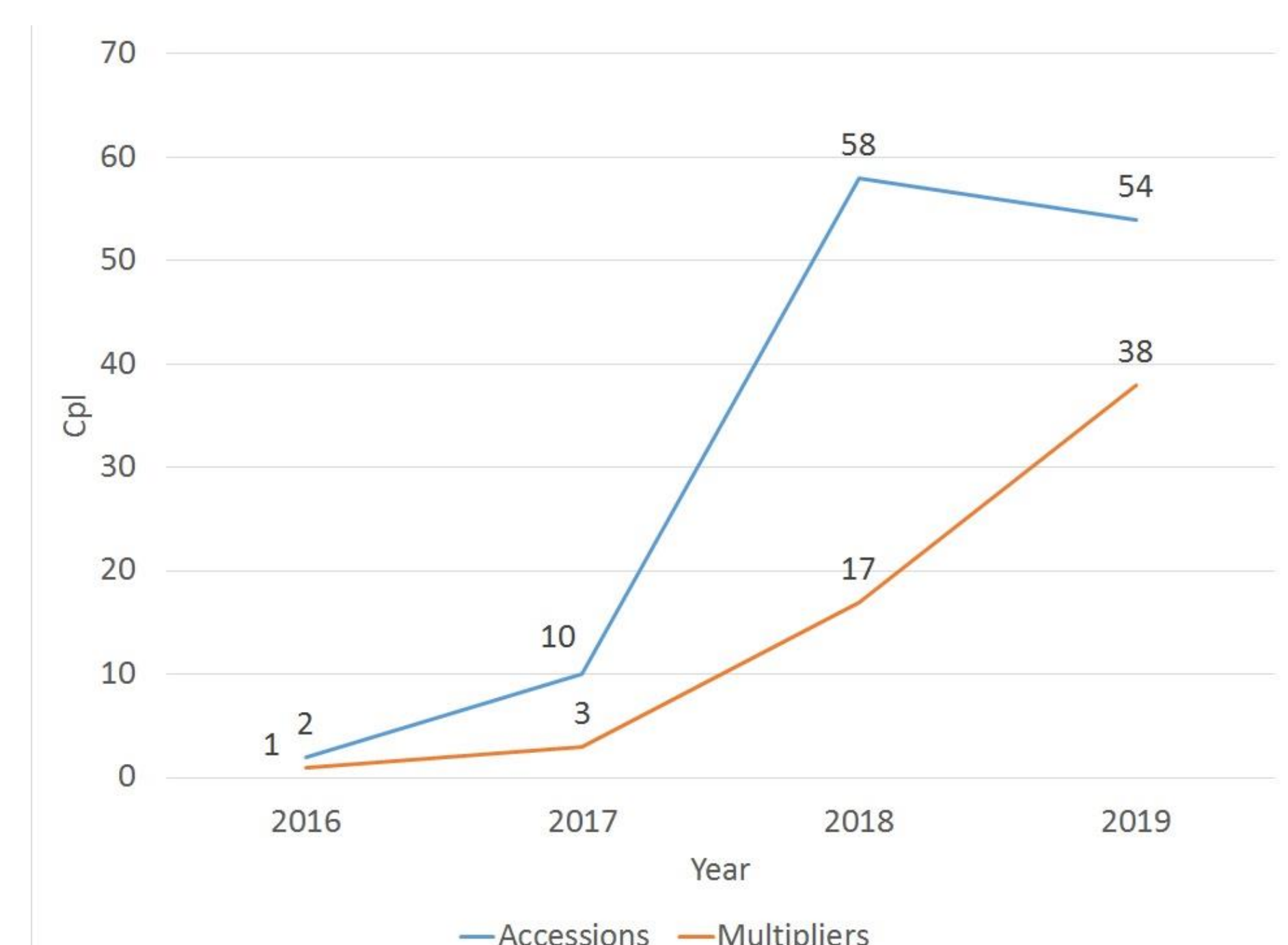
The network orders annually seeds from the gene bank as a joint order. Half of the material (5-10 g) stays as backup seeds in the network storage and the other half is sent to the farmer. Farmers multiply five years following given instructions and after this there will be enough seeds for cultivation.



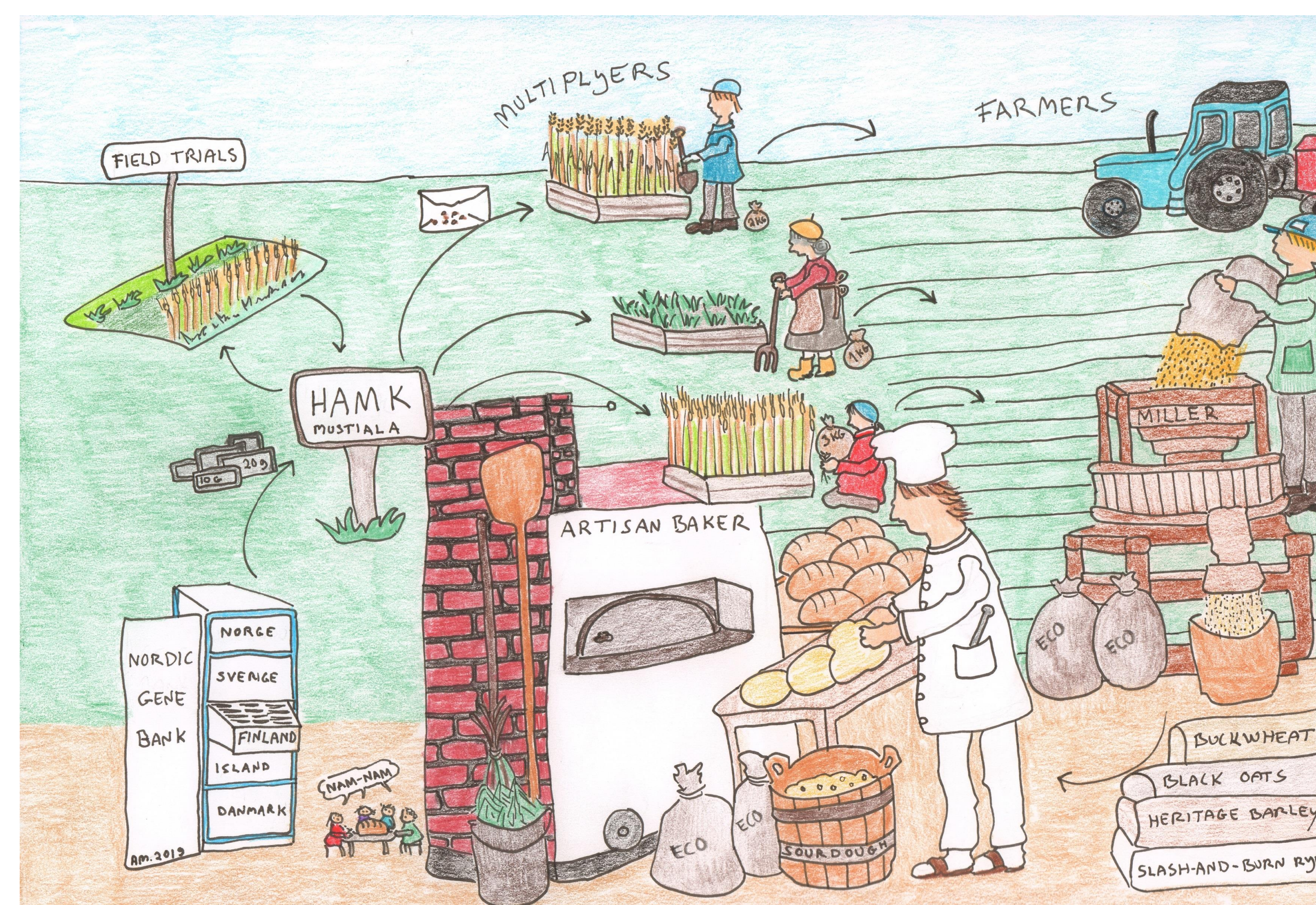
Picture 1 Samples of cereal landraces in Nordic countries stored in NordGen. Source: Sesto 2018 (<https://sesto.nordgen.org>).



Picture 2 Finnish cereal landrace samples stored in NordGen and samples in multiplication. Sources: Sesto 2018 (<https://sesto.nordgen.org>), the Multiplier Network in Finland 2019.



Picture 3 The amounts of multipliers and samples in the Multiplier Network. Source: the Multiplier Network in Finland 2019.



Picture 4. Route of gene bank samples from seed multiplying to cultivation, crop processors and customers' table. Drawing: Annika Michelson