

Avenue

About the project

The Avenue project aims to develop data and a prediciton model that can be used to develop quality oat varieties with high nutritional value that are suitable for organic farming.

Oat is a priority crop for sustainable high-yield agriculture, traditionally been considered a low-input crop and is among the healthiest grains on earth: rich in protein, minerals, antioxidants and β-glucan fibre, being associated with reduction in cholesterol levels and post-meal glycaemic responses. Denmark has a large export of organic producs and oats is presently one of the largest organically produced crops in the country. Therefore, it is natural that the Danish Innovation Centre for Organic Farming is leading the collaborative project 'Breeding organic Avena sativa L. (Oat) with high nutritional value' (AVENUE). The project will address the need for oat varieties with high nutritional value specifically tailored to sustainable organic production.

The project will advance our knowledge of genotype and environment interactions, by bridging disciplines of plant genetics, agronomy and statistics. The overall objective is to develop prediction models that integrate quality, diversity, environment and cultivation management. To achieve this, the project will evaluate 200 oat varieties and landraces (of which 180 are from NordGen) that have been collected from across

the Nordic Region and grown for a century surviving changes in climate and agricultural practices. As part of the project, field trials will be carried out in Scotland, Denmark and Sweden over a two-year period.

The seed samples will be genotyped for key genes involved in β-glucan synthesis and scored for a range of grain quality traits under local environmental conditions. The combined dataset will be evaluated using state-of- the art novel modelling approaches to identify nutritionally superior and yield-stable oat accessions, providing valuable novel germplasm for breeders. Among other things, the project will deliver the following:

- Quantitative phenotypic data

- A prediction model to determine the nutritional value of oats

- New breeding material tailored to different climate scenarios to future proof health-promoting and sustainable oat production

The project Avenue will run during 2025-2027 with fundings from the Novo Nordisk Foundation.



The photo shows a part of NordGen's field trial in Alnarp, Sweden, captured in July, 2025.

Project partners

Innovation Centre for Organic Farming (Project leader: Sidsel Birkelund Schmidt)

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