

Innovation Project

Food and Agriculture Cluster



The Freese Organic Farm: Raising Climate-Adapted Vegetable and Grain Varieties, and Testing Innovative Greenhouse Coverings

The Freese Organic Farm is testing a number of adaptation options for agriculture, especially in the area of the cultivation of cereals and of high-quality vegetables. Open-field crop farming is becoming ever more difficult due to climate change. In order to better protect vegetable cultures from such extreme weather events as heat waves or heavy rain, the Freese Organic Farm is testing the following innovations: (1) A new greenhouse covering which, due to its particular permittivity, makes open-field-like light conditions possible in a protected structure. At the same time the farm is seeking resilient, climate adapted vegetable strains which are to be examined for their particular properties, both in open-field cultivation and under the protection of this innovative foil. (2) In the area of cereal raising, the organic farm is trying to cultivate an old strain of rye. (3) And by baking and marketing bread from this rye, the farm wants to raise consciousness about the issue of climate change and adaptation.

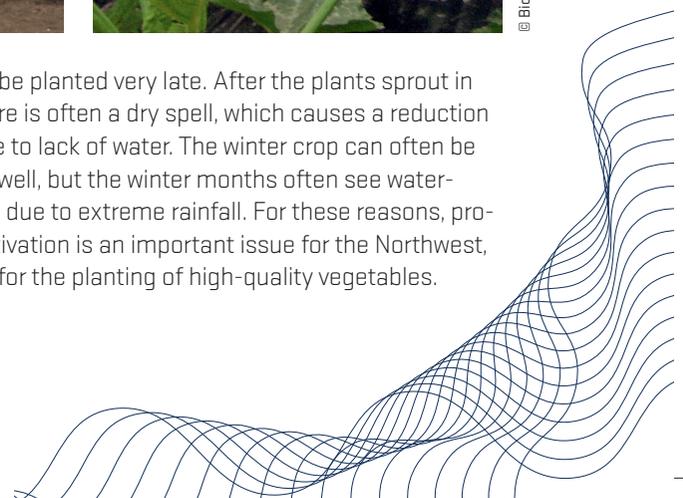


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The Need for Climate Adaptation

Longer periods of heat and drought, combined with extreme weather situations, such as strong thunderstorms and heavy winds, is making the open-field cultivation of crops ever more difficult. Especially the cultivation of cereals is an ever greater challenge in the region of East Friesland. Due to extreme wetness on the field, the summer crop can

often only be planted very late. After the plants sprout in spring, there is often a dry spell, which causes a reduction in yield due to lack of water. The winter crop can often be sown very well, but the winter months often see waterlogged soil due to extreme rainfall. For these reasons, protected cultivation is an important issue for the Northwest, especially for the planting of high-quality vegetables.



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Implemented Measures

- Analysis of possible success factors for the cultivation of climate-adapted varieties, coordinated with the use of such farming technology as new types of greenhouse covering
- Cultivation of an old strain of rye
- Development of a marketing concept for climate-adapted products.

Method and State of Implementation

Analysis of possible success factors, using the example of vegetable cultivation

Based on a cost-benefit analysis of various greenhouse systems, the F-Clean foil was assessed as being favorable for use for vegetable cultivation, and was tested for that purpose. It is characterized by a particular permittivity, which enables cultivation under light conditions similar to those in open-field cultivation.

Suitability and implementation of tests, using the example of an ancient strain of rye

In the area of cereal cultivation, an old rye variety was planted. It is very robust and fast-growing, and since it is a deep-rooter, it has good tilth. Due to its rapid growth, even under non-optimum conditions – it is very robust with regard to drought, wet conditions and extreme temperatures – this strain of rye is very well suited as groundcover, and combats weeds very effectively. The rye was used as a short intermediate summer crop and also sown in the fall as an intermediate winter crop. Nonetheless, challenges have arisen with regard to the cultivation: it may grow very high before ripening, leading to harvest problems, and top level yields are not possible. Moreover, a high input of nutrients causes unstable growth.

Developing a marketing concept using the example of this strain of rye

Together with a local baker, a marketing concept for a type of »climate-adapted« bread based on this strain of rye was implemented, in order to permit consumers to develop consciousness for the issue of climate change; a band around the loaf of bread and a flyer were developed.



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Results and Transferability

In the course of the project, it became clear that old seed is not necessarily resistant against disease and extreme weather conditions, and that, especially when using climate-adapted and climate-robust strains, it will be necessary to operate in the context of climate change. At the same time, these arguments can also be used as marketing characteristics. It is very important to maintain the gene pool of old strains, and to use them for intensive cultivation, so as to preserve the characteristics of traditional breeding methods, and combining them with today's requirements. The preservation and diversity of strains is considered important at the Freese Organic Farm, inasmuch as all direct marketers have a great interest in maintaining taste diversity, and this contributes to maintaining the regional cultural landscape.

nordwest2050 is one of a total of seven projects funded by the Federal Ministry of Education and Research (BMBF) in the context of the KLIMZUG Program (Klimawandel in Regionen zukunftsfähig gestalten – Creating Climate Change-Ready Regions). In 2012 **nordwest2050** was awarded as an official project of the United Nations' World Decade on Education for Sustainable Development. The goal of the adaptation research is to develop strategies and measures by means of which regions and industries can be better prepared for life and business under the conditions of climate change. This is on the one hand designed to strengthen future competitiveness, and on the other to promote the development and use of new technologies and procedures for adaptation to climate change.

