

BIOBREED – a new project on marker assisted population breeding in wheat with resistance to common bunt

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Abstract

Organic farming aims at controlling pests and diseases with the use of biodiversity and resistance. However most organic wheat fields today are sown with monocultures of pure line varieties, and resistance to common bunt is rarely used, even this disease causes severe problems for seed producers and for farm saved seed, as infected seed lots are discarded because of contamination with bunt spores. To improve the system, organic wheat needs resistance to common bunt that is effective enough to prevent development of the disease over time.

Composite cross populations have been proposed as a future tool, both to increase biological diversity, and to stabilize yield. However, if such populations should be used in organic systems, resistance to common bunt need to be implemented into the populations.

On this background a new project is starting up in Denmark, which aims at developing methods for mass selection of wheat population. The project includes the development of a composite cross population based on 30 wheat lines with low susceptibility to common bunt. In the project DNA markers will be developed for common bunt and marker assisted selection and field infection pressure will be used to increase resistance in the population over time. The project also deals with other topics of relevance to organic wheat breeding such as baking quality, antioxidants, phytate content and phytase activity.