



Increasing the efficiency and competitiveness of organic crop breeding

PRACTICE ABSTRACT No. 18

Protein yield – criteria and metrics for choice of varieties

PROBLEMS:

- Yield, protein and gluten content are important criteria for choice of varieties in bread-making wheat. In some countries protein is the relevant criteria, in others gluten.
- Yield and protein/gluten content have a negative correlation to yield that makes variety choice difficult. Protein content is not relevant for animal feed.
- Organic farmers have limited access to data from organic variety testing.

SOLUTIONS:

- Breeders with a focus on organic farming have successfully started to select for protein/gluten yield. Protein and gluten content have a high positive correlation.
- A high nitrogen efficiency in wheat improves protein yield of organic farming systems.

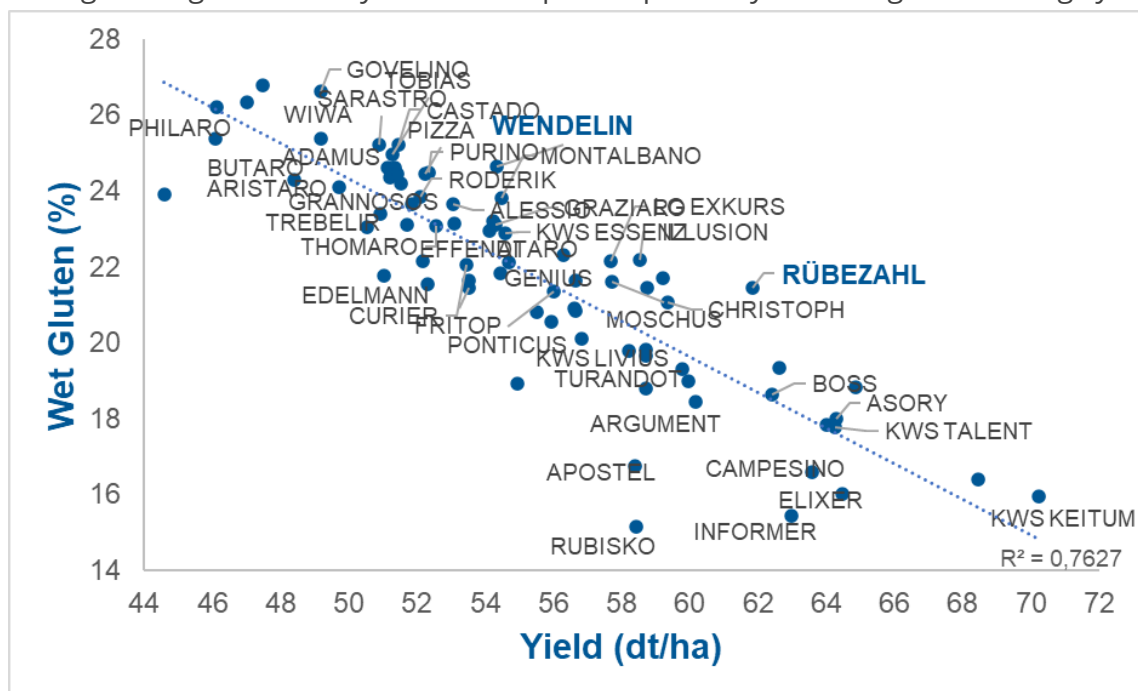


Fig. 1: Bundessortenamt, organic VCU winter wheat, organic trials of German federal states. All varieties mentioned have organic multiplication in Germany.

PRACTICAL RECOMMENDATIONS:

- To select varieties for high protein and gluten yield use results from organic variety trials. If not available, then use results of trials carried out under low-input conditions.
- Location of the trials are comparable with your farm concerning soil quality and climate. Often official trials have the tendency to be grown on soils with good quality.
- Some conventional breeders focus on development of varieties with reduced protein content but improved gluten content. These varieties have not shown good results under organic farming conditions to date in most cases.

FURTHER INFORMATION:

W. Vogt-Kaute (2006): Baking quality of variety mixtures of organic wheat and acknowledgement by farmers and millers in Germany, in: SUSVAR proceedings La Besse 2006, <https://orgprints.org/id/eprint/10337/1/10337.pdf>

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ABOUT ECOBREED:

ECOBREED is a 5-year (2018-2023) project funded by European Union's Horizon 2020 research and innovation programme that will improve the availability of varieties and seed suitable for organic and low-input production. Activities will focus on four crop species i.e. wheat, potato, soybean and common buckwheat, selected for their potential contribution to increasing the competitiveness of the organic sector.

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