

Publication

Yield and baking quality of winter wheat cultivars in different farming systems of the DOK long-term trials

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BACKGROUND: A challenge in wheat (*Triticum aestivum* L.) breeding for organic farming is to provide high-yielding cultivars with appropriate baking qualities under the limiting conditions of organic fertiliser input and without the use of pesticides. Cultivars are usually tested on organic and conventional farms. However, field properties may differ owing to spatial variations of soils and microclimate heterogeneity. In this study, old, organically bred and conventionally bred cultivars were tested in organic and conventional farming systems of the DOK long-term system comparison trial.

RESULTS: Effects of cultivars and systems on yield and quality parameters were statistically significant. Genotype x system interactions were generally not observed. Grain yield across all cultivars increased from 4.2 Mg ha⁻¹ under organic conditions up to 6.8 Mg ha⁻¹ under conventional conditions, with protein contents of 90 and 117 g kg⁻¹ respectively. Conventionally bred cultivars yielded significantly more under conventional conditions than organically bred cultivars, whereas neither organically nor conventionally bred cultivars performed better under organic conditions.

CONCLUSION: Breeding for yield was successful, but only under high-input conditions, where these successes were accompanied by rising inputs of external resources. The results of this study suggest that cultivar testing in long-term system comparisons can complement standard on-farm testing.

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