



Research Article

Wheat quality in organic and conventional farming: results of a 21 year field experiment

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Abstract

Consumers have become more aware of healthy and safe food produced with low environmental impact. Organic agriculture is of particular interest in this respect, as manifested by 5.768 million hectares managed pursuant to Council Regulation (EEC) 2092/91 in Europe. However, there can be a considerable risk that the avoidance of chemical inputs in organic farming will result in poor food quality. Here the results of a study on the quality of wheat (*Triticum aestivum* L.) grown in a 21 year agrosystem comparison between organic and conventional farming in central Europe are reported. Wheat was grown in a ley (grass/clover) rotation. The 71% lower addition of plant-available nitrogen and the reduced input of other means of production to the organic field plots led to 14% lower wheat yields. However, nutritional value (protein content, amino acid composition and mineral and trace element contents) and baking quality were not affected by the farming systems. Despite exclusion of fungicides from the organic production systems, the quantities of mycotoxins detected in wheat grains were low in all systems and did not differ. In food preference tests, as an integrative method, rats significantly preferred organically over conventionally produced wheat. The findings indicate that high wheat quality in organic farming is achievable by lower inputs, thereby safeguarding natural resources.

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