

Wheat Cultivar Performance on Certified Organic Fields in Minnesota and North Dakota

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Research Summary

Synthetic agrichemicals are used to minimize nutrient deficiencies and pests when developing and selecting modern small-grain cultivars. Some farmers believe that modern cultivars are not adapted to environments without these inputs, and old cultivars should be grown. Our objective was to determine the adaptability of spring wheat (*Triticum aestivum* L.) cultivars for production in certified organic environments. A single seed lot for 15 cultivars and two seed lots each for two others were used to establish 19 treatments evaluated for grain yield, protein content, kernel and volume weight, along with phenological growth traits on four certified organic fields in Minnesota and North Dakota in 2003 and 2004. The cultivars represented different development eras, but 11 were released

since 1995. Interactions between environments and cultivars existed for the four grain parameters ($P < 0.05$), but some modern cultivars ranked high consistently for yield, protein content, and volume weight. For example, the modern cultivar Walworth produced an average of 500 kg ha⁻¹ more grain than the highest yielding cultivar developed prior to 1970. Seedling vigor and other phenological growth traits did not explain consistently yield differences between cultivars. These results suggest that modern spring wheat cultivars are adapted to certified organic environments. The phenological growth traits considered in this study are not suited as primary selection criterion for cultivars in certified organic environments.

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