

Impact of Tillage and Crop Rotation on Grain Yield of Spring Wheat II. Rotation Effect.

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Summary

North Dakota is the leading domestic producer of field pea (*Pisum sativum* L.) with almost 600,000 acres seeded in 2006. This level of production partially results from the belief that grain yield of spring wheat (*Triticum aestivum* L. emend. Thell.) is greater following field pea compared with a spring wheat monoculture. The reduction in tillage occurring in the Great Plains has generated interest among farmers in determining if crop rotation benefits of field pea extend to spring wheat across contrasting tillage systems. A six-year field study was conducted to determine the impact of field pea on grain and N yield of a subsequent spring wheat crop in clean-, reduced-, and no-till systems. A beneficial rotation effect occurred for spring wheat grain and N yield in four of the six years and ranged from 9 to 11 bu/acre and 13 to 28 lb/acre, respectively ($P < 0.05$). An interaction between cropping strategy (rotation and monoculture) and tillage system was not observed for either trait. These results suggest that the beneficial rotation effect of field pea is similar for spring wheat across different tillage systems and occurs in most but not all years, depending on environmental factors.

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