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Major benefits, adoption barriers for extended crop rotations

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Iowa farmers at a field day for small grains in extended rotations. Photo courtesy of Practical Farmers of Iowa.

In the U.S. Midwest, the use of extended rotations that incorporate small grains and forages in addition to the predominant crops corn and soybean can have positive agronomic and environmental impacts. Agronomic impacts include increased soil organic matter; larger and more diverse microbial communities; greater water-holding capacity; reduced weed, insect pest, and disease prevalence; and, ultimately, better crop yields. Potential environmental benefits include improved water quality through greater nutrient retention. Despite potential benefits, adoption of more diverse rotation systems across the region is low.

To determine why, a survey was conducted. Results, published in *Agricultural & Environmental Letters*, showed that farmers are aware of the potential benefits of extended rotations with almost all agreeing that extended rotations can improve agronomic and environmental outcomes while reducing fertilizer and pesticide needs. However, results also showed that farmers perceive major barriers to their use, including lack of markets, lagging breeding research, and shortage of technical capacity among agricultural advisers. A major conclusion is that these are structural barriers that cannot be easily addressed by individual farmers. Consequently, changes in agri-food policies, programs, and ultimately markets will be required to foster the spread of extended rotations and the benefits they provide.

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Weisberger, D.A., McDaniel, M.D., Arbuckle, J.G., & Liebman, M. (2021). Farmer perspectives on benefits of and barriers to extended crop rotations in Iowa, USA. *Agricultural & Environmental Letters*, 6, e20049.

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