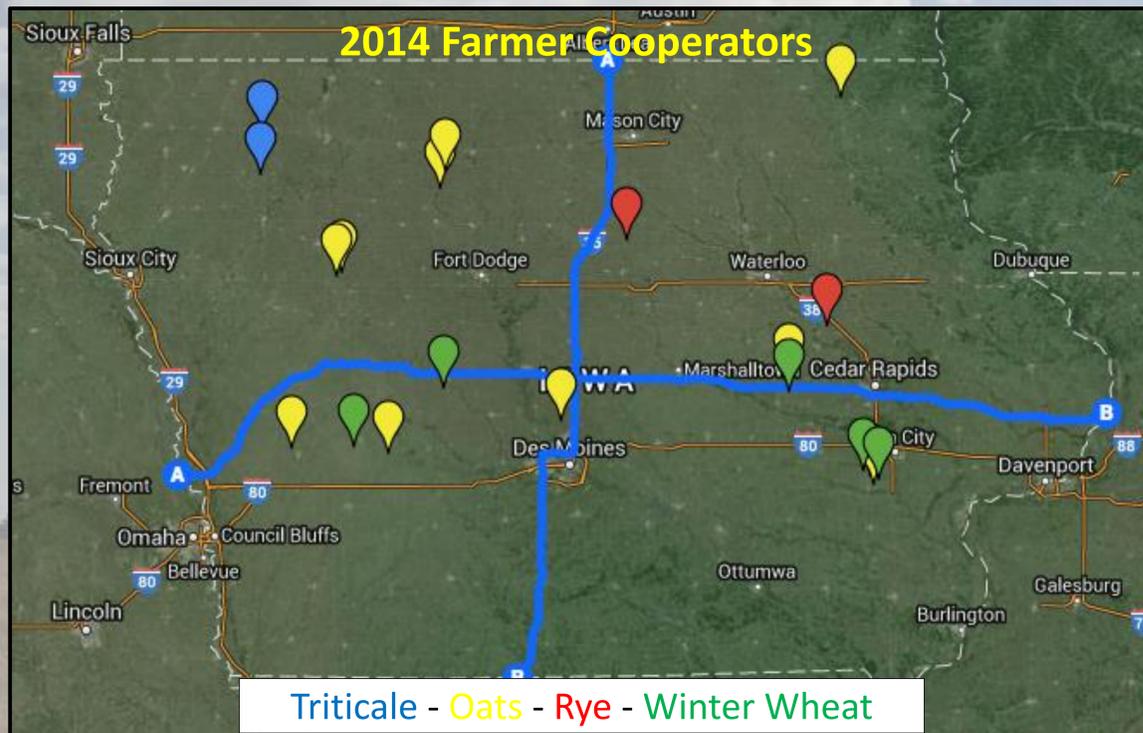


Constraints to Organic Small Grain Productivity in Iowa

David Weisberger¹ Mary Wiedenhoef^{1,2} Margaret Smith³

1 ISU Graduate Program in Sustainable Agriculture 2 ISU Dept. of Agronomy 3 ISU Value Added Extension



Small grains are a cornerstone of organic grain crop rotations. They help decrease the soil weed seed bank, provide greater soil cover, and their rooting structure and biological function contribute to soil health by increasing soil aggregate stability. Small grains help spread the workload across the farming year and are particularly beneficial in hot, dry years, because they complete their life cycle in mid summer and avoid the driest part of the growing season. Following harvest, there is a window available for double cropping, cover cropping and/or grazing that also contributes to ecological diversity, both above and below ground (Francis and Clegg, 1990, Karlen et al, 1994). Unfortunately, small grains are presently a financial weak link in the rotation (Chase, 2011). Low yields and poor grain quality can inhibit their ability to compete economically. This year, 20 organic farmers participated in an observational study to conduct basic research on what factors constrain grain yield and quality. These include:

- operation timing
- seeding rate
- soil fertility levels
- variety choice
- farmer perceptions



WORKS CITED:

- Chase, Craig, Kathleen Delate, and Ann Johans. 2011 Organic Crop Production Enterprise Budgets. Available online at: <http://www.extension.iastate.edu/agdm/crops/html/a1-18.html>
- Francis, C. A., and Clegg, M. D. 1990. Crop rotations in sustainable production systems. In "Sustainable Agricultural Systems" (C. A. Edwards, R. Lal, P. Madden, R. H. Miller, and G. House, eds.), pp. 107-122. Soil Water Conserv. Soc., Ankeny, Iowa
- Karlen, D. L., G. E. Varvel, D. G. Bullock, and R. M. Cruse. 1994. Crop rotations for the 21st century. Advances in Agronomy 53: 1-45.

	Oats	Rye	Triticale	Winter Wheat
Farmers' top perceived constraints to profits	delayed planting date, annual weed pressure, too much mid-season rain	Winter kill, annual & perennial weed pressure		
Varieties planted	Jerry, Reeves, Shelby 427, Horsepower bin-run own seed	VNS	NE426GT Winter Triticale,	Overland, SY Wolf, BW 442, bin-run own seed
Range of seeding dates	4/2/14 – 4/18/14	11/2/13	10/7/13 – 10/11/13	9/25/13 – 10/23/13
Range of seeding rates	1.75 - 5 bu/A	110 lb/A	90-112 lb/A	90-120 lb/A
Range of Yields	54-119 bu/A	19 bu/A	15 bu/A	32-45 bu/A
Range of Test Weights	24-45 lb/bu	45-46 lb/bu	39-41 lb/bu	45-56 lb/bu