



## Greening the Brown Period Using Managed Perennial Species

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From fall to late spring, driving across the upper Midwest tells a story of unproductive land: bare soil, erosion, and nutrient loss. While the land during the remaining of the year produces a highly productive crop, this period of bare soil represents short term soil and nutrient losses to the farmer and long term impact to the environment. Traditional cover crops, while highly effective at mitigating environmental impacts, typically add a cost to growers with minimal economic return. The goal of the experiment “Greening the brown period using managed perennial species” is to develop a perennial cover crop system within a corn and soybean rotation. This will be done by manipulating tillage treatments with various perennial species to optimize cover while minimizing yield loss to the cash crop harvested in the fall. Designing such a system with perennials provides significant benefit to our water quality through continuous living cover across the landscape (Table 1) without the need to rebuy and replant cover seed each and every year.



Picture 1. Planting using Brillion seeder in August 2015 (Waseca, MN)



Picture 2. Spring establishment (Lamberton, MN)

### Locations

- Rosemount, MN
- Waseca, MN
- Lamberton, MN

### Species (see Table 2 on back)

- Grasses (2)
- Legumes (3)
- BMP Check (no cover)

### Treatments

- No till herbicide applications
- PTO Driven Rotary Zone Tillage

### Objectives

- Determine best tillage treatment per species that maximizes cover and minimizes yield hit to cash crop
- Quantify nitrogen usage within each species

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~Thank you~





**Table 1.** Effect of crop system on nitrate N losses in subsurface drainage (from article “Nitrate Nitrogen in Surface Waters as Influenced by Climatic Conditions and Agricultural Practices” by Gyles W. Randall and David J. Mulla)

Crop system	Nitrate N lost, 4-yr total
	kg/ha
Continuous corn	217
Corn-soybean	204
Soybean-corn	202
Alfalfa	7
CRP*	4

\*Conservation Reserve Program

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**Table 2.** Explanation of species used in Greening the brown period experiment

Type	Explanation	Species
Grasses	Shade tolerant, herbicide tolerant	<ul style="list-style-type: none"> <li>• Hard Fescue</li> <li>• Chewings Fescue</li> </ul>
Legumes	Shade tolerant, herbicide tolerant, N contributor	<ul style="list-style-type: none"> <li>• Kura Clover</li> <li>• Crown Vetch</li> <li>• Legume mix (kura-, red-, white-, ladino-, alsike clover, birdsfoot trefoil)</li> </ul>



~Thank you~

