

Current Research: Kernza and Water Quality

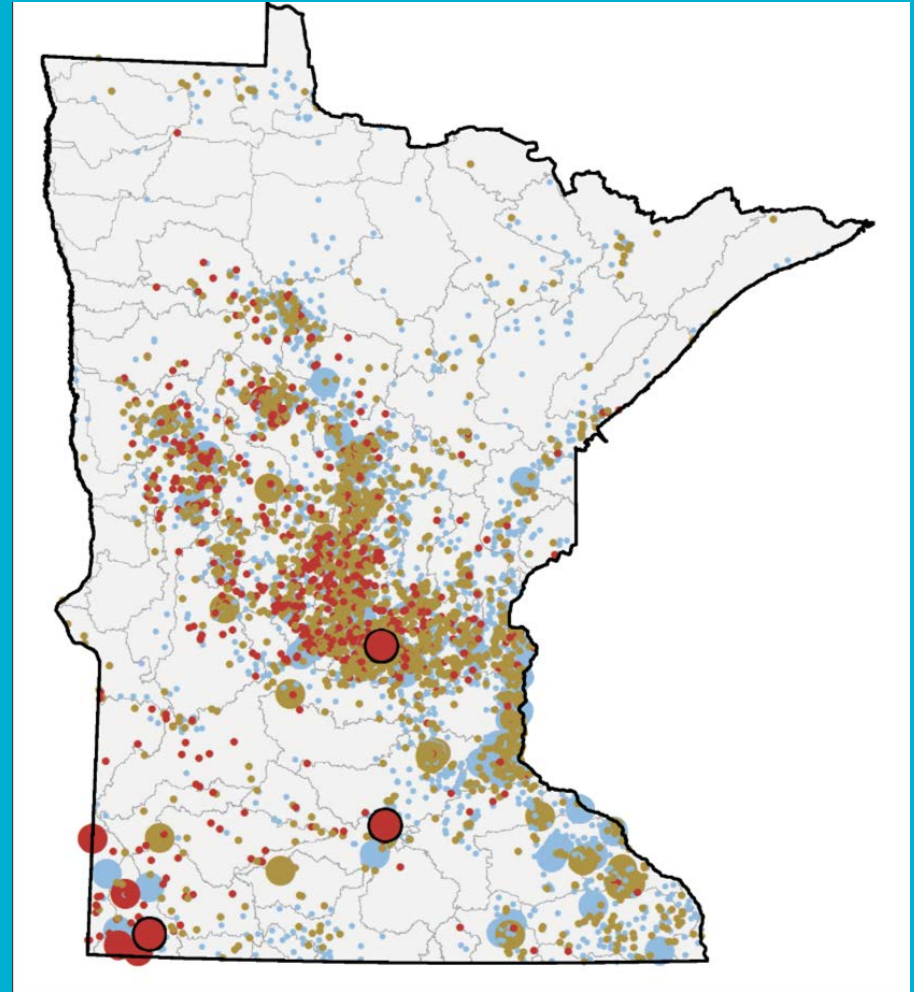
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Problem: Nitrate Leaching

- High nitrate leaching beneath corn-soy systems
- 13% of private wells exceed drinking water limits
- 30% in Sand Plains
- Huge costs, health risks

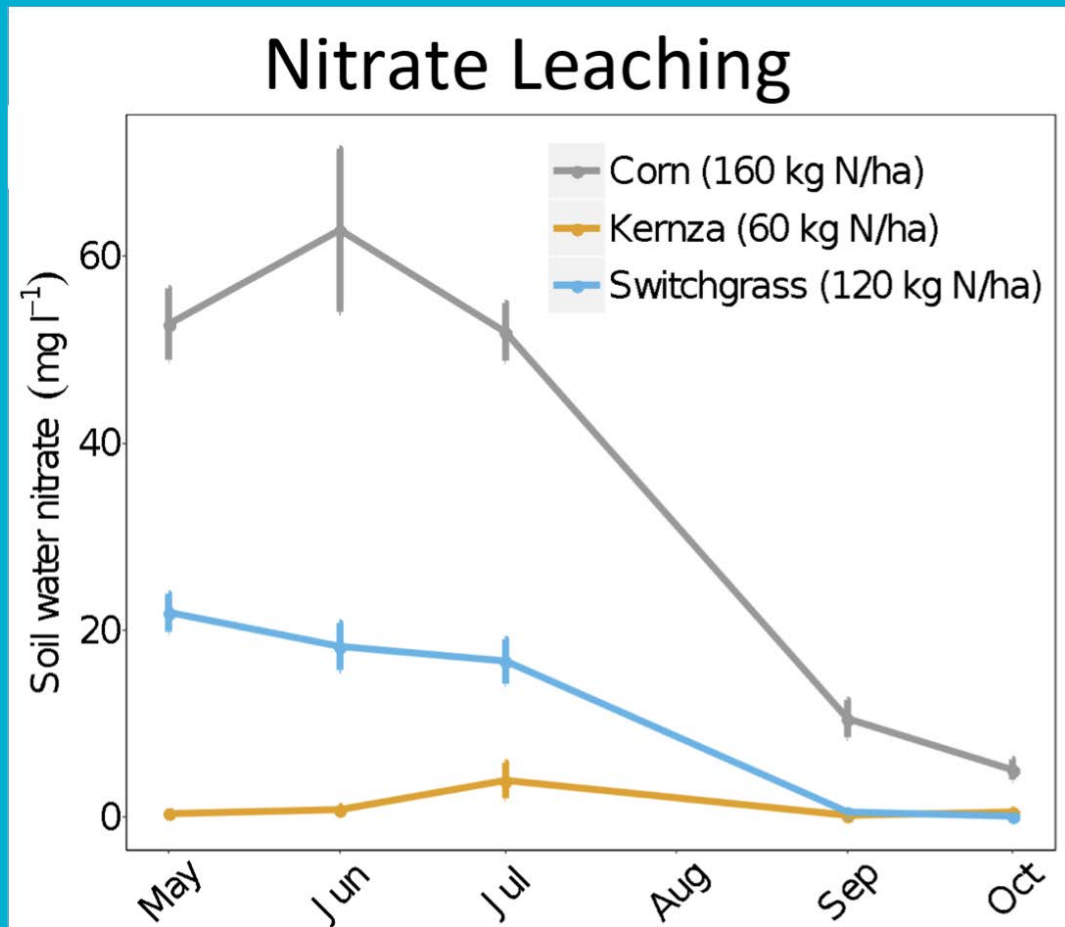


Mitigating Nitrate Leaching - Why Kernza?

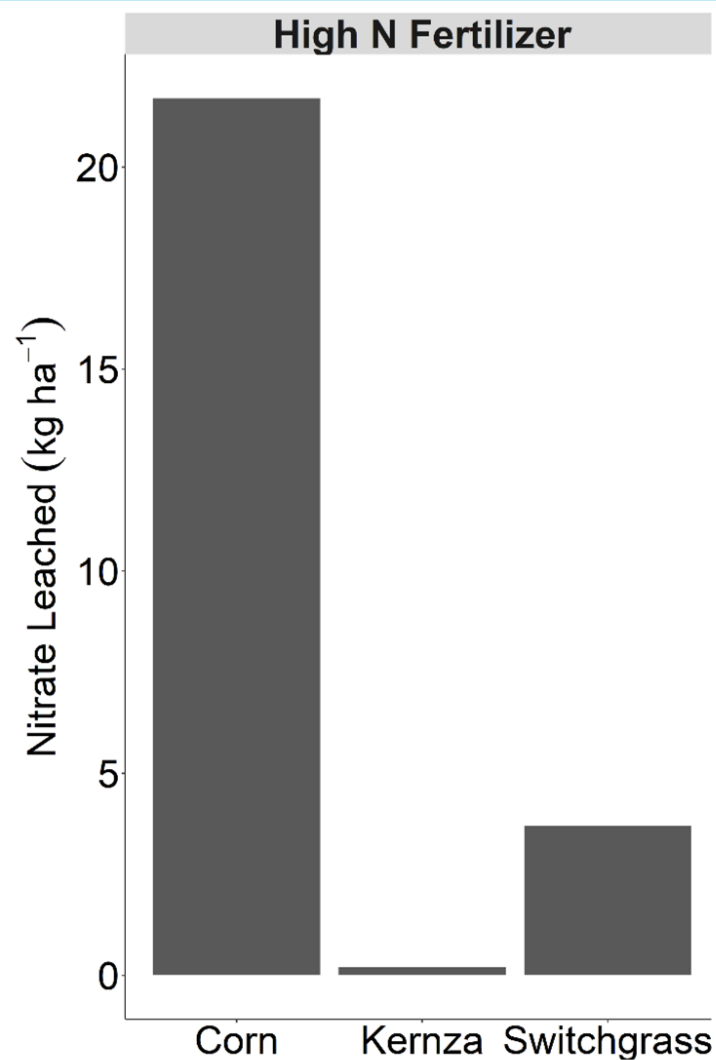
- Leaching depends on concentration and water movement
 - Kernza is more efficient at taking up nitrogen fertilizer
 - Reduces soil water nitrate concentration
 - Kernza takes up water in the spring before annual crops are growing
 - Reduces drainage to groundwater
 - Higher spring rainfall predicted for Minnesota

Initial Findings from Plot-Based Studies

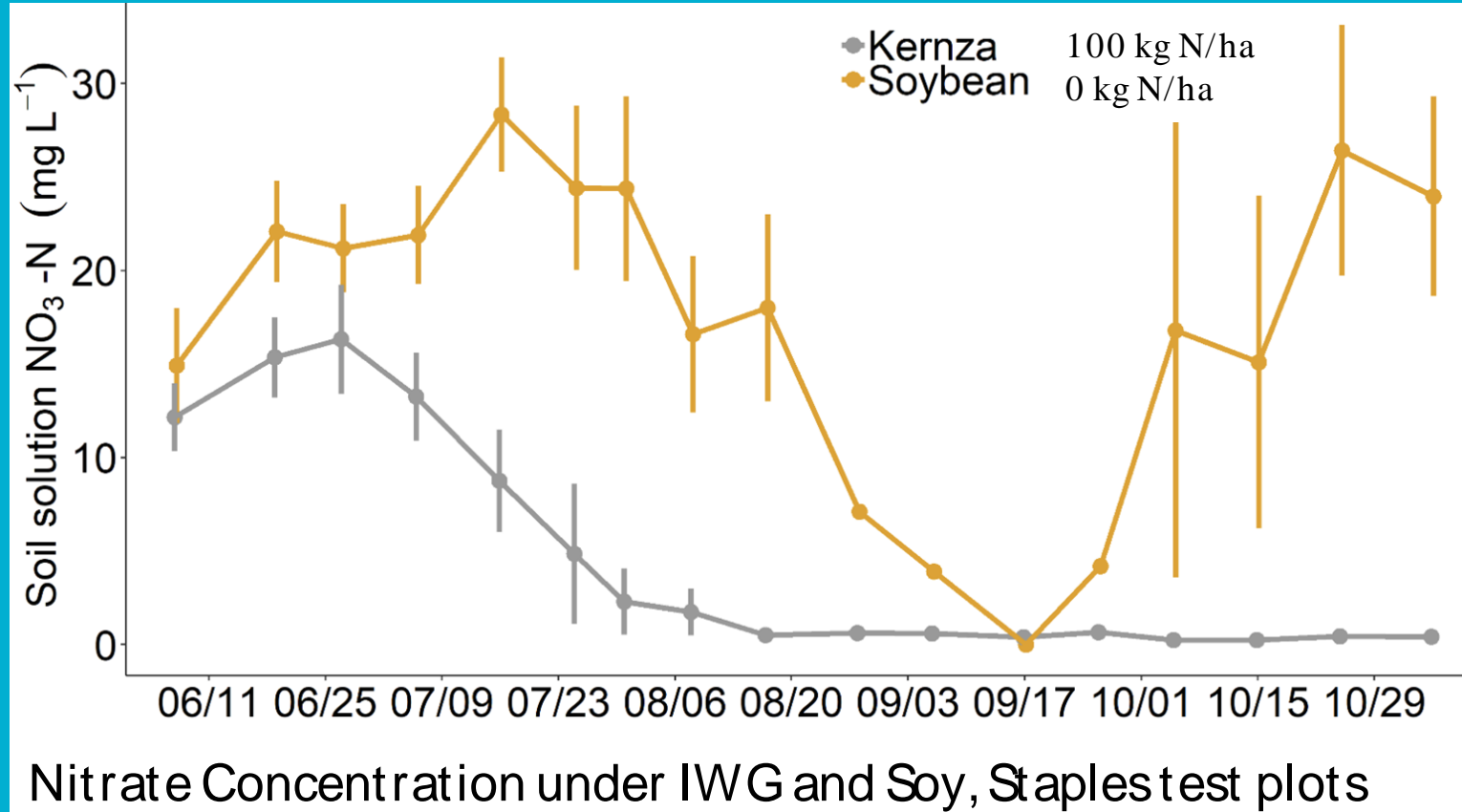
- IWG reduced nitrate concentration in soil water compared to corn



- IWG reduced nitrate leaching by 90-95% compared to corn



- Dramatic decrease even with fertilized IWG and unfertilized legumes



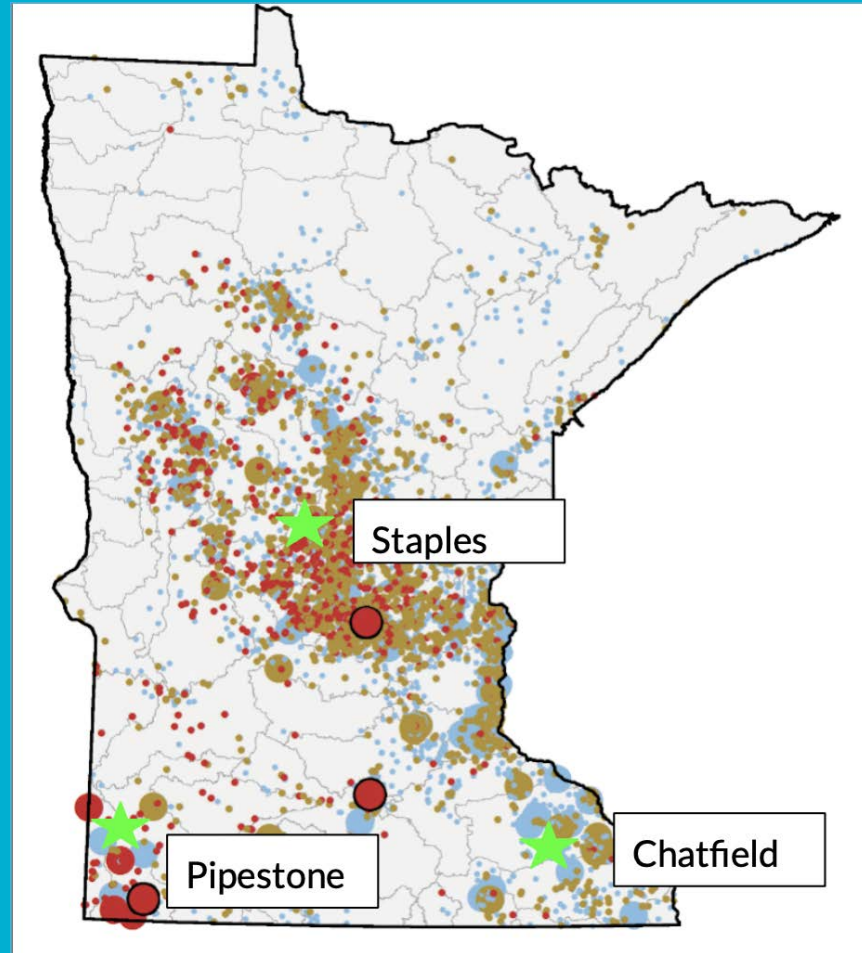
Current Research: Scaling Up

Field-scale experiments in wellhead protection areas

Pipestone - 54 acres

Chatfield - 13 acres





Data

- **Lysimeters:** collect soil water for nitrate analysis
- **Soil moisture probes:** provide data at six depths



Plot-based research continues in Staples



Expected Results

- Early 2019 data show very low nitrate concentrations and drier soil under wheatgrass than corn
- We expect field-scale experiments to support plot trial results, providing more evidence that intermediate wheatgrass prevents nitrate leaching in wellhead protection areas and protects drinking water

Thank you!