



Evaluation of stockpiling pastures to extend the fall grazing season

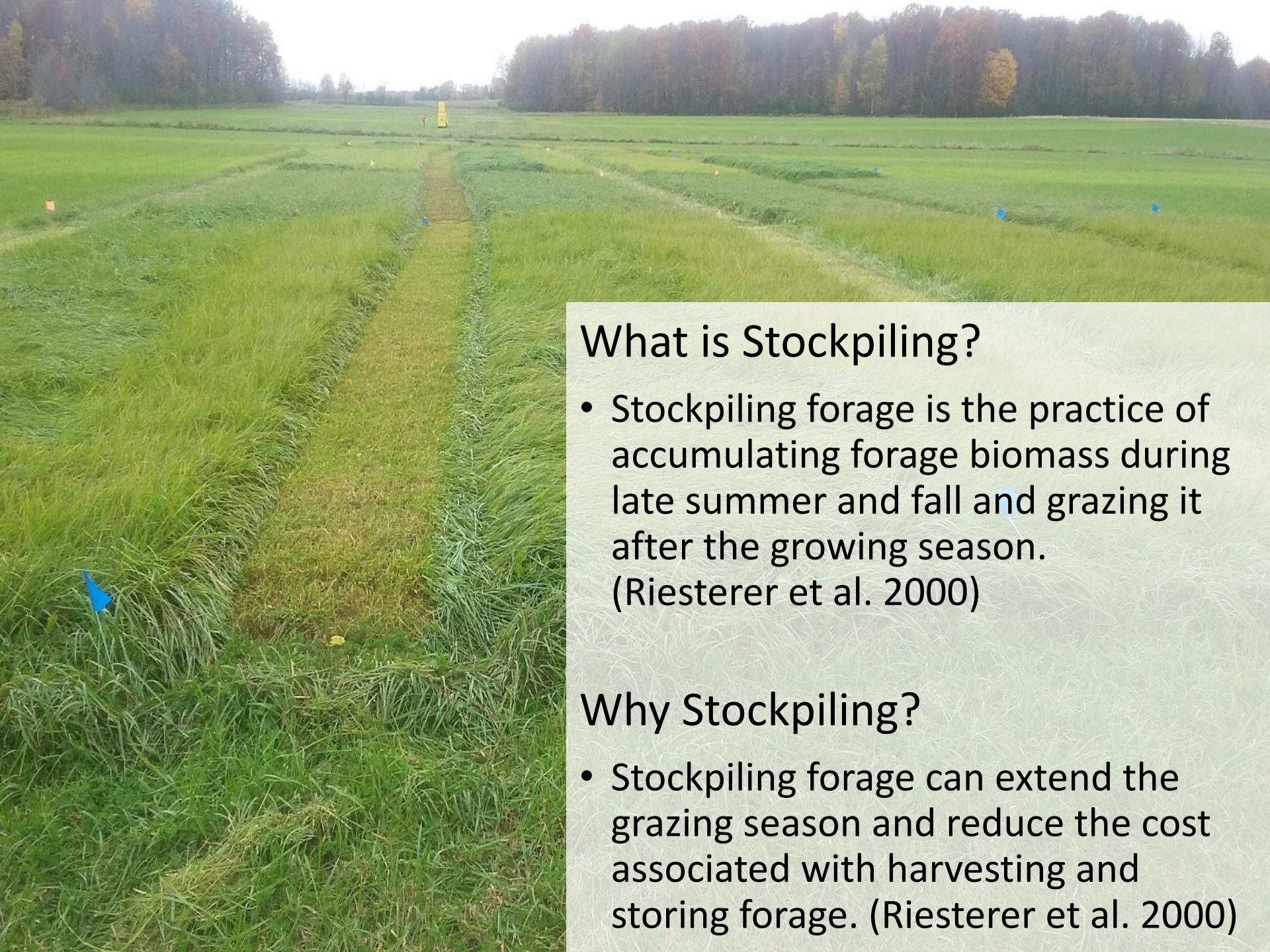
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Study Questions

- Is grazing stockpiled pastures feasible for growing dairy heifers?
- What are the effects of different grass species?
 - Tall Fescue, Orchardgrass, Meadow Fescue
- What role does different levels of nitrogen play in fall grass growth?
- What are the economics of grazing stockpiled forage?



What is Stockpiling?

- Stockpiling forage is the practice of accumulating forage biomass during late summer and fall and grazing it after the growing season. (Riesterer et al. 2000)

Why Stockpiling?

- Stockpiling forage can extend the grazing season and reduce the cost associated with harvesting and storing forage. (Riesterer et al. 2000)

Project Design

- 2 Studies

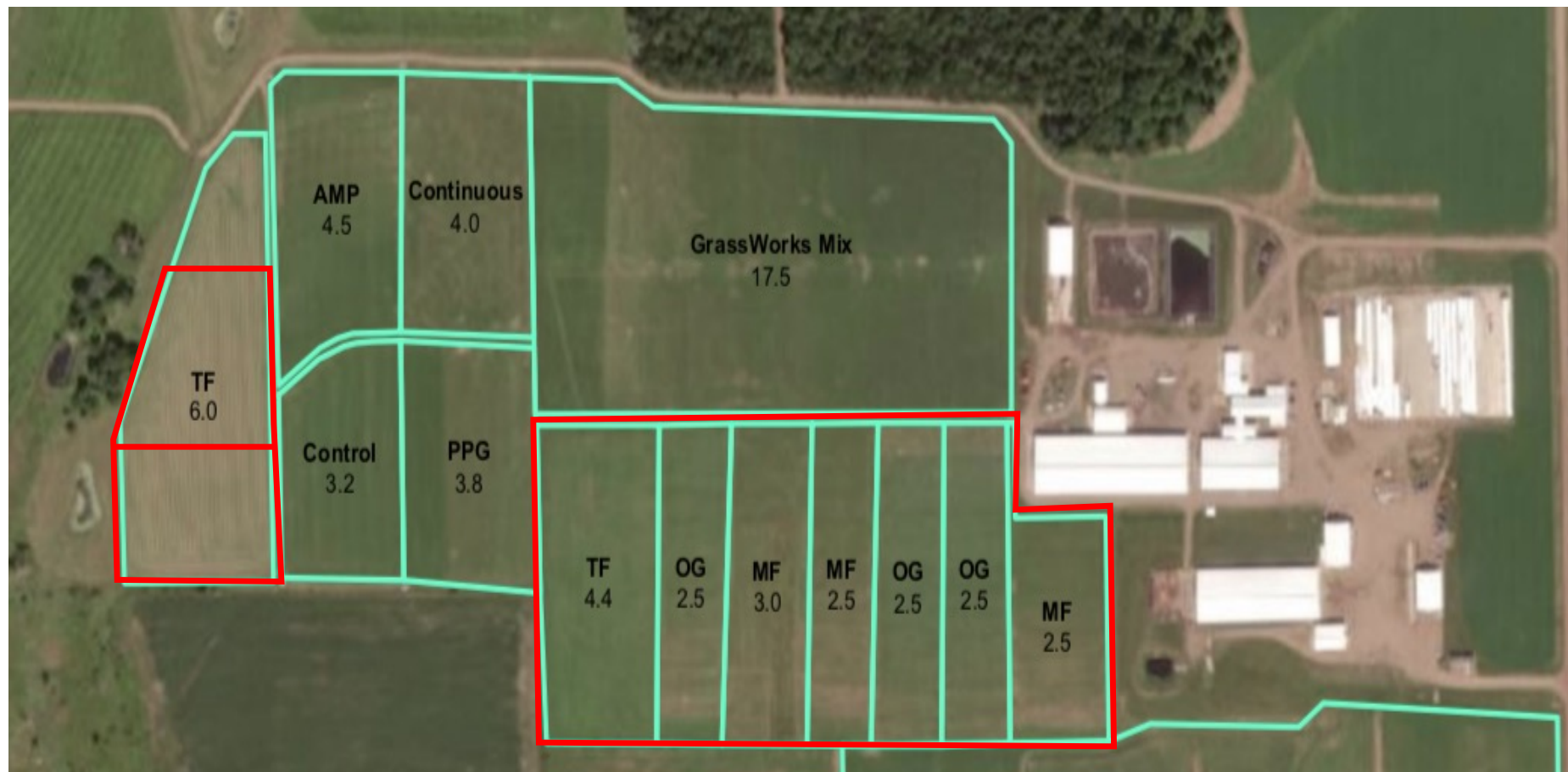
- 1) Dairy heifers grazing 3 different grass species to evaluate pasture growth/quality, and heifer growth, nitrogen utilization, and gas emissions
- 2) Plot study to evaluate effects of nitrogen fertility on forage yield and quality of 3 grass species

Heifer Grazing Study

- 9 pastures (2.5 acres each)
 - 3 each of tall fescue, meadow fescue, and orchardgrass
- Normal rotational grazing ceased early August
 - Fertilized with liquid manure (8000 gallons/acre; ~40 lb N/acre)
- Allowed to accumulate forage for 2 months
 - Grazing started early October
 - 49 days grazing
- 4 heifers per pasture (~500-700 lb)
- Moved daily for intakes of 2.5% of body weight and 60% usage
- Body weight measured before and after study
- Enteric methane measured using Greenfeed equipment
- Fecal, urine, and blood sampling for nitrogen utilization

Marshfield Agricultural Research Station

Pasture Map





Pasture Management

- Measured forage available weekly to adjust daily moves
- Residue of 3-4 inches (60-70% utilization)
- No back fence used to avoid moving waterers
- Water provided daily when lines freeze

Forage Sampling

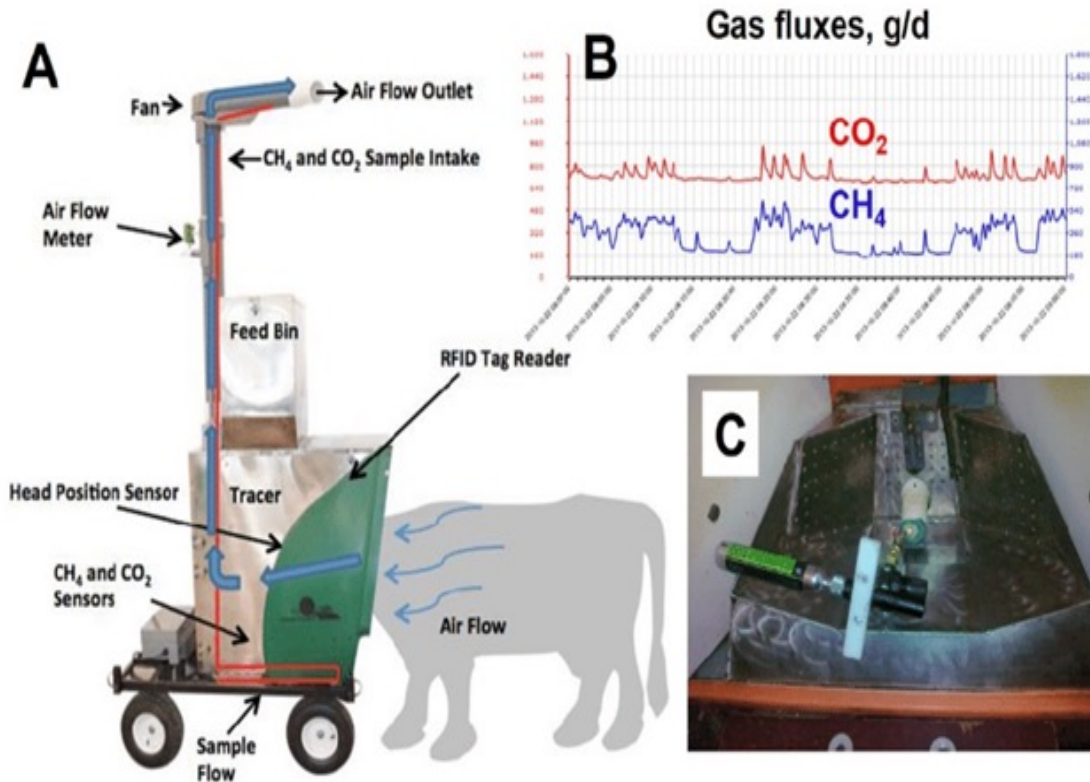
- Forage mass measured by clipping quadrats
- Intake calculated from area grazed and forage mass consumed



Gas Emissions: GreenFeed Pasture Unit (C-Lock Inc.)

*Funding from Dairy Innovation Hub

- Measures methane, carbon dioxide, and oxygen from animal's breath and eructated gases



Animal Sampling



Forage Availability and Average Daily Gain

Grass Species	Forage Availability
Orchardgrass	2801 lb/acre
Tall Fescue	3965 lb/acre
Meadow Fescue	3167 lb/acre

$P = 0.03$

-Stopped grazing after 7 weeks

-Some additional grazing days especially tall fescue

-Potential for 60-80 days

Grass Species	Daily Gain
Orchardgrass	2.18 lb
Tall Fescue	1.91 lb
Meadow Fescue	1.94 lb

$P = 0.27$

Methane and CO₂ Production

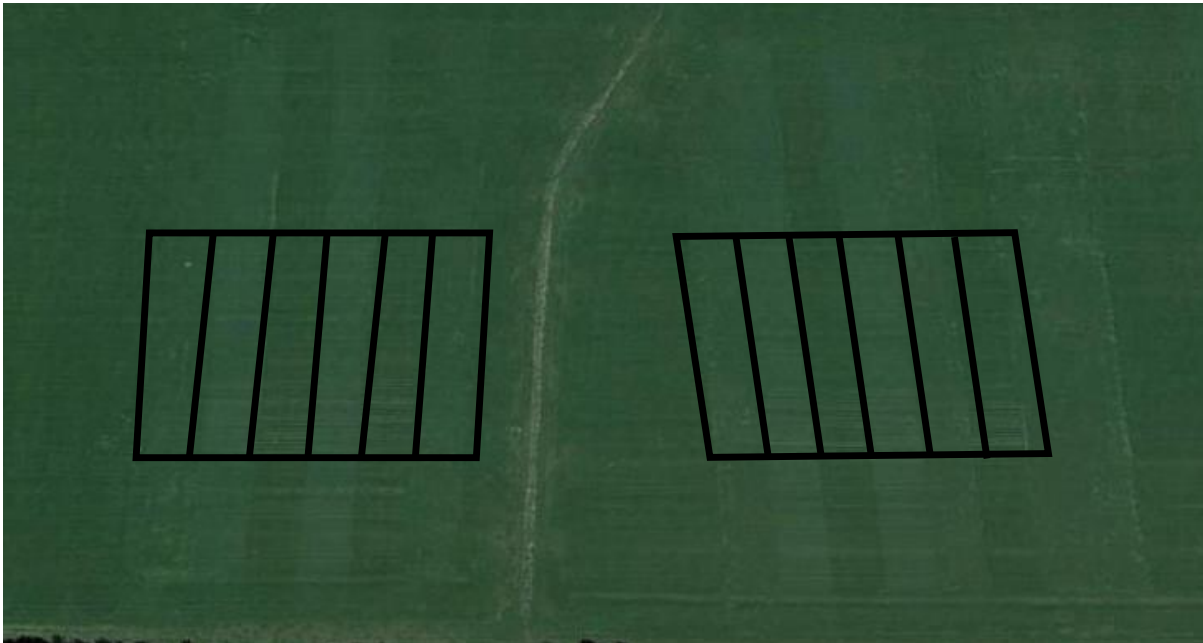
Grass Species	CH ₄	CO ₂
Orchardgrass	188 g/heifer/day	6392 g/heifer/d
Tall Fescue	164 g/heifer/day	6277 g/heifer/d
Meadow Fescue	175 g/heifer/day	6113 g/heifer/d

$P = 0.21$

$P = 0.46$

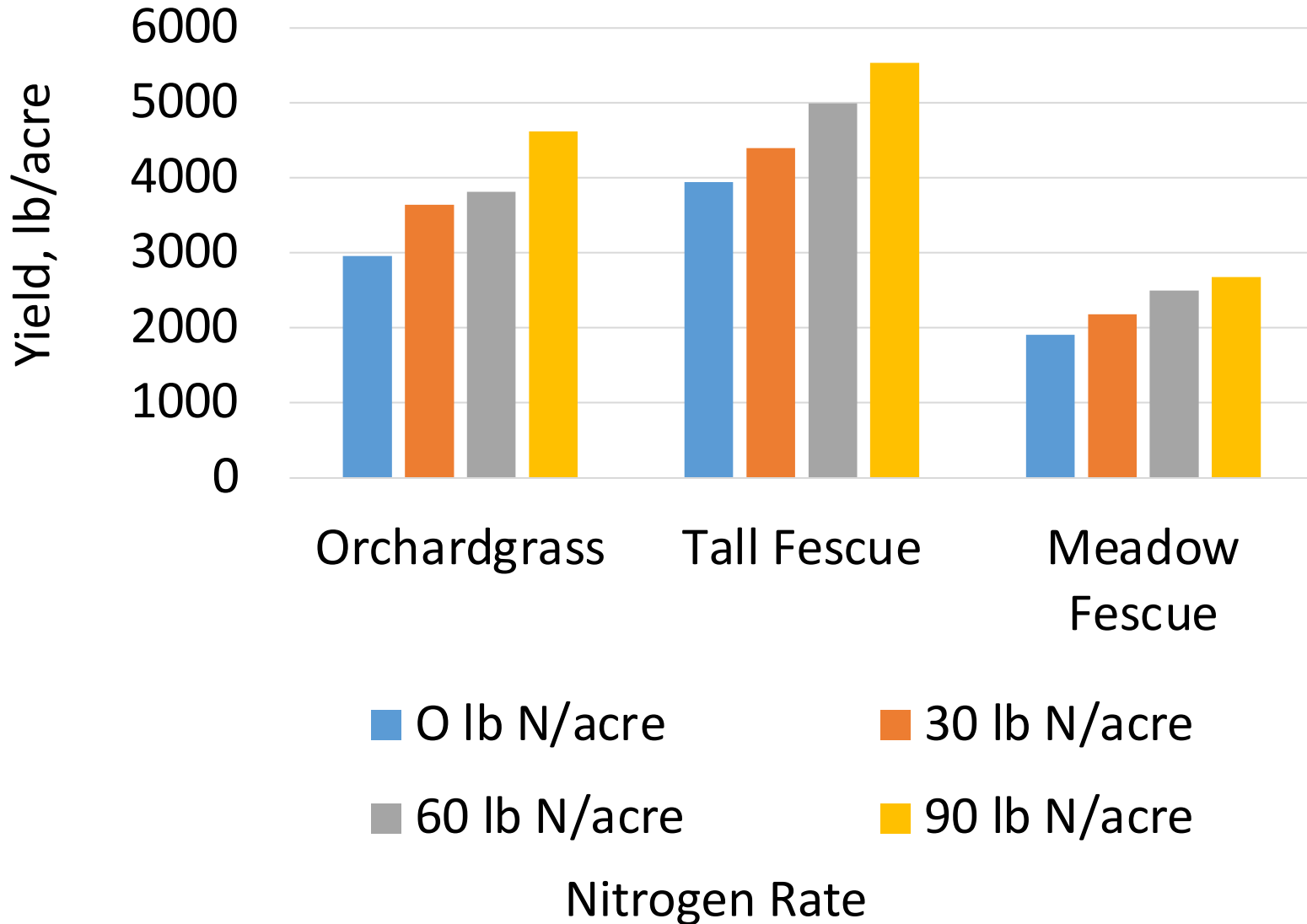
Nitrogen Fertility Study

- 3 Species: Orchardgrass, Meadow Fescue and Tall Fescue
- 4 nitrogen fertility rates (0, 30, 60, 90 lb N/acre)
- 3 harvest times to measure change during fall





Yield Data



Pasture Walk – September 2021

Stockpile Grazing Pasture Walk

Marshfield Agricultural
Research Station
September 30, 2021
1 pm to 3pm

208356 Drake Ave N,
Stratford, WI, 54484



Event topics:

- Stockpile grazing: why and how
- Economics of grazing heifers
- Maintaining legumes in pasture
- Overgrazing of pasture
- Watering pasture animals in freezing temperatures
- GreenFeed research unit – measuring GHGs on pasture
- Rainfall simulator – the environmental impact of grazing
- Status of grazing research program at MARS
- Grassland 2.0 project
- Clover Belt Learning Hub project



Central Wisconsin River Graziers



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grassLAND 2.0

Summary

- Stockpiled forage provided adequate nutrients for dairy heifer growth
- No differences in gas emissions across species
- Potential for 60-80 days grazing
- Tall fescue and Orchardgrass more responsive to nitrogen and had highest potential yield

Thank You!

Acknowledgements:



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