



SOUTH DAKOTA STATE UNIVERSITY EXTENSION

# Hybrid Rye Grain in Cattle Diets

Western Canada Feedlot Management School

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# Where I'm From



South Dakota State University, Brookings, SD

- Diversified agriculture
- Corn, soybeans
- Cow-calf
- Confined livestock
- Forage



# Why Study Anything Other Than Corn?

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- Corn is king in South Dakota!
  - Mcal NE/acre
  - Highly productive genetics
  - Finely tuned system
- Popular does not equal perfect
  - Increased pest pressure
  - Input cost
  - Soil health and labor seasonality



# Rye as a Cattle Feed Grain

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- Livestock feed value important for when higher value markets are saturated.
- At that time there was little data on feed value
- Questions to answer:
  - Will cattle eat the feed?
  - How will cattle perform?



# Study Design

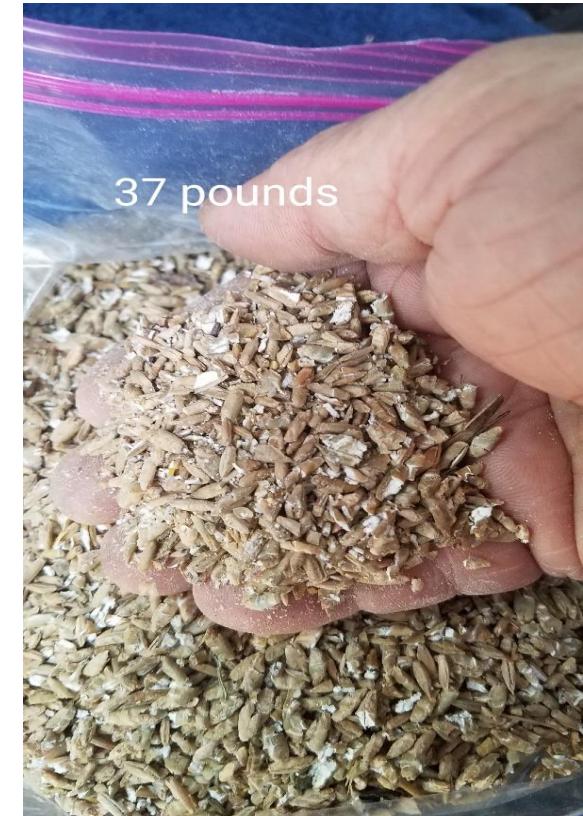
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- Experiment conducted at Southeast Research Farm near Beresford, SD
- Four treatments (DRC:rye)
  - Base diet, 60% dry rolled corn (60:0)
  - 20% rye (40:20)
  - 40% rye (20:40)
  - 60% rye (0:60)
- 240 Angus X steers (891 lbs)



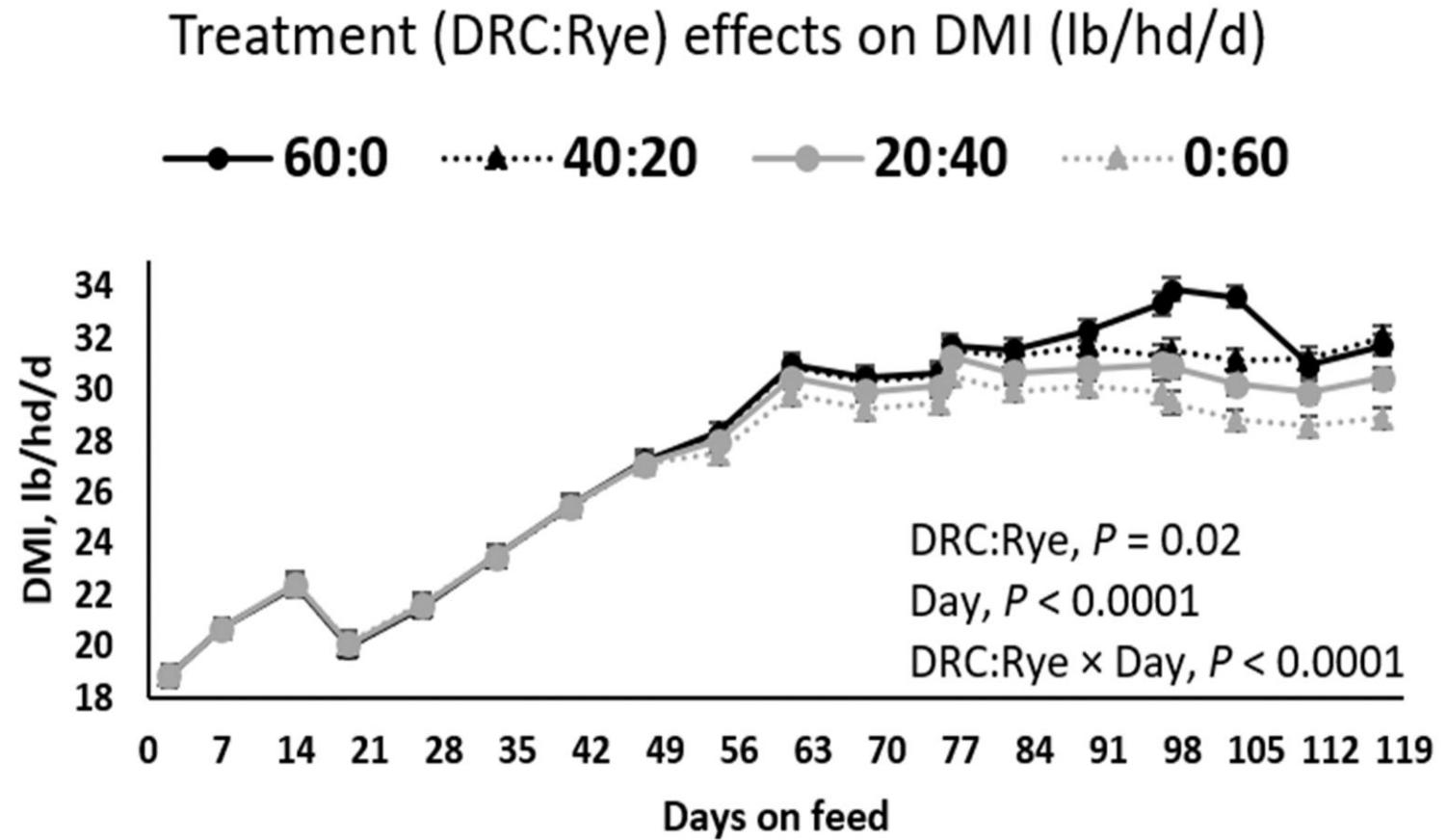
# Rye Grain

- Hybrid rye provided by KWS Cereals USA, LLC (KWS Bono)
- Ergot alkaloid concentration, **392 ppb**
- Cracked using a roller mill
  - Processed to a test weight of 42.5 lbs/bu
  - Processing index of 79

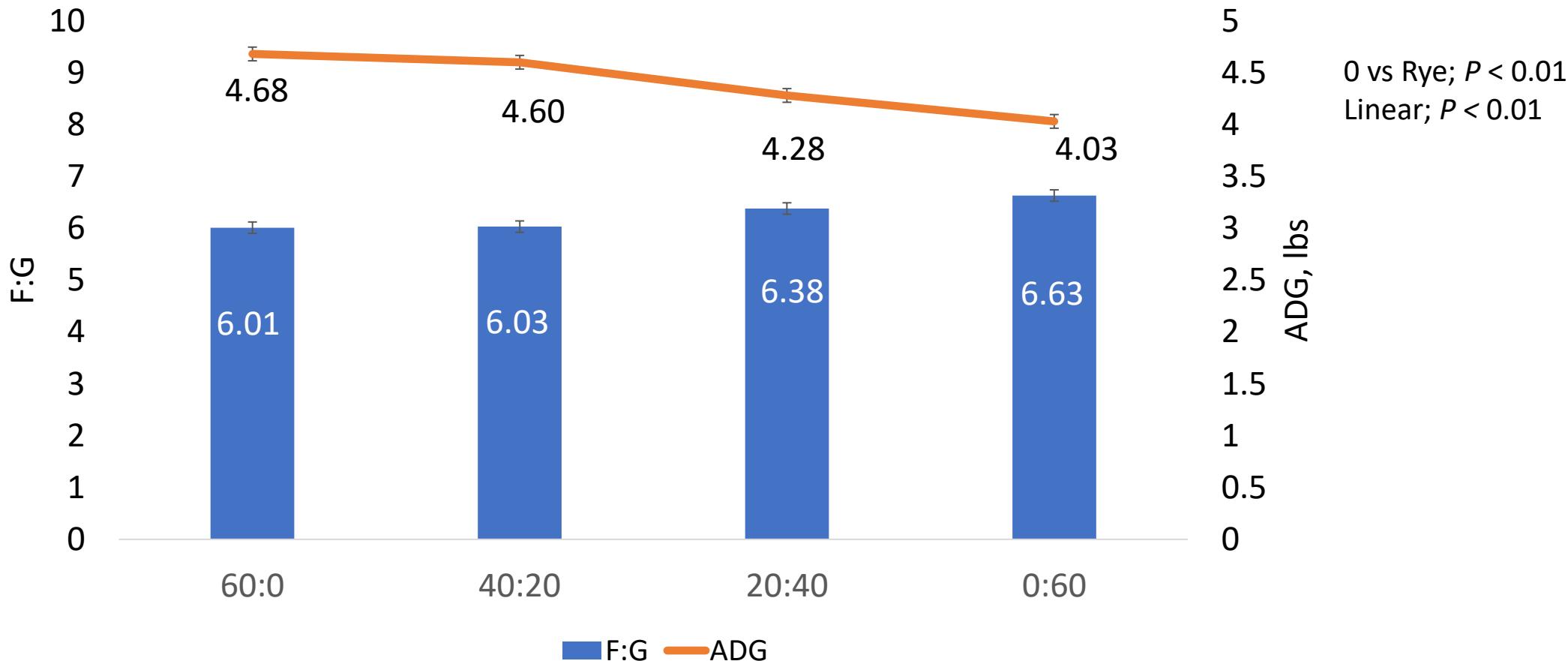


# Dry Matter Intake

- No differences through d 47
- Feed intake diverged later in the feeding period with increased rye resulting in less DMI



# ADG and Feed Efficiency



# Effects on Feeding Behavior



0% Rye

50 DOF, 7 HR post feeding



60% Rye



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# How Should We Process Rye?

## 1. Use roller mill

- Might need something new
- Is that purchase justified?



## 2. Grinder mixer

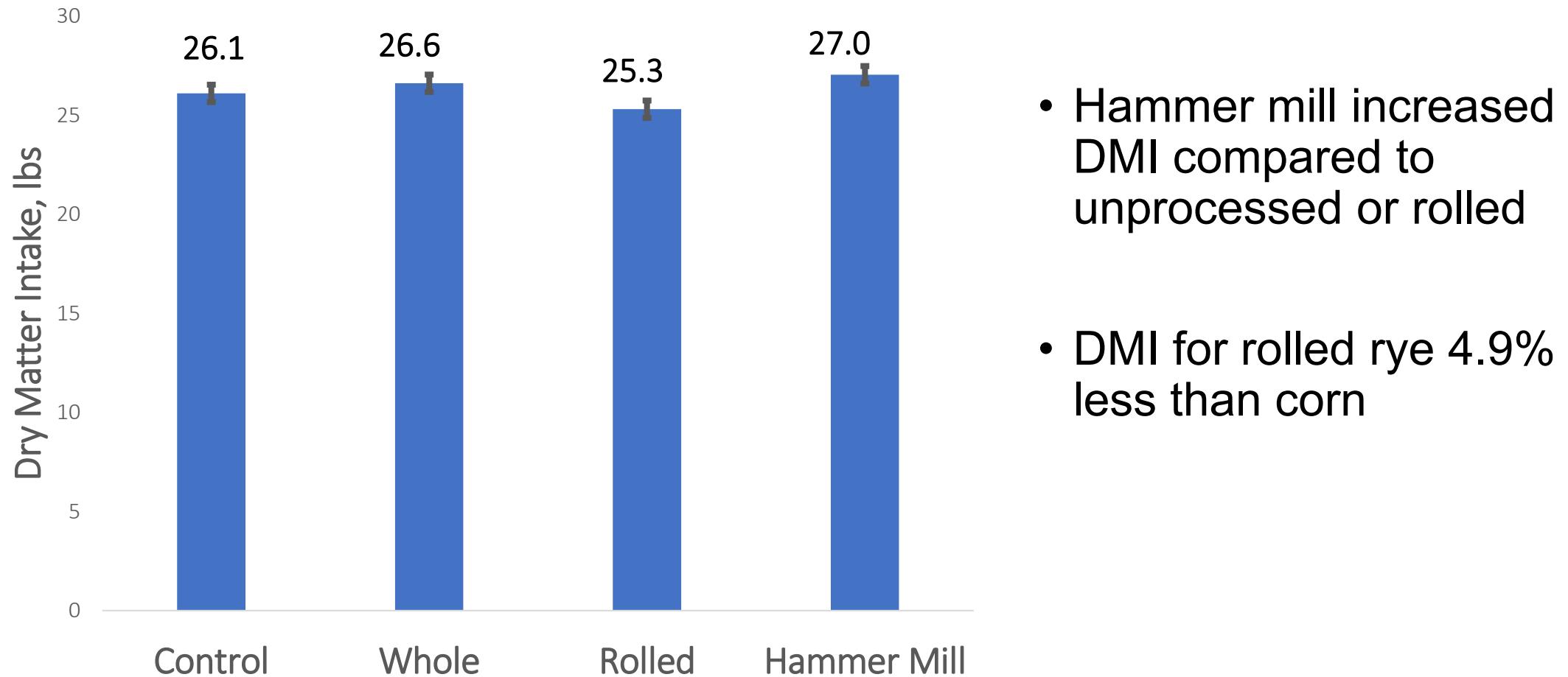
- Readily available
- Relatively inexpensive
- Greater bloat/acidosis risk?



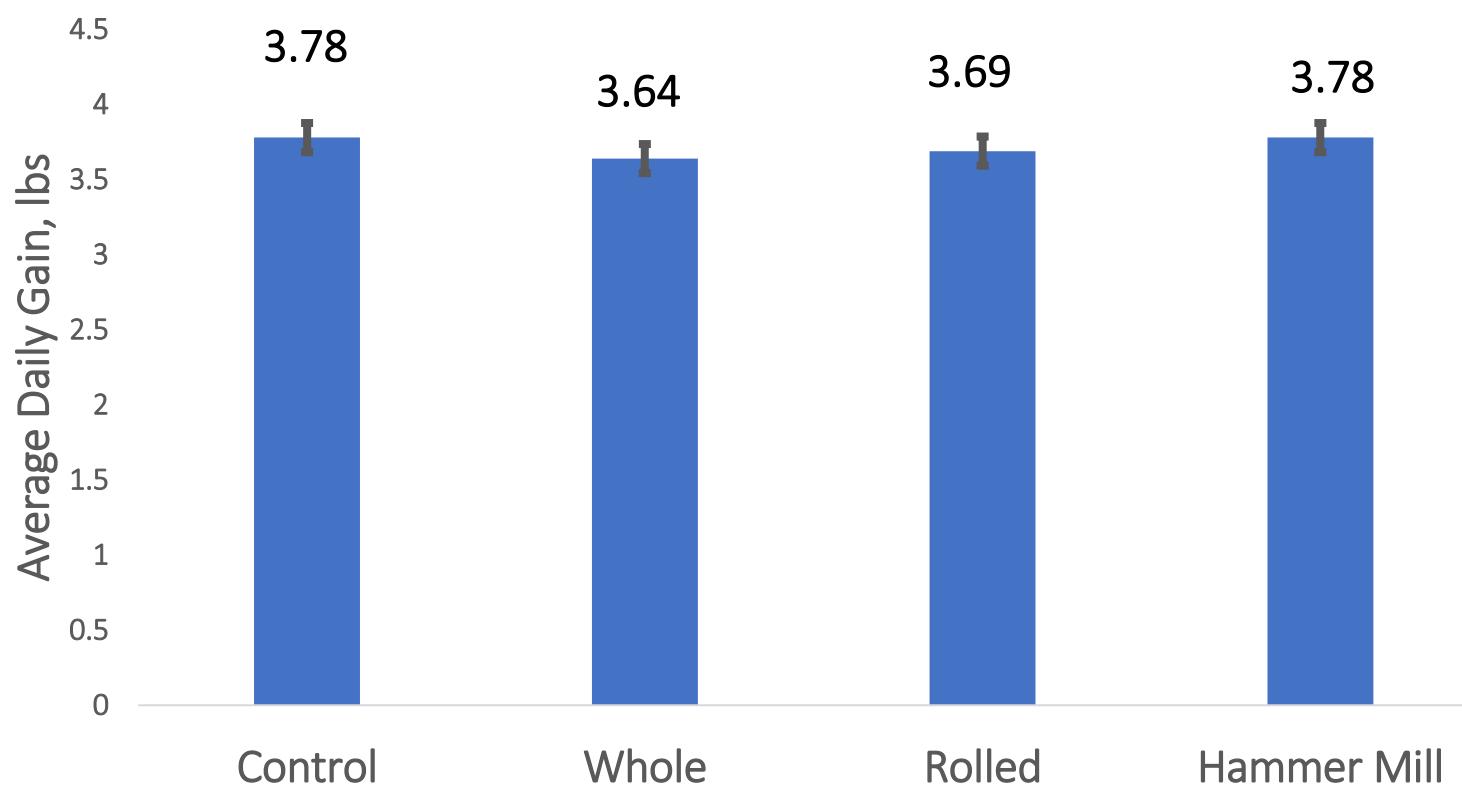
## 3. Do nothing

- No additional expense
- How much performance drag?

# Dry Matter Intake



# Average Daily Gain

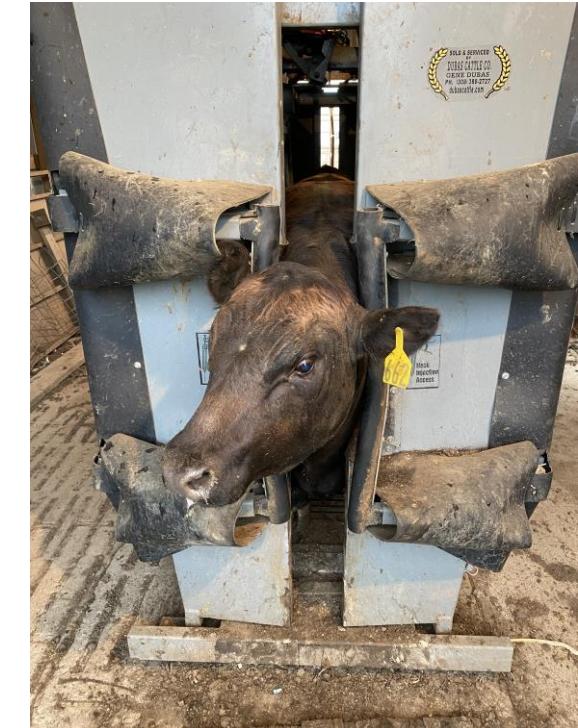
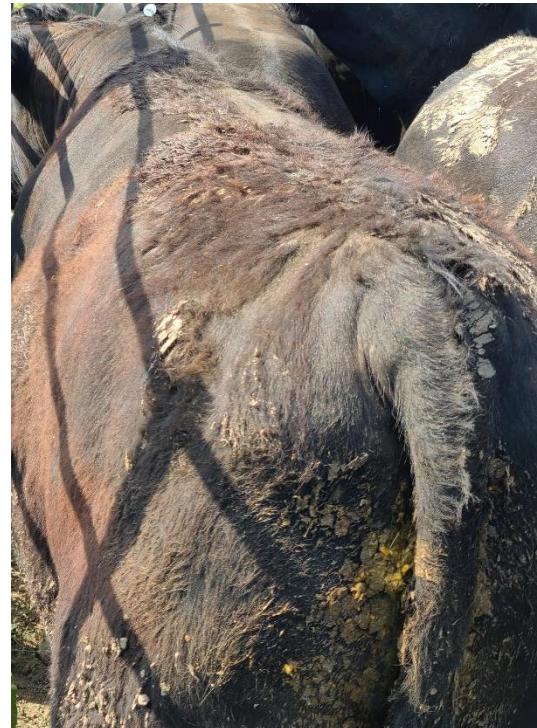


- No effect of grain type or processing method on ADG



# Ergot Alkaloids in Grain

- We observed less hair shedding in cattle fed rye compared to corn
- Approximately 2X ergot compared to our original study



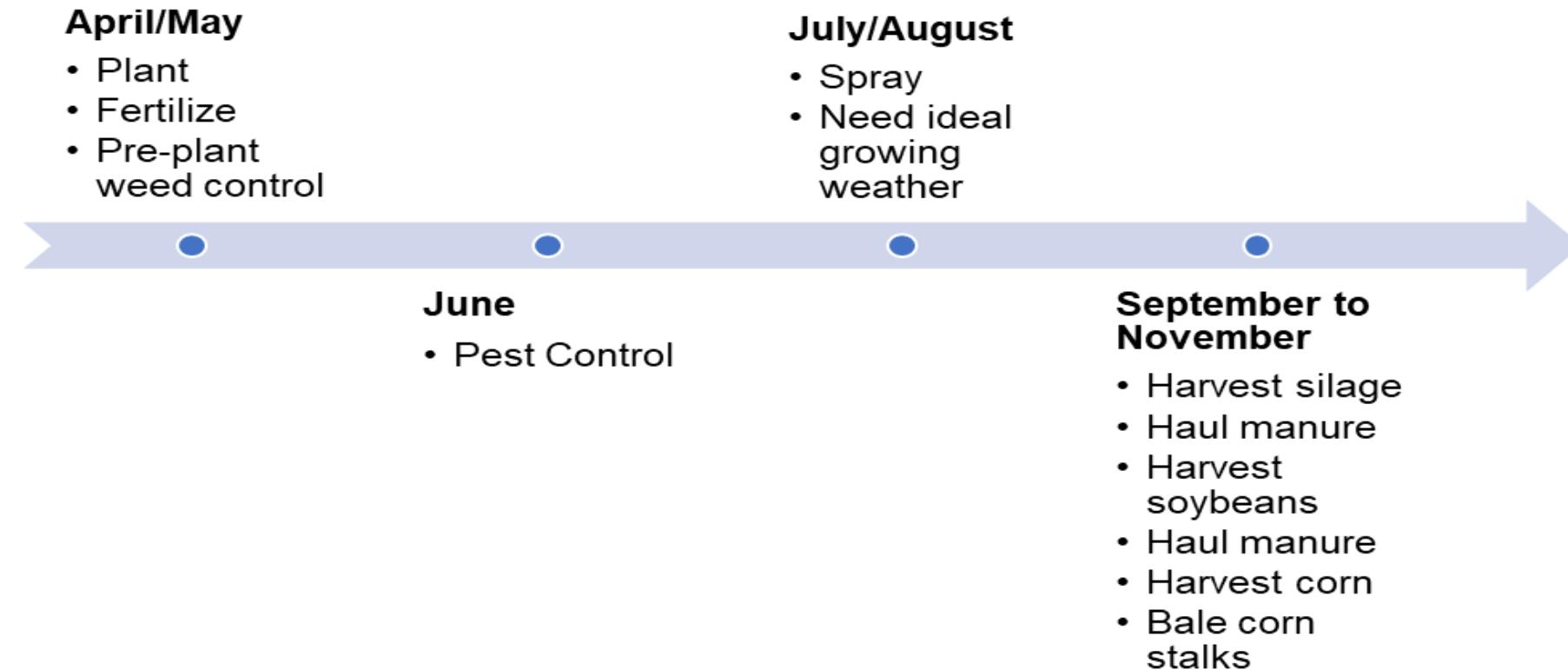
# Rye Increases Options

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- Harvest for forage
- Harvest for grain
  - Feed or sell to higher value market
  - Straw for bedding or resale
- Mitigates weather risk
- Spreads out labor demands
- Downside = Added complexity?



# Row crop operations calendar



# Row crops + winter annual operations calendar

## April/May

- Plant
- Fertilize
- *Graze or Harvest Rye as Forage*

## July/August

- Spray
- Need ideal growing weather
- *Harvest rye for grain*
- *Bale straw*
- *Haul manure*

## June

- Pest Control
- *Plant summer annual or short-season cash crop*
- *Haul manure*

## September to November

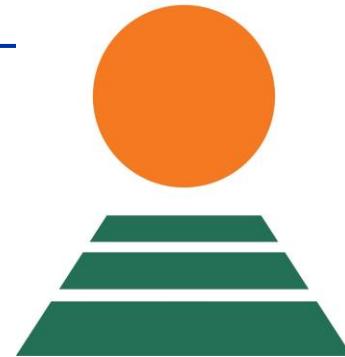
- Harvest silage
- Haul manure
- Harvest soybeans
- Haul manure
- Harvest corn
- Bale corn stalks
- *Plant rye*



# Acknowledgements

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**KWS**



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  - Financial Support
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