



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?

- 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

- 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?



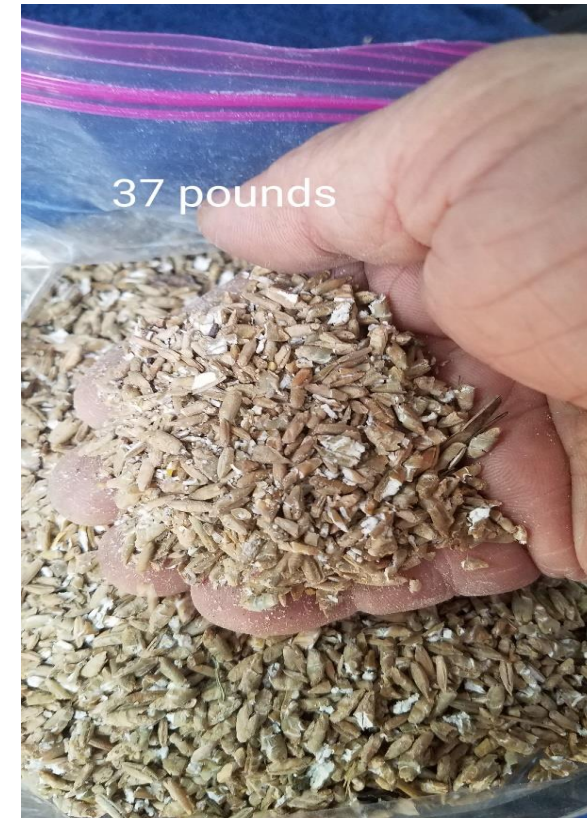
Study Design

- 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)



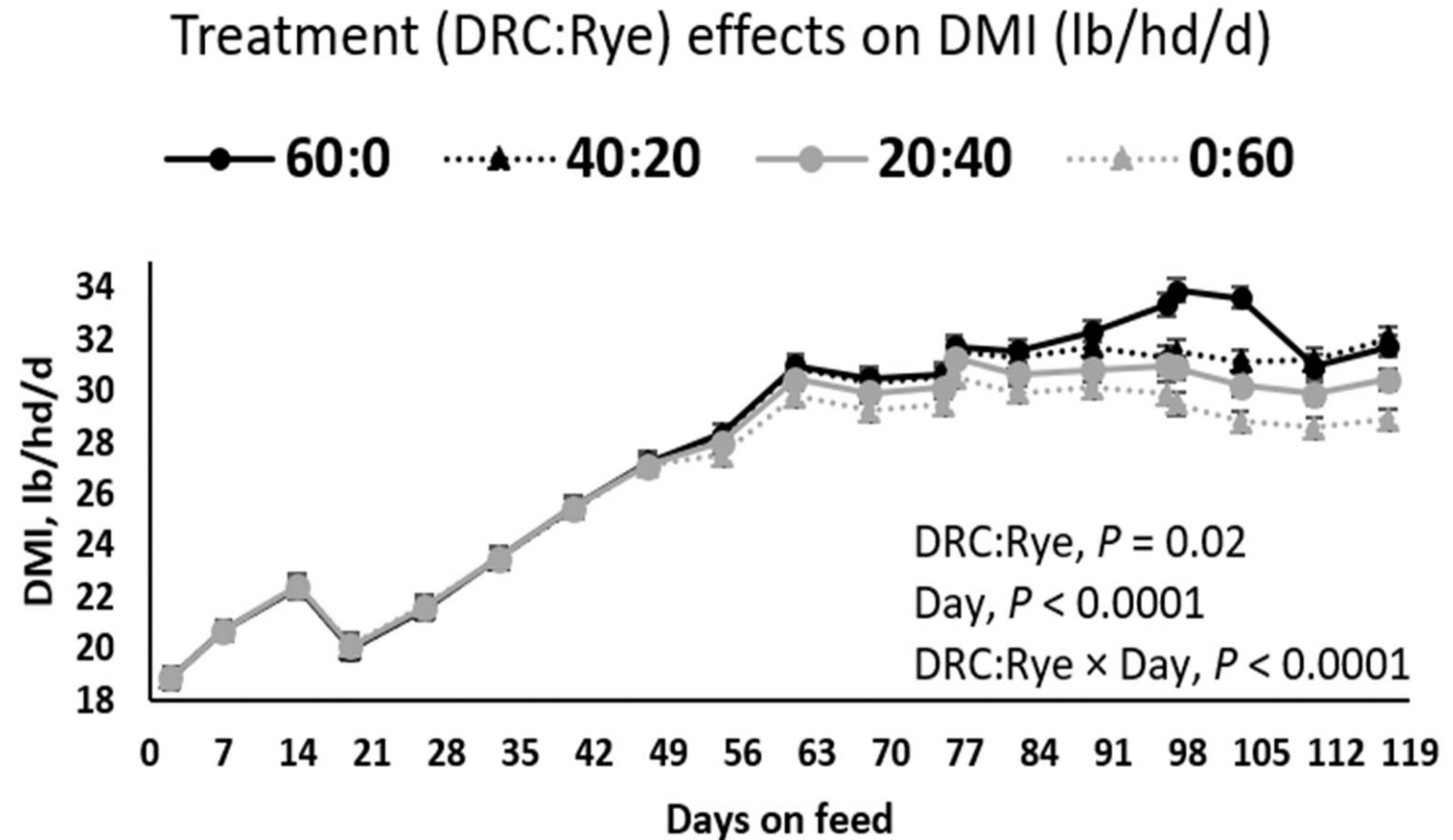
Rye Grain

- 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

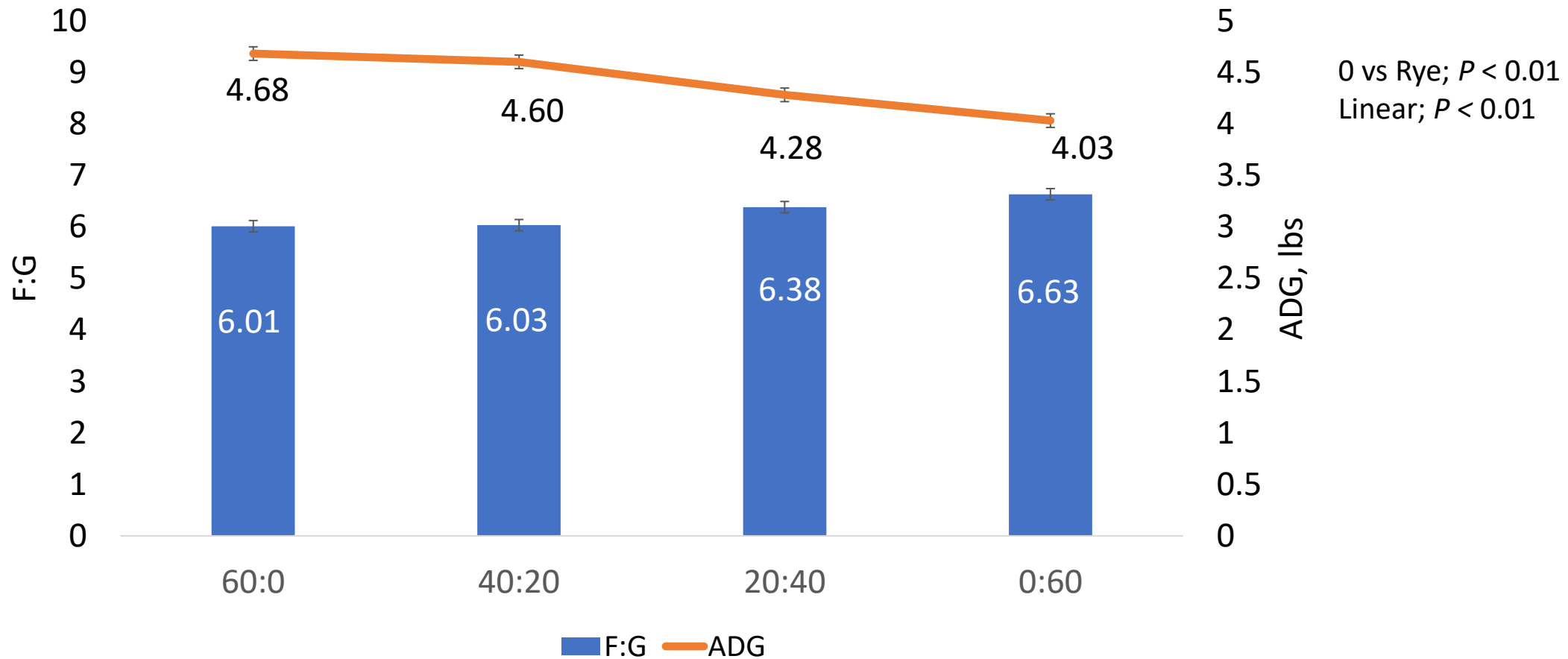


Dry Matter Intake

- 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



60% Rye

50 DOF, 7 HR post feeding



How Should We Process Rye?

1. Use roller mill

- Might need something new
- Is that purchase justified?

2. Grinder mixer

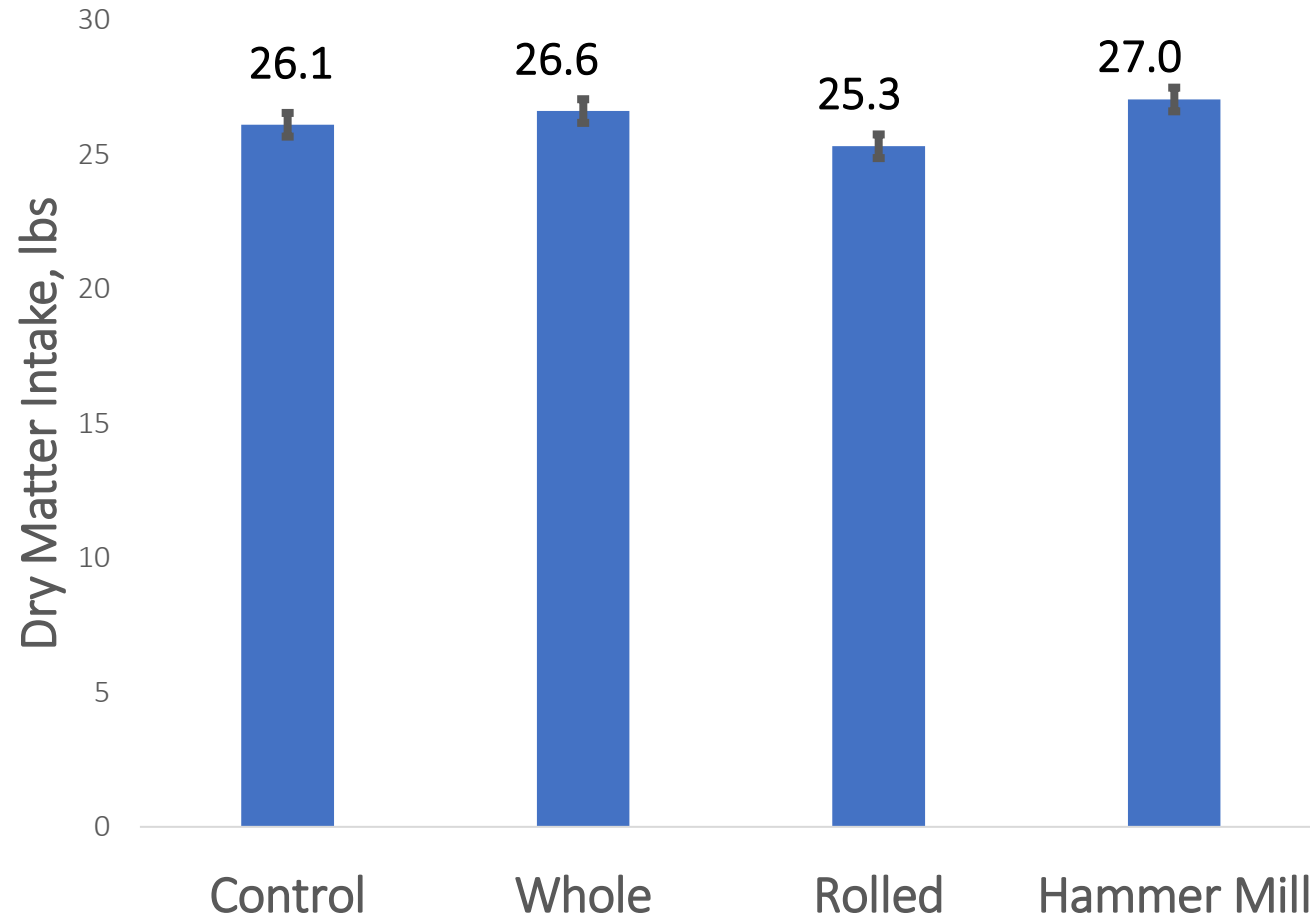
- Readily available
- Relatively inexpensive
- Greater bloat/acidosis risk?

3. Do nothing

- No additional expense
- How much performance drag?



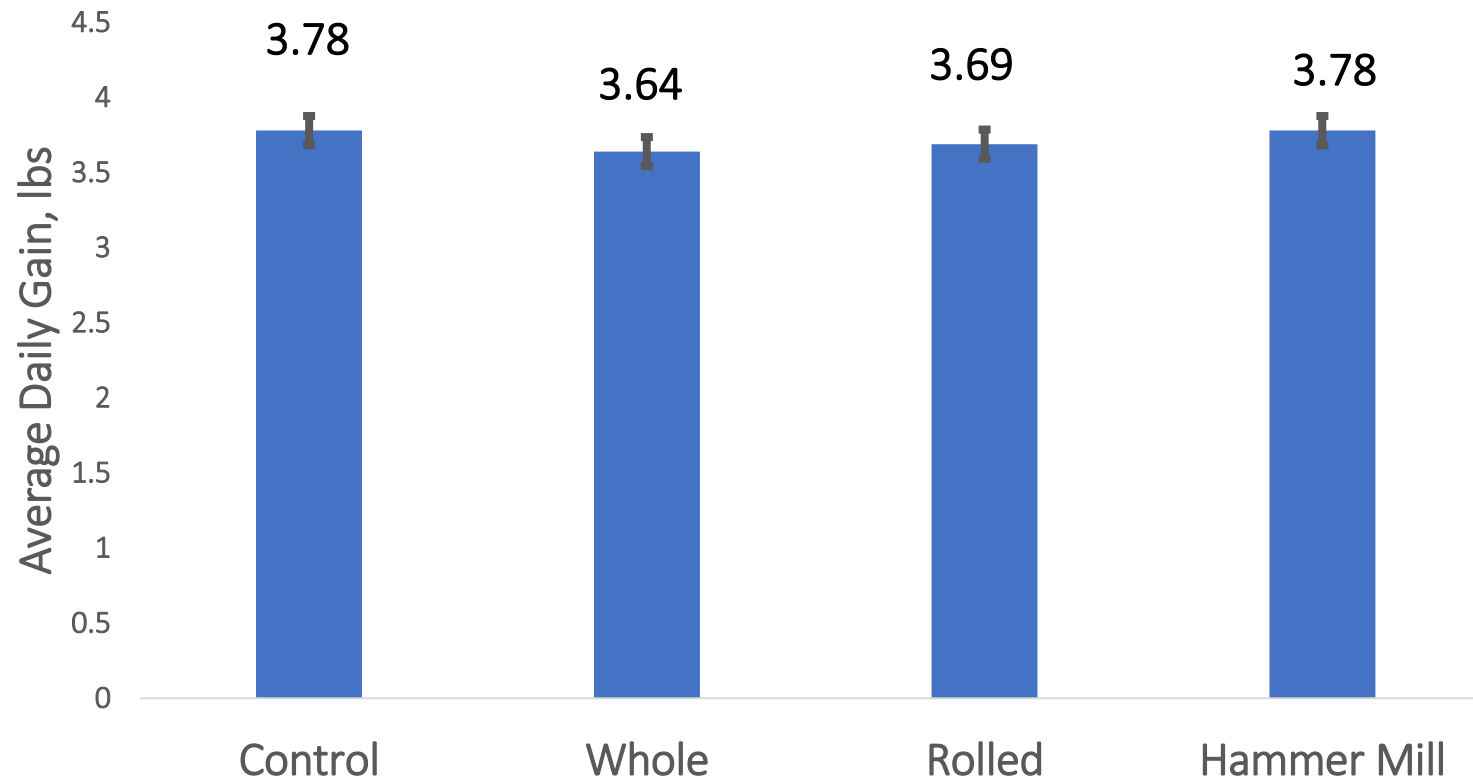
Dry Matter Intake



- Hammer mill increased DMI compared to unprocessed or rolled
- DMI for rolled rye 4.9% less than corn



Average Daily Gain

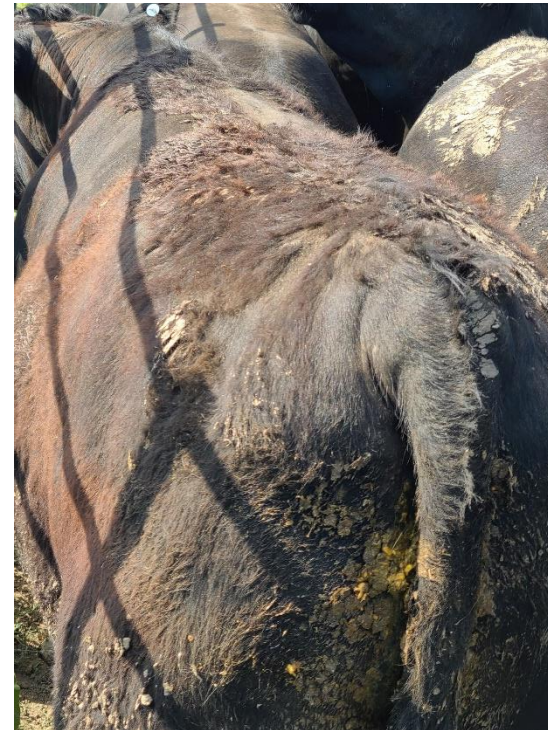


- No effect of grain type or processing method on ADG



Ergot Alkaloids in Grain

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

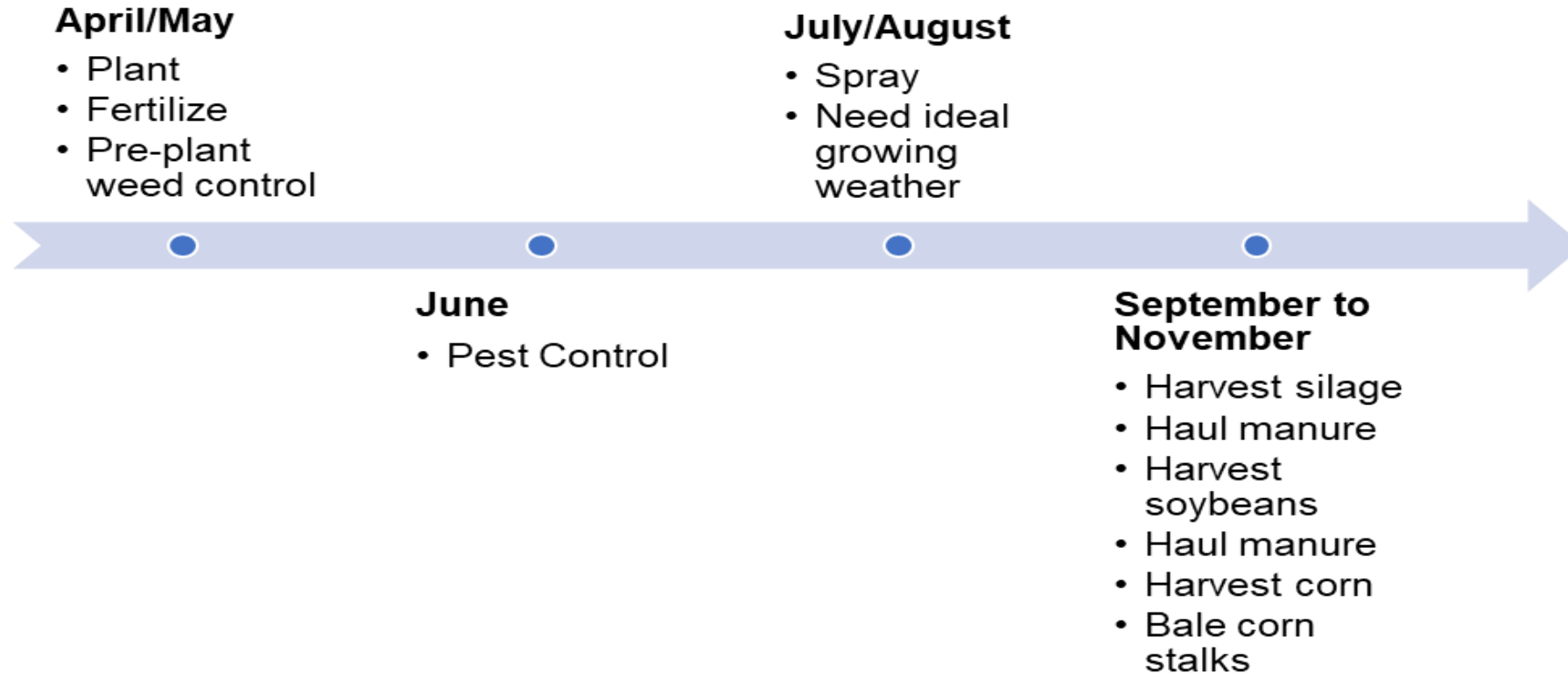


Rye Increases Options

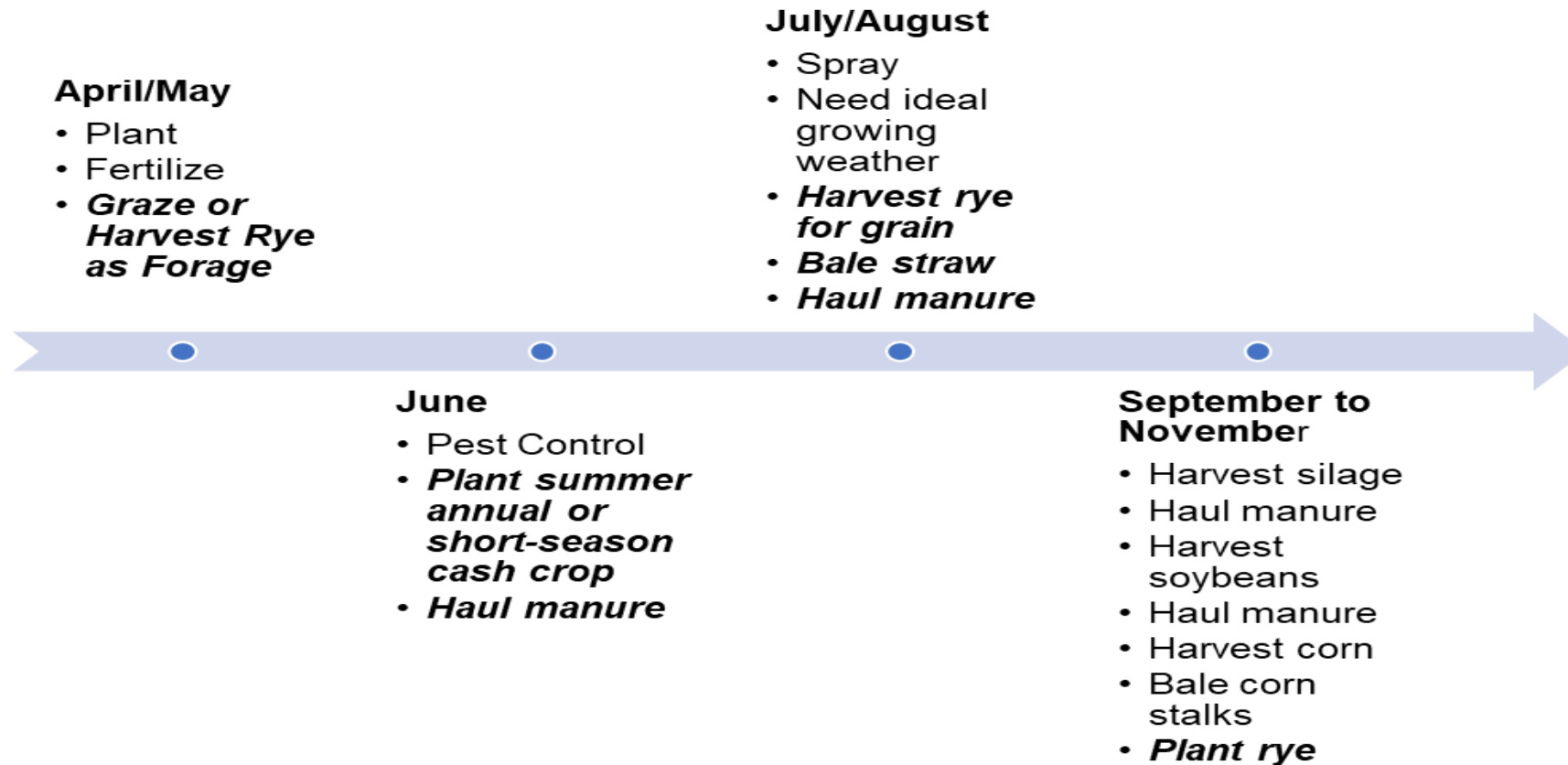
- Harvest for forage
- Harvest for grain
 - Feed or sell to higher value market
 - Straw for bedding or resale
- Mitigates weather risk
- Spreads out labor demands
- Downside = Added complexity?



Row crop operations calendar



Row crops + winter annual operations calendar



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- KWS Cereals USA, LLC
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