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Use of hybrid rye for silage

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BE WHAT THE WORLD NEEDS

Hybrid rye as a source of silage for feedlot cattle

- Potential for double cropping systems in Western Canada
  - Early harvest date
  - Greater forage yield than conventional rye

- Recommendations for harvest maturity are not well established
  - Boot to soft dough – but based on conventional rye
    - Rapid decline in quality (Edmisten et al., 1998)
    - Lower digestibility than barley silage (Helsel and Thomas, 1987; Stefanyshyn-Cote, 1993).
    - Reduction in palatability with advancing maturity (Stefanyshyn-Cote, 1993).

- Rye vs. barley silage
  - Greater CP and NDF, but less starch (NASEM, 2016; 2021)
  - Similar energy values (NASEM, 2016)

3 replicated 20-acre field plots/crop type in each year

Our approach

Crop production

KWS Progass Hybrid rye
Seeded: Aug 18th 2021 / Sept 1st 2022
Rate: 800,000 seeds/acre
Fall weed control and fertilizer

Silage production

Late milk
2022: 30 June
2023: 22 June

CDC Austensen
Seeded: May 13th in 2022 and 2023
Rate: 120 lbs/acre: ~1.1 million seeds/acre
Spring/summer weed control and fertilizer

Soft dough
2022: 25 July
2023: 19 July

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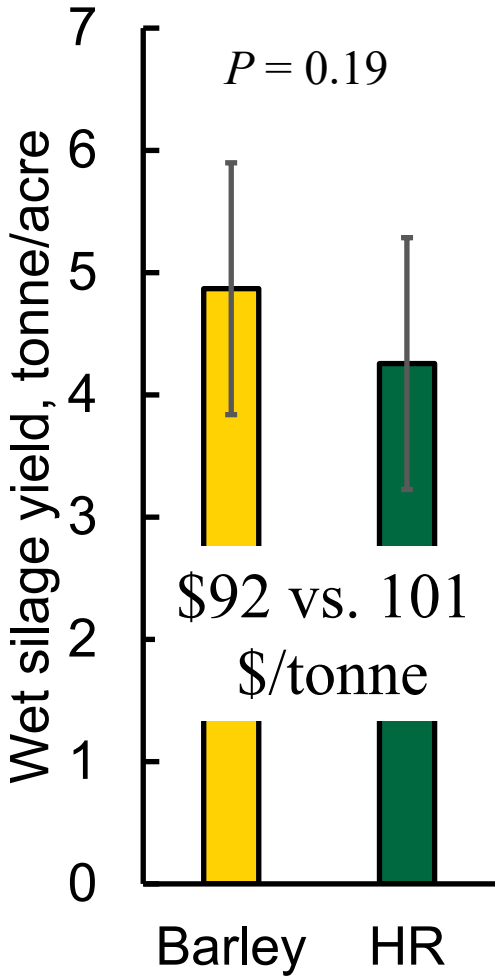
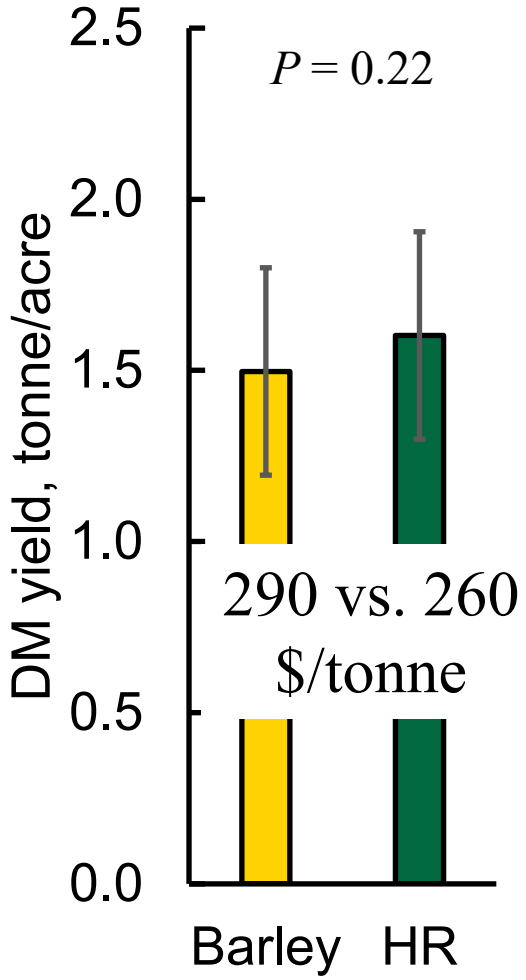
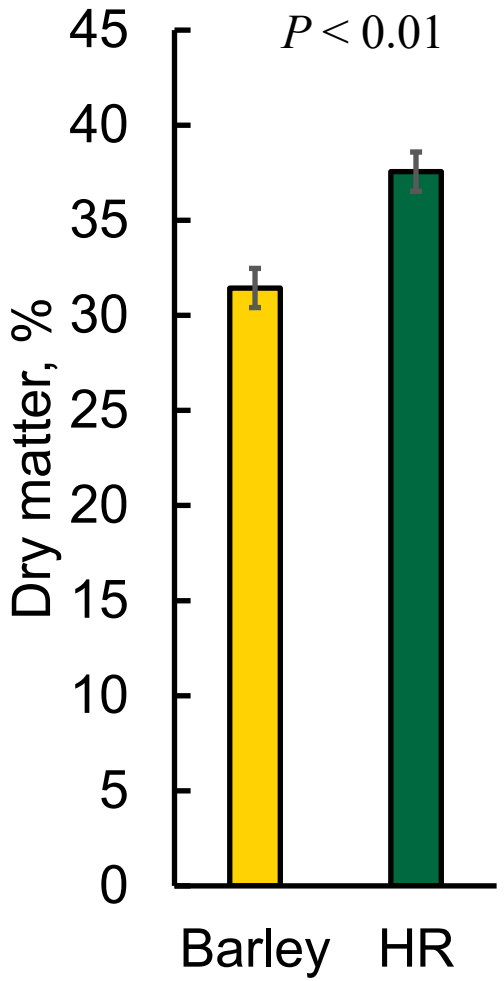
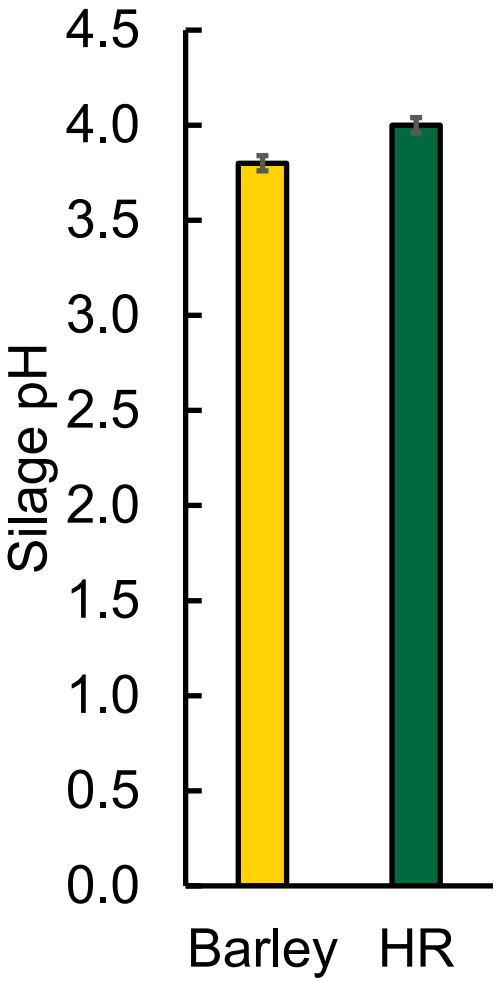
HR had similar yield and produced good quality silage

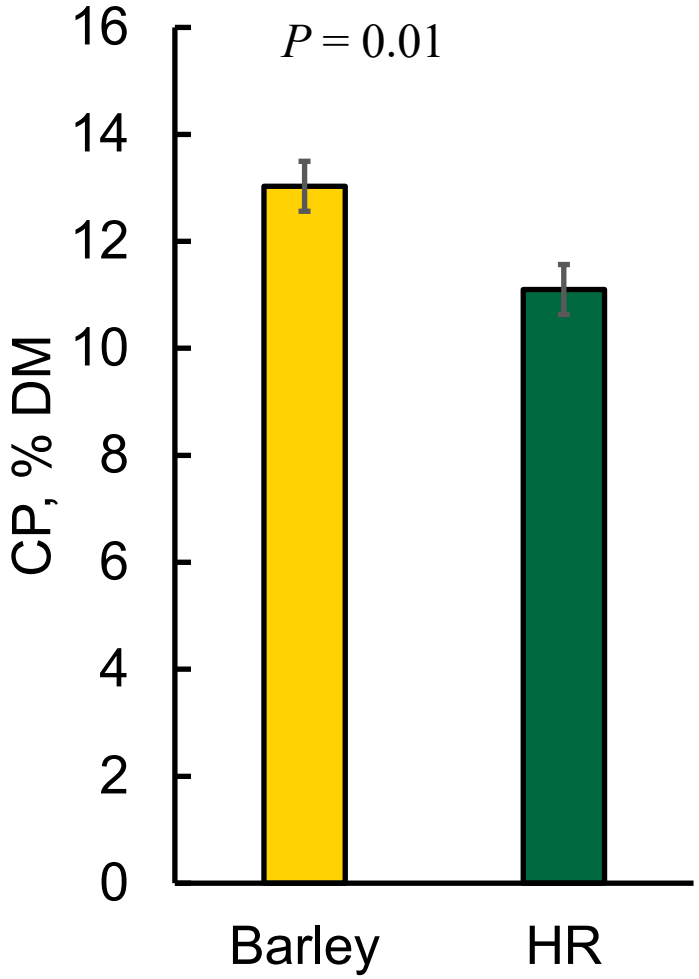


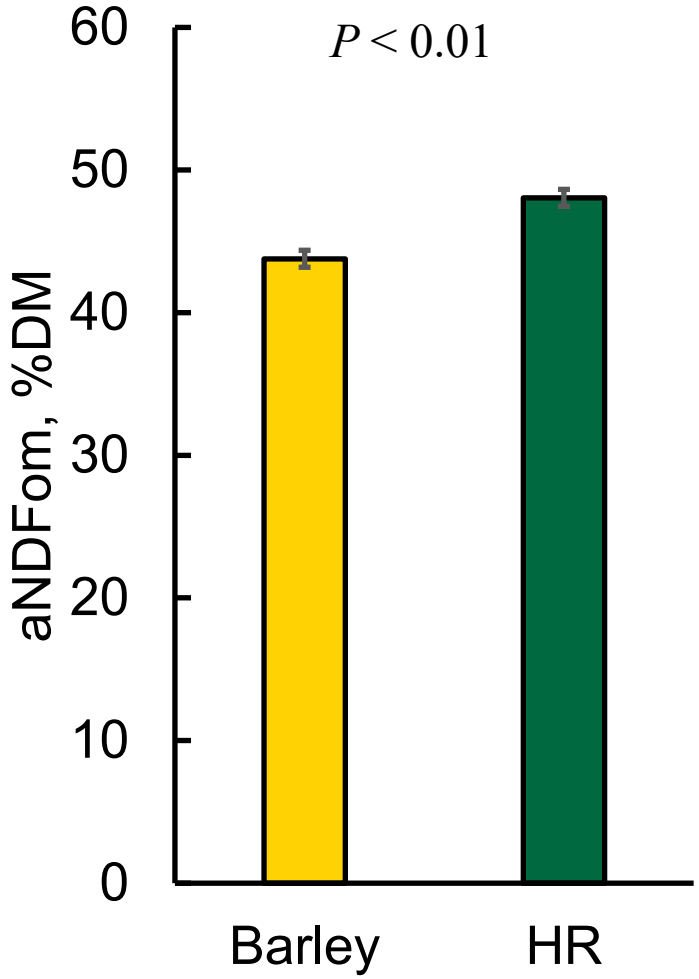


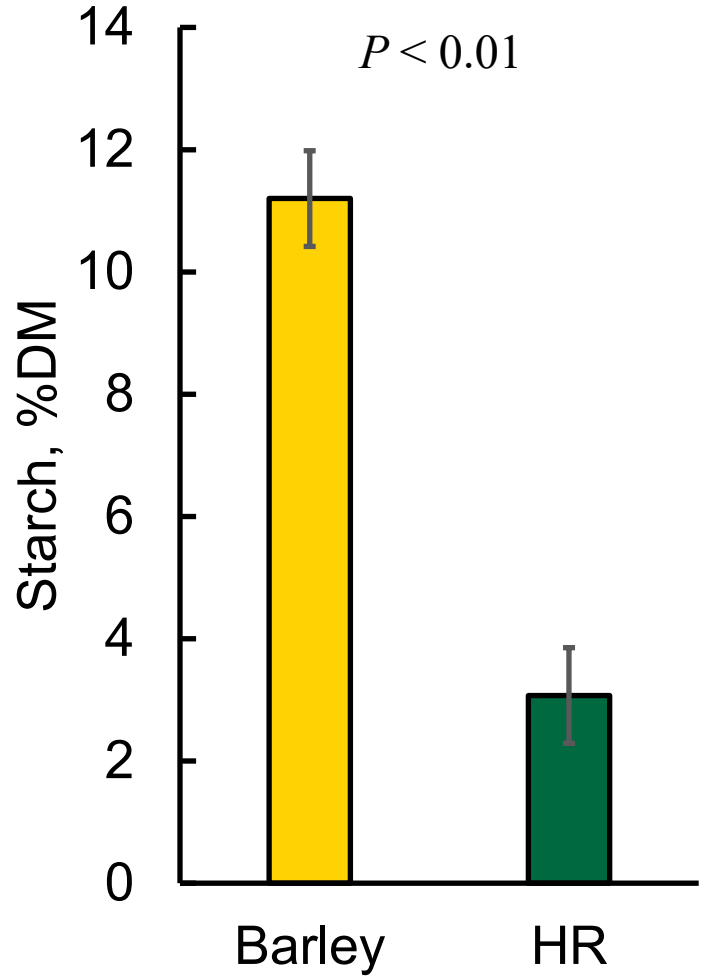




HR had less CP and starch and more NDF than barley







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Dietary treatments

Backgrounding phase

340 to 450 kg; n=4 pens/yr

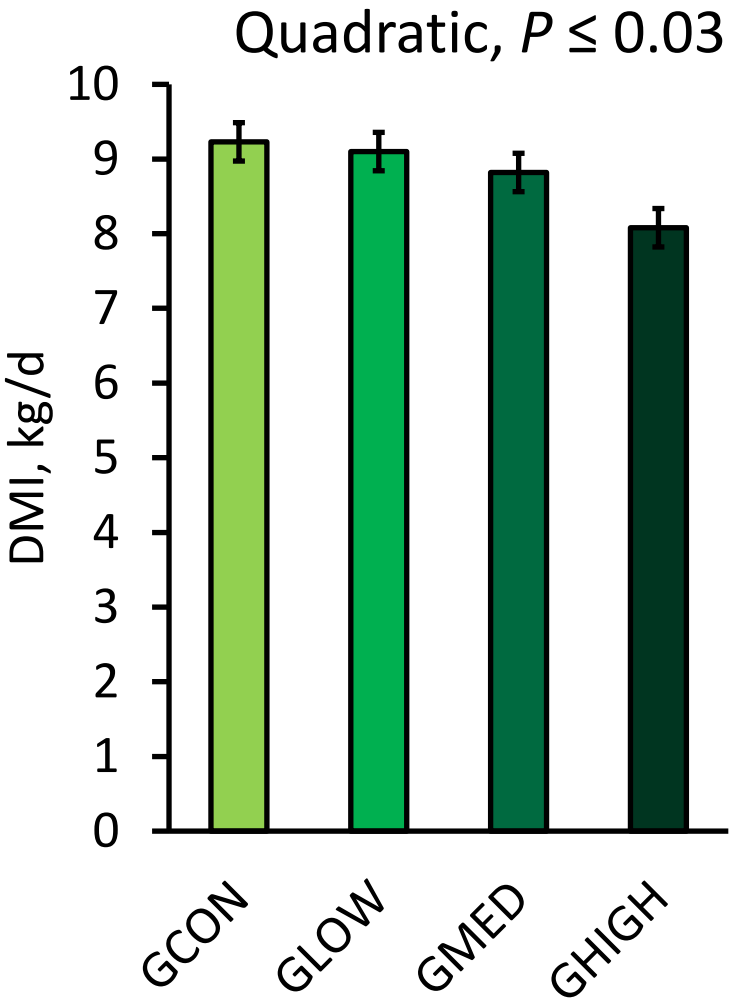
- HR replaced 0, 33, 67, or 100% of the barley silage
- Dietary inclusions of 0, 20, 40, and 60% (DM basis)

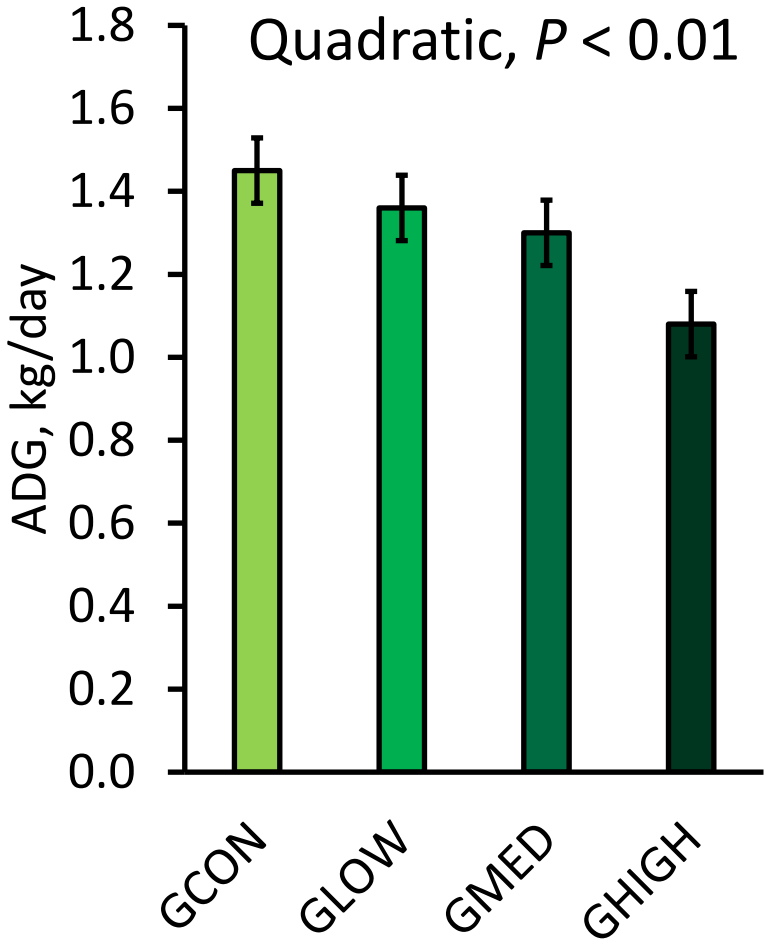
Finishing phase

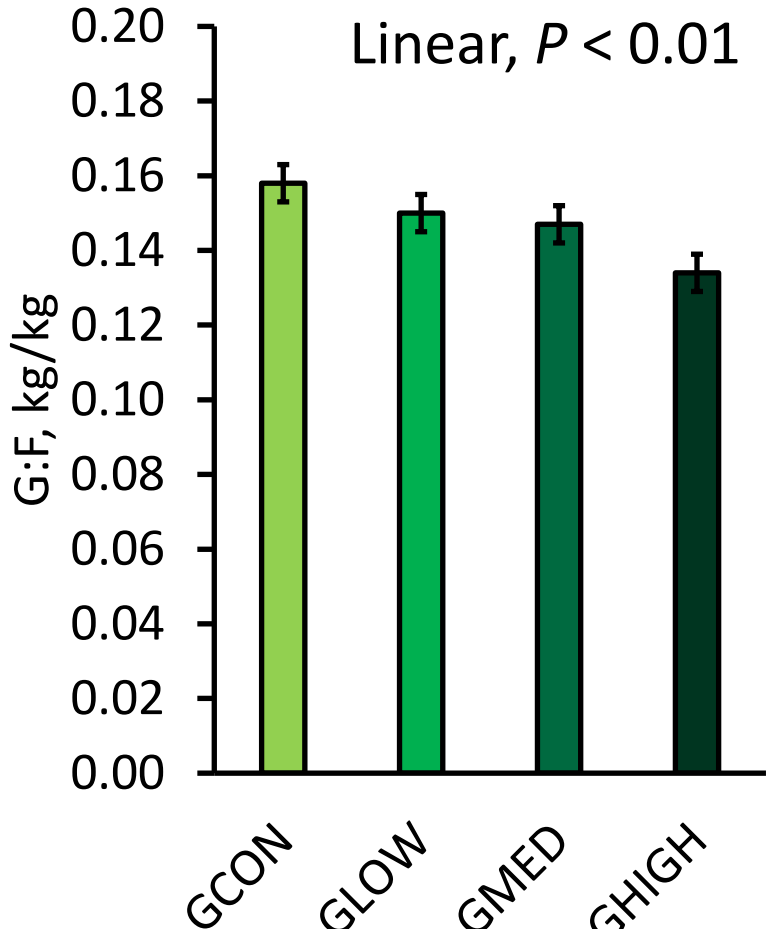
450 to 650 kg; n=5 or 6 pens/yr

- HR replaced 0, 50, or 100% of the barley silage
- Dietary inclusions of 0, 5, and 10% (DM basis)

Increasing HR inclusion reduced DMI, ADG, and G:F during backgrounding







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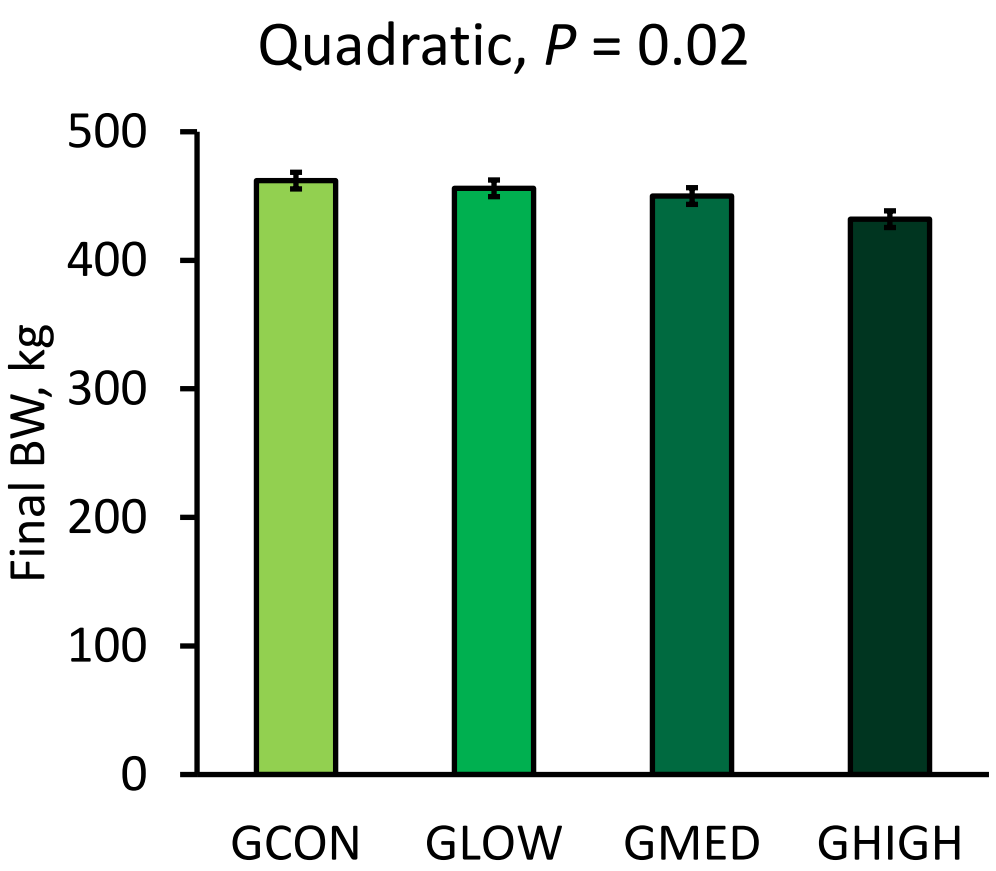
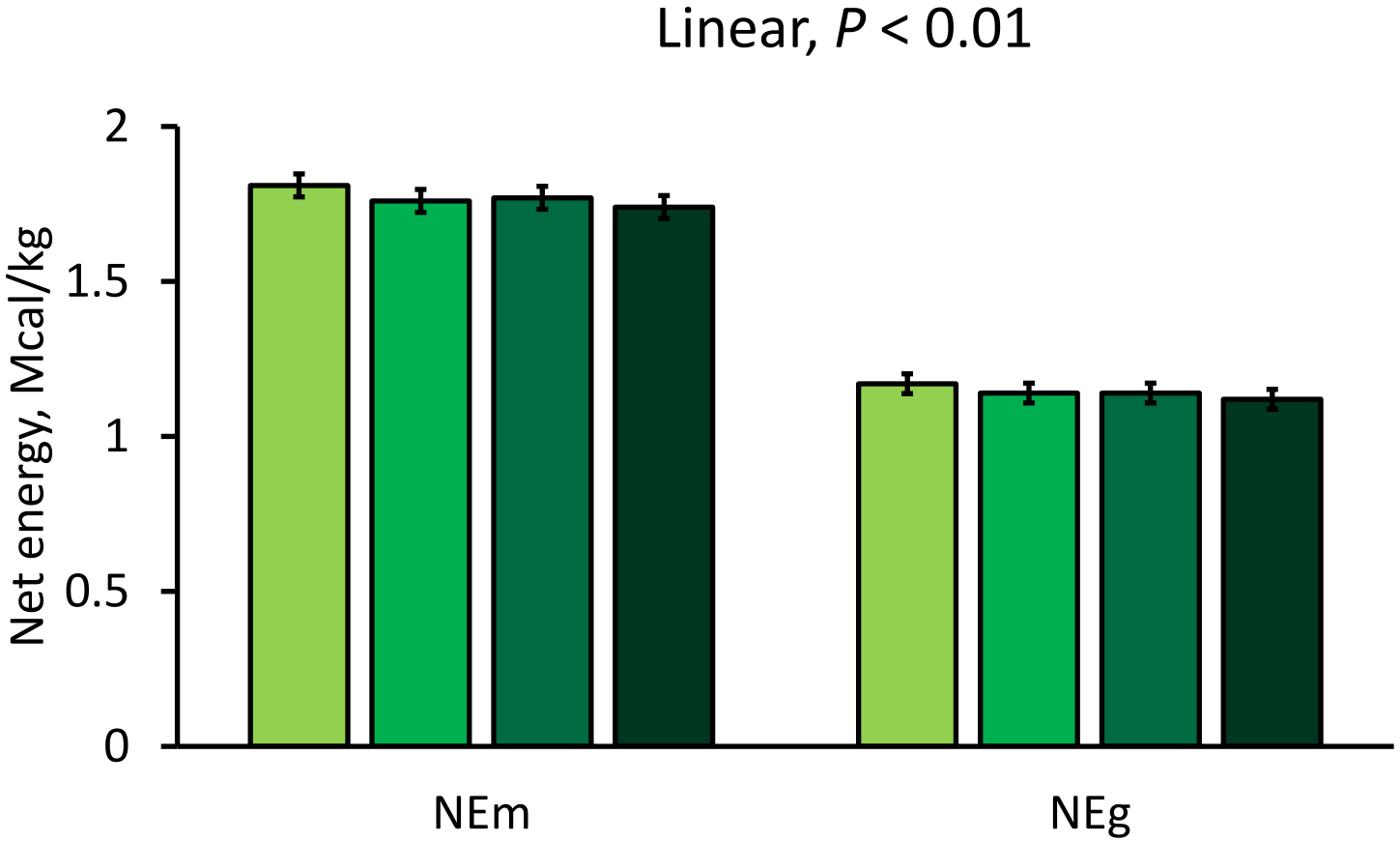
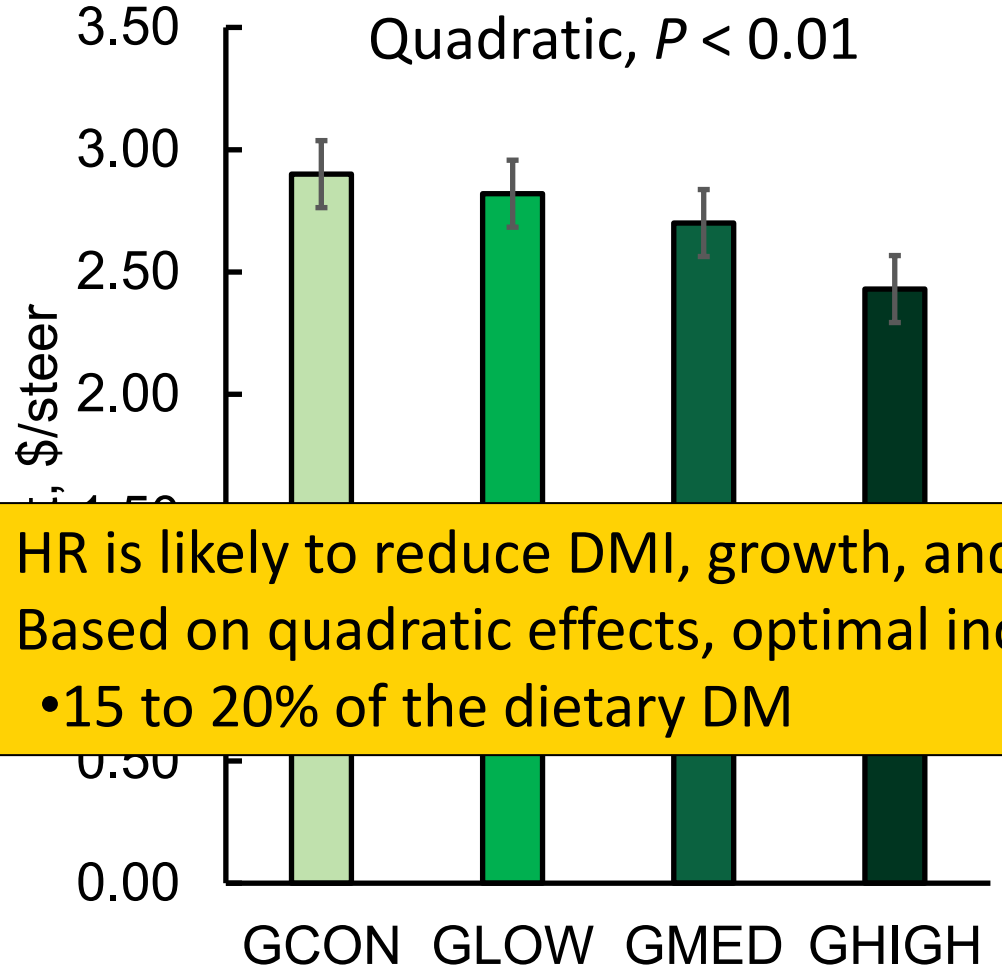
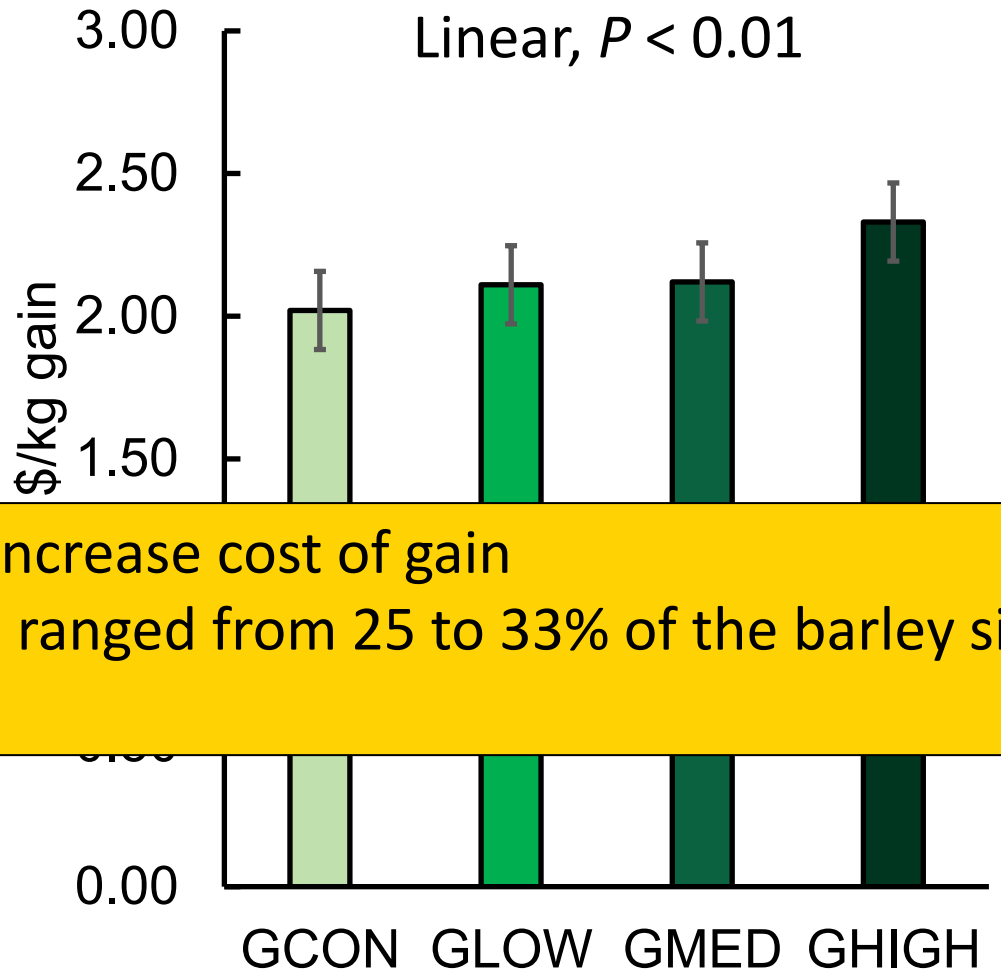
Increasing HR reduced final BW and performance-based dietary energy





Feeding HR reduced feed cost but increased cost of gain

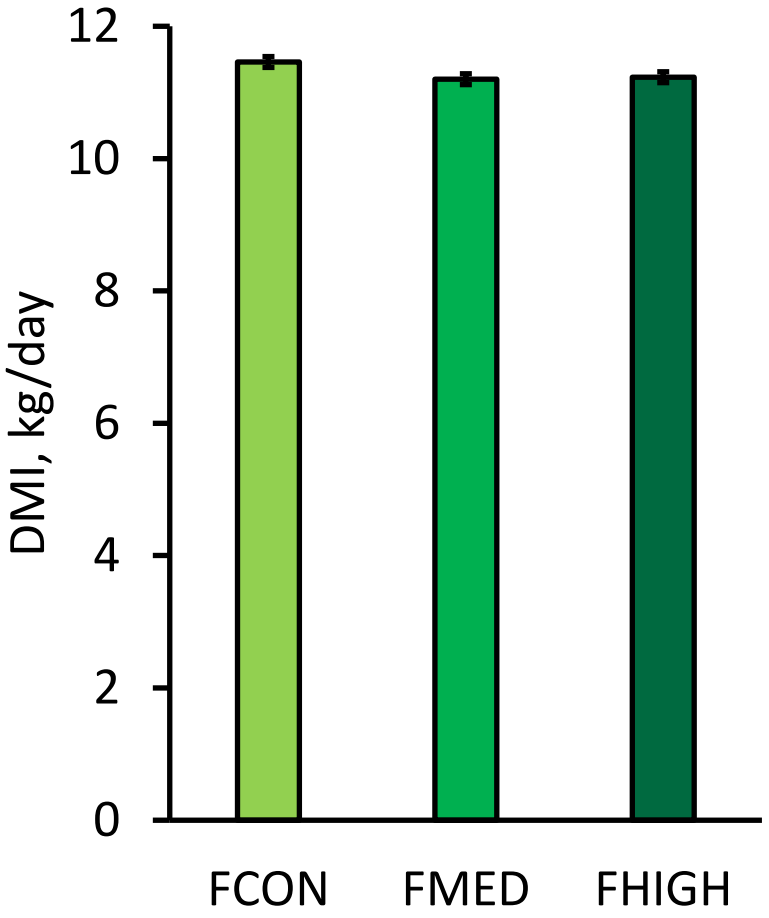




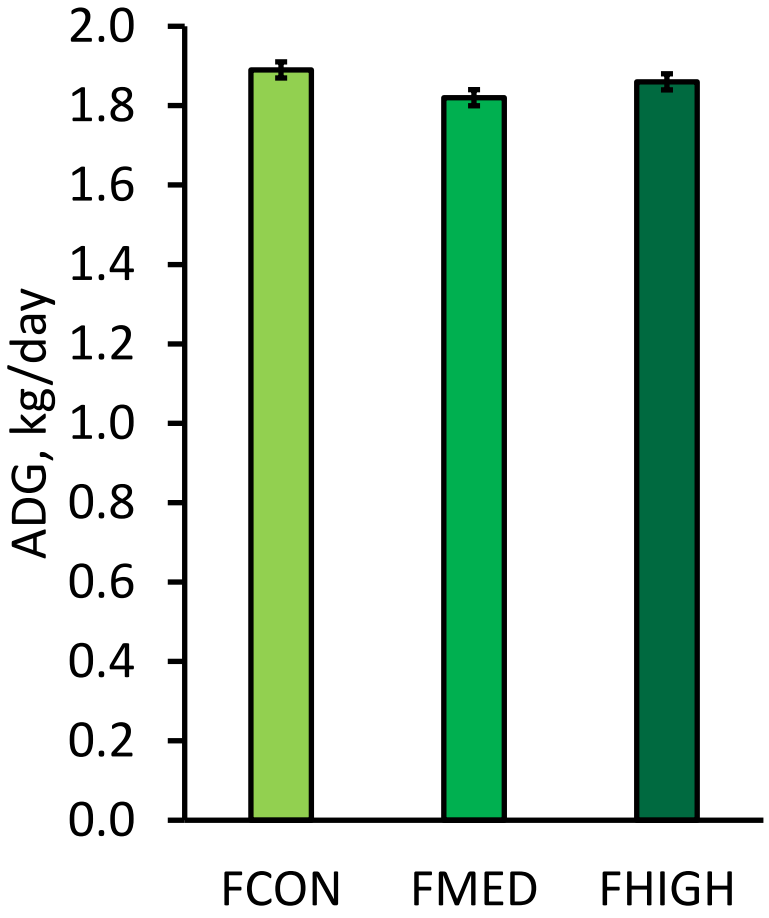
- HR is likely to reduce DMI, growth, and may increase cost of gain
- Based on quadratic effects, optimal inclusion ranged from 25 to 33% of the barley silage
  - 15 to 20% of the dietary DM

Hybrid rye inclusion reduced growth during finishing

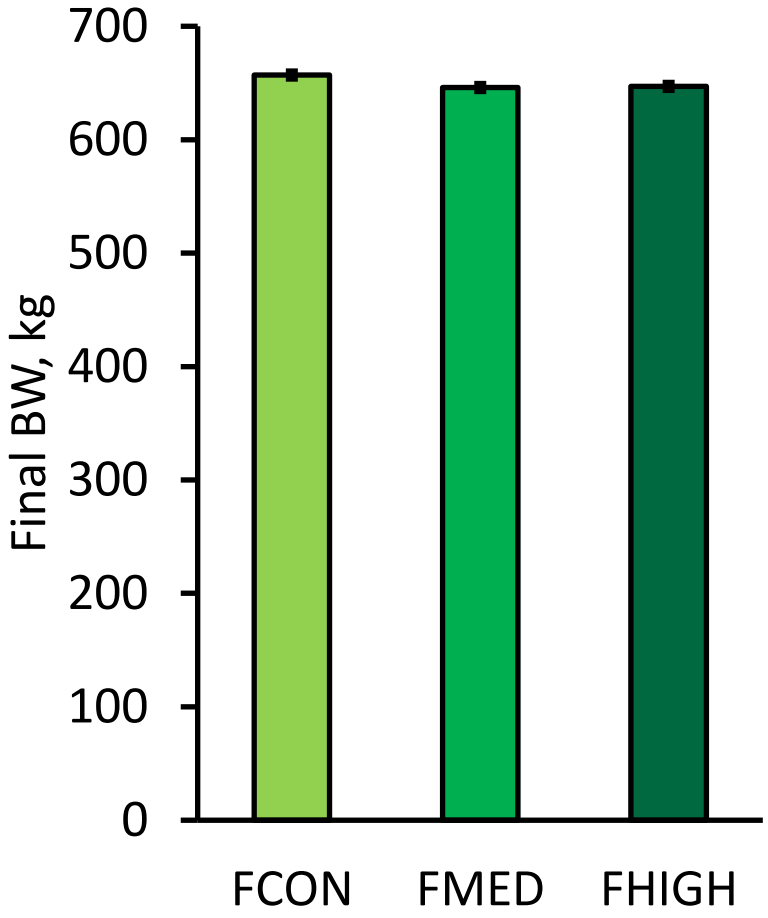
Linear, *P* = 0.06



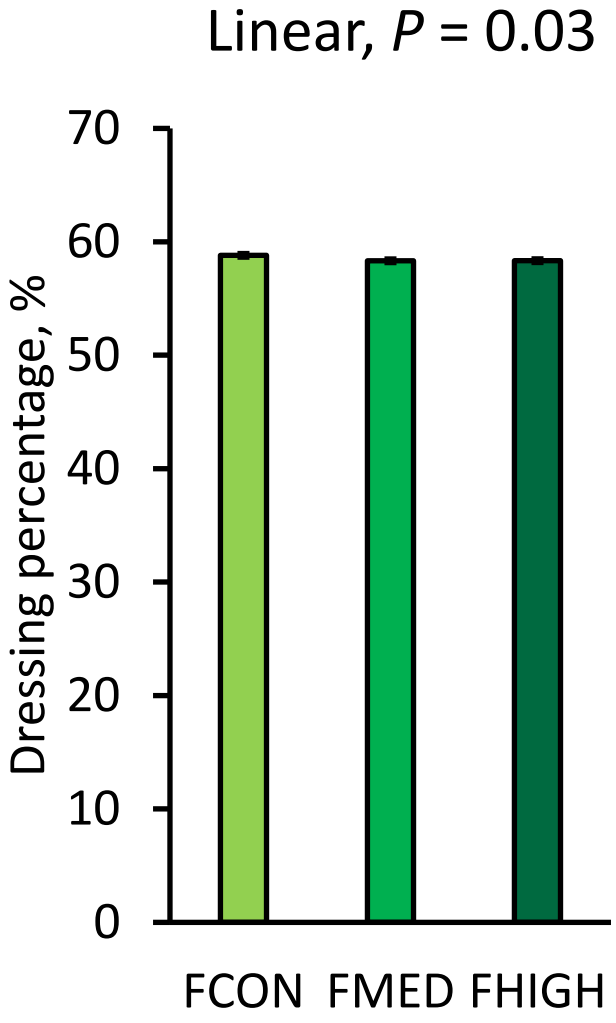
Quadratic, *P* = 0.04

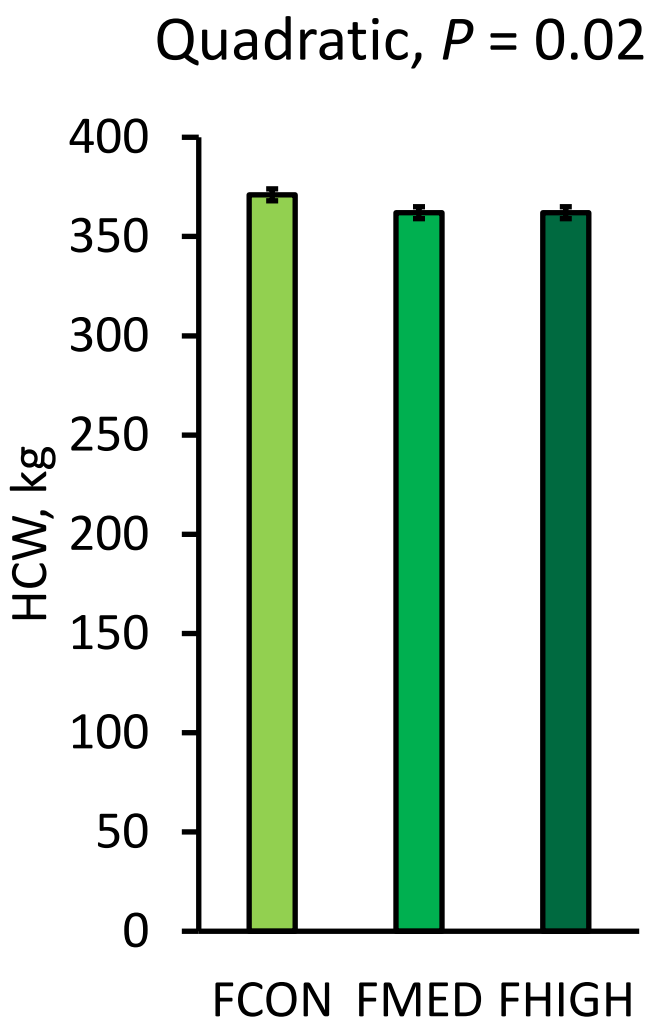


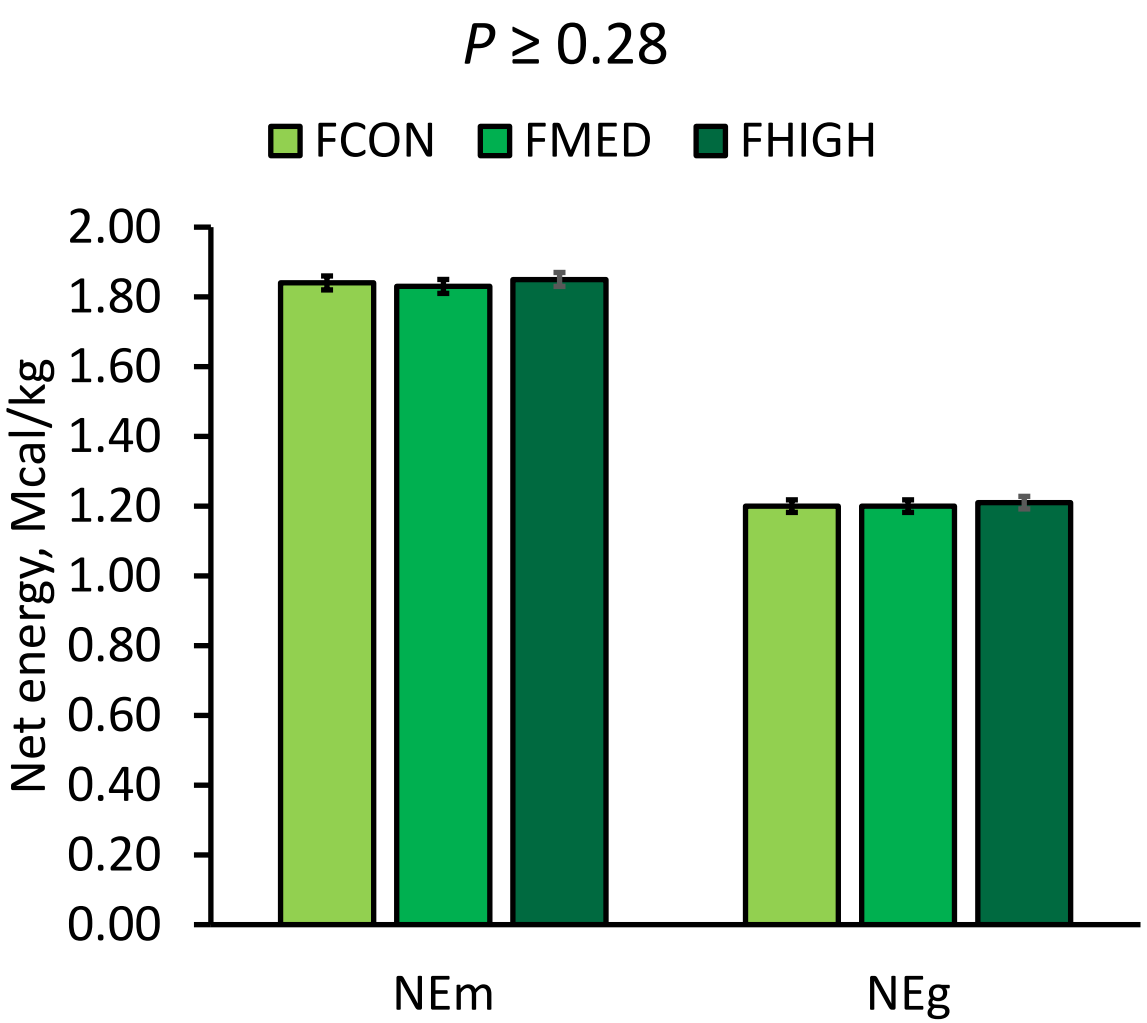
Quadratic, *P* < 0.01



HCW and dressing percentage were reduced







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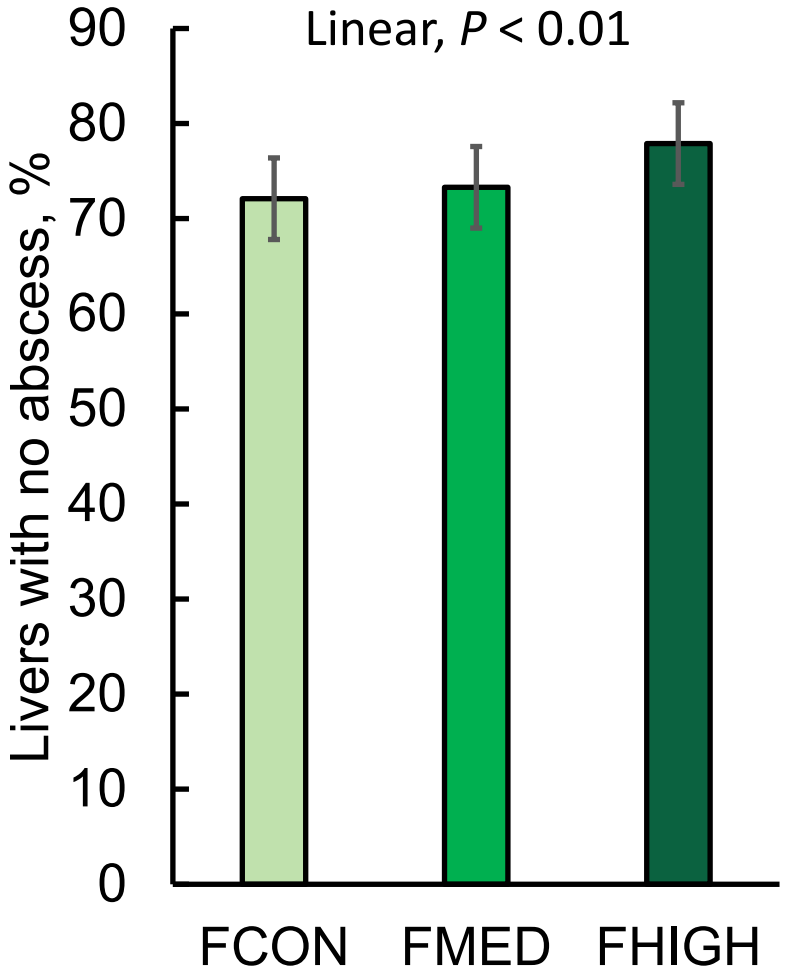
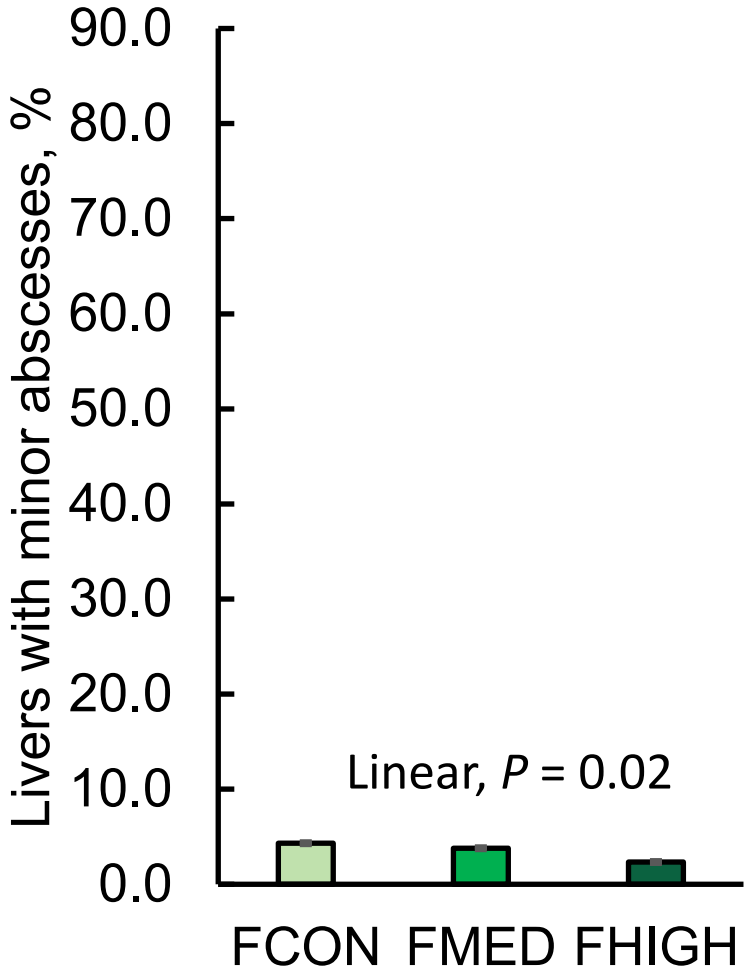
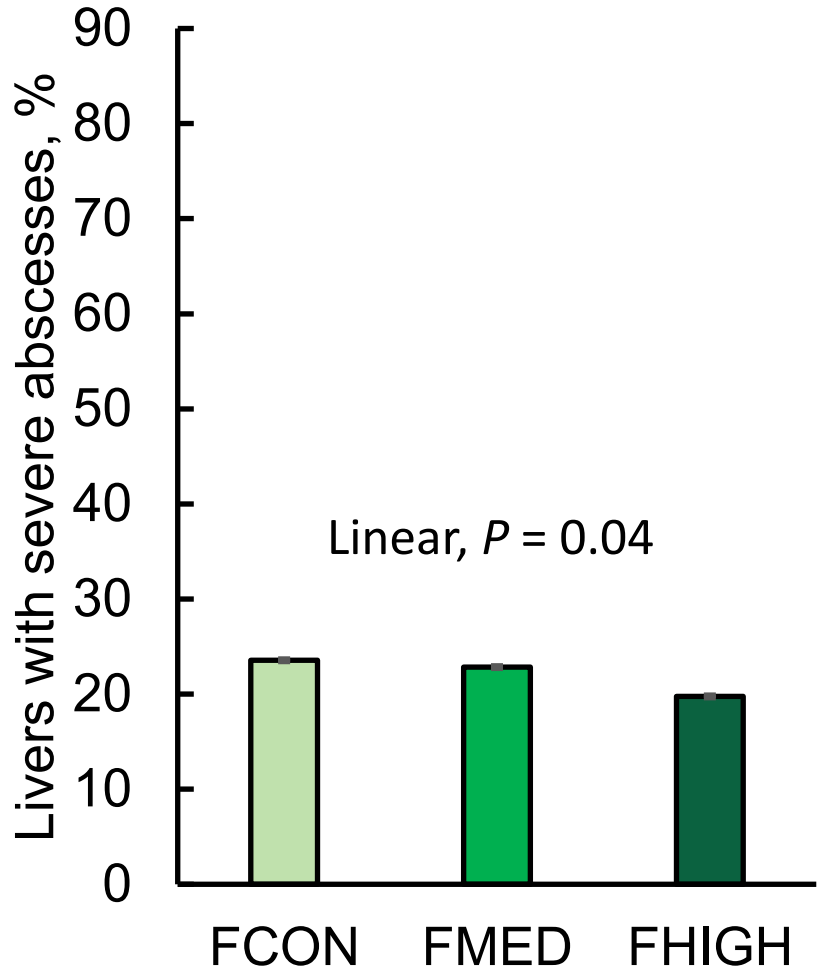
HR silage reduced liver abscesses







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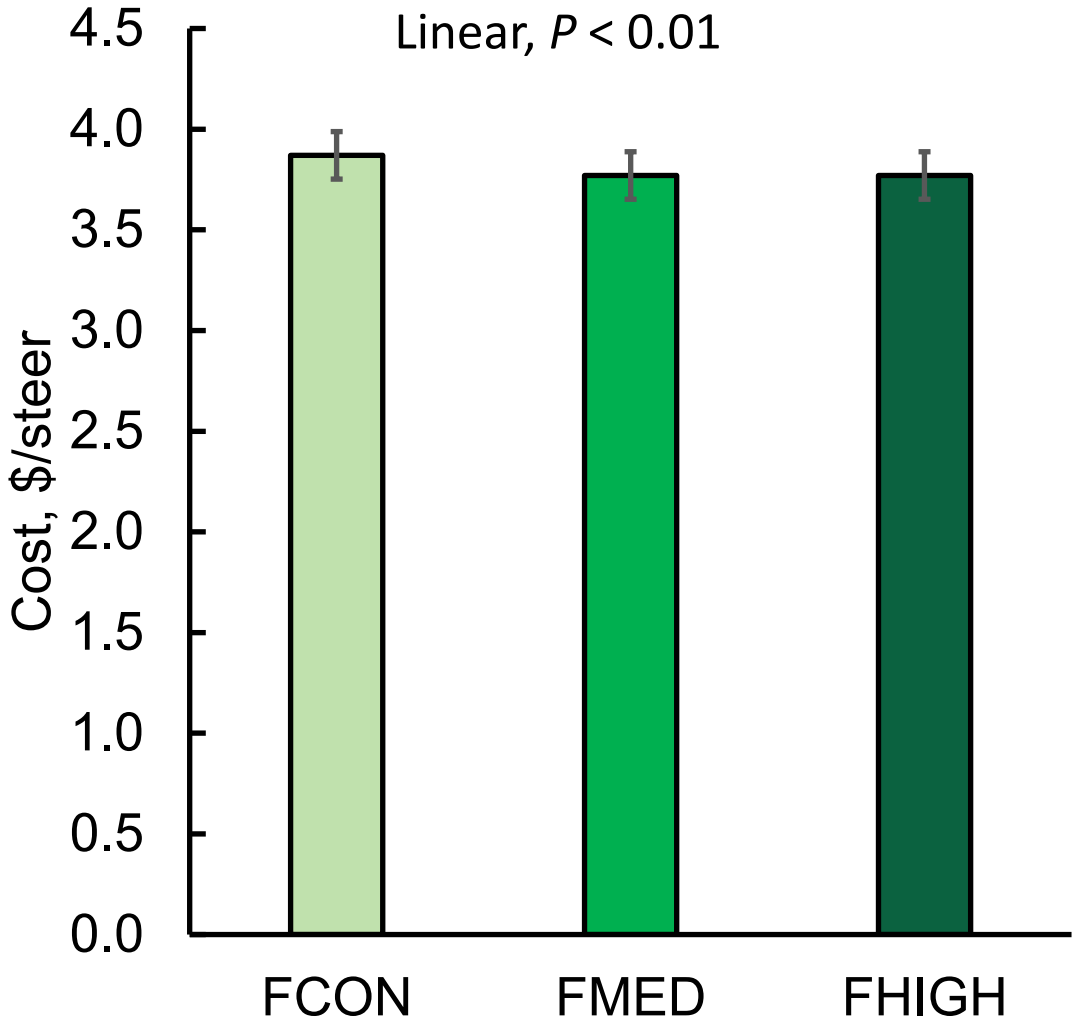
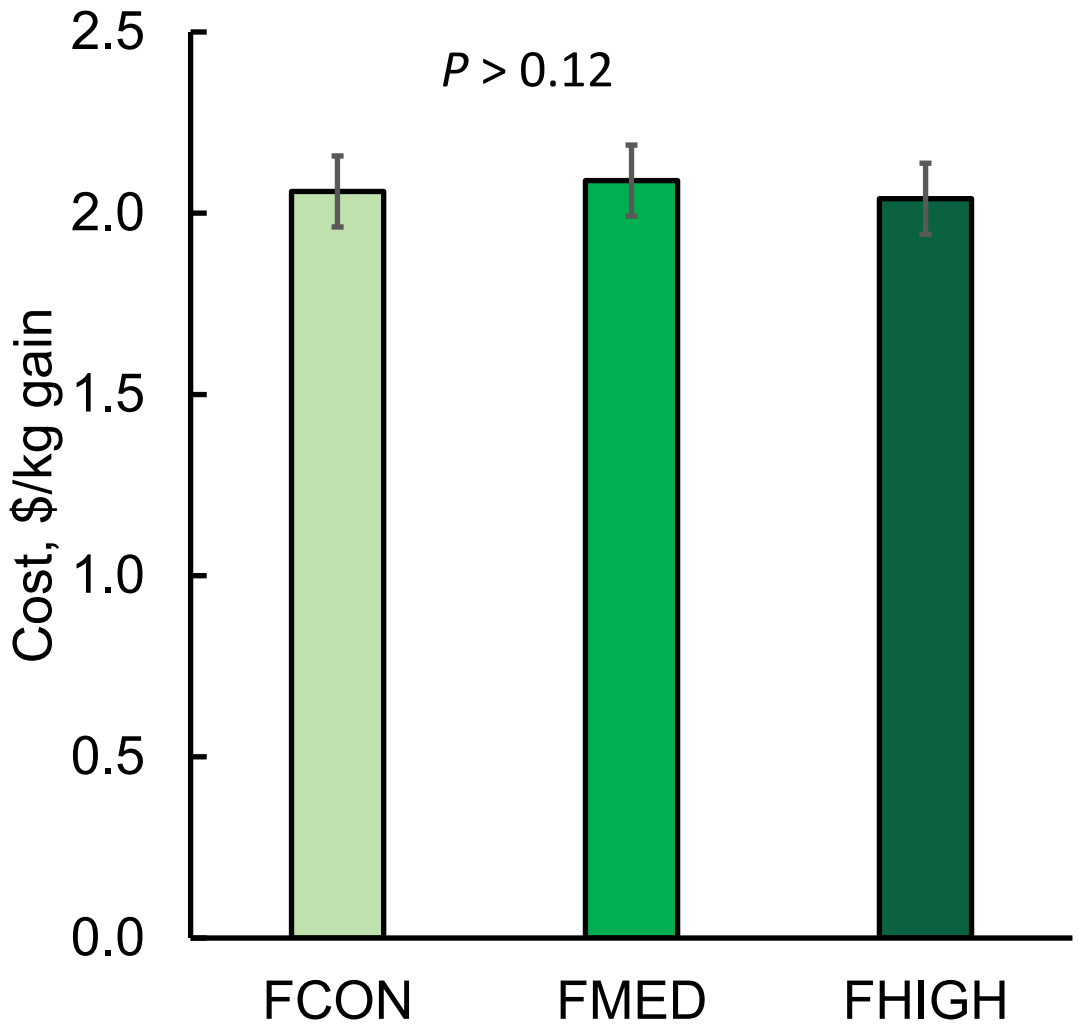
HR did not affect COG during finishing





Use of hybrid rye for silage production

- Hybrid rye provides similar forage DM yield at a similar cost relative to barley
  - Much earlier harvest (~1 mo earlier than barley)
  - More aNDFom, less starch and CP

Conclusions with hybrid rye silage

- HR is likely to reduce DMI, growth, BW
  - Increases cost of gain during backgrounding
  - No change in cost of gain or net return/steer during finishing
- Based on quadratic effects, optimal inclusion was
  - Up to 1/3 of the barley silage (15 to 20% of the dietary DM) during backgrounding
  - Up to 100% of the forage (10% of the DM) during finishing
- May need to consider other dietary approaches
  - Balance starch and NDF rather than direct replacement
  - Consider an earlier harvest maturity for HR

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Thank you for listening, and a special thanks to the funders!

KWS

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