

Feeding Hybrid Rye to Finishing Cattle

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Corn has been the dominant feed grain for beef finishing systems in the Midwestern United States for several reasons. Corn produces more metabolizable energy per unit of cropland than any other alternative crop and infrastructure and marketing channels for corn are well-established. However, popularity should not be mistaken for perfection. Monocultures or two-crop rotations increase risk from environmental conditions and pest pressures. Diversifying crop rotations provides opportunities to break up pest cycles and spread-out labor requirements.

Cereal winter rye fits the criteria for a potential third rotational crop well. Newer hybrid germplasm recently introduced to the market offer greater yield potential and increased ergot resistance compared to open-pollinated varieties. However, if cereal rye is to be adopted more widely, information related to feed value must be generated for those periods where higher value markets such as milling or distillery industries become saturated.

Our initial study was conducted in the fall and winter of 2019 and used 240 Angus yearling steers (initial shrunk weight = 891 pounds) in a 117-d finishing study. The basal diet consisted of silage, MDGS, liquid supplement, and 60% dry-rolled corn (DRC) on a DM basis with the test diets replacing one-third, two-thirds, or all of the DRC with dry-rolled rye (KWS Bono; KWS Cereals LLC). Steers fed diets with 40 or 60% dietary rye had reduced DMI compared to either the corn control or the one-third replacement. Rye linearly decreased ADG and feed conversion; however, differences between corn and 20% rye inclusion for ADG (4.68 and 4.60 lbs/d) and F:G (6.01 and 6.03) were not appreciable. We noted no negative effects on characteristics affecting carcass value among the varying levels of rye inclusion.

After the initial study we wanted to explore reasons for decreased DMI as rye inclusion increased. We also wanted to examine different processing approaches as we quickly learned that the same roller mill used to process corn was ineffective with rye kernels. We conducted a follow-up study using yearling heifers during the fall of 2020 to determine the effect of feeding whole rye as a complete replacement for DRC. In that experiment, heifers fed 60% whole rye grain ate more and gained less compared to heifers fed control diets, indicating that extent of processing influenced both intake and energy value of rye grain.

Our most recent study using rye was completed in August 2022. For this experiment, we fed 192 yearling steers (initial shrunk BW = 904 pounds) for 147 d with a 60% DRC control diet, compared to diets containing 40% DRC and 20% rye processed with three different methods: whole unprocessed, rolled, or hammer milled. Steers fed whole rye had the poorest gains and feed conversion, as expected. Steer fed dry-rolled rye were numerically more efficient than the corn control (6.85 vs. 6.90, respectively) with reduced DMI and ADG. Hammer milled rye supported identical ADG compared to corn control (3.78 pounds per day) with the greatest DMI. We did note less hair shedding in steer fed rye in this study, possibly related to intake of ergot alkaloids. We plan to conduct further research to define

ergot alkaloid tolerances more clearly in high-concentrate diets and to examine timing of rye inclusion to optimize efficiency.