Hybrid rye shows potential as a new feed ingredient for finishing cattle

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The word rye typically brings to mind cover crops and soil health with little thought to the grain that could actually be produced. This is largely driven by old varieties that often provide limited yield with high toxic ergot risk. This image may be about to change as hybrid rye varieties become more readily available across North America. KWS Cereals, a European company, has developed novel high yielding hybrid rye varieties with mitigated ergot risk. In test plots across the US hybrid rye has continuously out-yielded small grains such as wheat, barley, triticale, and older open pollinated varieties of rye. This new hybrid still offers the same value as old-style rye, contributing to winter cover and improving soil health, however, the added yield advantage and decreased ergot risk means good news for the feed industry!

As a feed ingredient hybrid rye is similar in composition to barely or wheat. While extensive research has been completed with hybrid rye in swine diets, little data exists showing the role this novel feed ingredient may play in finishing cattle diets. Therefore, Dr. Zach Smith and Warren Rusche at South Dakota State University developed an experiment to evaluate the effect of replacing dry rolled corn with KWS hybrid rye on the growth performance, carcass traits, and efficiency of net energy utilization in finishing steers. Two hundred and forty, predominately Angus steers, were fed finishing diets for 117 days. The hybrid rye was coarsely cracked using a roller mill to a processing index of 78.5 ± 2.29 and the ergot alkaloid concentration was 0.39 ppm. Four treatments were used where hybrid rye replace dry rolled corn on a dry matter basis, with the final diet representing 100% replacement of corn with hybrid rye (Table 1).

Table 1. Actual diet formulations fed to finishing steers based upon weekly ingredient analysis, % dry matter basis

	Dry rolled corn:Hybrid rye			
	60:0	40:20	20:40	0:60
Dry rolled corn	60.34	40.33	20.22	0.00
Hybrid rye	0.00	19.91	39.93	60.04
MDGS	18.90	18.95	19.00	19.04
Corn silage	16.84	16.89	16.93	16.97
Liquid supplement	3.91	3.92	3.93	3.94

Interestingly, during the adaptation period of the trial (day 1 – day 18; Figure 1) increased inclusions of hybrid rye linearly increased average daily gain (ADG) and decreased feed to gain (F:G). Suggesting palatability was not an issue with this novel feed ingredient. However, inclusion of hybrid rye linearly decrease carcass adjusted final body weight (BW), ADG, and dry matter intake (DMI) and linearly increased F:G over the entire feeding period (Table 2). Hybrid rye also linearly decreased hot carcass weight (HCW) and rib eye area. However, these linear decreases were largely driven by the decreased performance noted in the high rye inclusion diets, with the 20% hybrid rye diet performing similarly to the corn-based

control. Regardless of inclusion level, hybrid rye had no effect on distribution of liver scores and USDA grades for quality and yield. Based on performance from day 19 through day 117, performance-adjusted NE was calculated. The estimated NEm and NEg were 87.60 and 57.13 Mcal/cwt, respectively. These data show that 20% hybrid rye can be included in a finishing cattle diet with minimal to no impact on cattle performance and carcass quality.

Figure 1.

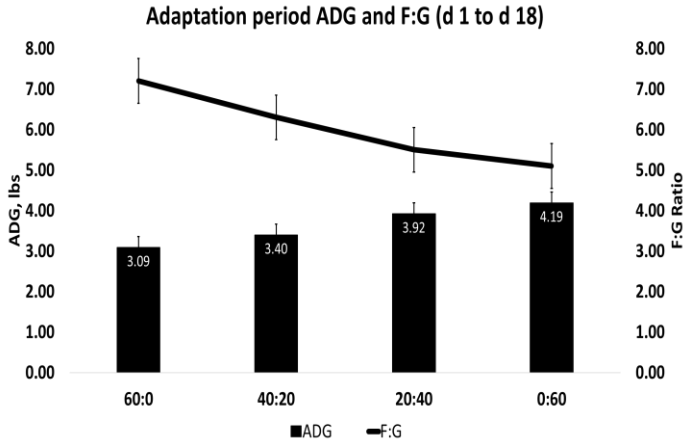

Table 2. Finishing steer performance

	DRC:Rye, % DM basis					*P* - value		
	60:0	40:20	20:40	0:60	SEM[1]	0 v Rye	L	Q
Initial BW[2]	885	890	892	896				
Final BW[3]	1432	1429	1393	1367	10.8	0.01	0.01	0.32
HCW	895	892	871	855	6.7	0.01	0.01	0.33
ADG[2]	4.68	4.60	4.28	4.03	0.094	0.01	0.01	0.36
DMI	28.01	27.71	27.29	26.74	0.148	0.01	0.01	0.42
F:G	6.01	6.03	6.38	6.63	0.110	0.01	0.01	0.32

[1]Pooled SEM

[2]Shrunk 4%

[3]Carcass-adjusted using HCW/0.625