

Impact of rye (Brasetto hybrid) and inclusion level on finisher pig performance, carcass and meat quality

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Rye is a cereal that can provide a valuable source of energy and protein when included in swine diets. Its nutrient value for protein and energy are similar for those for wheat and barley. Nevertheless, livestock producers have been reluctant to use rye as a feedstuff. This reluctance is attributed mostly to the concerns over the presence of ergot alkaloids, potential anti-nutritional effect of pentosanes which could lead to potential lower feed intake for animals consuming rye.

A new hybrid of rye (Brasetto) has been developed by KWS Cereals, an European company specialized in plant breeding. This fall hybrid rye was developed to have a better resistance to heat stress drought compared to conventional rye. Also, as a fall crop this hybrid rye can better use the winter humidity for an optimal growing start in spring. This allows a faster pollination and reduces the risk of mycotoxin contamination, especially ergot alkaloids. Finally, the yield advantage of hybrid rye compared to conventional rye is said to be approximately 26-30% higher per acre.

A trial was conducted to evaluate the effect of feeding up to 50% inclusion rate of rye to pigs during grower-finisher phase on growth performance, carcass characteristics and meat quality. The test barn had 48 pens with 22 pig/pen. A total of 1056

pigs weighing with an average starting weight of 30.3 kg were allotted to either three feed treatments (Table 1). All diets were formulated for the same net energy and SID Lys/NE ratio.

Table 1. Percentage of added rye in the finisher rations

Treatment	A	B	C
Stage 1	0 %	10 %	20 %
Stage 2	0 %	15 %	30 %
Stage 3	0 %	20 %	40 %
Stage 4	0 %	25 %	50 %*
Stage 5	0 %	25 %	50 %*

*Xylanase 40 000 G (Danisco) added at 100 g/ton.

Table 2. Results of performance during feed stages 1 to 4 (using rye at 800 ppb of Ergot)

	A	B	C	SEM	P-value
Live weight (kg)	118,8	118,3	117,9	1,17	0,852
ADG (g/day)	978	971	965	11,97	0,742
ADFI (kg/day)	2,59	2,59	2,54	0,05	0,677
FE (feed/gain)	2,64	2,66	2,63	0,02	0,460

Table 3. Results of performance during feed stage 5 (using rye at 4 980 ppb of Ergot)

	A	B	C	SEM	P-value
Live weight (kg)	136,2	134,5	133,1	1,21	0,205
ADG (g/day)	938A	880B	839C	12,70	0,001
ADFI (kg/day)	3,13	3,08	3,00	0,07	0,334
FE (feed/gain)	3,34A	3,50AB	3,58B	0,06	0,012

The rye used to make the feed for the first 4 stages of feed all came out of the same source and contained 800 ppb of Ergot alkaloids. For stage 5 diet, we had to buy extra rye from another source and this rye was tested for ergot and came back with a very high level being at and for 4 980 ppb of ergot alkaloids.

The stage 4 diet was fed up to week 13 in finisher. Results from table 2 show that feeding rye in a step-up program allows similar ADG, ADFI and FE during stages 1-4 (up to week 13) when rye had 800 ppb of ergot alkaloids ($P < 0.10$). During Stage 5 which started at week 13, the pigs fed with rye were significantly affected by the high level of ergot alkaloids (table 3). In fact, there was a linear decrease in ADG and FE within treatments with increased rye inclusion rye ($P < 0.05$). Mortality, carcass yield and meat quality characteristics were unaffected by the feeding or rye during the finisher period (results not shown).

In conclusion, in iso-nutrient formulated diets, this trial showed that rye can comfortably be an alternative ingredient to wheat and barley, especially when included at moderate levels (10-25%) and in a step-up pattern. It was again confirmed that highly contaminated rye by ergot does have detrimental effects on the performance of finisher pigs. The cereal producers should consider growing rye for its high yield, but they need to choose varieties of rye that reduce the risk of ergot contamination. KWS breeding does have this as one main breeding topic and is able to offer new hybrids with better ergot resistance already now. ■