

# LIGNIN CONTENT OF OAT GRAIN - DOES IT AFFECT ANIMAL PERFORMANCE WHEN SHEEP ARE GIVEN OATS AS A SUPPLEMENTARY FEED?

J.B. ROWE and L.R. COSS

Animal Industries Division, Dept of Agriculture, Baron-Hay Court, South Perth, W.A. 6151

Lignin content of oat hulls is variable and genetically controlled (Crosbie *et al.* 1985). Oat cultivars with a high lignin content in the hull have a lower digestibility than low-lignin cultivars (Rowe and Crosbie 1988). When fed as a complete diet there is a reduced intake of low-lignin cultivars compared to high-lignin cultivars and a higher dressing percentage (lower gut fill) (Rowe and Coss 1992). The aim of this experiment was to determine the influence of hull lignin content on feed intake and dressing percentage under conditions of supplementary feeding. Comparisons were also made between oat, barley and lupin grain.

One hundred and forty sheep were divided into 13 treatment groups. Each of 4 grains (high and low-lignin oats, barley and lupins) were fed at 3 levels (150, 300 and 450 g/day) in addition to chaffed hay *ad libitum* (n = 10/treatment group). There were also 20 sheep fed only chaff. Feed intake was measured daily and all sheep were weighed weekly. The average weight of the sheep at the start of the experiment was 38 kg. At the end of 7 weeks on experimental diets all sheep were slaughtered and measurements made of dressing percent and gut contents.

Level of grain feeding had a significant ( $P < 0.001$ ) negative effect on the intake of chaff with an indication ( $P = 0.08$ ) that source of grain also affected chaff intake. Intake of barley was significantly ( $P < 0.05$ ) higher than high-lignin oat grain. There was no indication of reduced feed intake in sheep fed low-lignin oat grain. There were significant effects of grain type ( $P < 0.001$ ) and level of feeding ( $P = 0.05$ ) on dressing percent and an interaction between grain type x level of feeding ( $P = 0.06$ ). The highest dressing percentage was in sheep fed lupin supplements and the lowest levels in the animals supplemented with high-lignin oats. Unlike responses in other grains, there was no increase in dressing percentage with increasing levels of high-lignin oats.

**Table 1. Feed intake, liveweight gain (g/day) and dressing percentage of sheep fed chaff *ad libitum* and a range of different supplements**

Supplement	Grain intake		Chaff intake		Liveweight gain		Dressing %	
	Mean	s.e.	Mean	s.e.	Mean	s.e.	Mean	s.e.
Chaff only	-	-	885	25	32	6.2	40.3	0.57
Lupins	137	1	758	30	55	3.7	41.9	0.68
Lupins	277	1	710	40	85	8.1	42.6	0.48
Lupins	415	4	511	55	102	7.1	44.9	0.59
High-lignin oats	133	2	769	46	52	6.6	41.2	0.63
High-lignin oats	275	1	609	33	71	8.5	39.4	0.77
High-lignin oats	409	10	440	26	66	10.3	39.4	0.93
Low-lignin oats	124	5	765	41	48	9.6	40.8	0.60
Low-lignin oats	269	4	659	60	79	7.0	40.7	0.64
Low-lignin oats	409	6	515	42	68	7.5	41.9	0.65
Barley	137	1	775	34	46	11.0	40.8	0.74
Barley	266	5	733	53	72	10.5	41.2	0.80
Barley	401	8	573	46	59	11.1	42.4	0.73

The results indicate that feed intake is not affected when low-lignin oats are fed as a supplement and show that dressing percent is reduced when high-lignin oat grain is fed under these conditions.

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