LUPINS FOR SHIPBOARD FEEDING OF SHEEP

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Whole lupinseed as a shipboard ration for sheep has a number of advantages over pelleted rations in relative cost, bulk density, feeding value and handling characteristics. However there are several potentially serious problems with its use, particularly the likely high levels of atmospheric ammonia from high urinary nitrogen, and possibly exacerbated "shy-feeder" problems. Approximately 600 grams of lupinseed is sufficient to maintain shipping wethers compared to 1000 grams of commercial pellets; this reduction in feed volume may allow a change in feeding frequency. As part of a programme investigating the potential of lupins as a sole diet for shipboard feeding, feeding behaviour and rumen variables were monitored in individually-caged sheep fed 580 grams per day every one, two or three days.

All three treatments produced similar initial rates of consumption. The animals quickly consumed 600-700 grams in the first hour. Only the three day cycle showed a diurnal feeding pattern, with 50% of the feed remaining after 12 hours. The consumption rates of each treatment produced markedly different responses in faecal output, urinary nitrogen output, rumen pH and rumen ammonia. The results suggest that with feeding lupins daily rumen ammonia levels may be sufficiently high to affect feed intake. A three day feeding cycle however may reduce the "shy-feeder" problem without affecting feed intake and utilisation.

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. LUPINS, BEANS, PEAS AND BARLEY AS ALTERNATIVE GRAINS FOR DAIRY COWS FED HAY

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The feeding of lupin instead of barley grains has increased dairy cow performance during early lactation in our previous experiments. This experiment determined the relative values of hammermilled lupin, bean, pea and barley grains for milk production during early lactation when cows were fed cereal hay ad lib.. Forty eight Holstein-Friesian cows and heifers were used in a 12 week covariance designed experiment.

Table 1 Production and intake data of cows fed various grains

	Lupins	Beans	Peas	Barley
Milk (L/d)	24.9 c	22.5 b	21.8 b	20.3 a
Fat (kg/d)	0.96 b	0.81 a	0.81 a	0.81 a
Protein (kg/d)	0.73 c	0.68 b	0.67 ab	0.63 a
Grain intake (kg DM/d)	7.6	7.5	7.6	7.2

The crude protein contents of the grains on a dry matter (DM) basis were 27.4% for lupins, 27.6% for beans, 26.5% for peas and 9.8% for barley. Total intakes of dry matter and final liveweights were similar for all cows. Lupin grain was superior to bean, pea and barley grains for milk, fat and protein production even though the three legume grains were of similar crude protein content.

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