

# A COMPARISON OF LUPIN AND BARLEY GRAIN AS SUPPLEMENTARY FEEDS

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In Western Australia responses in ovulation rate in sheep have been observed as a result of supplementation with lupin seed immediately before ovulation (Knight et al. 1975). A similar increase has not been found as a result of supplementation with cereal grain (Oldham 1980). Most trials have been conducted under field conditions with group feeding, and the variation in feed intake between animals has not been measured. The purpose of this experiment was to study the frequency distributions of the level of feed intake in sheep fed either barley or lupin grain ad libitum in addition to a maintenance ration.

Eighty-eight ewes, five years of age, were housed individually and fed a basal pelleted ration of 700 g/d (g/kg; cereal grain 560; cereal straw 400; minerals and vitamins 40). The two experimental groups, balanced for liveweight, were introduced to the grains in increments of 50 g/d in addition to the basal diet for the first 10 d. Over the next 20 d ad libitum intake was measured by adjusting the amount offered according to the quantity of feed remaining uneaten from the previous day. Maximum intake of supplement was defined as the highest level of intake achieved on at least two days. The frequency distribution of the intake of supplement by animals offered lupins or barley is given in Fig. 1.

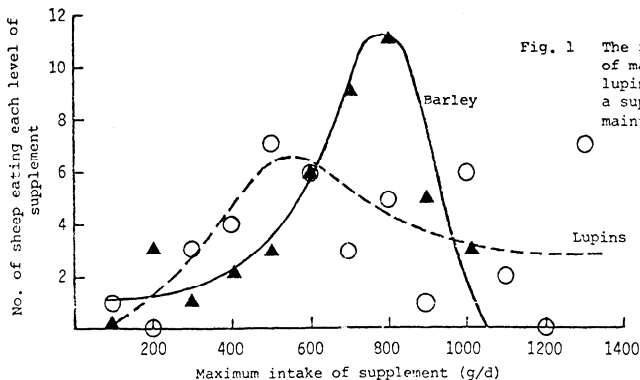


Fig. 1 The frequency distributions of maximum intake for either lupins or barley offered as a supplement to sheep fed a maintenance ration

There were wide ranges in the level of feed intake achieved on the two supplements. While no sheep ate more than 1 kg/d of barley approximately 15 per cent of the animals offered lupins consumed 1.3 kg/d (ie. 30% more than the maximum barley intake). This difference was statistically significant ( $P < 0.002$ ). This ability of the animals to consume higher levels of DM (and metabolisable energy) in the form of lupins than as barley could be related to the differences in the composition of the organic matter fractions of the two grains. While the fermentable organic matter in cereal grain is principally in the form of starch, lupins contain significant levels of proteins, pentosans, sugars, cellulose and hemicellulose (Hill 1977). It is possible that some of the responses to lupin supplementation under field conditions, which were attributed solely to the supply of protein could in fact have resulted from certain animals achieving high levels of metabolisable energy intake.

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