PREFERENCE RANKINGS FOR LEGUME AND CEREAL HAYS AMONG LIVESTOCK SPECIES

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The Australian hay industry is growing, with large quantities of oaten hay now exported to Japan, and all types of legume, pasture and cereal hay sold on the domestic market to the dairy, horse, grazing and feedlot industries. Objective measurement of hay quality is being increasingly used as a marketing tool with energy, protein and fibre content being important indicators of nutritive value. A measure of animal preference would assist all users in ration formulation and is being particularly sort for the export market. The factors that influence preference are poorly defined and have not been compared across animal species. The aim of this experiment was to undertake preference tests using a range of cereal and legume hays fed to sheep, horses, beef and dairy cattle.

Nine cereal hays (including oaten and barley hay. and barley straw) and nine legume hays (including Persian clover, medic, balansa clover, lucerne and vetch) were compared within two separate blocks in sheep, horses, dairy cattle and beef cattle (n=18, 12, 27 and 12, respectively). All hays were processed to a length of 10-15 cm before feeding. Chemical analysis of the hays will be undertaken. Animals were housed in individual pens and each animal had access to two feed bins. During the introduction phases, all animals were exposed to each of the hays at least twice, in order to remove the novelty aspect of the feed. Animals were trained to eat from both feed bins, with removal of bins after 10 minutes.

In the design, every hay in each block was compared with every other hay in that block, so that all combinations were tested. Animals were offered two different hays in each combination, with tests carried out an hour apart. No animal was exposed to the same hay twice. On the day of the test, sheep, horses and beef cattle were given a small quantity of pasture hay to break their fast, while dairy cattle were given 3 kg grain in the dairy at milking. Between four and six tests were undertaken each day.

Preliminary statistical analysis showed differences in preference between hays within each of the animal species. Table 1 shows the rank obtained for each of the hays across the livestock species. As a guide, based on the preliminary analysis, the hays have been placed into groups for each of the species (between horizontal bars in Table 1). Among the legume hays, there was more variation in preference across the different animal species, compared to that for the cereal hays. Further statistical analysis is required on the preference rankings, and it is hoped that laboratory analysis of the hays will identify the important chemical and physical factors that are associated with preference.

Table 1. Legume and cereal hay ranks based on preference tests undertaken across four livestock species

	Cereal Hays				Legume Hays			
Rank	Beef	Sheep	Horses	Dairy	Beef	Sheep	Horses	Dairy
1	OAT7	OAT3	OAT7	OAT3	PER	LUC5	LUC5	LUC5
2	OAT5	OAT7	OAT3	OAT7	MED	LUC3	LUC6[+]	PER
3	OAT1	OAT6	OAT1	OAT1	BAL	PER	LUC1	MED
4	OAT6	OAT5	OAT2	OAT5	LUC5	LUC1	PER	BAL
5	OAT2	OAT1	OAT4	OAT2	LUC1	MED	MED	LUC4
6	OAT3	OAT2	BAR	OAT6	LUC7[+]	LUC4	LUC3	LUC1
7	OAT4	BAR	OAT5	BAR	LUC6[+]	BAL	LUC7[+]	LUC3
8	BAR	OAT4	OAT6	OAT4	LUC3	LUC2*	LUC4	LUC2*
9	STR	STR	STR	STR	LUC4	VET*	BAL	VET*

OAT = oaten hay, BAR = barley hay, STR = straw, PER = Persian hay, LUC = lucerne hay, MED = medic hay, BAL= balansa clover hay, VET = vetch hay. * These hays were removed from subsequent preference tests and [+] these hays were substitutes.