

## ALKALI TREATMENT OF PEANUT HULLS FOR CATTLE

N.F. STANDFAST\* and B. GULBRANSEN\*

Peanut hulls are a cheap source of roughage readily available in some areas of Queensland. Most are presently used either in potting mixes and mulches or as roughage in feedlot diets. They contain about 8% crude protein, but have a high cell wall content. Suitable alkali treatment may improve their feed value particularly as a drought fodder, since alkali treatment improves the digestibility of many straws and crop residues (Jackson 1977). We measured the effect of treatment with sodium hydroxide on the digestibility of peanut hulls by cattle.

Initially we compared the in vitro digestibilities of untreated hulls and hulls treated with 50 g NaOH per kg of hulls. We treated the hulls by spraying with a 20% aqueous NaOH solution while mixing in a paddle mixer. The hulls were then covered and kept moist for 48 hrs before drying (Kellaway et al. 1978). This treatment increased dry matter digestibility from 21.9 to 26.7%. We then measured the in vivo digestibility of hulls treated similarly. As hulls alone are too poor for a maintenance diet, we added urea (2.5%) and molasses (5%) to both the NaOH treated and untreated hulls, before mixing each 80:20 with rhodes grass hay.

Six Hereford steers were individually fed the NaOH treated and untreated rations at 90% of their estimated ad lib. intakes in a simple crossover design. An equilibration period of 7 d was followed by a measurement period of 7 d, and digestibilities of the hulls were calculated by difference using a previously determined figure for the rhodes grass hay (60.9%). Treatment means (Table 1) were compared by analysis of variance using individual animals as the experimental units. Throughout the period, steers fed NaOH treated hulls drank significantly more water than steers fed untreated hulls (28.1 vs 19.6 L/hd/d,  $P < 0.01$ ).

Table 1. Mean dry matter digestibilities (%) of untreated and NaOH treated hulls

	Total ration	Peanut hulls
Untreated	32.0 <sup>a</sup>	24.7 <sup>a</sup>
NaOH treated	38.4 <sup>b</sup>	32.7 <sup>b</sup>
SE mean	0.68	0.80

Within columns, means with different superscripts differ at  $P < 0.01$

While alkali treatment increased the in vivo digestibility of peanut hulls by 8 percentage units (Table 1), the initial digestibility of the material was so low that the treated hulls still had little feed value for cattle. We conclude that peanut hulls, even when treated with alkali, are suitable only as low quality roughage for cattle.

JACKSON, M.G. (1977). *Anim. Feed. Sci. and Tech.* 2 : 105.

KELLAWAY, R.C., CROFTS, F.C., THIAGO, L.R.L., REDMAN, R.G. and LEIBHOLZ, J.M.L. (1978). *Anim. Feed. Sci. and Tech.* 3 : 201.

\*Qld Dept of Primary Industries, "Brian Pastures" Research Station, Gayndah, 4625.