

EFFECTS OF PROTEIN SUPPLEMENTATION AND UREA ENSILED
STRAW ON THE GROWTH OF LAMBS

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During the **winter on the Loess Plateau of China**, pasture growth ceases and livestock are largely on wheat straw. In this traditional system, the ruminant loses weight through the winter. Leng (1987) suggested **that if** the diet could be balanced the efficiency with which feed is used for growth, pregnancy and lactation will be increased. Two approaches were proposed to use the available feeds more efficiently. The first was to **ensile** wheat straw with urea to increase the digestibility of the straw and provide NPN to **rumen** microbes. The second was to use a by-pass protein meal to provide amino acids for the host animal and balance the nutrients closer to requirements.

Female Merino lambs (36) were assigned at random to 3 treatment groups. Diet 1 was untreated straw + 70 g wheat bran (WB) and diet 2 was straw + 50 g WB + 50 g linseed meal (LSM) + 5 g urea and 10% alfalfa hay. Diet 3 was the same as diet 2 but the straw was replaced by 4% urea ensiled straw. After 2 weeks of adjustment, data were collected over a 84 days feeding trial.

The live-weight gain and feed intake were significantly different between diets (See Table). In sacco degradation of feed ingredients in the **rumen** of sheep on the untreated straw diet indicated a greater DM and CP degradation of ensiled straw compared with untreated straw (DM 62% vs 48%; CP 70% vs 52%). There was a relatively slower breakdown of the LSM protein compared to alfalfa protein (DM 54% vs 84%; CP 48% vs 92%) for 24 h incubation in the rumen.

Table I *Feed intake, liveweight gain and feed conversion of sheep fed supplements on straw basal diets.*

Diet	Feed intake (g DM/d)	Straw intake (g DM/d)	LWT gain (g/d)	Feed conversion (kg DM/kg)
1	640 ^a	579 ^a	-35 ^a	
2	780 ^b	623 ^a	3.5 ^b	223 ^a
3	957 ^c	754 ^b	88 ^c	11 ^b

* Values with the same superscript are not different (P<0.05).

The results indicate that small quantity of NPN and protein meal to supplement lambs fed on straw basal diet can improve their productivity. The research also indicates that LSM can provide by-pass protein to the host animal. The liveweight change on diet 3 indicates that the increase in digestibility of ensiled straw was responsible for the improved growth rate. The use of treated straw with a by-pass protein is a viable option for the establishment of a feeding system for sheep in China.

Leng, R.A. (1987). " Report of Livestock Production in GGASRDP". Lanzhou, China.

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