

UTILIZATION OF MADRE DE CACAO (THEOBROMA SEPA M

(CACOQ.) STEUD. AS FEED FOR SHEEP

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UTILIZATION OF MADRE DE CACAO (*GLIRICIDIA*  
*SEPIUM* (JACQ.) STEUD.) AS FEED FOR SHEEP

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*sepium (Jacq.) Steud.) as feed for sheep*  
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## ABSTRACT

MEDRAND, WILLIAM C. University of the Philippines at Los Baños, March, 1991. Utilization of Madre de Cacao (*Gliricidia sepium* (Jacq.) Steud.) as Feed for Sheep.

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Two feeding trials and an in vivo digestibility trial using sheep were conducted to evaluate the feeding value of gliricidia in combination with rice straw. In Experiment 1, local and foreign gliricidia accessions were analyzed for their chemical composition and toxic factors.

The toxicity study (Experiment 2) involved 54 albino rats weighing 180–200 g and administered orally with gliricidia extract to determine the lethal dose 50. Feeding trials utilized 20 upgraded weanling sheep. In Experiment 3, ad libitum amount of rice straw was supplemented with dry or fresh gliricidia and/or concentrate at 0.6% and 0.3% BW (DM basis). In Experiment 4, gliricidia was fed at 0, 20, 40, 60 and 80% of the ration with rice straw and 10% setaria. A separate digestibility study (Experiment 5) was done using 100, 60, 40, 20 and 0% gliricidia levels with rice straw. The feeding experiments followed the Randomized Complete Block Design while the digestibility study used a 5 x 5 Latin Square Design.

In Experiment 1, local gliricidia accessions contained higher CP (23.19 vs 22.46%), higher lignin (16.24 vs 9.33%) but lower cell wall component (38.99 vs 42.19%) than those of foreign ones. In fresh leaves, coumarin content was higher in local than in foreign ones (2.37 vs 0.83%) but was undetectable in dry leaves.

Lethal dose 50 of crude gliricidia extract in rats was computed at 128.103 g/kg body weight (Experiment 2).

In Experiment 3, there were no significant differences among treatments in terms of daily dry matter intake (DDMI), average daily gain (ADG) and feed efficiency (FE). Crude protein intake was significantly higher ( $P < 0.01$ ) at 0.6% BW either as fresh or dried gliricidia than at 0.3% BW as fresh and the 0.6% BW concentrate (Control).

In Experiment 4, sheep fed with 80% gliricidia + 10% setaria + 10% rice straw had significantly higher ( $P < 0.01$ ) ADG and DDMI than the other dietary treatments. As increasing rice straw replaced gliricidia in the ration, the ADG and DDMI significantly decreased. Dietary treatments containing gliricidia were more efficient ( $P < 0.05$ ) than those with 20% concentrate.

Blood tests indicated no significant differences in the RBC and WBC counts, hemoglobin contents and clotting time of experimental sheep fed varying gliricidia levels

In Experiment 5, digestibility of dry matter and nitrogen free extract increased significantly ( $P < 0.05$ ) with increasing gliricidia level in the diet (40.12 and 46.28% at 0% and 53.62 and 65.35% at 100%). However, the 100% gliricidia diet had the lowest ( $P < 0.05$ ) digestibility for crude fiber, neutral detergent fiber and cellulose (17.58, 22.43 and 11.88%, respectively) but significantly highest ( $P < 0.05$ ) in total digestible nutrients and digestible energy (49.98% and 2891 kcal/kg, respectively).

Rumen pH,  $\text{NH}_3\text{-N}$  concentration and BUN values were not significantly influenced by different gliricidia levels.

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## INTRODUCTION

The problem of low energy and protein nutrition continuously besets livestock productivity in the tropics. In ruminant feeding, protein supplementation using food grain legumes, cereals and animal by-products are less economical in comparison to pig and poultry feeding. Legume forages are the traditional protein supplements for ruminants.

Leguminous shrubs and trees, which establish easily and do not require extensive agronomic inputs, also constitute potentially valuable sources of protein supplements to improve backyard livestock production. Smallhold farmers utilize tree fodders extensively, especially when annual crops and weeds are in short supply. During the dry season, leguminous shrubs and trees with their extensive root system exploit deep underground moisture and can regrow after cutting.

In the Philippines, the discovery of ipil-ipil (*Leucaena leucocephala*) as a cheap source of protein and yellow pigment is considered one of the breakthroughs in the livestock industry. However, the psyllid (*Heteropsylla cubana*) infestation in 1985 resulted in a big setback and caught the mixed feed industry unprepared. Today, efforts are directed to the search for substitute species to ipil-ipil. Among those species identified with great potential is *Gliricidia*