B-48: Feeding of straw, tree legume fodder and concentrates for increased production with cattle grazing under small farm conditions

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Feeding of unprocessed straw or more significantly, such straw together with low levels of appropriate concentrates improved the reproduction and milk production of cattle grazing natural herbage under coconut. Main objectives of this study were to test on-farm: (1) the feeding regimes which were promising in the previous study, and (2) to determine the feeding value of tree legume fodder under such conditions.

Following 5 feeding regimes jor treatments were tested using a randomized complete block design with 5 replicates:

(1) Grazing natural herbage only, as practised by most small farmers (G).
(2) G + as it is straw *ad libitum* (GS).
(3) GS + concentrates (urea dissolved and sprinkled on straw at 25 g/kg straw; molasses, rice bran and mineral mix. at 200 300 and 50 g/head/day, respectively (GSC).
(4) GS + legume (*Gliricidia sepium*) *ad libitum* (GSL).
(5) GSC + legume as in GSL (GSCL).

All 5 treatments were tested at each of 5 farms. Cows were distributed to farms so that within each farm they were uniform as far as possible in breed, live weight, parity and stage of lactation. Within each farm, the cows and calves were managed the same way except for the 5 different feeding regimes of the cows. Milking was at 0500 and 1600 h leaving one quarter on a rotational basis for the calf. Intake of milk by the calf was determined by weighing before and after suckling. Calves were kept away from cows except at milking. There was free grazing and drinking water was available *ad libitum*. The study was conducted in the low country intermediate rainfall zone for 90 days during the dry spell from January to March.

The dry matter and crude protein contents and the dry matter digestibility of *Gliricidia sepium* were 24, 21 and 61%, respectively, which were higher than the corresponding values for grazed natural herbage, being 19.8, 9.8, and 53.4%, respectively.

Intake (kg/head/d) of straw was higher ($p < 0.01$) when supplemented with concentrates (GSC) or legume (GSL) than with concentrates and legume (GSCL) while it was lowest ($p < 0.01$) without any supplementation (GS), being 2.9, 2.9, 2.7 and 1.9, respectively. Legume intake was higher ($p < 0.01$) without concentrates (GSL) than with concentrates (GSCL). The total ration intake (kg/head/d) was the same and highest ($p < 0.01$) with GSL and GSCL (4.9), being lowest ($p < 0.01$) in GS (1.9) while it was in between in GSC (3.5). Treatments significantly ($p < 0.01$) affected the intake of milk by calves and the total milk yield of cows, being 0.3, 0.8; 0.5, 1.8; 1.4, 3.8; 1.4, 4.2; 1.8 and 5.8 kg/head/d for G, GS, GSC, GSL and GSCL, respectively. Live weights of calves and cows were also significantly ($p < 0.01$) affected due to treatments, being 23.8, 81.8, 158.8, 162.2 (g/head/d) for calves and -32.4, -12.6, 27.6, 27.2 and 32.0 g/head/d for cows in G, GS, GSC, GSL and GSCL, respectively.

Feeding of unprocessed straw to grazing cows under small farmer conditions significantly improved their milk production, reduced the body weight without losses while improving the weight gains of suckling calves, Appropriate supplementation of such straw with concentrates, legume or a combination of both significantly improved the intake of straw and the total dry matter intake under such conditions. Although for highest production, a combination of concentrates and legume was the best, concentrates can be replaced with legume under low levels of production.

Gliricidia sepium being superior to grazed herbage, a greater emphasis should be placed on its utilization as against concentrates in production ration based on roughages under small farmer conditions.

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