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The effect of growth stage and additives on the fermentation of CO - 3 (*Pennisetum purpurium x* Pennisetum americanum) grass

D N Ranasinghe [1], Sujatha Premaratne[1*], G G C Premalal[2] and H M S S C H Thundeniya[1]
[1]*Department of Animal Science, Faculty of Agriculture, University of Peradeniya, Peradeniya*
[2] *Pasture and Fodder Division, Veterinary Research Institute, Gannoruwa*

The objective of the present study was to find out the effect of growth stage and additives on fermentation characteristics of CO-3 (*Pennisetum purpurium* x *Pennisetum americanum*) grass. An established stand of CO-3 was used. At first, the grasses were cut to a height of 12.5 cm above ground level and the re-growth was harvested at 2 stages, namely, 45 and 60 d. Grasses were chopped (1 kg for each) and ensiled alone (control) or with 5 % Rice bran (*Oryza sativa*) (RB), 5 % Poultry manure (PM) or 5% sugar cane (*Saccharum officinarum*) Molasses (M) in double lined polythene bags and sealed after expulsion of gases. The study consisted of eight treatments [2 Stages of cutting X with (Poultry manure, Rice bran or Molasses) or without additives (control) (4)] with five replicates. Silos were opened after 6 wks and the aroma, colour and texture of silages were observed. Proximate analyses were done using standard methods for fresh grass, silage and additives. The pH and volatile fatty acid content of silages were also measured. Data were statistically analysed using SAS package and means were compared using DMRT.

All silages were light green in colour and had a pleasant aroma. Control and the silage with PM had a moist texture. Inclusion of additives increased ($P<0.05$) the dry matter (DM) content of silage compared to the control. Silage with M had a higher ($P<0.05$) DM% (19.8%) than silage with RB (17.7%) or PM (16%). Addition of M reduced ($P<0.05$) the pH (3.7) of silage compared to other

treatments (4.9, 6.0 and 5.7 for RB, PM and control respectively). Dry matter content of 60 d grass silage (17.4%) was much higher ($P<0.05$) compared to 45 d grass silage (16%) whereas crude protein content of 60 d silage (12%) was less ($P<0.05$) than that of 45 d silage (15%). However, stage of growth of grass did not have any significant effect on the pH of silage (4.9 and 5.3 for 60d and 45 d grass silage respectively). According to the results, inclusion of M or RB increased the DM and crude protein content of silage and reduced the pH of silage and thereby produced good quality silage. Therefore molasses or rice bran can be used as additives in making silage with CO -3 grass.

* suep@pdn.ac.lk Tel: 081-2387179