

### *Determination of dry matter and mineral disappearance of forages*

Disappearance of dry matter (digestibility) and mineral (solubility) was measured by *in situ* (nylon bag) technique (Ørskov, 1985). Approximately 5 grams of each forage samples were placed into nylon bags and incubated in the rumen of ruminally cannulated Japanese Corriedale wethers at 24 and 72 hrs. incubations period. Water soluble fractions of DM and mineral (0 hr incubation) were determined by washing of the samples in the nylon bags for 30 minutes until rinsing water was colorless. Disappearance of forage minerals from the nylon bags during incubation was considered as solubilized minerals in the rumen. The animals were fed on Timothy hay and concentrate mixture consisting of rolled barley, rice bran and soybean meal in two equal portions twice daily at 8:00 AM and 5:00 PM to meet the nutrient requirement for animal and microbial activity (Agricultural and Food Research Council, 1995). A mineral premix block and drinking water were freely available.

### *Statistical analysis*

Data on dry matter and minerals disappearance of *in situ* nylon bag studies were subjected to analyze by using General Linear Model procedure using StatView® (Statistical analysis system, 1999). The mean comparison between species of forages and seasons were carried out by the analysis of variance and the least significant difference.

The following statistical model was used in the analysis:  $Y_{ijk} = \mu + S_i + L_j + F_k + e_{ijk}$ , where:  $Y_{ijk}$  = Dependent variable (general observation);  $\mu$  = The overall mean;  $S_i$  = Effect of  $i^{\text{th}}$  season;  $L_j$  = Effect of  $j^{\text{th}}$  location;  $F_k$  = Effect of  $k^{\text{th}}$  species and  $e_{ijk}$  = Error term

### **Results and Discussion**

#### *Disappearance of dry matter and macro mineral at 0 hr incubation*

The effects of season and species on disappearance of DM (*in situ* digestibility) and mineral disappearance (solubility) of the forages at 0-h incubation are presented in Table 1. The analysis of variance (ANOVA) showed that DM and Ca disappearance of grass and legumes were significantly ( $p < 0.05$ ) affected by species and seasons. In rainy season, *in situ* DM digestibility of grass varied from 12.5 (*A. compressus*) to 20.2 % (*P. purpuphoides* and *P. maximum*), while in dry season the value was relatively lower, ranged from 11.5 (*A. compressus*) to 19.3 % (*P. maximum*). *In situ* digestibility of legumes was significantly higher ( $p < 0.05$ ) than in grass. In rainy season, the lowest DM digestibility of legumes was found in *C. mucunoides* (18.7%) and the highest was found in *A. mangium* (30.4%); while in dry season, the lowest was occurred in *C. pubescens* (20.1%) and the highest was found in