

which percentage release of mineral decreases as plant maturity increases. The trend of the mineral solubilities was :  $\text{Ca} > \text{P} > \text{S} > \text{Mg}$  for grass and  $\text{P} > \text{Ca} > \text{S} > \text{Mg}$  for legumes.

### Conclusion

In conclusion, among the forage species and seasons differences exist on the solubility of macro mineral (Ca, P, Mg and S). Minerals solubility increased as increasing period of incubation from 0 to 72 hr. Data on the actual solubility (72 hr incubation) showed that P was the most soluble minerals in grass followed by Ca, S and Mg. However, the highest mineral solubility in legumes was occurred in Ca, followed by Mg, S and P. Consistent with mineral concentration, among the forages evaluated *P. purpuphoides* (grass) and *L. leucocephala* (legume) had higher mineral solubility compared to the other species.

### References

- Agricultural and Food Research Council (AFRC). 1995. Energy and Protein Requirements of Ruminants. CABI, Wallingford, UK.
- Bromfield, S.M., and O.L. Jones. 1972. The initial leaching of hayed-off pasture plants in relation to the recycling of phosphorus. *Aust. J. Agric. Res.* 23: 811-824.
- Collins, M. 1985. Leaching effects on composition and digestibility of leaf and stem of alfalfa and red clover. *Proc. XV Int. Grassland Congress.* 24-31 August, Kyoto, Japan. pp. 995-997.
- Emanuele, S. M. and C. R. Staples. 1990. Ruminal release of mineral from six forage species. *Journal Animal Science* 68:2052-2060.
- Evitayani, L. Warly, A. Fariani, T. Ichinohe, S.A. Abdul Razak, M. Hasyashida and T. Fujihara. 2006a. Micro mineral distribution of forages in South Sumatra during rainy and dry seasons. *Journal of Food, Agriculture & Environment – JFEA*, Vol. 4 (2) – 2006.
- Field, A.C. 1981. Some thought on dietary requirements of macro-minerals for ruminants. *Proc. Nutr. Soc.* 40: 267-272.
- Ibrahim, M. N. M., A. Van Der Kamp, G. Zemmeling and T. Tamminga. 1990. Solubility of mineral elements present in ruminant feeds. *Journal Agric. Sci. (Camb.)* 114:265-274.
- Ledoux, D.R. and F. A. Martz., 1991. Ruminal solubilization of selected macro minerals from forages and diets. *J. Dairy Sci.* 74: 1654-1661.
- McDowell, L.R., 1985. Nutrition of Grazing Ruminants in Warm Climates. Academic Press, Orlando. pp. 443.