Mineral Content of Leguminous and Non-Leguminous Crop Residues *vis a vis* Their Requirement in Animals

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Introduction

The need of mineral for growth, reproduction and production as well as normal physiological functions of animal body is well recognized. In most of the tropical and sub-tropical countries crop residues constitute the major feed resource in the livestock. The concentration of macro and trace minerals in crop residues depend on various factors including genetic and species of plant viz., leguminous and non-leguminous (Singh *et al*., 1997). Further, limited information is available currently on different types of crop residues. Therefore, in the present study was under taken to see the macro and micro mineral status of some leguminous and non-leguminous crop residues in relation to animal requirement.

Materials and Methods

Samples of wheat, rice, gram and masoor straw were collected from major growing states viz., Bihar, Haryana, Punjab, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal. After drying to a constant weight samples were ground and required quantity (1-1.25g) were digested in tri-acid mixture (HNO_3:H_2SO_4:$HClO_4$ in the ratio of 15:2:4) and extractable aliquot were subjected to estimation of Calcium (Ca), magnesium (Mg), copper (Cu), zinc (Zn) and iron(Fe) using Atomic Absorption Spectroscope model Varian AA240. Phosphorus (P) was analyzed using ammonium molybdate (AOAC, 1980). The data were analyzed statistically (Snedecor and Cochran, 1967).

Results and Discussion

Calcium content in legume straws was considerably higher as compared to rice and wheat straws (Table 1) which in the line with earlier reports (Singh *et al*., 1997). Both leguminous and non-leguminous straws were deficient in phosphorus as compared to the required level of 0.22 percent (McDowell, 1985). The magnesium levels in leguminous crop residues were sufficient to meet the requirements, while non-leguminous crop residues were low to moderate source of magnesium. Both wheat and rice straw contained low copper than the suggested critical levels of 8 ppm to meet the dietary requirements of dairy animals. However, gram and masoor crop residues were good source of copper. Almost all crop residues screened were found to be deficient in zinc as compared to the required levels of 40 ppm. Similar findings have also been reported by Garg *et al*., (2005). Iron in leguminous and non-leguminous crop residues were many fold higher than the suggested levels of 50 ppm.

Table 1: Mineral composition of leguminous and non-leguminous crop residues

Crop residues	**No.**	**Ca (%)**	**P (%)**	**Mg (%)**	**Cu (ppm)**	**Zn (ppm)**	**Fe (ppm)**
Wheat straw(*T. aestivam*)	68	0.73	0.06	0.17	6.22	15.51	257.60
Rice straw (*O. sativa*)	48	0.61	0.12	0.07	5.85	22.10	215.08
Gram straw (*C. aritenium*)	30	1.22	0.13	0.21	10.01	18.04	350.53
Moong straw (*V. radiata)*	20	1.29	0.11	0.52	8.88	16.77	328.04
Pooled SE	-	0.08	0.01	0.01	0.80	0.92	5.32
Critical levels	-	0.50	0.22	0.20	8.00	40.00	50.00

Conclusion

From the results it is evident that only calcium content was adequate in crop residues whereas P, Mg and Zn were deficient. Thus necessitate dietary supplementation. Higher levels of Fe also require suitable counteractive mineral supplementation strategies.

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