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SHORT COMMUNICATION

NUTRITIONAL EVALUATION OF SELECTED FODDER SPECIES FROM WARDHA DISTRICT OF MAHARASHTRA, INDIA

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SUMMARY

The present study was carried out to evaluate the nutritional analysis of some fodder plant species in Wardha district. Fourteen fodder species viz., *Apluda mutica, Sehima sulcatum, Dichanthium* sp., *Themeda quadrivalvis, Spodiopogon rhizophorus, Chrysopogon fulvus, Cleistachne stocksii, Sehima nervosum, Pennisetum pedicellatum, Eulalia fimbriata, Heteropogon ritchiei, Cymbopogon martini, Thelepogon elegans* and *Stylosanthes hamata* were analyzed for crude protein, crude fiber, oil/ether extract, ash and silica content. The crude protein content of the investigated fodder species ranged from 2.81 to 10.17 per cent, the crude fiber content from 24. 56 to 35.73 per cent, the ether extract from 0.59 to 1.01 per cent, ash content from 8.17 to 11.55 per cent and silica content from 3.87 to 7. 47 per cent. Findings of the present analysis indicated that fodder species showed variations in nutrients status before seed maturity stage and local fodder species provided partly required nutrients for indigenous livestock and reduced keeping cost in many folds.

Key words : Fodder species, nutritional analysis, Wardha, Maharashtra

Livestock plays an important role in sustainable livelihood, nutritional and environmental security and growth of agriculture. Livestock has contributed a major role in generating cash income through the production of milk, butter, meat, egg, hides, skin, wool and manure (Dhungana *et al.*, 2012). The major advances made in the livestock sector in the past decades are major reasons for growth rate recorded in agricultural sector. Nutrition is one of the most critical constraints to increase animal productivity in developing countries (ILRI, 1995). The level of crude protein, the essential amino acids and metabolisable energy in the recipes for livestock and poultry has a significant impact on productivity and depends on the breed, genetic potential, nutrition and maintenance technology (Stepurin and Vrancean, 2008; Caisin, 2010).

Increasing human population and growing preference for cultivating food and commercial crops are sparing only a limited area for fodder production (Radotra and Katoch, 2002). In most parts of tropics and sub-tropical countries, the grazing of available native rangeland largely supports the production of ruminants (Aregherore, 2001). In the developing countries like India where many grazing animals are reared, natural grasslands have remained the source of nutrient for livestock. In India, the traditional feeding systems, make maximum use of local resources like crop residues, tree leaves, pods, seeds, etc. (Pradhan *et al.*, 1991).

In this context, the study of the nutritive value of fodder species becomes essential. The factors that have been reported to affect the nutrient value of herbaceous plants are seasonal variability (Snyman, 1998), species variation (Arzani *et al.*, 2008), soil nutrient status of production location (Tessema *et al.*, 2011), grazing pressure (Henkin *et al.*, 2011) and management aspects (Van der Westhuizen *et al.*, 2005). The present study was carried out to evaluate the nutritional value of the common indigenous grass species of Wardha district. This study will help to know the nutritive composition of local fodder species and to recommend composition in dietary supplements.

Sample Collection

The most dominant fodder species in the study area, which are being used for feeding livestock locally, were collected during the month of November 2016 from Wardha district. The fodder species consisted of *Apluda mutica, Sehima sulcatum, Dichanthium* sp., *Themeda quadrivalvis, Spodiopogon rhizophorus,*

Chrysopogon fulvus, Cleistachne stocksii, Sehima nervosum, Pennisetum pedicellatum, Eulalia fimbriata, Heteropogon ritchiei, Cymbopogon martini, Thelepogon elegans and *Stylosanthes hamata*. Fodder samples 1 kg of each species were collected with the help of herdsman from the natural habitat and identified with the help of regional and state flora (Cooke, 1967 (Rpr.); Sharma *et al.*, 1996; Singh and Karthikeyan, 2000.) The samples were pre-dried at field for easy transportation to laboratory.

Nutritional Analysis

The analysis of the fodder samples was carried out in the laboratory of the Department of Animal Nutrition at Central Research Station of BAIF Development Research Foundation, Urulikanchan. Crude protein (CP%), crude fiber (CF%), oil/ether extract (EE%), ash and acid insoluble ash (Silica%) were determined by standard methods following AOAC (1995). (Anonymous, 2000).

Proximate analysis for nutritive evaluation of the forage species is depicted in Table 1. The crude protein content of the investigated fodder species ranged from 2.81 to 10.17 per cent, the crude fiber content from 24.56 to 35.73 per cent, the EE from 0.59 to 1.01 per cent, ash content from 8.17 to 11.55 per cent and silica content ranged from 3.87 to 7.47 per cent. Being legume *Stylosanthes hamata* showed higher protein content (10.17%). Crude fiber content was highest in *Chrysopogon fulvus* (33.40%), highest EE (1.01%) in *Apluda mutica*, highest ash content (11.55%) in *Chrysopogon fulvus* and highest silica content (10.47%) was found in *Cymbopogon martinii*. (Table 1).

Grasses are the dominant plants in most forage-based enterprises throughout the world. Whether livestock graze native rangeland or tame pastures, grasses usually are the basis of the energy and nutrients for animal growth and maintenance (Trlica, 2017). Findings of the present analysis indicated that local fodder species provided partly required nutrients for indigenous livestock and reduced keeping cost in many folds. Straw can form the roughage in the absence of grasses and in such cases concentrates should be given for maintenance. However, in the case of high yield, improved breeds, even good quality roughage alone cannot entirely replace concentrates. As per recommendations of Bureau of Indian Standards compounded cattle feeds should have 20 per cent crude protein, 2.5 per cent crude fat, 12 per cent crude fiber and 4 per cent acid insoluble ash composition.

CONCLUSION

All the fodder species have shown variations in nutrients and they are good sources of fodder for grazing animals and the livestock are being maintained on these available fodder species in the study area.

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TABLE 1
Chemical composition (% DM basis) of fodder species in Wardha district

S. No.	Common name	Scientific name	Crude Protein (%)	Crude Fibre (%)	Ether Extract (%)	Ash (%)	Silica (%)
1.	Pochad	*Apluda mutica* L.	4.15	29.89	1.01	8.96	5.34
2.	Papaniya	*Sehima sulcatum* (Hack.) A. Camus	4.80	30.13	0.98	8.59	5.26
3.	Marvel	*Dichanthium* sp.	4.97	24.56	0.78	8.67	6.04
4.	Dhowyad	*Themeda quadrivalvis* (L.) Kuntze	5.12	27.26	0.88	9.27	6.13
5.	Shide	*Spodiopogon rhizophorus* (Steud.) Pilg.	4.16	29.57	0.68	9.14	4.68
6.	Dongari	*Chrysopogon fulvus* (Spreng.) Chiov.	4.23	35.73	0.76	8.17	6.38
7.	Sugaran	*Cleistachne stocksii* Hook. f.	4.06	34.04	0.71	8.57	6.04
8.	Shedal	*Sehima nervosum* (Rottler ex Roem. & Schult.) Stapf	4.31	29.22	0.59	11.55	6.16
9.	Dinanath	*Pennisetum pedicellatum* Trin.	4.17	26.46	0.68	10.34	5.26
10.	Pawanya	*Eulalia fimbriata* (Hack.) Kuntze	4.02	26.23	0.63	10.26	3.87
11.	Kusal	*Heteropogon ritchiei* (Hook. f.) Blatt. & McCann	2.81	32.49	0.73	11.16	5.68
12.	Tikhadi	*Cymbopogon martinii* (Roxb.) Wats.	3.71	28.21	0.71	10.67	7.18
13.	Bondare	*Thelepogon elegans* Roth	3.70	33.40	0.76	10.56	6.81
14.	Stylo Hamata	*Stylosanthes hamata* (L.) Taub.	10.17	27.09	0.76	10.47	4.74

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