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NOTE

Chemical Composition and Nutritive Value of *Brachiari paspaloides*

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Ether extract, total ash and concentration of nutrients such as protein, Ca, Mg, K, P, Fe, crude fibre and calorific value of *Brachiari paspaloides* in three growing stages and in different plant parts were determined. Free amino acids, sugars, hexoses, pentoses and total sugars were also studied. It was found that flowering stage is more nutritious than pre and post flowering stage.

In order to improve the production of milk highly nutritive fodder is required for our cattle. Earlier a few workers[1-5] have analysed some grasses and feeding material for their nutritive value. Fodder grasses, dry roughages constitute a major part of food of ruminants. *Bracharia paspaloides* is known as good fodder crop, hence it would be of interest to know its chemical composition and nutritive value.

B. paspaloides is a wild annual grass which grows luxuriantly in the surrounding of Kotdwara Bhabar region, due to favourable conditions of growth. In the present study nitrogen, protein, amino acids, organic matter, crude fibre, calorific value, total fat and sugars of different plant parts at three different stages were studied.

Samples of *B. paspaloides* at pre-flowering, flowering and post-flowering stages were collected from Kotdwara Bhabar, separated into stem, leaves and inflorescence dried at 80°C and grounded for chemical investigation.

The nitrogen and protein content were determined by Kjeldahl's method[6]. Defated 1.0 gms dry powder was extracted with 80% ethanol and centrifuged. The supernatent was evaporated to semi-dried film in a hot water bath at 40°C and then 1.0 ml of ethanol was added into it. This solution was used for chromatography of free amino acids and sugars.

The amino acids were identified and estimated by co-chromatography and photochemical calorimeter[7]. Sugars were identified and estimated by paper-chromatography[8] and calorimetry method.[9]

Total hexoses, pentoses and reducing sugars were estimated by calorimetric (phenol sulphuric acid method) and Bendict's quantitative reagent

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method[10] respectively. Calcium, magnesium and phosphorus were estimated by using methods suggested by Misra[11]. Calorific value were determined by bomb calorimeter[12]. Spectro-photometer is used for determination of iron (dipyridyl method).

Table 1 indicate that ether extract and crude fibre of stem and leaves

TABLE 1

% Dry matter basis	Pre flowering		Flowering			Post flowering		
	S	L	S	L	Inf	S	L	Fru
Ether extract	1.30	1.42	1.38	1.56	1.20	1.60	1.80	1.26
Nitrogen	0.92	1.12	1.18	1.18	0.84	0.95	0.70	0.96
Protein	5.75	7.00	7.29	3.37	5.25	5.93	5.38	6.00
Ash	11.00	12.60	10.50	9.50	8.00	12.60	12.95	9.00
Ca	1.92	1.06	2.94	3.06	4.80	0.82	2.15	1.06
Mg	0.59	0.32	0.27	0.23	0.43	0.43	0.62	0.44
K	1.11	1.73	1.84	2.04	0.95	0.60	0.80	0.35
P_2O_5	0.22	0.21	0.19	0.23	0.74	0.13	0.13	0.10
Fe	0.03	0.05	0.04	0.04	0.09	0.01	0.04	0.09
Silica	6.20	5.50	5.80	5.00	4.00	3.75	5.75	5.50
Crude fibre	13.00	10.00	28.00	10.18	15.00	38.00	28.00	20.00
Calorific value (Cal)	4052.60	3670.58	4344.82	3750.00	3831.58	3386.24	3150.00	3473.56

S, stem; L, leaves; Inf, inflorescence; Fru, fruiting.

increases from pre-flowering to post-flowering stages. Protein content of the leaves is maximum in pre-flowering stage in comparison to other stages. Leaves of the plant retain higher values of Ca in all stages in comparison to other parts.

15 amino acids (Table 2) were identified in 8 samples of the grass. Glutamic acid is present in excess in comparison to other amino acids. Methionine is the only amino acid which present in flowering parts of the plant. General survey of Table 2 indicates that the flowering stage is rich in amino acids (whole plant) in comparison to other stages.

In Table 3 the carbohydrate composition of different plant parts in three growing stages is presented. General survey of Table 3 indicates that flowering stage is rich in sugar content in comparison to other 2 stages.

From the results described above, it is evident that flowering stage is more nutritious than other growing stages. Hence it is concluded that this grass should be used as fodder in flowering stage.

TABLE 2

Amino acids mg/100 g on dry matter basis	Pre flowering		Flowering			Post flowering		
	S	L	S	L	Inf	S	L	Fru
Histidine	0.60	0.80	0.90	0.22	0.80	0.92	1.20	1.30
Lysine	2.00	3.00	3.20	0.73	0.50	0.52	0.48	0.60
Serine	1.00	1.20	1.10	1.30	1.00	1.30	1.40	1.50
Glycine	0.70	0.72	0.60	0.68	0.70	1.40	1.50	1.10
Aspartic acid	1.30	1.40	1.50	0.64	0.20	1.40	0.60	1.10
Threonine	0.20	0.20	0.22	0.15	0.24	0.24	0.23	0.25
Glutamic acid	2.00	3.10	10.50	24.00	12.26	8.20	16.50	7.30
Alanine	1.10	1.30	1.20	1.60	1.10	0.80	0.90	0.70
Proline	1.80	2.50	4.00	5.00	3.20	3.00	4.30	2.50
Tyrosine	0.80	0.50	0.40	0.80	0.60	0.70	0.80	0.90
Valine	0.60	1.00	0.50	1.50	0.80	1.20	1.30	0.90
Methionine	—	—	—	—	0.70	—	—	0.60
Phenyl alanine	1.10	1.20	1.30	2.60	1.30	1.20	1.60	1.20
Isoleucine	0.50	0.70	0.80	0.15	0.60	0.85	1.20	0.90
Leucine	0.20	0.30	1.00	1.30	0.80	0.85	0.96	0.90

S, stem; L, leaves; Inf, inflorescence; Fru, fruiting.

TABLE 3

Sugar % on dry matter basis	Pre flowering		Flowering			Post flowering		
	S	L	S	L	Inf	S	L	Fru
Hexose	3.98	2.13	1.93	1.49	1.52	0.56	0.42	0.58
Pentose	2.20	1.25	1.25	1.20	1.32	0.34	0.28	0.32
Reducing sugars	0.80	0.54	0.74	0.20	0.30	0.60	0.72	0.50
Sucrose	+	++	0.08	0.24	0.09	0.07	1.20	2.00
Glucose	—	+	0.50	0.20	0.20	2.20	2.10	2.08
Fructose	+	—	0.05	0.04	0.02	+	+	+
Arabinose	0.02	0.01	0.03	0.02	+	+	++	+
Xylose	+	+	0.02	0.03	0.02	0.04	0.03	0.03

S, stem; L, leaves; Inf, inflorescence; Fru, fruiting; —, not detected; +, in traces; ++, moderate amount.

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