

NOTES

Chemical Composition and Nutritive Value of *Bothriichloa Pertusa* (Linn) A. Camus

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Stem and leaves of *Bothriichloa pertusa* (Linn.) A. Campus in pre-flowering stage, stem, leaves and fruiting in flowering and post-flowering stages were analysed for the estimation of protein, amino-acids, sugars, minerals and calorific values. It was found that *B. pertusa* is a good fodder grass, in flowering and post-flowering stages.

The usual source of cattle feed are grasses, fodder crops and straw of cereals. Earlier a few workers¹⁻⁵ have analysed some grasses and feeding material for their nutritive value. *B. pertusa* is a wild perennial grass. It is much valued as a good fodder grass, both for grazing and for stocking. Hence it would be of interest to know its chemical composition and nutritive value. In the present study nitrogen, protein, amino acids, organic matter, crude fibre, calorific value, total fat and sugars of different plant parts at 3 different stages were studied.

Sample of *B. pertusa* at pre-flowering, flowering and post flowering stages were collected, separated into stem, leaves and fruiting dried at 80°C and grounded for chemical investigation. The nitrogen and protein contents were determined by Kjeldahl's method⁶. Defacted dry powder was extracted with 80% ethanol and centrifuged. This was then purified by lead acetate. It was used for chromatography of free amino acids and sugars. The amino acids⁷, sugars⁸ were indentified and estimated by co-chromatography and photochemical calorimeter. Total hexoses, pentoses and reducing sugars were estimated by calorimetric (phenol-sulphuric acid method⁹) and Benedict's quantitative reagent¹⁰ method. Calcium, magnesium, potassium and phosphorus were estimated by using methods suggested by Misra.¹¹ Calorific values were determined by bomb calorimeter¹². Spectrophotometer was used for determination of iron (dipyridyl method).

Table 1 indicates that ether extract and calorific value of the leaves are maximum in pre-flowering stage and then decrease as the plant matures. Potassium content of the leaves increases from the pre-flowering to post-flowering. Crude fibre of stem is greater than that of leaves and

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TABLE II
CHEMICAL COMPOSITION OF BOTHRICHLOA PERTUSA

% on dry matter basis	Pre-flowering		Flowering		Post-flowering			Fruiting
	Stem	Leaves	Stem	Leaves	Inflorescence	Stem	Leaves	
Ether extract	0.68	2.40	2.00	1.08	1.70	0.48	0.84	1.20
Nitrogen	0.84	1.68	1.12	1.24	1.98	1.12	1.98	1.26
Protein	5.25	10.58	7.00	7.75	12.37	7.00	12.37	7.87
Ash	7.25	4.50	6.50	5.00	3.70	4.10	5.50	5.40
Calcium	2.14	2.67	1.46	1.20	2.13	0.72	1.20	0.57
Magnesium	0.44	0.24	0.30	0.22	0.10	0.30	0.12	0.09
Potassium	0.50	0.56	0.39	0.41	0.27	0.73	0.81	0.57
Phosphorus pentoxide	0.0135	0.1288	0.0931	0.1196	0.0850	0.0644	0.1288	0.1219
Iron	0.0295	0.0115	0.0270	0.0115	0.0140	0.0180	0.0135	0.0100
Silica	3.20	3.45	4.20	1.85	1.35	2.80	3.80	2.35
Crude fibre	24.00	15.00	32.00	20.00	26.00	34.00	27.00	36.00
Calorific value (cals)	4265.00	4189.63	3862.07	3625.52	3065.26	3705.28	3610.52	3803.00
Amino acids mg/100 gm								
Cyst	+	++	2.00	3.00	12.00	3.00	4.00	5.00
Hist.	-	+	-	++	9.80	-	0.60	2.50
Arg.	+	++	+	++	16.20	5.00	7.00	6.00
Ser.	++	+	2.00	0.24	10.50	1.00	0.42	4.00
Gly.	0.25	0.46	4.00	0.50	14.20	10.60	8.00	13.00

	1	2	3	4	5	6	7	8
Gluta.	+	++	0.22	0.42	7.60	0.33	2.80	9.82
Ala.	-	+	++	++	5.34	0.32	3.56	7.60
Pro.	+	+	++	+	4.67	++	3.76	3.86
Tyro.	++	0.80	1.50	1.20	2.20	0.32	0.84	2.38
Methio.	+	+	++	0.18	6.34	0.18	0.72	2.00
Phe. ala	+	+	++	++	4.66	0.12	0.55	2.62
Iso. leu.	++	++	++	0.75	3.88	++	++	2.58
Leu.	+	+	++	0.10	+	0.08	0.22	+
Hexoses	1.562	1.563	1.150	1.375	1.400	2.535	2.660	1.400
Pentoses	0.750	0.760	0.780	0.192	0.800	1.125	1.138	0.755
Reducing sugar	1.34	1.57	1.21	1.30	1.22	1.16	1.20	1.17
Stachyose	+	++	++	++	++	++	++	++
Raffinose	0.040	0.052	0.068	0.088	0.075	0.092	++	0.080
Sucrose	0.038	0.092	0.042	0.032	0.032	-	-	0.028
Glucose	0.130	0.142	0.156	0.140	0.158	0.167	0.172	0.195
Fructose	0.020	0.025	0.032	0.047	0.012	0.019	0.022	0.035
Xylose	0.052	0.061	0.042	0.073	0.052	0.060	0.092	0.098
Rhamnose	0.012	0.020	0.022	0.032	0.028	0.040	0.055	0.020

-; Not detected

+; In traces

++; Moderate amount

its value increases with the advancement of the plant. Pre-flowering stage accumulates more Ca and P₂O₅ in leaves, while protein content is maximum in flowering stage.

Thirteen amino acids were identified in different plant parts at different stages. Inflorescence and fruiting of the grass were rich in all amino acids in comparison to leaves and stem. Pre-flowering stage retains minimum concentration of amino acids, while flowering stage accumulates maximum, followed by post-flowering stage. Hexoses, pentoses and reducing sugars were present in all the parts and in all the stages with appreciable amounts. Post-flowering stage is rich in hexoses and pentoses in comparison to pre-flowering and flowering stages. Glucose was the only sugar which was present in excess of the other sugars in all the parts at all stages. Raffinose, stachyose, sucrose, glucose, fructose, xylose and rhamnose were detected in all the parts.

From the above discussion, it is concluded that *B. pertusa* is a good fodder grass, in flowering and post-flowering stages. It must be supplied to the cattle fresh in flowering stage and hay in post-flowering stage.

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