Impact of Mica Dust on Nutritional Quality of Grassland of Jharkhand

Ashok Kumar
Magadh University, Bodh Gaya.

Abstract :-

Various investigations on different fodder grasses and forbs show that apart from the dominating influence of factors like soil and climate, the storage of growth of plant has also no important bearing on the chemical composition and nutritive value. Nutritive value of the grasses and forbs in India has attracted lot of attention because of importance of fodder in its various forms in the dietary of cattle needs no special emphasis. The composition of grass and fodder crops is known to be affected by several factors. Much works have been carried out on the forage quality of grasses and forbs but the nutritive value of grasses in relation to pollution work on grassland is untouched.

The underground standing crop of energy ranged from 821.78 Kcal/m^2 to 1377.76 Kcal/m^2 on control and 548.67 Kcal/m^2 to 690.57 Kcal/m^2 on polluted grassland.

The annual net production value of total community was 2846.62 Kcal/m^2 on control and 1544.76 Kcal/m^2 on polluted grassland. Mica dust pollution has reduced 54.27 Kcal/m^2 per cent of production in terms of Kcal/m^2/yr in comparison to control grasslands.

The energy conserving efficiency of Bothriochloa pertusa, Cynodon dacrylon, other species and total community was estimated in rainy, winter and summer seasons on control and polluted grasslands. The annual energy conserving efficiency of total community was recorded 0.94 per cent on control and 0.33 per cent on polluted grassland.

Key words: Nutritional quality of Grassland.

Introduction :-

The forage quality i.e. crude protein, crude fiber, ether extract, ash, Nitrogen free extract, phosphorus, calcium and potassium of Bothriochloa pertusa was estimated in rainy, winter and summer seasons as compared to polluted grassland. The percentage of crude fiber and ash was found high in Bothrichloa perusa on polluted grassland in different seasons as compared to control grassland. On the basis of above observations it is concluded that Mica dust pollution adversely harm the forage quantity and quality of the grassland species and makes it less palatable to the livestock.

In conclusion, the present study suggested that naturally deposited particle pollutants i.e. mica dust adversely affect the grassland dominated by Bothriochloa pertusa of Koderma district, Jharkhand, India.

Materials and Methods :-

Nutrition quality of Bothriochloa pertusa estimated seasonally from control and polluted grasslands. Plant were collected and dried in an oven at 600C for 48 hrs. Dried plants were powered by an electrical grinder and sieved through 1 mm sieve. Sieved materials were kept in

the polythene bags for the analysis of their forage quality i.e. crude protein, crude fibre, ether extract, ash, nitrogen free extract, phosphorus, calcium and potassium.

(A) Crude Protein

Crude protein was obtained by multiplying the nitrogen content of Bothriochloa pertusa by 6.25 (William, 1970). The nitrogen content was estimated by micro-kjeldahl method (Jackson, 1962).

(B) Crude Fibre

It was determined as method given by William (1970).

(C) Ash

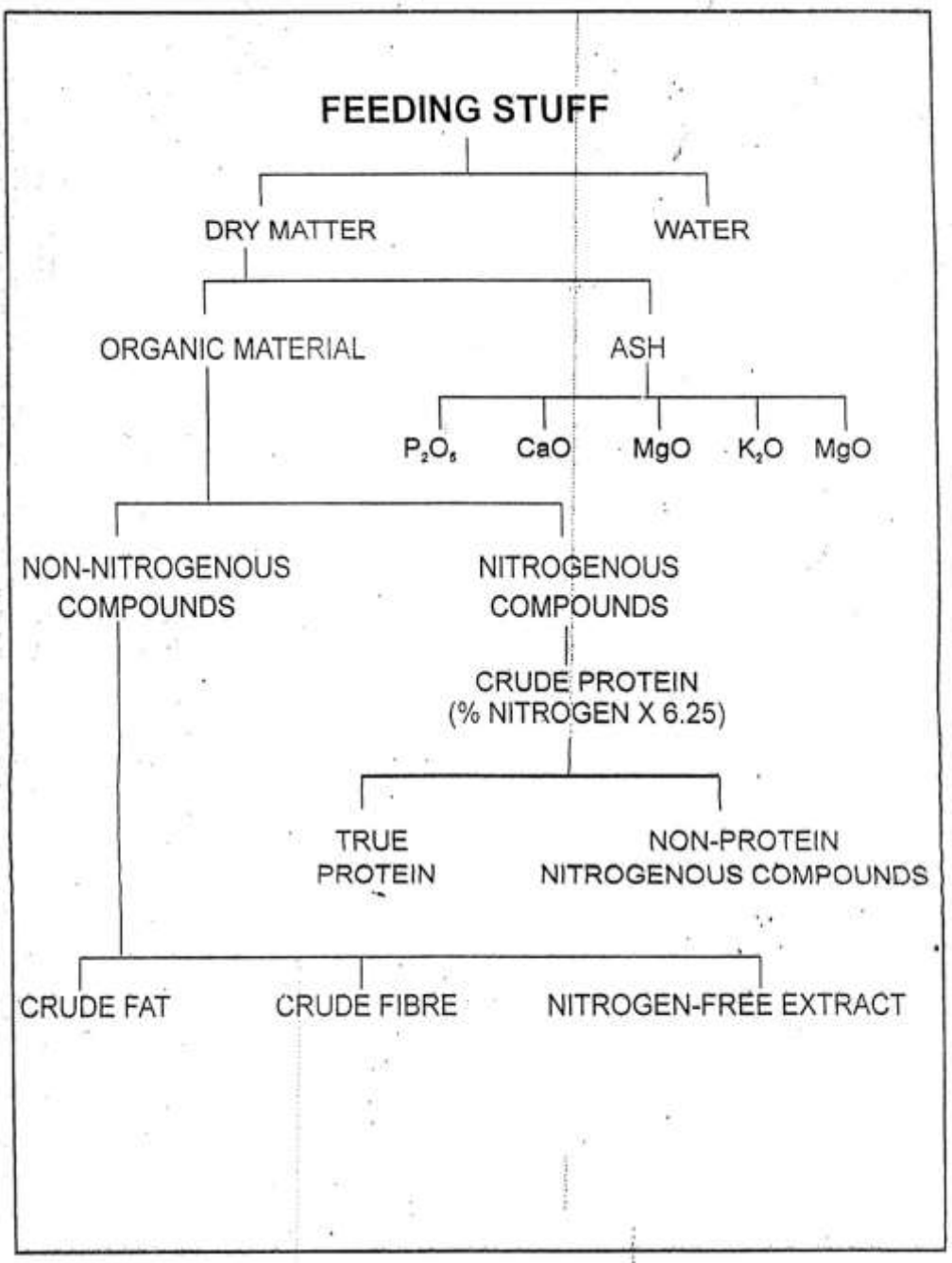
It was determined as method given by William (1970).

(D) Nitrogen Free Extract

It was obtained by the difference between 100 and the sum of the crude protein, crude fibre, ether extract and ash (William, 1970)

(E) Phosphorus

It was determined by calorimetric method (Jackson, 1962).



(F) Calcium and Potassium

It was determined by flame Photometric method (Jackson, 1962).

Results

Seasonal Variation in the Nutritive Value of *Bothriochloa Pertusa* on Control and Polluted Grassland

Crude protein was found maximum 9.97 per cent and 8.60 per cent in rainy season on control and polluted grasslands, respectively (Table 6.1). The minimum was recorded in summer season both types of grasslands. Crude fibre was found maximum 27.11 per cent and 31.07 per cent in summer on control and polluted grasslands, respectively. The minimum was recorded in rainy season on both types of grasslands. Ether extract was found maximum 1.67 per cent and 1.62 per cent in winter on control and polluted grasslands, respectively. The minimum was recorded in summer season on both types of grasslands. Ash was recorded maximum 12.27 per cent and 14.70 per cent in winter season on control and polluted grassland, respectively. The

minimum was obtained in rainy season on both types of grassland. Nitrogen free extract was recorded maximum 60.81 per cent and 55.31 per cent in rainy season on control and polluted grasslands, respectively. The minimum was found in summer season on control and winter season on polluted grasslands. Phosphorus was obtained maximum 0.41 per cent and 0.28 per cent in rainy season on both types of grasslands. The minimum was recorded in summer season on both types of grasslands.

Table 6.1. Chemical composition of *Bothriochloa pertusa* in different seasons on control and polluted grasslands (% dry weight basis).

Season	Grassland Type	Crude Protein	Crude fibre	Ether extract	Ash	N.F.E.	Phosphorus	Calcium	Potassium
RAINY	Control	9.97 ±0.47	18.93 ±0.92	1.41 ±0.05	8.88 ±0.38	60.81 ±2.67	0.41 ±0.02	0.56 ±0.03	1.69 ±0.04
	Polluted	8.60 ±0.36	24.54 ±1.11	1.28 ±0.04	10.27 ±10.24	55.31 ±2.26	0.28 ±0.01	0.53 ±0.02	1.48 ±0.04
WINTER	Control	7.31 ±0.32	21.71 ±0.89	1.67 ±0.07	12.27 ±0.49	57.04 ±2.53	70.26 ±0.02	0.50 ±0.02	1.60 ±0.06
	Polluted	6.45 ±0.23	26.46 ±1.28	1.62 ±0.06	14.70 ±0.53	50.77 ±1.99	0.24 ±0.01	0.43 ±0.02	1.38 ±0.05
SUMMER	Control	4.71 ±0.19	27.11 ±1.08	1.29 ±0.05	10.17 ±0.41	56.72 ±2.27	0.17 ±0.01	0.37 ±0.01	1.09 ±0.03
	Polluted	4.28 ±0.20	31.07 ±1.28	1.13 ±0.03	10.49 ±0.40	53.03 ±2.02	0.10 ±0.01	0.34 ±0.01	1.07 ±0.04

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