

Effect of Different Cutting Intervals on Yield and Chemical Composition of Napier-Bajra Hybrid (NB-21) Fodder

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ABSTRACT

In order to decide harvesting interval of NB-21 fodder to get maximum green, dry matter as well as nutrient yields, an experiment was conducted with three cutting interval treatments of 30, 40 and 50 days for a period of 600 days. The results of chemical composition revealed that crude protein, ether extract and carotene contents were higher with 30 days cutting interval as compared with 40 and 50 days cutting intervals, while reverse trend was observed for C. fibre and NFE contents. No striking difference for calcium content was noted. Dry matter yield of the fodder was significantly higher by 31% and 52% with 40 and 50 days cutting intervals respectively as compared with 30 days cutting interval. Nutrients yield except for protein and carotene followed similar trend. The results of present study indicated that maximum green, dry matter as well as nutrients yield can be obtained by harvesting NB-21 fodder between 40 and 50 days intervals.

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INTRODUCTION

'NB-21' (NAPIER-BAJRA HYBRID) is one of the new and popular type high yielding perennial cultivated green fodders. Gill and Gill (1974) reported that NB-21 provides 6.43% DCP and 57.34% TDN when harvested at 40 days cutting interval and at the height of 75 cm. Nutritive value decreases with increase in cutting interval. Barevadia, Patel, Patel and Patel (1976) reported that NB-21 produced significantly higher dry matter and protein yield as compared to rest of hybrid napier bajra varieties. The present experiment was planned to ascertain the desirable cutting interval and at the same time to obtain good quality fodder with maximum dry matter and nutrient yields.

MATERIAL AND METHODS

The plan of the lay out consisted of

three treatments in a randomized block design (R.B.D.) with four replications. The net plot size was 5m × 4m. The treatments were 30 days (T_1), 40 days (T_2) and 50 days (T_3) cutting intervals. Newly sprouted tussocks of NB-21 were planted at 1m × 1m spacing in July, 1974. At every alternate cut 120 kg N/ha in the form of urea was given as top dressing. The rest of the operations like interculturing and irrigation were kept uniform for three treatments. The fodder from all plots was harvested initially at 60 days after transplanting. Regular treatments of 30, 40 and 50 days cutting intervals started after initial cutting. In all 20, 15 and 12 cuts of 30, 40 and 50 days cutting intervals respectively were obtained during 600 days period.

Samples of NB-21 fodder were collected at every cuttings and all the indi-

vidual samples were analysed for their proximate nutrients as well as for *P*, *Ca*, oxalate and carotene. The latter was determined immediately after harvesting. AOAC (1970) methods were followed for estimation of proximate nutrients. Oxalate was estimated by the method of Talpatra, Ray and Sen, (1948) and carotene by the method of Acharya and Malpoorwala (1952). All the data were statistically analyzed by analysis of variance following Snedecor and Cochran (1967).

RESULTS AND DISCUSSION

Chemical composition:

The average chemical composition of NB-21 fodder for each treatment

is given with statistical analysis in Table 1. From the perusal of data it is revealed that the C. protein content of the fodder harvested at 30 days interval was 14.82% while it was 12.29% and 10.17% when harvested at 40 and 50 days cutting interval, respectively. The differences were statistically significant. Ether extract, ash and carotene contents also decreased with the increase in interval of cutting. While reverse trend was observed for crude fibre and NFE contents. Patel, Patel and Dharni (1967) also reported decrease in C.protein and increase in C.fiber yield with increasing cutting interval. Similar findings were also reported by Shukla, Dharni and Patel (1970) when hybrid napier was grown

TABLE 1

Average chemical composition (on % D. M. basis) of NB-21 fodder harvested at different cutting intervals during the period of 600 days.

Constituents	Treatments (days)			Treatment 'F' value	C.D.
	30	40	50		
C. Protein	14.82	12.29	10.17	240.93 **	0.45
E. Ext.	4.15	3.99	3.73	8.74 **	0.23
C. Fibre	27.33	28.92	29.49	20.18 **	0.78
N. F. E.	39.66	41.11	43.83	52.01 **	0.94
Ash	14.04	13.69	12.78	24.0	0.42
Silica	5.75	5.61	5.90	0.66 *	N.S.
P	0.44	0.46	0.42	5.22	0.03
Ca	0.65	0.65	0.65	0.00 **	N.S.
Carotene (g/tonne)	177.21	166.79	98.09	42.9 **	20.01
Oxalate	2.82	2.51	2.13	59.03	0.14

* Significant at 5% level

** Significant at 1% level

N.S. Non significant.

alone or in association with lucerne and harvested at 30, 40 and 50 days cutting interval.

The calcium contents of fodder did not vary significantly with different harvesting intervals.

Green, dry and nutrient yields:

The green, dry matter and nutrient yields with statistical analysis are given in Table 2.

The green and dry matter yields of NB-21 fodder increased with the increase in cutting intervals studied. The green yield of fodder was 2031, 2211 and 2453 Q/ha. with 30, 40 and

50 days cutting intervals, respectively. Hence, 40 and 50 days cutting intervals yielded 9% and 20% more green fodder, respectively compared to that of 30 days cutting interval. Dry matter yield was also significantly higher i.e. 31% and 52% in 40 and 50 days cutting intervals respectively. Similar findings were also reported by Patel *et al* (1968) and Shukla *et al* (1970) for green and dry matter yields of hybrid napier grass.

From the dry matter yield and the chemical composition, the total nutrients yields were calculated. No significant differences were observed with C.protein yield. Ether extract and N.F.E. yields

TABLE 2

Green yield, dry matter yield and nutrients yield (kg/ha) of NB-21 fodder harvested at different cutting intervals during the period of 600 days.

Yields	Treatments (days)			'F' value **	C.D.
	30	40	50		
Green fodder	203087	221125	245250	99.78 **	7628
Dry matter	34157	41083	51959	124.42	2784
Crude protein	4829.6	4514.8	4705.1	1.55 **	N.S.
Ether Extract	1327.5	1595.6	1794.9	14.12 **	431.9
Crude fibre	9633.2	12345.3	16116.0	202.09 **	792.5
N.F.E.	13527.9	17253.6	22783.7	144.66 **	1490.1
Ash	4751.0	5533.2	6213.7	29.38 **	467.3
Silica	1925.2	2246.3	2838.6	111.61 **	151.8
P	141.3	183.1	205.9	28.28 **	21.4
Ca	213.9	250.7	311.0	169.47 *	13.0
Carotene	5.736	6.589	4.880	9.34	0.979
Oxalate	962.2	1031.78	1072.9	4.60	N.S.

* Significant at 5% level

** Significant at 1% level

N.S. Non Significant.

were significantly higher with 40 and 50 days cutting intervals as compared with 30 days cutting interval. Yields were higher by 17.21% and 45.4% for calcium. While that of phosphorus were 29.6% and 45.70%, respectively with 40 and 50 days cutting interval as compared with 30 days cutting interval. The differences for these constituents were also found to be significant ($P < 0.01$). Carotene yield was higher by 35.1% in 40 days as compared to 30 days cutting interval. The least carotene yield was noted with 50 days cutting interval. No significant differences were found between treatments for yield of oxalate. The results of nutrient yields are also in general agreement with those reported by Shukla *et al* (1970).

The results of present study indicated that most of the nutrients as well as fodder yield was higher with 40 and 50 days cutting interval as compared to 30 days cutting interval. Hence, in order to get good quality fodder with more fodder

as well as nutrients yield, it is desirable to harvest NB-21 fodder between 40 and 50 days interval.

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