

## Study on re-growth and nutritional potentials of *Eleusine indica* L in Chitwan, Nepal

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**Introduction** The efforts to use exotic fodder species to solve the problem of green roughage scarcity in Nepal, have had only limited success because the species are not persistent. Use of local forage species, such as *Eleusine indica*, which is widely adapted and tolerant of repeated cutting (Lowry *et al.*, 1992), could be possible solution to the problem. The objective of this study was to understand the re-growth potential of *E. indica* with respect to nitrogen fertiliser application and cutting management and to determine its feeding value in the dry season.

**Materials and methods** The field trial was carried out in Chitwan. It had a split plot design with three replicates. The main plot treatments were nitrogen fertiliser (0, 50, 100 kg N/ha), and the sub-plot treatments were cutting height (2, 4, and 6 cm from the base). The plot size was 4.5 x 2.7 m<sup>2</sup> with row-row distance of 30 cm and plant-plant distance of 15 cm. Tiller numbers/plant, forage re-growth and proximate constituents were recorded. The digestibility trial was carried out with local *Khari* goats of around 1 year age and digestibility of the test feed was compared with that of seasonally available grass (*Melia azedarach* and *Imperata cylindrica* in equal parts).

**Results** Increased number of tillers per plant (46<sup>b</sup>, 57<sup>ab</sup> and 66<sup>a</sup> at 0, 50 and 100 kg N/ha respectively for the April count; P<0.05) and higher re-growth (Table 1) was obtained with 100 kg N/ha. However, cutting height had no effect (P<0.05) on forage re-growth. The cumulative forage re-growth for four harvests during the dry season (Jan-May) was about 11 t/ha with 100 kg N/ha and 2-cm cutting height. This is comparable with the productivity of other cultivated and indigenous grasses found in Nepal (Pande, 1997; Relwani, 1979). Crude protein % increased with nitrogen level (11.9<sup>b</sup>, 13.0<sup>a</sup> and 13.3<sup>a</sup> at 0, 50 and 100 kg N/ha respectively; P<0.05). The CP content of *E. indica* in this study was higher than that of the majority of grasses grown in the dry season in Nepal (Pande, 1997). Crude fibre (19.98 % to 22.27%) and ash (16.3 % to 21.3%) were higher than reported by Serra *et al.* (1997). The grass was fairly digestible (Table 2), palatable and had no untoward effect on goats.

**Table 1** Effect of different levels of N on re-growth (g/ha) of *E. indica* at different harvesting dates in Chitwan

Date of harvest/ Rate of fertiliser	Jan.1 (n=9)	Feb15 (n=9)	Apr. 1 (n=9)	May 15 (n=9)
0 kg N/ha.	77.1 (2.94)	45.4 (3.15)	330 (32.5)	181 (20.28)
50 kg N/ha.	68.33 (7.79)	53.25 (4.45)	376 (13.0)	243 (11.7)
100 kg N/ha.	94.6 (6.28)	91.1 (4.69)	465 (37.6)	304 (26.9)

Figures in parentheses indicate standard error of mean.

**Table 2** Digestibility coefficients of *E. indica* and local seasonal grass fed to goats in Chitwan

Chemical constituents	Digestibility coeff. of fodder / forage	
	<i>E. indica</i> (n=4)	( <i>I. cylindrica</i> + <i>M. azedarach</i> ) (n=4)
DM	53.5 (1.23)	52.9 (2.11)
CP	66.6 (1.54)	57.6 (1.47)
CF	69.6 (2.05)	47.2 (2.41)
EE	53.7 (0.87)	41.6 (1.30)

Figures in parentheses indicate standard error of mean; and n= number of observations.

**Conclusions** The study indicates that *E. indica* is a nutritious, fairly palatable, and easily digestible grass. It has no untoward effect on goats. It appears that it can be cut or grazed as low as 2 cm from the ground without jeopardising its persistency. The species has a potential in overcoming the problem of green roughage scarcity during the dry season in Chitwan, Nepal, and other similar areas in different parts of the world.

### References

- Lowry, J.B., R.J. Petheram & B. Tangendjaja (1992). Plants fed to village ruminants in Indonesia. ACIAR Technical Report No. 22, 3-29, Australian Centre for International Agricultural Research, Canberra.
- Pande, R.S. (1997). Fodder and Pasture Development in Nepal, Udaya Research and Development Services (P.) Ltd., 1-12.
- Serra, A.B., S.D. Serra, E.A. Orden, L.C. Cruz, K. Nakamura & T. Fujihara (1997). Variability in ash, crude protein, detergent fiber and mineral content of some minor plant species collected from pastures grazed by goats. *Asian-Australasian Journal of Animal Science*, 10, 28-34.
- Relwani, L.L. (1979). Fodder Crops and Grasses. Indian Council of Agricultural Research, 59-85.