

Paper ID: 1366

Theme 2. Grassland production and utilization**Sub-theme 2.6.** Interdependence of grassland and arable lands for sustainable cereal, forage and livestock production**Effect of sugar promoters on biomass yield and sugar content of Napier Bajra hybrids****Rajiv Kumar Agrawal***, G. Prabhu, K. K Singh, Sultan Singh, M. M. Das, Satendra Kumar

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*Corresponding author e-mail: rajiv68@gmail.com**Keywords:** Napier Bajra Hybrids, Perennial grasses, Sugar content, Sugar promoters**Introduction**

In India deficiency of green fodder is estimated to the tune of 35.7% and this difference is likely to increase in coming period due to possible decrease in acreage under fodder crops as the cultivated land is being utilized for urbanization and other industrial uses. In tropical countries like India, crop residues from cultivated crops and grasses (mainly monsoon grasses) constitute the basal diet of livestock. But the nutritive value of these grasses is low (protein and digestibility) than the fodder crops and even in green stage is able only to meet the maintenance requirement of animals. A conservative estimate is that around 220 million tones of surplus green herbage is available during flush season of monsoon and can be conserved through ensiling. But due to the low DM (dry matter) and WSC (water soluble carbohydrate) content (2-4%) in such tropical grasses, they results in poor fermentation of freshly cut materials under anaerobic environment of ensiling. A minimum of 7-8% of water-soluble carbohydrate is needed to initiate the fermentation process. Hence, there is a need to improve in the quality of grasses even to conserve them as silage. The research efforts put forth by animal nutritionist to conserve these grasses as silage were not successful mainly due to their low water soluble carbohydrate contents. The use of chemicals to increase immature internodal sucrose levels in sugarcane has been made in some parts of the world. In forages, such efforts may solve the issue of conservation of monsoon grass as hay. Keeping in the view, an attempt has been made to explore the possibility of improving the sugar content of BN Hybrid grass.

Materials and Methods

The field experiment was carried out during 2014 at CR Farm, IGFRI, Jhansi. The treatments consisted of three levels each of Glyphosate (20 to 60g a.i/ha), Ethrel (0.01 to 0.03%), Ethrel (0.01 to 0.03%) +15 kg urea, whip super (2 to 6g a.i/ha) and control. The treatments were replicated thrice in factorial randomized complete block design. The BN hybrid was planted in July and after a general cut, the treatments were applied at 10 day stage. The grass was harvested at 40 day stage. Five cuts were obtained during the study period. Statistical analyses were done using standard procedures.

Results and Discussion

The application of sugar promoters significantly affected the green and dry biomass of NB hybrids in initial 1st and 2nd cut (Fig. 1). In terms of total biomass yield (Table 1) T12 recorded maximum green and dry fodder (72.37 and 15.02 t/ha, respectively). In subsequent cuts the green and dray matter yields were not affected. Spraying of Whip super @2 g a.i/ha, significantly increased (5.56g/100g) the water soluble sugar content of NB hybrid (5.56g/100g) by 12.29% than control (no sugar promoter). McDonald *et al.* (2001) also observed the improvement in sucrose levels of sugarcane with the application of sugar promoters *viz.*, glyphosine, glyphosate, ethephon, fluazifop, haloxyfop and trinexapac-ethyl.

Table 1: Effect of sugar promoters on biomass yield of BN Hybrid

	Treatments	Green fodder yield (t/ha)	Dry matter yield (t/ha)
T1	Glyphosate 20g a.i/ha	66.99	14.18
T2	Glyphosate 30g a.i/ha	68.42	15.31
T3	Glyphosate 40g a.i/ha	69.37	15.63
T4	Ethrel 0.01% or 100 ppm	67.82	14.36
T5	Ethrel 0.02% or 200 ppm	67.43	14.86
T6	Ethrel 0.03% or 300 ppm	68.35	14.28
T7	Ethrel 0.01% or 100 ppm +15 kg urea	68.83	15.01
T8	Ethrel 0.02% or 200 ppm +15 kg urea	69.03	14.83
T9	Ethrel 0.03% or 300 ppm +15 kg urea	66.47	14.33
T10	Whip super 2 g a.i/ha	69.56	15.56

T11	Whip super 4 g a.i/ha	69.60	15.46
T12	Whip super 6 g a.i/ha	72.37	15.02
T13	GA3 0.02 % or 200 ppm	70.91	15.42
T14	GA3 0.05 % or 500 ppm	70.06	15.37
T15	GA3 0.1 % or 1000 ppm	71.96	15.92
T16	Control	67.56	14.83

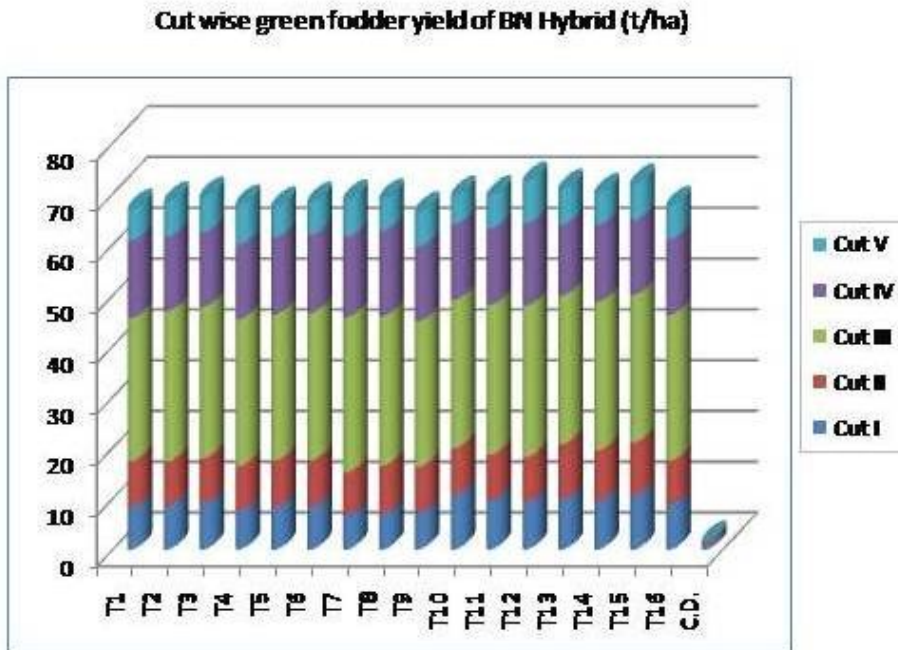


Fig 1. Cut wise green fodder yield of BN Hybrid

Conclusion

The spraying of Whip super 6 g a.i/ha is beneficial for improvement of biomass yield and water soluble sugar content of NB hybrid.

References

McDonald, L., T. Morgan and P. Jackson. 2001. The effect of ripeners on ccs of 47 sugarcane varieties in the Burdekin. *Proc. Aust. Soc Sugar Cane Technol.* 23:102-108.