Biological Forum – An International Journal **15(6): 643-645(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Evaluation of Different Fodder Napier Hybrids and their Suitability for Coastal Region of Andhra Pradesh

Bukke Triveni[1*], Kancharana Anand Rao[2], Allu Teja[3], Mula Ravi Kumar[4] and Thejavath Varun Singh[5]

[1]Scientist, Department of Agronomy, Buffalo Research Station, Venkataramannagudem, Sri Venkateswara Veterinary University, Tirupati (Andhra Pradesh), India.
[2]Principal Scientist and Head, Buffalo Research Station, Venkataramannagudem, Sri Venkateswara Veterinary University, Tirupati (Andhra Pradesh), India.
[3]Scientist (VGO) Buffalo Research Station, Venkataramannagudem, Sri Venkateswara Veterinary University, Tirupati (Andhra Pradesh), India.
[4]Senior Scientist (AN) Buffalo Research Station, Venkataramannagudem, Sri Venkateswara Veterinary University, Tirupati (Andhra Pradesh), India.
[5]Ph.D. Scholar, Buffalo Research Station, Venkataramannagudem, Sri Venkateswara Veterinary University, Tirupati (Andhra Pradesh), India.

(Corresponding author: Bukke Triveni)*
(Received: 14 March 2023; Revised: 06 April 2023; Accepted: 21 May 2023; Published: 05 June 2023)
(Published by Research Trend)

ABSTRACT: A field experiment was carried out during *kharif* 2021-22, at Buffalo Research Station, Venkataramannagudem, West Godavari, Andhra Pradesh to study the impact of hybrid Napier cultivars on the performance and productivity of the Coastal region of Andhra Pradesh. Among the nine different cultivars, Super Napier resulted in Significantly higher in plant height, number of leaves plants^{-1}, number of tillers plant^{-1}, leaf to stem ratio and green fodder yield which was followed by the red Napier cultivar in the above parameters.

Keywords: Hybrid Napier, Green fodder yield and Fodder cultivars.

INTRODUCTION

India has the world's largest population of cattle, but only 4% of its total cropped land is used for growing fodder. The production of livestock in mixed crop-livestock systems is severely constrained by the lack of fodder, both in quantity and quality, for year-round feeding. It is proposed to introduce hybrid forages to provide alternative high-quality feeds to increase livestock productivity and close yield gaps. Ruminant diets should include forages because they supply the fibre essential for rumen function. Compared to other tropical grasses, Napier grass produces a higher yield of dry matter (DM), making it a popular tropical forage plant (Hanna *et al.,* 2004). The advantages of Napier grass include its high yield per unit area, resistance to sporadic drought, and high water use efficiency. A promising perennial source of green feed is Bajra Napier hybrid grass and it is widely used for its excellent yield, palatability, and tolerance to diverse soil and climatic conditions (Faruqui *et al.,* 2009). According to Pandey and Roy (2011), hybrid Napier is a multi-cut perennial grass with abundant tillering and very good tonnage all year long. It is one of the improved fodder grasses. Bajra Napier hybrid grass is highly recommended because of its high tillering capacity, regeneration capacity, leaf-to-stem ratio, resistance to pests and diseases, green forage yield, crude protein content and is free from adverse factors along with other fodder varieties grown in the country (Suganthi *et al.,* 2019).

MATERIALS AND METHODS

A field investigation was carried out during *Kharif,* 2021 at Buffalo Research Station, Venkataramannagudem, West Godavari, Andhra Pradesh, to evaluate the performance of hybrid Napier cultivars in the Coastal region and to assess the productivity potential of these Napier fodder hybrids. Buffalo Research Station was located at an altitude of 44.7 meter on above mean sea level on 16.8831' N latitude and 81.4513'E longitudes. Godavari zone of Andhra Pradesh. The institute is located at the upland area where the water source was mainly dependent on rainfall and bore well, where the temperatures were raises upto 37 ºC in summer and comes closer to 19 º C during the winter season. The average annual rainfall is around 90 mm per annum and the maximum was received during the months of August to October.

The soil of the experimental field was sandy loam in texture having low available nitrogen (215 kgha^{-1}) phosphorus (23.5 kgha^{-1}) and organic carbon (0.43 %), medium in potassium (250 kgha^{-1}), neutral in soil reaction (pH 6.9) and EC of 0.18 dSm^{-1}. The field experiment was laid out in Randomized Block Design (RBD) with nine cultivars and replicated thrice. The

experiment consists of Guinea Juri (T_1), Guinea brown (T_2), Super Napier (T_3), Red Napier (T_4), APBN-1 (T_5), Kenera Napier (T_6), Co-3 (T_7), Co-4 (T_8), Co-5 (T_9). The varieties were planted in July 2021 with a common row spacing of 90 cm and 60 cm between plants. An equal quantity of farm yard manure at the rate of 10 t ha^{-1} was applied to each plot three weeks prior to planting. The recommended doses of 10 kg nitrogen, 120 kg P_2O_5 and 80 kg K_2O ha^{-1} were applied uniformly as basal doses at the time of planting in the form of urea, single super phosphate and muriate of potash respectively. The remaining 170 kg of nitrogen was applied in seven equal splits immediately after each cut at 45 days interval in the form of urea for better growth of the crop.

Statistical Analysis: Five plants were randomly selected in each net plot area for taking observations on growth and yield attributing parameters. The crop in each net plot was harvested separately as per treatment and the values were converted into hectare basis and expressed in quintals. The statistical analysis of data was done using ANOVA at 0.05 probability level utilizing the AGRES software.

RESULTS AND DISCUSSIONS

Plant height: The highest plant height was noticed with APBN-1 (T_5), however, which was comparable with CO-5 (T_9) and Kenara Napier (T_6) (Table 1). The latter variety in turn on par with Super Napier (T_3) and Guinea juri (T_1). The lowest plant height was recorded with Guinea Brown (T_2). The increase in plant height among the varieties might be due to the variation in their genetic makeup, internodal length, nutrient absorption capacity and conversion of radiant energy in presence of chlorophyll. The findings of Zewdu *et al.* (2002); Tessema *et. al.* (2003) supported the above results.

Number of leaves per plant: The highest number of leaves per plant was produced by Super Napier (T_3) which was signed in parity with CO-5 (T_9) and Guinea juri (T_1). The next best variety in recording the number of leaves per plant is Red Napier (T_4) and CO-4 (T_8). The lowest number of leaves $plant^{-1}$ was produced by APBN-1 (T_5).

Number of tillers per plant: The highest number of tillers per plant was noticed with Super Napier (T_3) which was significantly superior to other varieties investigated (Table 1). This could be mainly due to their genetic makeup. Increased assimilatory surface area per plant might have led to increased biomass production, ultimately accumulating a large number of photo assimilates. The next best variety was Guinea juri (T_1), which was however comparable with Red Napier (T_4). The variety APBN-1 (T_5) produced the lower number of tillers per plant among the varieties tested.

Leaf-to-stem ratio: Significant differences were not found with respect to leaf and stem ratio. However, Table 1 revealed that the super Napier variety showed a higher leaf-stem ratio (1.19) as compared to C0-4 and it was on par with the variety guinea brown (1.12). The increase in leaf-stem ratio was mainly due to the rapid expansion of dark green foliage, which could intercept and utilize the incident solar radiation in the production of photosynthates and eventually result in higher meristematic activity. These results are in conformity with the findings of Gupta (1995).

Green fodder yield: Significantly higher green fodder yield was produced by the variety Super Napier (T_3) (Table 1). APBN-1 (T_5) and Red Napier (T_4) were the next best varieties in recording higher green fodder yield, with no significant disparity between them. Whereas, the lower green fodder yield was recorded with APBN-1 (T_5). Differences in yields among the varieties can be attributed to their genetic potentiality to utilize and translocate photosynthates from source to sink. Super Napier (T_3) was found to be the best hybrid Napier variety with a higher green fodder yield due to the efficient translocation of photosynthates from source to sink.

Table 1: Performance of different hybrid Napier cultivars on growth attributes and yield.

Treatment	Hybrid	Plant height (cm)	No. of leaves $Plant^{-1}$	No. of tillers $Plant^{-1}$	Leaf-to-stem ratio	Leaf length (cm)	Leaf Breadth (cm)	Green fodder yield (q/ha)
T_1	**Guinea Juri**	209.20	380.00	80.80	1.00	74.00	3.88	115.0
T_2	**Guinea brown**	148.80	261.80	64.00	1.12	91.00	3.78	113.0
T_3	**Super Napier**	210.40	388.00	84.00	1.19	107.00	3.52	430.0
T_4	**Red Napier**	158.00	360.30	66.00	1.00	102.00	3.78	375.0
T_5	**APBN-1**	222.20	237.60	25.00	0.93	86.00	4.00	320.0
T_6	**Kenera Napier**	218.00	236.00	60.00	0.88	104.00	3.52	290.0
T_7	**Co-3**	204.00	292.80	65.00	0.73	103.00	2.92	325.0
T_8	**Co-4**	209.80	364.60	35.00	0.70	95.00	3.56	319.0
T_9	**Co-5**	219.80	386.00	42.00	0.83	107.00	4.06	298.0
	CD (P = 0.05)	10.1	21.2	9.1	N/S	4.0	0.4	26.00
	SEm ±	2.85	7.06	3.03	0.04	1.33	0.13	8.6

CONCLUSIONS

The above investigation clearly inferred that Super Napier (T_3) was found to be superior with respect to growth attributes and registered significantly higher green fodder yield compared to other varieties tried on sandy loam soils of the Coastal region of Andhra Pradesh at Buffalo Research Station, Venkatramannagudem.

Acknowledgements. The authors sincerely thank Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India for allowing to carry out this study at Buffalo Research Station, Venkataramannagudem.
Conflict of Interest. None.

REFERENCES

Faruqui, A., Hledik, R. and Tsoukalis, J., (2009). The power of dynamic pricing. *The Electricity Journal*, *22*(3), 42-56.

Gupta, A., (1995). Blurred boundaries: the discourse of corruption, the culture of politics, and the imagined state. *American ethnologist*, *22*(2), 375-402.

Hanna, N., Shepherd, F. A., Fossella, F. V., Pereira, J. R., De Marinis, F., Von Pawel, J., Gatzemeier, U., Tsao, T. C. Y., Pless, M., Muller, T. and Lim, H. L. (2004). Randomized phase III trial of pemetrexed versus docetaxel in patients with non-small-cell lung cancer previously treated with chemotherapy. *Journal of clinical oncology*, *22*(9), 1589-1597.

Pandey, P. R. and Roy, S. (2011). Headgroup mediated water insertion into the DPPC bilayer: a molecular dynamics study. *The Journal of Physical Chemistry*, *115*(12), 3155-3163.

Suganthi, R., Ghosh, J., Malik, P., Awachat, V., Krishnamoorthy, P., Pal, D. and Nongkhlaw, S. (2019). Effect of dietary organic selenium (Se) on immune response, hepatic antioxidant status, selenoprotein gene expression and meat oxidative stability in lambs. *Journal of Animal Feed Science*, *28*, 138-148.

Tessema, M., Langer, F., Dingemann, J., Ganser, A., Kreipe, H. and Lehmann, U. (2003). Aberrant methylation and impaired expression of the p15INK4b cell cycle regulatory gene in chronic myelomonocytic leukemia (CMML). *Leukemia*, *17*(5), 910-918.

Zewdu, T., Baars, R. M. T. and Yami, A. (2002). Effect of plant height at cutting, source and level of fertiliser on yield and nutritional quality of Napier grass (*Pennisetum purpureum* (L.) *Schumach.*). *African journal of range and Forage Science*, *19*(2), 123-128.

How to cite this article: Bukke Triveni, Kancharana Anand Rao, Allu Teja, Mula Ravi Kumar and Thejavath Varun Singh (2023). Evaluation of Different Fodder Napier Hybrids and their Suitability for Coastal Region of Andhra Pradesh. *Biological Forum – An International Journal*, *15*(6): 643-645.