



RESEARCH PAPER

Performance of newly introduced fodder crops in rice-wheat cropping system in adopted villages of Bareilly district in North Western U.P.

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Abstract : Two demonstrations were conducted in the adopted villages of IVRI for transfer of technology from lab to land programme. Trials were conducted in the project villages viz., Mohanpur, Kalapur in 2003-4 and khata, Bhansar during 2013-14 after ten years. Napier Hybrid NB 21, multi cut *Bajra* (Ganga kaveri, Pearl millet) as new crops were introduced in the study area. Forage maize (Sweta) was grown for comparative study as a control forage crop. The growth of napier Hybrid NB 21 was found to be fast growing crop over the other forage crop during summer and rainy seasons. Napier Hybrid raised with scientific package of practices on farmers field. This crop gave 825.1 q/ha green fodder. The crop was harvested 4-5 times by the farmers. Maize cultivar Sweta was harvested at 45-75 days after sowing. This maize provided for one month fodder while, NB hybrid gave green fodder round the year. Maize gave 525.4 q/ha green fodder. Forage liking of animal feeding or palatability was maximum for forage maize. Pearl millet multi cut cultivar Ganga Kaveri harvested 3-4 times by September and produced 445.7 q/ha leafy, succulent fodder to milch animals during summer and rainy seasons. This was the second choice of animals. This was found to be good for feeding dairy animals long with wheat straw in 50:50 ratio of green and dry feeding balanced diet. However, palatability of NBH was after Multi Cut *Bajra*. After ten years area under forage crops was increased 2-3 times. NBH from zero to 20 ha and MCB 3 ha and maize from 2 ha to 7 ha in the adopted villages. Some farmers started green fodder for sale in Rithoura to get more profits per acer of land. Technology adoption rate was higher in adopted villages than the near by non adopted villages.

Key Words : Fodder crop, Maize, Cropping system, Yield, Napier hybrid

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INTRODUCTION

Napier grass is a monocotyledonous flowering plant belonging to the family Poaceae (The family of grass) and the genus Pennisetum. Pennisetum is a highly diverse

genus consisting of a heterogeneous group of approximately 140 species with different basic chromosome numbers of 5, 7, 8 or 9, a range of ploidy levels from diploid to octoploid, both sexual and apomictic reproductive behaviours and life cycles of an annual,

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biennial or perennial nature. Napier grass is a perennial C4 grass species native to Sub-Saharan Africa from where it is believed to have been distributed to other tropical and subtropical regions around the world. It has been reported to be adapted to grow across a wide range of soil conditions and agro-ecologies, from sea level to 2100 m, and it can withstand minor dry spells, although it grows best in areas where the annual rainfall is between 750 and 2500 mm. Having its wide agro-ecological adaption, Napier grass has been naturalized in areas of Central and South America, tropical parts of Asia, Australia, the Middle East and the Pacific islands. As a result, today it is widely grown in tropical and subtropical regions of the world, for use predominantly as animal fodder. Napier grass can be more commonly distributed by vegetative cuttings and tillers. Since the grass cannot produce many seeds and those that are produced are normally very small, light of poor quality and the spikelets are prone to shattering. Consequently, the seeds are considered inappropriate for propagation as they produce weak seedlings and, as Napier grass is an open pollinated crop, the seedlings are also highly heterozygous. Therefore, propagation by stem cuttings is currently the dominant practice for the distribution of Napier grass propagation. A range of grass species are used as fodder crops by farmers in Africa, Asia and other tropical/subtropical regions of the world. Napier grass is one of the most important fodder crops, particularly in Eastern and Central African smallholder farming communities. It is mainly used to feed livestock in cut and carry feeding systems. It is a multipurpose forage crop that can be grazed directly, or made into silage or hay and there have also been reports of using Napier grass as fish food, for example for feeding grass carp and tilapia in Nepal and Bangladesh. A recent report from Nigeria also indicated that young shoots of Napier grass were used as a cooked vegetable. These varied uses provide an indication of the diversity of roles that napier grass could contribute to the reduction of poverty and nutritional insecurity. It is also an essential source of forage for elephants

throughout Africa, hence its name is “elephant grass”. *Perinnium purpureum*, often commonly called Napier grass, cane grass or elephant grass is a large tender, perennial grass native to tropical.

MATERIAL AND METHODS

Two demonstrations were conducted in the adopted villages of IVRI for transfer of technology from lab to land programme. Trials were conducted in the project villages viz., Mohanpur, Kalapur in 2003-4 and khata, Bhansar during 2013-14 after ten years. Napier hybrid NB 21, multi cut *Bajra* (Ganga kaveri, Pearl millet) as new crops were introduced in the study area. Forage maize (Sweta) was grown for comparative study as a control forage crop. This was the second choice of animals. This was found to be good for feeding dairy animals long with wheat straw in 50:50 ratio of green and dry feeding balanced diet. However, palatability of NBH was after multi cut *Bajra*. After ten years area under forage crops was increased 2-3 times. NBH from zero to 20 ha and MCB 3 ha and Maize from 2 ha to 7 ha in the adopted villages. Some farmers started green fodder for sale in Rithoura to get more profits per acer of land. Technology adoption rate was higher in adopted villages than the near by non adopted villages.

RESULTS AND DISCUSSION

Data shows that crops that napier hybrid produced maximum green fodder (825.3 q/ha) followed by Multicut-*Bajra* (622.5 q/ha). Grain yield was received 19.1 from maize but grain yield was found higher in rice-wheat cropping (35.3 q/ha) followed by maize (C) (19.1 q/ha) and multicut-*Bajra* (4.3 q/ha) produced less and least of napier.

The yields during the year 2013-14 were higher as compared to 2003-04. Napier hybrid produced green fodder (1017.1 q/ha), followed by multicut-*Bajra* (782.4 q/ha) and followed by maize (688.6 q/ha). Maize seed yield was higher than 10 years back. It was found 24.3

Table 1: Performance of newly introduced napier hybrid NB-21, multicut-*Bajra* and Sweta maize (2003-04)

Treatment crop	Plant height (cm)	No. of leaves plant	Leaf stem ratio	green fodder q/ha	Dry matter q/ha	Grain yield q/ha
Maize (C)	209.1	7.6	0.31	525.1	135.3	19.1
Multicut- <i>Bajra</i>	123.2	14.4	0.66	622.5	130.1	4.3
Napier NB-21	110.3	23.3	0.74	825.3	215.6	0.7
Rice-wheat cropping	95.6	11.6	0.52	450.6	180.3	35.3
C.D. (P=0.05)	11.3	4.3	0.11	7.5	10.5	0.25

Treatment crop	Plant height (cm)	No. of leaves plant	Leaf stem ratio	Green fodder q/ha	Dry matter q/ha	Grain yield q/ha
Maize (C)	217.3	8	0.39	688.6	177.4	24.3
Multicut-Bajra	144.1	17	0.62	782.4	172.2	5.5
Napier NB-21	125.9	30	0.7	1017.1	248.4	1.1
Rice-wheat cropping	102.2	13	0.52	472.6	185.6	42.5
C.D. (P=0.05)	4.5	2.8	0.01	7.6	3.4	2.6

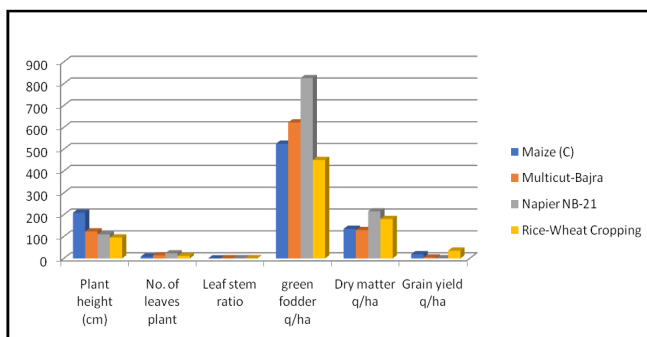


Fig. 1 : Performance of newly introduced napier hybrid NB-21, multicut-Bajra and Sweta maize (2003-04)

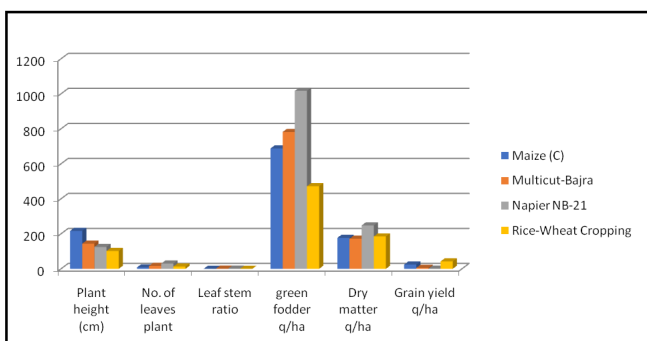


Fig. 2 : Performance of newly introduced napier hybrid NB-21, multicut-Bajra and Sweta maize (2013-14)

q/ha. The reason for higher yield and better growth parameters may be due to adaptability of crop, improvement in soil fertility, more awareness by the farmers regarding package of practices of the crop.

Conclusion :

From the above trials, it may be concluded that Napier hybrid NB-21 and multicut *Bajra* (Ganga-Kaveri) were introduced in the rice-wheat cropping system in the adapted villages. Hence, the new crops were adapted by the farmers for feed and fodder availability during the winter, summer and rainy season. These variety may be recommended for the cropping system available in the Bareilly region of U.P. Multiplication of NB-21 was increased 1 acre in 2003-05 and 7 acres in 2013-14.

REFERENCES

- Singh, Om and Arya, H.P.S. (2011).** Trials on integrated plant nutrient management for sugarcane intercropping in western U.P., *Tropical Agriculture*, **29** (3-4) : 351-356.
- Singh, Om (2011).** Forage production and quality of berseem, makkhan grass and barley forage crops as influenced by organic manure. *J. Tropical Agriculture*, **29** (3-4) : 350-359.
- Singh, Om (2014).** Effect of integrated nutrient management on rye grass production under irrigated conditions, *J. Tropical Agriculture*, **32** (3-4) : 857-860.
- Singh, Om (2014).** Effect of inorganic source of nutrients on yield in rice-wheat sorghum, *J. Tropical Agriculture*, **32** (3-4) : 851-855.
- Singh, Om and Verma, M.R. (2018).** Effect of row arrangement on sorghum-cowpea intercrops in irrigated conditions, *Archives*, **18** (1) : 7-10.

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