

Adoption of bajra napier hybrid

Green fodder at farmers' field

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Green fodder plays an important role in fulfilling the nutritional requirements of animals and reduce the cost of milk production. India is endowed with 512 million livestock and about 16.81 million ha agricultural land. India, with 2.29% of the land area of the world, maintains about 10.71% livestock population of the world. Green fodder is being cultivated only on 8.4 million ha (5.23%) of cropping area and the available forages are poor in quality and deficient in protein and minerals, which has a significant bearing on production potential and productivity of livestock.

Key words: Bajra, Green fodder, Napier Hybrid, Nutrition

THE pressure of ever-increasing human population to grow food crops for meeting their requirement are the major hurdles to increase the area under forage crops.

At present, the country faces a net deficit of 33.10% green fodder, 11.41% dry crop residues and 64% feeds. Further, 54% of the total fodder is met from crop residue, while 18% fodder is met from grasslands and only 28% fodder is met from cultivated fodder crops, viz. *jowar*, *bajra*, *maize*, *barseem*, *lucerne*, etc.

The pattern of green fodder deficit varies in different parts of the country. The Bareilly district of Uttar

Pradesh is not an exception in terms of the deficit of green fodder, where the scarcity of green fodder remains static during 4-5 months (September to November and April to May) in a year. The major green fodder crops grown by the farmers in Bareilly district are *barseem* and oat in *Rabi* (3,384 ha area), multicut *jowar* and *bajra* in *Kharif* (5,113 ha area) and multicut *jowar* was also sown in *Zaid* season (2,593 ha area) in 2013-14. The blockwise area under green fodder is also very low, which was 186 ha in Bithrichainpur block during *Rabi* followed by Fatehganj West block in *Kharif* (153 ha) and Ramnagar block in *Zaid*

season (63 ha). Further, total crop sown area season wise was 230010 ha in *Rabi*, 273,854 ha in *Kharif* and 27,277 ha in *Zaid* season with regards to the total net sown area of 330,438 ha of the district during 2013-14. This data depict the poor status of green fodder availability in Bareilly district as the fodder crops occupy only 1.02%, 1.54% and 0.78% in *Rabi*, *Kharif* and *Zaid* season, respectively in comparison to other field crops, whereas the total livestock population of Bareilly district is 1,125,743 as per the 19th Livestock census, 2012.

To address the problem of non-availability of green fodder in Bareilly



Fig. 1. Distribution of B-N Hybrid cutting by Hon'ble DG, ICAR & Secretary DARE and Secretary ICAR, Govt. of India



Fig. 2. Extension activities for promoting B-N Hybrid cultivation among the farmers

district, ICAR-IVRI has introduced perennial fodder crop i.e., *Bajra* Napier Hybrid (B-N Hybrid) as a best alternative fodder grass to meet the green fodder requirement for the livestock and to maintain the green fodder availability at low cost (Fig. 1). B-N Hybrid is a fast growing, deeply rooted, perennial in nature, growing up to 4 m and can spread by underground stems to form thick ground cover. It has marvellous properties, viz. easy to establish, drought tolerant, high yielding fodder crop with good palatability, highly nutritious, dark green stem and leaves. Among all the grasses, B-N Hybrid is the highest green forage yielder in a unit time and space. It is vigorous, nutritious, succulent, palatable and responds to heavy nitrogenous fertilization. It grows well at high temperatures and can withstand the drought conditions for fairly long spell. Ridge and furrow method of planting technique of B-N Hybrid with 100 cm ridge spacing, 100 cm width of the ridge and 60 cm spacing of plant to plant at the both side of the ridge in diagonal fashion with the varieties CO 4 and CO 5 was implemented in 30 acres land at the fodder farm of ICAR-IVRI, Izatnagar. This technology is being demonstrated for creating awareness, enhancing the knowledge and upgrading the managerial skills of the farmers about

B-N Hybrid cultivation in Bareilly district.

To popularize the B-N Hybrid along with the results of the demonstration, ICAR-IVRI implemented massive extension educational activities (through paper media, electronic media, social media, mobile app, training to the farmers, farmers workshop, exposure visit of the farmers to the demonstration etc.) to aware and educate the farmers to grow B-N Hybrid (Fig. 2). Social media (Facebook page, WhatsApp, YouTube Channel) and a documentary film on B-N Hybrid played a role in popularizing the B-N Hybrid among the farmers, which resulted into the introduction of B-N Hybrid beyond the Bareilly district of Uttar Pradesh.

Information dissemination

Because of intensive extension work, B-N Hybrid has been adopted by 450 farmers in many districts that include Bareilly, Rampur, Badaun, Pilibhit, Moradabad, Sitapur, Shajhanpur, Meerut, Baghpat, Unnao, Gorakhpur, Aligarh, Bahraich, Sultanpur, Kasganj, Muzaffarnagar, etc. of Uttar Pradesh. The farmers of other States like Uttarakhand, Madhya Pradesh, Rajasthan, Odisha and Bihar, have also taken the cuttings of B-N Hybrid from ICAR-IVRI for

cultivation. The feedback from the farmers reveals that B-N Hybrid growers are further distributing the stem cuttings to other farmers which is essential to harness the potential of production and productivity of their livestock. The intensive efforts made for popularization of B-N Hybrid cultivation resulted in increased area under fodder crop at farmers' field. The total area under B-N Hybrid cultivation (CO 4 and CO 5) has reached up to 50 ha, which was nil earlier in Bareilly district before the intervention by ICAR-IVRI. The farmers as well as *Mahila Kisans* feel satisfaction towards B-N Hybrid as a good source of green fodder for their livestock (Fig. 3). Extension education programme has also encouraged the rural youth to establish the entrepreneurship in B-N Hybrid cultivation and at present they are supplying the chaffed and whole Napier to the dairies situated in Bareilly city at varying price, viz. ₹ 120 to 140/quintal whole/unchaffed fodder and ₹ 400 to 450/quintal chaffed fodder at the doorstep of the dairymen. The B-N Hybrid has not only increased the availability of green fodder but it has also increased the level of income and employment opportunities among the rural youth and farmers.

Income and yield

Farmers opined that after adoption



Fig. 3. B-N hybrid technology adopted by Mahila Kisan



Fig. 4. The chaffed green fodder of B-N Hybrid

of B-N Hybrid cultivation, regular availability of green fodder to the livestock has increased the length of lactation period of milch animals, which helped enhance their household income up to 15%. Further, research revealed that farmers got 4 cuttings per year when they developed nursery in the month of February and planted the cuttings in main field during 1st fortnight of April. In this case, the total green fodder yield in 4 cuttings was 62.5 to 65.0 tonnes/acre/year with the average net monthly income of ₹ 4,028.00 to 4,178.00 per acre through selling of green fodder during first year. The average productivity ranging from 15.6 to 16.3 tonnes/acre (39.1 to 40.6 tonnes/ha) was recorded from 4 cuttings in first year. B-N Hybrid has started to increase number of tillering after 2nd cutting, therefore, average productivity of the crop has increased in 2nd year with the values ranging from 25.0 to 25.7 tonnes/acre (62.5 to 64.2 tonnes/ha) and the total green fodder yield of 150.0 to 154.0 tonnes/acre/year was obtained from 6 cuttings. The average net monthly income (net returns) was recorded between ₹ 12,683.00 to ₹ 12,908.00/acre from 6 cuttings when farmers sold the green fodder. However, farmers saved the net amount of ₹ 15,408.00 to ₹ 16,533.00/month per acre, when

they used green fodder for their own milch animals.

The study revealed that for October planted crop, 6 to 7 cuttings were obtained next year from 1st fortnight of April to 2nd fortnight of November with the total green fodder yield of 132.0 to 141.0 tonnes/acre/year and average productivity was 22.0 to 23.5 tonnes/acre (55.0 to 58.8 tonnes/ha). The average net monthly income of the farmers varied from ₹ 9,717.00 to ₹ 11,021.00 from one acre land area, when the farmers sold the green fodder. However, farmers saved the net amount of ₹ 13,017.00 to ₹ 13,958.00/month/acre, when they used the green fodder for their own milch animals.

SUMMARY

Data, obtained from the farmers' field, indicate that the productivity of B-N Hybrid has reached to the highest level of 27.1 tonnes/acre (67.7 tonnes/ha) during 3rd year of its cultivation with the total green fodder yield of 163 tonnes/acre/year (408 tonnes/ha/year). The dairy farmers saved the net amount of ₹ 16,742.00/month/acre land area by using the green fodder for feeding his own milch animals. The total expenditure involved in growing B-N Hybrid for 3 years was recorded to the tune of ₹ 76,570.00/acre and this has resulted in net saving of the total

amount of ₹ 4,48,430.00, when the farmer used the green fodder of B-N Hybrid for feeding his own milch animals.

The study of B-N Hybrid at ICAR-IVRI fodder farm and farmers' field, reveal that CO 5 variety has highest crude protein content of 13.1 to 13.5% with the dry matter content of 14 to 16% at the age of 42 to 48 days after cutting. Study also revealed that 1st cutting of the crop should be taken 60 days after planting and successive cuttings need to be taken within 35 to 40 days' interval. Delay in cutting reduced the quality of green fodder and also efficiency of the crop to produce green fodder as tiller mortality was observed. Farmers opined that B-N hybrid cultivation is a one time investment production system with all-time availability of green fodder and money as per their requirement except during the month of December to February. Further, it was observed that ridge and furrow method of planting technique caused better establishment of the crop and saved almost 40% of irrigation water, which fulfilled the objective of "*Per Drop More Crop*".

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