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EVALUATION OF FRONT LINE DEMONSTRATION ON NAPIER GRASS PRODUCTION

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SUMMARY

The present study was conducted in Waghai, Subir and Ahwa talukas of Dang district of South Gujarat, to popularize the improved green fodder production technology. The results revealed that lack of suitable high yielding varieties, lack of technical knowledge and less availability of irrigation water were the three most important factors which inhibited the adoption of HYVs of hybrid Napier in Dang (Gujarat). The yield of Napier in demonstration was 1792 q/ha as compared local check (1461 q/h). The percentage increase in the yield over local check was 22.43. Economic analysis of the yield performance revealed that front line demonstrations recorded higher gross returns (312000 Rs/ha) and net return (2,32,000 Rs/ha) with higher benefit cost ratio (5.21) as compared to (4.66) local checks. Every year, extension gap was lower than technology gap indicating the need to educate farmers in adoption of improved technologies. Thus, it is suggested that location-specific approaches would be needed to bridge the productivity gap of napier grass in the region.

Key words: Economics, Extension gap, Napier grass, Technology gap, Technology index

Cenchrus purpures (formerly *Pennisetum purpures*) is the scientific name for napier grass (elephant grass), which is a significant fodder crop in Gujarat. The cultivation of napier grass in India occurs in Assam, Bihar, Orissa, Uttar Pradesh, Delhi, Haryana, Madhya Pradesh, Tamilnadu, Gujarat, Karnataka, Maharastra and Punjab. Napier grass is developed by hybridization of bajra. It is perennial grass, however, its production is very good in the monsoon and summer season. But the production in the winter season (December, January and February) is slow. During the year 2010, there is a recommendation for the new variety CO-3 (Coimbatore-3) farmers of Gujarat. Which was under Verification during 2004-05 to 2009-10 at Gujarat. This is the perennial grass as well as its growth is very quickly. Being smooth and soft, cows-buffalo, sheep and goats have the first choice to eat. Due to poor fodder management techniques used in napier grass production, high cost and lower yield obtained. Therefore, Front Line Demonstration (FLD) on napier grass at farmer's field may be helpful to reduced cost and high yield at farming community. The basic objective of this programme is to demonstrate improve proven technologies, high yield and reduced cost with Co-3 (Coimbatore-3) variety of napier grass at farmer's field through Krishi Vigyan Kendra to enhanced adoption of modern technologies to generate yield data with farmers feedback. Keeping this in view KVK, Waghai (Dang) conducted 25, 25 and 50 demonstration on napier grass at farmer's field during *Rabi* 2024, 2025 and 2026, respectively.

MATERIALS AND METHODS

The conducted Front Line Demonstration (FLDs) on napier grass varieties *i.e.* CO-3 (Coimbatore-3) at 100 selected farmer's field in different villages of Dang District (Gujarat) during *Rabi* 2024 to 2026. With 5 hectares of area coverage, 100 number of demonstrations under napier grass were laid out with improved management practices using high yielding variety 'CO-3 (Coimbatore-3)'. Before conducting Front Line Demonstration (FLDs) *Kisan Gosties*, Farmer Scientist interaction, Farmer Meeting and Lecture delivered was imparted to selected farmers regarding different aspects of cultivation. The napier grass variety CO-3 (Coimbatore-3) was sown in 0.9 m x 0.9 m spacing. The package of proven technologies like line sowing, seed treatment with the use of *bijamrut, jeevamrut* and *ghan jeevamrut* use as



Pic. 1. Napier grass planting material distribution to farmers.

manure as per recommendation and whole package were applied in demonstration. The data were collected from both demonstrated as well as farmers practices plots and finally the extension gap, technology gap, technology index along with benefits cost ratio were worked out by using following formulas (Samui *et al.,* 2000).

The details of different parameters are as follows:

1. Extension gap = Demonstration yield – Farmer practice yield
2. Technology gap = Potential yield – Demonstration yield
3. Technology index = Potential yield – Demonstration yield x 100/ Potential yield

RESULTS AND DISCUSSION

Results of Front Line Demonstration (FLDs) indicated that the cultivation practices comprised under FLD *viz.*, use of variety CO-3 (Coimbatore-3), seed treatment with the use of *bijamrut, jeevamrut* and *ghan jeevamrut* use as manure as per recommendation and line sowing. The finding of impact of FLDs on napier grass variety CO-3 (Coimbatore-3) is presented in Table 1. The CO-3 (Coimbatore-3) recorded three years average yield of 1792 q/ha compared to local variety of as 1461 q/ha. The average percent increase in yield was recorded as 22.43% during these three years of FLD programme. The results of the present study are in consonance with the findings of Sawardekar *et al.* (2003), and Hiremath and Nagaraju (2009). It is evident from the results that the yield of improved variety was found better than the local variety under same environment conditions. Farmers were motivated by results of demonstrated agro technologies applied in the FLDs and it is anticipated that they would adopt these technologies in future.

Technology gap

The technology gap in the demonstration ranged from 1872 to 2670 q/ha yields over potential yield (Table 1). The technology gap observed may be attributed to the dissimilarity in soil fertility, salinity and erratic rainfall and other vagaries of weather conditions in the area. Hence, variety wise location specific recommendation appears to be necessary to minimize the technology gap for yield level in different situations (The technology gap were calculated using the formula given by Samui *et al.* (2000).

Extension gap

The extension gaps ranged from 230 to 413 q/ ha during the period of demonstration emphasized the need to educate the farmers through various means for the adoption of improved agricultural production technologies to reverse this trend of wide extension

TABLE 1
Effect of new technology on average yield, extension gap, technology gap and technology index

Year	Area (ha)	No of Demo	Potential yield (q/ha)	Average yield (q/ha)		Per cent yield increase over FP	Technology gap (q/ha)	Extension gap (q/ha)	Technology Index (%)
				Demo	FP				
2024	1.25	25	4000	1330	1100	20.91	2670	230	66.75
2025	1.25	25	4000	1920	1570	22.29	2080	350	52.00
2026	2.50	50	4000	2128	1715	24.08	1872	413	46.80
Mean value			4000	1792	1461	22.43	2207	331	55.18

FP: Farmer practices, Demo: Demonstrations.



Pic. 2. Demonstration plot of Napier grass.



Pic. 3. Demonstration plot of Napier grass.

TABLE 2
Effect of new technology on economics of different experimental year

Year	Cost of cultivation (Rs/ha)		Gross return (Rs/ha)		Net return (Rs/ha)		B:C Ratio		Net return increased over FP (%)
	Demo	FP	Demo	FP	Demo	FP	Demo	FP	
2024	55000	45000	287000	210000	232000	165000	5.21	4.66	40.60
2025	80000	71000	288000	205000	208000	134000	3.60	2.88	55.22
2026	80000	74000	312000	223000	232000	149000	3.90	3.01	55.70
Mean	71666	63300	295666	212666	224000	149333	4.23	3.51	50.51

FP: Farmer practices, Demo: Demonstrations.

gap. More and more use of latest production technologies with high yielding variety will subsequently change this alarming trend of galloping extension gap. The new technologies will eventually lead to the farmers to discontinue the old technology and to adopt new technology (Table 1). This finding is in corroboration with the findings of Narayanaswamy and Eshwarappa (1998), and Singh *et al.* (2007).

Technology Index

The technology index shows the feasibility of the technology at the farmer's field. The lower the value of technology index more is the feasibility. The technology index was from 46.80% (2026) to 66.75% (2024) and average technology index was 55.18% (Table 1). The results of the present study are in consonance with the findings of Sawardekar *et al.* (2003), and Hiremath and Nagaraju (2009).

ECONOMICS

The input and output prices of commodities prevailed during each year of demonstration were taken for calculating cost of cultivation, gross return, net return and benefit cost ratio and Net return increased over FP (%) (Table 2). While the net return from farmer practices ranged from Rs. 165000/- to Rs. 149000/-, the net return from suggested practices ranged from Rs. 232000/-, 208000/- and Rs. 2,32,000/- respective years. It means that net return from demonstration was higher than the farmer practices. The benefit cost ratio was also calculated. The average benefit cost ratios of under recommended practices was higher (4.23) as compared to farmers' practice (3.51). Benefit cost ratios was higher may be due to higher yield obtained under recommended practices compared to farmer's practices. Similar results were also reported by Hiremath and Nagaraju (2009) and Dhaka *et al.* (2010).

CONCLUSION

From forgoing discussion, it can be concluded that by conducting FLDs of improved variety with intervention of proven technologies in farmer's field, Napier grass productivity enhanced to a great extent which increased the income level of farmers and improved the livelihood of farming and especially animal husbandry community.

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