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Performance of frontline demonstration of Okra var. Purna Rakshak

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Abstract

The front-line demonstrations were conducted to create awareness for the use of the newly released variety Purna Rakshak (GNO-1) for the Okra crop by Navsari Agricultural University during the year 2022-23 in Vandsa block of Navsari district in Gujarat. In the demonstrated plot, the Purna Rakshak variety resulted in higher yield (90.00 q/ha) compared to farmer plots (77.50 q/ha) in the off-season (winter). The yield raised compared to farmer's field plot was 16.13 %. The extension gap was recorded 12.50 q/ha. In the same way, the technical gap was noted 37.20 q/ha. The technology index recorded 29.25 %. The BC ratio was recorded maximum in the technology exhibited plot (2.54) compared to the farmer plot (1.86). Furthermore, the net return increase percent was noted 52.09 %. The additional return was recorded higher 56,100 Rs. with the additional cost of 18,600 Rs. The net return in the technology exhibited plot was recorded 1,63,797 Rs/ha compared to the farmer's plot which was 1,07,697 Rs/ha.

Keywords: Okra, Purna Rakshak, GNO-1, extension gap, technical gap, technology index and yield

Introduction

Okra has been known by different names in different languages. In Sanskrit, the mother of all languages, it has many names viz, Asrapatraka, Dindisa (Singh and Jadhav, 2011) ^[10], Bhenda, Darvika, Pitali (Lim T K, 2012) ^[7], Sushak (Sood *et al.*, 2010) ^[11], Tindisha, Gandhamula (Chris Smith, 2019) ^[3], Vrittibija, Chatupunda, Kshtrasambhav (Jaipurkar, 2007) ^[6]. In Gujarati and Oriya languages it is known as Bhinda, whereas in Hindi, Punjabi and Marathi it is known as Bhindi. In Kannada and Asamese it called Bhendi, in the Tamil language, it is known as Venaikkay whereas in the Telugu language, it is known as Vendakaya. It is known as *gombo* in French, *gluinogombo* in Spanish and *guibeiro* in Portuguese. Okra (*Abelmoschus esculentus* (L.) Moench) is known as Ladies finger and Okra as common name in English.

It is easy to cultivate, has a remunerative yield, year-round growth potential, better nutritive value, wide adaptability to environmental conditions. It is a famous crop produced all over the year, except in wintertime. (Ray *et al.*, 2022) ^[8]. The ancient documents of Ayurved, it is mentioned as remedy of different types of ailments, which proves its existence from India. Even though, on bases of its variation availability, it is considered native to tropical Africa. Okra is often-cross-pollinated crop with somatic chromosome number 2n=130. The rate of out crossing to an extent of 4 to 42.2 % is noticed. Globally, India is on number one position in production.

The availability of vitamin A, C and K and the mucilaginous matter, makes it helpful for growing muscular vigour as well as getting better skin physical condition. One-hundred-gram unripe fruits gives only 30 calories makes it great popular for less calories food. It reduces cholesterol therefore, it is useful for heart. It is also used in constipation, dysentery, painful urination, cystitis, urethritis, gonorrhoeal cystitis and diabetes. Roasted seeds are considered as one of the best substitutes for coffee. Its wild species root and stem are used for clearing cane juice for the preparation of jaggery.

Important Okra cultivating states in Bharat are Punjab, Uttar Pradesh, Madhya Pradesh, Karnataka, Maharashtra, Gujarat and some parts of Rajasthan. Gujarat is the leading state in the cultivation of okra contributing about 77.59 thousand hectare of the area with a total production of 949.79 thousand MT (2019-20). Navsari Agricultural University, Navsari, Gujarat released this variety in the year 2021 in the name of Purna Rakshak (GNO-1=Gujarat Navsari Okra-1). Looking at overall performance, the variety Purna Rakshak may recommend for cultivation in the okra producing area of the Southern Gujarat.

Its fruit are smooth, tender, and dark green in colour with a green base. Looking at the pest incidences, the Purna Rakshak variety was found superior to all checks at Navsari against fruit borer, jassid and white fly. It is less affected by YVMV, ELCV and powdery mildew incidence in fields under south Gujarat conditions.

The farmer of South Gujarat particularly Tapi and Navsari districts, Okra is cultivated in large areas. Southern Gujarat is considered as a bowl of horticultural crops. (Gurjar *et al.*, 2023) [5]. Okra is grown after the harvest of paddy just after completion of monsoon in South Gujarat. (Chauhan, 2015) [1]. Moreover, after harvesting paddy first, they complete the cultivation and sowing of Okra in the field and then after the threshing of paddy crop is completed. The vegetable crop production is very low in the Navsari district therefore it gives to local farmers in the market for price.

Therefore, to find out the performance of the Purna Rakshak (GNO-1) Okra variety in the grower's plot, KVK Navsari arranged demonstrations in the grower's field with following objectives:

To study the performance of the Purna Rakshak variety in the farmer's field

To find out the economics of the Purna Rakshak variety

To find out the Extension gap, technical gap and technical index of the Purna Rakshak variety

Materials and Methods

KVK, Navsari started the FLDs on scientific farming method of Purna Rakshak (GNO-1) Okra variety in the Vandsa block of Navsari district during the year 2022-23. A total of 45 (19 male and 26 female) farmers (Table 2) were chosen for the winter (off-season) with a spacing of 45 cm * 10 cm in the area of 4.50 hectare in irrigated condition with good drainage facility. The required step for the choice of the location, growers and plan of the demonstration were supervised as recommended by Choudhary (1999) [2]. Before starting of the FLDs, a listing of the farmer from different villages was created through surveys and farmer gathering and precise skilfulness was created, regarding the different aspects of technical farming systems and plant care methods. Navsari Agricultural University released the Okra variety Purna Rakshak was given 1 kg to each farmer. Moreover, farmers used a advised dose of fertilizers and manure (100-50-50 kg NPK/ha in Okra with 10 t/ha well-decomposed Farmyard Manure) for the technology exhibited plot. The traditional practices followed by farmers were continued in the case of Farmer's field. The observation of yield statistics were recorded from FLD plots as well as Farmer's field and as a final point, the BCR was calculated. The data on production cost and financial returns were pulled together for the profitability of okra Purna Rakshak variety cultivation. The technology index, technology and extension gap were calculated as recommended by Eswaraprasad *et al.* (1993) [4] and Samui *et al.* (2000) [9]. The details of the formulas are mentioned below.

Extension Gap = Demonstration Yield – Farmer Yield

Technical Gap = Potential Yield – Demonstration Yield

Technical Index = (Technical Gap / Potential Yield) * 100

Results and Discussion

From the observed statistics (Table 1), it was observed that the yield of okra was significantly influenced by the newly demonstrated variety Purna Rakshak (GNO-1). It can be observed from the data (Table 1) that days to 50 per cent flower (44 days) and the numbers of pickings (10), were recorded the same in Purna Rakshak and Local check. In the results of observation *e.g.* plant height (120 and 132 cm), fruit length (11.1 and 12.2 cm), fruit girth (1.5 and 1.6 cm), internodal length (6.7 and 6.8 cm), number of fruits per plant (7.0 and 6.6), the local check was found superior whereas in case of fruit weight (7.75 and 7.00 g), days to harvesting (85 and 84), fruit yield (90.00 and 77.50 q/ha) recorded, respectively. From the observed data it can be easily observed that in most of the data, the Purna Rakshak variety recorded better performance.

Table 1: Observation recorded for Okra FLDs during the year 2022-23.

Sr. No.	Observation recorded	Purna Rakshak Variety	Local variety
1	Days to 50 percent flower	44	44
2	Plant tallness (cm)	120	132
3	Number of fruits per plant	7.00	6.60
4	Fruit length (cm)	11.1	12.2
5	Fruit girth (cm)	1.5	1.6
6	Inter nodal length (cm)	6.7	6.8
7	Fruit weight (g)	7.75	7.00
8	Number of pickings	10	10
9	Days to harvesting	85	84
10	Fruit yield (q/ha)	90.00	77.50

Frontline demonstrations with the Purna Rakshak variety had a considerable effect on the output of Okra throughout the off-season (winter) growth. It is clear from the data that the better yield (Table-3) was noted in the technology exhibited field plot (90.00 q/ha) compare to the farmer's field plot (77.50 q/ha). The yield increase per cent was 16.13 % by use of Purna Rakshak (GNO-1). The cause was the use of a newly released variety which enhanced the capacity of plants in the technology exhibited plot.

The potential yield (Table-3) recorded in the okra Purna Rakshak variety is 127.20 q/ha in the Navsari district. The extension gap recorded in okra was 12.50 q/ha. This could be attributed to ignorance regarding the principles of technical organisation of crop farming and variety selection. Farmers are not aware of the new variety released and its usefulness in increasing crop yield sustainability. Therefore, it is necessary to train the growers regarding new variety through farmers' meeting, training as well as problem-solving visits and perception clearance. In terms of the technical gap, a yield of 37.20 q/ha was recorded, highlighting the imperative to educate farmers through various extension methods in order to promote the adoption of scientifically advanced production techniques and newly released varieties. Furthermore, the technology index of 29.25% indicates the effectiveness of the demonstrations provided to growers.

The economic analysis, as shown in Table-4, reveals that the overall cost in the Purna Rakshak variety demonstration plot was 1,06,203 Rs/ha, while it was 1,24,803 Rs/ha in the local control area for okra. The increase in gross cost in the control area can be attributed to the expense of using seeds from a private company.

In contrast, the overall income in the Purna Rakshak demonstration plot was 2,70,000 Rs/ha, whereas in the farmer's plot, it was 2,32,500 Rs/ha. Consequently, the net profit return in the variety exhibited plot was 1,63,797 Rs/ha, compared to 1,07,697 Rs/ha in the control plot. Moreover, the BC ratio was higher in the variety exhibited plot (2.54) compared to the control plot (1.86).

The percentage increase in net profit return amounted to 52.09%, highlighting the profitability of transitioning to the Purna Rakshak variety. Notably, the additional cost was 18,600 Rs./ha, while the additional return was a noteworthy

56,100 Rs./ha, emphasizing the potentiality of adopting this variety.

Table 2: FLDs Detail for crop variety season and total participant during the year 2022-23

FLD organized			Area (ha)	Male	Female	Total Participant
Name of Crop	Name of Variety	Season				
Okra	Purna Rakshak	Winter	4.50	19	26	55

Table 3: Yield performance of FLDs organized during the year 2022-23

Name of Crop	Name of variety demonstrated	Planting	Yield obtained (q/ha)		Yield increase (%)	Potential yield of the demo variety (q/ha)	Extension gap (q/ha)	Technical gap (q/ha)	Technical index (%)
			Demo Average	Check Average					
Okra	Purna Rakshak	0.45*0.10 cm	90.00	77.50	16.13	127.20	12.50	37.20	29.25

Table 4: Expenditure and Return performance of FLDs organized during the year 2022-23

Name of Crop	Expenditure and Returns (Rs./ha)									Additional	
	Demonstrated variety Purna Rakshak				Local Check Variety						
	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	B: C ratio	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	B: C ratio	Net Return increase percent	Cost	Return
Okra	1,06,203	2,70,000	1,63,797	2.54	1,24,803	2,32,500	1,07,697	1.86	52.09	18,600	56,100

Conclusion

In summary, Purna Rakshak (GNO-1) significantly improved okra yield, particularly during off-season growth. The variety demonstrated superior performance in most aspects. Frontline demonstrations were effective, resulting in a 16.13% yield increase. The potential yield in Navsari is 127.20 q/ha, but an extension gap of 12.50 q/ha persisted due to farmer awareness gaps. Educating farmers through various means is crucial. Economic analysis showed that adopting Purna Rakshak was profitable, with a 52.09% increase in net profit and noteworthy additional returns compared to costs.

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