Current Horticulture 12(1): 69–71, Januray–April 2024 DOI: 10.48165/chr.2023.12.1.02

Effect of frontline demonstration on yield and economics of okra (*Abelmoschus esculentus*) in Dungarpur district of Rajasthan

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Received: 11 January 2021; Accepted: 14 November 2022

ABSTRACT

The frontline demonstration on okra [*Abelmoschus esculentus* (L.) Moench.] was conducted on 70 ha during 2016, 2017, 2018 and 2019 at farmers' fields in tribal area of Dungarpur district of Rajasthan. A total of 350 demonstrations were conducted on 350 farmers fields' with package of practices. The average yield was obtained 145.9, 147.5, 148.6 and 150.2 q/ha under demonstrated practice, whereas in farmers practice it was 102.2, 103.1, 102.6 and 103.4q/ha yield during summer season of 2016, 2017, 2018 and 2019, respectively. An average on technology gap of four years frontline demonstration programme was 3.95qha. The per cent increase in yield with high-yielding over local variety was 42.76 to 45.26 per cent. The extension gap recorded was 43.7, 44.4, 46.0 and 46.8 q/ha during all years. An average technology index was 2.60 per cent during all the four years, showing the efficacy of technical interventions. The demonstrated practice also gave higher gross return, net return with higher benefit: cost ratio compared to farmers practice.

Key words: B:C ratio, Extension gap, FLD, Technology gap, Technology index, Yield.

Okra [*Abelmoschus esculentus* (L.) Moench] thrives in all kinds of soils, but it grows best in a friable well manured soil (Yawalkar, and Ram, 2004). Farmers in India are still producing crops based on knowledge transmitted to them by their forefathers leading to a grossly unscientific agronomic, nutrient management and pest management practices (Papnai, *et al*. 2017). As a result, they often fail to achieve the desired potential yield. To improve yield levels and make awareness to okra growers, frontline demonstrations were conducted. The performance of okra Jamuna against local check was evaluated at farmers' fields during summer seasons 2016 to 2019.

MATERIALS AND METHODS

The frontline demonstrations were conducted in Dungarpur district during summer season 2016, 2017, 2018 and 2019. A total 350 frontline demonstration on okra Jamuna was conducted at farmers' fields. The data were collected on pod yield, cost of cultivation, net returns with benefit: cost ratio. The data were collected through personal contacts with the help of well-structured interview schedule. The data were processed, tabulated, classified and analyzed in terms of mean per cent score. More than 10 per cent difference between beneficiary and non-beneficiary farmers was considered as significant difference. The extension gap, technology gap and technology index, marginal benefit: cost ratio and relative economic efficiency were calculated using the formula as suggested by Papnai *et al*. (2017).

Extension gap = demonstrated practice yield-farmers practice yield

Technology gap = potential yield- demonstration yield

$$\text{Technology index} = \frac{\text{Potential yield - demonstration yield}}{\text{Potential yield}} \times 100$$

RESULTS AND DISCUSSION

On an average pod yield was recorded 148.05q/ha under demonstrated practices as compared to farmers' practice (102.18q/ha). The highest pod yield of demonstrated practices was 150.20q/ha during summer season 2019 and in farmers' practice (103.10q/ha). The lowest yield was during summer season 2016. Average pod yield increased 44.92%/ha. The higher average pod yield was due to technical knowledge and adoption of improved package of practices. The findings support to those of Singh *et al*. (2008), Dhemre and Desale (2010), Singh *et al*. (2011), Nanda and Saha (2014), Khaiwal (2014), Yadav and Verma (2015),

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Kacha and Patel (2015), Rajput *et al*. (2016), Papnai *et al*. (2017), Choudhary *et al*. (2017), Aklade *et al*. (2018), Shelke *et al*. (2019), Adhikari and Piya (2020), Kachari and Barooah (2020), Ray *et al*. (2020), Sivakumar *et al*. (2020), Irulandi, *et al*. (2020), Bhati *et al*. (2021) and Choudhary *et al*. (2022). However, variations in yield might be due to variations in soil fertility, moisture availability, rainfall and change in location.

The yield of demonstration practices was 6.1q/ha, 4.5q/ha, 3.5g/ha and 1.8q/ha during summer season 2016, 2017, 2018 and 2019, respectively. An average on technology gap of four years frontline demonstration programme was 3.95qha. The technology gap might be attributing to dissimilarity in soil fertility status and weather conditions. Hence, location-specific recommendations depend on identification and use of farming situation, specific interventions and greater implications in enhancing system productivity. These findings are similar to those of Singh *et al*. (2008), Singh *et al*. (2011), Balai *et al*. (2013), Kacha and Patel (2015), Rajput *et al*. (2016), Choudhary *et al*. (2017), Aklade *et al*. (2018), Sivakumar *et al*. (2020), Kachari and Barooah (2020), Ray *et al*. (2020), Bhati *et al*. (2021) and Choudhary *et al*. (2022). Extension gap of 43.7q/ha, 44.4q/ha, 46.0q/ha and 46.8q/ha was observed during all seasons.

An average of extension gap under frontline demonstration programme was 45.23q/ha, which emphasized the need to educate the farmers for adoption of improved production technology. These findings are similar to those of Singh *et al*. (2008), Balai *et al*. (2013), Singh *et al*. (2011), Kacha and Patel (2015), Rajput *et al*. (2016), Choudhary *et al*. (2017), Aklade *et al*. (2018), Sivakumar *et al*. (2020), Kachari and Barooah (2020), Ray *et al*. (2020), Bhati *et al*. (2021) and Choudhary *et al*. (2022). The technology index varied from 1.18 to 4.01 per cent. An average technology index was 2.60% during all years, which showed the efficacy of technical interventions.

The technology index showed economic feasibility of the demonstrated technology at farmers' fields. Therefore, it is concluded that understanding and using improved varieties/hybrids with recommended scientific package of practices enhanced yield. These are in agreement with those of Singh *et al*. (2008), Singh *et al*. (2011), Balai *et al*. (2013), Kacha and Patel (2015), Rajput *et al*. (2016), Choudhary *et al*. (2017), Aklade *et al*. (2018), Kachari and Barooah (2020), Sivakumar *et al*. (2020), Ray *et al*. (2020), Ray *et al*. (2020), Bhati *et al*. (2021) and Choudhary *et al*. (2022).

The net return of ₹110400/ha, ₹139450/ha, ₹169250/ha and ₹185250/ha, respectively, were obtained as

Table 1. Economics and yield difference of okra Jamuna under frontline demonstrations

Year	No. of Demo.	Area (ha)	Yield (q/ha)		increase yield over FP%	Extension Gap (q/ha)	Technology gap (q/ha)	Technology Index (%)	Cost of cultivation (₹/ha)		Gross return (Rs/ha)		Net return (₹/ha)		B:C ratio	
			DP	FP					DP	FP	DP	FP	DP	FP	DP	FP
2016	50	10	145.9	102.2	42.76%	43.7	6.1	4.01	35500	34950	145900	102200	110400	67250	4.11	2.92
2017	100	20	147.5	103.1	43.06%	44.4	4.5	2.96	37550	37050	177000	123720	139450	86670	4.71	3.34
2018	100	20	148.6	102.6	44.83%	46.0	3.4	2.24	38790	38250	208040	143640	169250	105390	5.36	3.76
2019	100	20	150.2	103.4	45.26%	46.8	1.8	1.18	40050	39020	225300	155100	185250	116080	5.63	3.97
Mean	**350**	**70**	**148.05**	**102.83**	**43.98%**	**45.23**	**3.95**	**2.60**	**37973**	**37318**	**189060**	**131165**	**151088**	**93848**	**4.95**	**3.50**

DP = Demonstrated practice, FP = Farmers practice and Potential Yield (q/ha) = 152 compared to farmer practices ₹67250/ha, ₹.86670 /ha, ₹105390/ha and ₹116080/ha during summer seasons of 2016, 2017, 2018 and 2019, respectively (Table 1). The average net return of ₹1,51,088/ha was higher as compared to farmers practices (₹93,848/ha). An average cost of cultivation, gross return, additional net return and B: C ratio of demonstration practice was ₹37973/ha, ₹189060/ha, ₹57240/ha and 4.95, respectively as compared to farmers practice (₹37318/ha), gross return (₹131165/ha) and B : C ratio (3.50). The benefit: cost ratio was higher than farmers' practices in during all the years. This may be due to higher yield under improved technologies compared to farmers' practice. This finding is similar to those of Singh *et al*. (2008), Singh *et al*. (2011), Balai *et al*. (2013), Khaiwal (2014), Nanda and Saha (2014), Yadav and Verma (2015), Kacha and Patel (2015), Rajput *et al*. (2016), Choudhary *et al*. (2017), Papnai *et al*. (2017), Aklade *et al*. (2018), Sivakumar *et al*. (2020), Ray *et al*. (2020), Bhati *et al*. (2021) and Choudhary *et al*. (2022).

CONCLUSION

These yield potential of okra can be increased to a great extent. This will substantially increase the income as well as livelihood of farming community. There is a need to adopt multi-pronged strategy that involves enhancing okra production through improved technologies in tribal area of Dungarpur district of Rajasthan.

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