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Impact of front line demonstrations on the yield and economics of onion in Bharuch district of Gujarat

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Abstract

As per mandate of ICAR, KVK Bharuch is being conducting front line demonstrations every year to increase awareness among farmers of districts for different high yielding varieties released by Agriculture universities as well as from various research institutes which are helpful to them for increasing income. During year 2018-19 & 2019-20 by seeing the interest and demand from farmers decided to introduce new varieties of onion i.e. Bhima Shakti and Bhima Kiran released by Directorate of Onion & Garlic Research Station Rajgurunagar Pune. Farmers of Valia, Netrang, Ankleshwar and Zagadiya block of Bharuch districts were selected who are involved in Onion cultivation since long by using local variety who is yielding small bulb size with low yield resulting very low income which was not sufficient to meet out the invested amount. In the beginning awareness training was conducted for motivation and to disseminate information on standard package of practices. As a support saplings of both the varieties were given to selected farmers. The result showed an increase in the average yield of Bhima Shakti (35.55 t/ha), followed by variety Bhima Kiran (33.2 t/ha) compare to the local check (26.85 t/ha) of onion crop. There was a positive impact on the yield of onion crop, by replacing local varieties with improved varieties such as Bhima Shakti and Bhima Kiran as well as by adopting scientific package of practices. The economic analysis of the data revealed that Bhima Shakti variety has higher gross returns (Rs. 1,77,750/ha) with net returns (Rs. 1,20,715/ha) and B:C ratio (3:12) followed by variety Bhima Kiran higher gross returns (Rs. 1,66,000/ha) with net returns (Rs. 1,09,955/ha) and B:C ratio (2:96) as compared to local variety.

Keywords: Frontline demonstrations, yield and economics

Introduction

All activities in KVK are educational for increasing awareness among farmers for various new technologies with standard package of practices invented by Agricultural Universities and Research Institute which are helpful to them increasing income as well as to overcome the traditional practices adopted since long. Onion is daily required ingredient for kitchen without any recipe can make in India. Onion is rich in rich in vitamin C, potassium, dietary fibre, minerals and folic acid. It also contains calcium, iron and has a high protein quality and is low in sodium and no fat content. It also contains calcium, iron and has a high protein quality and is low in sodium and no fat content.

It also plays an important role in food and nutritional security of tribal, but cultivation of this crop is limited to the kitchen garden. Efforts are being taken from KVK Bharuch to increase the area under onion cultivation by introducing new high yielding varieties as well as motivation for adoption of scientific package of practices in tribal dominated villages of Bharuch district. In 2010 onion was sold @ Rs/kg which showed increasing trend in the succeeding years and at present its market value is Rs/kg this much reflection diverts the farmers for Onion cultivation as good source of income.

Materials and Methods

The present study was carried out in the adopted villages of 4 blocks of Bharuch district of Gujarat. During year 2018-19 & 2019-20 improved onion variety Bhima Shakti and Bhima Kiran was introduced as frontline demonstrations of Krishi Vigyan Kendra, Bharuch. All demonstrations were conducted in an area of 0.4 ha and for easy understanding the difference as well as for comparison plot of local variety were also grown. Scientific package of practices with respect to frontline demonstrations and farmers practices are given in Table 1. The data on production cost and net returns were collected from 100 demonstrations and 50 non demonstration farmers.

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The KVK provided inputs as saplings of improved varieties viz. Bhima Shakti and Bhima Kiran. The demonstrations were laid out under the close supervision of KVK scientists. All the recommended package of practices was followed for both the varieties as suggested by Directorate of Onion & Garlic Research Station Rajgurunagar Pune. The data on yield, cost of cultivation, net returns with the benefit cost ratio of variety were collected from FLDs as well as control from all selected farmers for further analysis.

Results and Discussion

It has been noted that (Table 2) the Bhima Shakti variety recorded good average yield in demonstration plots i.e. 34.60 t/ha and 36.5 t/ha respectively, followed by varieties Bhima Kiran 32.8 t/ha and 33.6 t/ha respectively for the years 2018-19 & 2019-20. However, the average onion yields in control

plots was 26.5 t/ha and 27.3 t/ha, in the years 2018-19 & 2019-20, respectively. This showed that there was a significant increase of onion in the mean yield of improved varietal plots i.e. Bhima Shakti (32.38%), followed by Bhima Kiran (24.5%) during the years 2018-19 & 2019-20, respectively as compare to the local variety. The main reasons of the low yield in control plots were, use of low yield producing seeds, traditional cultivation practices, improper fertilizer and weed management apart from this Black Mould and Thrips causes economic losses to farmers. Introduction of high yielding varieties, created awareness among beneficiaries for scientific cultivation practices like timely sowing, recommended spacing, balanced use of manure, fertilizers and weed management as well as integrated pest and disease management.

Table 1: Particulars showing the details of onion growing under Front Line Demonstration and existing practice

S.N.	Particulars	Farmers' Practice	Scientific package of practices
1	Variety	Use of saplings prepared from local seeds	Bhima Shakti & Bhima Kiran
2	Seed treatment	Sowing was done as such as procured from market	Captan (3 gm per 1 kg seeds)
3	Spacing	Broadcasting	Spacing : 15 x 10 cm.
4	Fertilizer application	Imbalanced application of fertilizer	Nitrogen @ 75 kg/ha, Phosphorus @ 60 kg/ha and Potash @ 50 kg/ha
5	Weed management	Hand weeding	Fluchloralin or Oxyfluorfen @ 15 ml/10 litres of water 30 DAT.
6	Pest and disease management	Non-adoption of IPDM practices	IPDM practices

Table 2: Yield of onion

Year	Number of farmers			Area (ha)			Yield (t/ha)			% increased yield		
	Farmers practice	Bhima Shakti	Bhima Kiran	Farmers practice	Bhima Shakti	Bhima Kiran	Farmers practice	Bhima Shakti	Bhima Kiran	Farmers practice	Bhima Shakti	Bhima Kiran
2018-19	25	22	18	10.0	22.0	18.0	26.5	34.6	32.8	--	30.57	23.77
2019-20	25	30	30	10.0	30.0	30.0	27.2	36.5	33.6	--	34.19	25.23
Mean	25	26	24	10	26	24	26.85	35.55	33.2	--	32.38	24.5

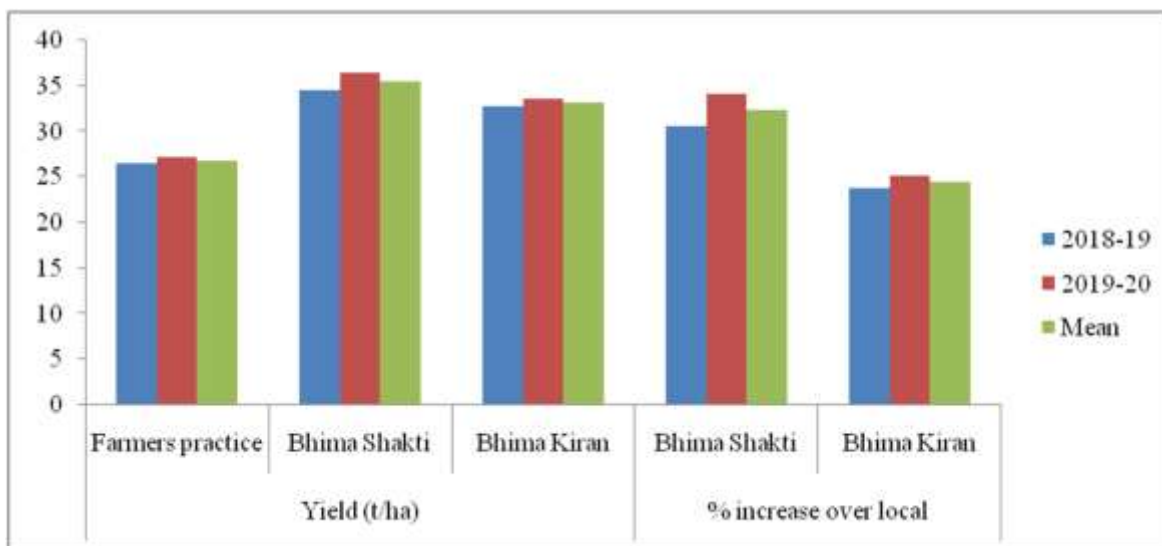


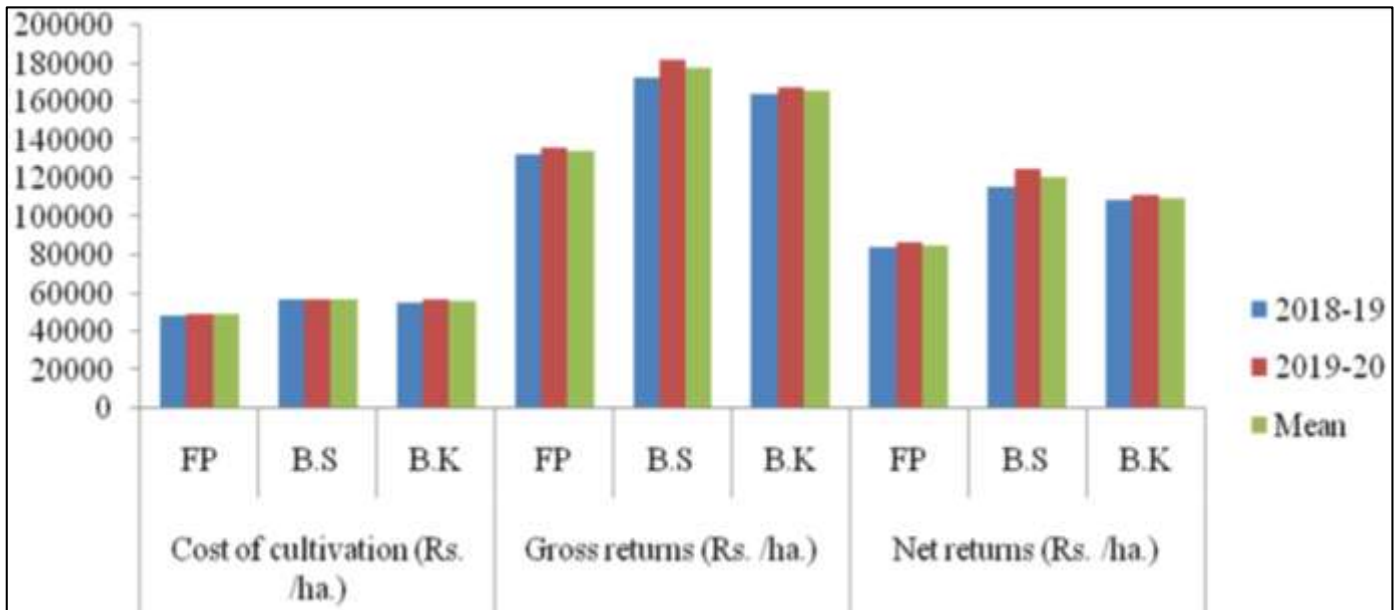
Fig 1: Yield performance

The year wise economics of onion production under frontline demonstrations was estimated and the results have been presented in Table 3. The data revealed that Bhima Shakti variety has higher gross returns (Rs. 1,77,750/ha) as well as net returns (Rs. 1,20,715/ha) and B:C ratio was 3:12 followed by variety Bhima Kiran which has higher gross returns (Rs. 1,66,000/ha) as well as net returns (Rs. 1,09,955/ha) and B:C ratio was 2:96 as compared to local varieties. These results

are in line with the findings of Hiremath *et al.* (2007) [1], Hiremath, and Nagaraj (2010) [2] and Hiremath *et al.* (2011) [3] in Haveri district by inclusion of Bhima Shakti & Bhima Kiran variety. Present study revealed that wide yield and management gaps in recommendations and farmers practices. Further improvement will be seen in succeeding years after adopting recommended management practices.

Table 3: Economics of onion production

Year	Cost of cultivation (Rs. /ha.)			Gross returns (Rs. /ha.)			Net returns (Rs. /ha.)			B: C ratio		
	Farmers practice	Bhima Shakti	Bhima Kiran	Farmers practice	Bhima Shakti	Bhima Kiran	Farmers practice	Bhima Shakti	Bhima Kiran	Farmers practice	Bhima Shakti	Bhima Kiran
2018-19	48450	56830	55200	132500	173000	164000	84050	116170	108800	2.73	3.04	2.97
2019-20	49530	57240	56890	136000	182500	168000	86470	125260	111110	2.75	3.19	2.95
Mean	48990	57035	56045	134250	177750	166000	85260	120715	109955	2.74	3.12	2.96



(FP: Farmer Practices, B.S: Bhima Shakti and B.K: Bhima Kiran)

Fig 2: Economics impact

Conclusion

It can be concluded from the study that increased yield and higher net return was due to adoption of improved varieties like Bhima Shakti and Bhima Kiran as well as adoption of scientific package of practices as recommended. This will subsequently increase the income as well as the livelihood of the tribal communities in Bharuch district of Gujarat.

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