

Original Research Article

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## Frontline Demonstrations of Capsicum, Turmeric, Garlic and Chilli in District Rupnagar in Sub-mountainous Zone of Punjab

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### ABSTRACT

#### Keywords

Frontline demonstrations, Extension gap, Capsicum, Turmeric, Garlic, Chilli, Technology index, Yield

#### Article Info

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The major constraint is low productivity of vegetable crops by following the non-recommended cultivation techniques. The results of front line demonstration revealed that average yield of 225, 325, 138 and 250 q/ ha was obtained in Ropar, Nurburbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda blocks of district Ropar during the year 2017-2020, respectively. The yield was found to be 29, 53, 59.5 and 25 per cent higher over the farmer's practice in the Ropar, Nurburbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda blocks of district Rupnagar, respectively. The extension gap of 0.6, 0.15, 0.2 and 0.3 q per ha was observed in Ropar, Nurburbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda blocks of district Ropar, respectively. The lowest values of technology index indicate the more feasibility of the technology index from 55 to 77 per cent indicated that the demonstrated technologies were feasible in improve the yield of the vegetables. The range of benefit cost ratio of frontline demonstration of varied from 7.0 to 9.0, while BC ratio for farmers practices varied from 5.5 to 4.1 that is lower than that of FLDs.

### Introduction

Vegetables occupy major place in terms of area, production and productivity in India, Punjab and district Rupnagar. They contribute major share to GDP in the country. The area under vegetables is 102.59 lakh ha with production of 1843.94 lakh ton in India (2017-18). The area under spices is 254.3 lakh ha and production of 3117.14 lakh ton (2017-18) in India.

In Punjab the vegetables were grown in an area of 103.64 thousand ha with production of 4.77 thousand ton. The capsicum crop was grown in 0.36 thousand ha area with production of 5.71 thousand ton, The capsicum crop was grown in the 0.36 thousand ha area with production of 5.71 thousand ton, the carrot crop was grown in 8.87 thousand ha area with production of 197.17 thousand ton, the chilli crop was grown in 8.21 thousand ha area with production of 15.54 thousand ton,

while the tomato crop was grown in 9.01 thousand ha area with production of 224.26 thousand ton, garlic crop was grown in 6.46 thousand ha area with production of 73.70 thousand ton, garlic crop was grown in 6.46 thousand ha area with production of 73.70 thousand ton, turmeric crop was grown in 0.90 thousand ha area with production of 3.90 thousand ton, brinjal was grown in 21.71 thousand ha area with production of 22.91 thousand ton. Here in Punjab, the value of Rs. 687179 vegetables are produced (2015-16).

In case of district Rupnagar the area, production and productivity of major crops during the year 2017-18 is as follows. In terms of area, potato ranks seventh, onion eighth, cauliflower ninth, while tomato ranks tenth. In the district, the production of onion is 4.58 lakh ton from an area of 0.208 thousand ha with productivity of 1192 metric ton per ha. Tomato crop has production of 3.009 lakh ton from an area of 0.13 thousand ha with productivity of 1247 metric ton per ha. The brinjal crop has production of 1.94 lakh ton from an area of 0.091 thousand ha with productivity of 756 metric ton per ha. The vegetables are rich source of vitamins, minerals and essential nutrients required for good health of human being. So, vegetables are economically important crops. They may be grown in varied environmental condition except harsh climatic conditions and on most of the soils. Better management practices in terms of nutrient management, weed management, intercultural operations, insect pest and disease management could be translated to higher yields. The frontline demonstrations (FLDs) were conducted in five blocks of the district Rupnagar by Krishi Vigyan Kendra, Roparto improve the vegetable yield levels and create awareness among farmers. In the present study, improved varieties of vegetables recommended by PAU, Ludhiana were compared with the most common varieties

grown by the vegetable growers by using the farmers cultivation practices and evaluated in front line demonstrations conducted at farmer's fields from 2017 to 2020. The farmers varieties were compared with recommended varieties by following the recommended package of cultivation practices. The vegetables grown in the front line demonstrations were capsicum, turmeric, garlic and chilli.

## **Material and Methods**

The present study was carried out by the KrishiVigyan Kendra, Haveli Kalan, Ropar The frontline demonstrations were conducted over an area of 8 acres on the five blocks of district Ropar, i.e., Ropar, Nurpurbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda. Five farmers were selected from each block with an area of one 0.25 acre each. The planting of capsicum and chilli were done in the first week of October, while turmeric crop planted in the last week of April and first week of May and garlic in the second week of October. The frontline demonstrations were conducted to study the gap between potential yield, demonstration yield, extension gap and technology index. An area of 0.1 acre was also sown alongside the FLD and was managed by farmers without following PAU recommended practices. The scientist from KVK provided timely guidance to the farmers on weed control, fertilizer requirement, and insect-pest and disease management. Technology gap, extension gap and technology index were calculated using the standard procedure (Samui *et al.*, 2000)

## **Results and Discussion**

### **Yield performance**

The results of front line demonstration revealed that average yield of 225, 325, 138 and 250 q/ ha (Table 1) was obtained in

Ropar, Nurburbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda blocks of district Ropar during the year 2017-2020, respectively. The yield was found to be 29, 53, 59.5 and 25 per cent higher over the farmer's practice in the Ropar, Nurburbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda blocks of district Rupnagar, respectively, this increase clearly indicates the positive impact of frontline demonstrations on the vegetables yield.

### **Technology gap**

The technology is the yield gap between vegetables yield under frontline demonstrations and vegetable yield by following the farmer practices. It also reflects the farmers cooperation in carrying out such demonstration.

The technology gap of 0.6, 0.15, 0.2 and 0.3 q per ha was observed in Ropar, Nurburbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda blocks of district Ropar, Respectively (Table-1). The technology gap observed may be attributed to variability in the management practices, soil fertility, fertilizer application, wee, insect- pest and disease control and climatic conditions.

The extension gap of 2.5, 1.9, 1.2 and 0.8 q per ha was observed in Ropar, Nurburbedi, Sri Anandpur Sahib, Chamkaur Sahib and Morinda blocks of district Ropar, respectively, highlighted the need to educate the farmers through varion means for the adoption of improved agricultural technologies.

The higher adoption of recent production technology with high yielding varieties, better weed, insect pest and disease management, the irrigation and fertilizer application technologies would subsequently change this alarming trend galloping the extension gap.

### **Technology index**

The feasibility of the improved technology at the farmer's field is indicated through technology index. The lowest values of technology index indicate the more feasibility of the technology index from 55 to 77 per cent indicated that the demonstrated technologies were feasible in improve the yield of the vegetables (Table 1).

### **Benefit Cost Ratio**

The benefit to cost ratio (B:C) from using recommended practice were comparatively higher than the farmer's practices of the demonstration (Table 2. The return per ha from the frontline demonstrations were higher than that of farmer practices. The range of benefit cost ratio of frontline demonstration of varied from 7.0 to 9.0, while BC ratio for farmers practices varied from 5.5 to 4.1 that is lower than that of FLDs.

In conclusion, the results of front line demonstration convincingly brought out that the yield of vegetables could be increased by 68.3, 45.4, 35.8, 56.5 and 62.4 er cent higher over the farmers practice in the Roar, Nurburbedi, Sri Anandur Sahib Chamkaur Sahib and Morinda blocks of district Ropar, Respectively. This study clearly reflects the extension and technological gap exist at grass root level.

The increase in yield clearly indicates the positive impact of better management practices followed in the front line demonstrations on the vegetables yield. Thus, it could also be concluded that e better management interventions for the cultivation reduce the extension and technology gap to great extent. This would sustainably increase the income as well as the livelihood of the farmer of this district.

**Table.1** Productivity, Technology gap, extension gap and technology index of vegetable crops under FLDs and Farmer's field

Block	Capsicum FLD Average Yield (q/ha)	Turmeric FLD Average Yield (q/ha)	Garlic FLD Average Yield (q/ha)	Chilli FLD Average Yield (q/ha)	Capsicum Farmer's Practice (q/ha)	Turmeric Farmer's Practice (q/ha)	Garlic Farmer's Practice (q/ha)	Chilli Farmer's Practice (q/ha)	Per cent Increased yield (Capsicum)	Per cent Increased yield (Turmeric)	Per cent Increased yield (Garlic)	Per cent Increased yield (Chilli)	Technology gap	Extension gap	Technology index (%)
Ropar	225	325	138	250	175	213	105	200	28.6	52.6	31.4	25.1	0.6	2.5	54
Nurpurbedi	235	321	139	248	181	210	108	197	15.8	52.8	28.7	25.9	0.15	1.9	57
Sri Anandpur Sahib	215	318	143	247	186	216	110	194	15.4	47.2	30.1	27.3	0.2	1.2	68
Sri Chamkaur Sahib	220	328	141	253	170	219	101	203	16.8	49.8	39.6	24.6	0.3	0.8	72
Morinda	240	331	137	257	167	209	103	206	17.1	58.4	33.1	24.7			77

**Table.2** Economic impact of vegetable crops under FLDs and Farmer's practices

Block	Cost of cultivation (Rs./ha)		Gross Returns (Rs./ha)		B:C Ratio	
	FLD	Farmer's practice	FLD	Farmer's practice	FLD	Farmer's practice
Ropar	64350	67350	223000	194000	4.1	2.7
Nurpurbedi	60100	69400	227000	197000	3.8	2.8
Sri Anandpur Sahib	65600	70250	236000	198000	4.1	2.9
Sri Chamkaur Sahib	68300	72500	241000	185000	3.7	2.1
Morinda	65450	66700	243000	191000	3.1	2.3

**Table.3** The different parameters recorded for Capsicum crop

<b>Capsicum Demonstration Average Yield (q/ha)</b>	<b>Farmer's Practice (q/ha)</b>	<b>Per cent Increased yield (Capsicum)</b>	<b>Technology gap</b>	<b>Extension gap</b>	<b>Technology index (%)</b>
225	175	28.6	0.6	2.5	54
235	181	15.8	0.15	1.9	57
215	186	15.4	0.2	1.2	68
220	170	16.8	0.3	0.8	72
240	167	17.1	0.25	0.7	77

**Table.4** The different parameters recorded for Turmeric crop

<b>Turmeric Demonstration Average Yield (q/ha)</b>	<b>Farmer's Practice (q/ha)</b>	<b>Per cent Increased yield (Capsicum)</b>	<b>Technology gap</b>	<b>Extension gap</b>	<b>Technology index (%)</b>
325	213	52.6	0.5	2.8	58
321	210	52.8	0.3	2.0	61
318	216	47.2	0.2	1.4	73
328	219	49.8	0.4	0.9	77
331	167	58.4	0.35	1.3	75

**Table.5** The different parameters recorded for Garlic crop

<b>Garlic FLD Demonstration Yield (q/ha)</b>	<b>Farmer's Practice (q/ha)</b>	<b>Per cent Increased yield (Capsicum)</b>	<b>Technology gap</b>	<b>Extension gap</b>	<b>Technology index (%)</b>
138	105	31.4	0.3	3.1	61
139	108	28.7	0.5	2.4	64
143	110	30.1	0.3	1.2	71
141	101	39.6	0.45	0.7	76
137	103	33.1	0.2	1.1	77

**Table.6** The different parameters recorded for Chilli crop

Chilli demonstration average yield (q/ha)	Farmer's Practice (q/ha)	Per cent Increased yield (Capsicum)	Technology gap	Extension gap	Technology index (%)
250	200	25.1	0.2	2.9	63
248	197	25.9	0.7	3.1	57
247	194	27.3	0.2	1.5	73
253	203	24.6	0.5	1.2	75
257	206	24.7	0.15	0.9	77

**Table.7** Technology interventions under demonstration plots and farmers practices

Parameters	Demonstration	Farmer's Practice
<b>Variety</b>	Bharat (Capsicum), Punjab Haldi-2 (Turmeric), PG-17 (Garlic) and CH-27 (Chilli)	Local variety
<b>Seed Rate</b>	250 g ha <sup>-1</sup> (Capsicum), 15 q ha <sup>-1</sup> (Turmeric), 7.5 q ha <sup>-1</sup> (Garlic) and 500 g ha <sup>-1</sup> (Chilli)	300 g ha <sup>-1</sup> (Capsicum), 17 q ha <sup>-1</sup> (Turmeric), 9.0 q ha <sup>-1</sup> (Garlic) and 400 g ha <sup>-1</sup> (Chilli)
<b>Seed Treatment</b>	Seed treatment with fungicide	No seed treatment
<b>Time of sowing</b>	Mid October (Capsicum), Ist week of May (Turmeric), Ist week of October (Garlic) and Ist week of November (Chilli)	Same as for Demonstration
<b>Method of sowing</b>	Transplanting for Capsicum and Chilli and planting for Turmeric and Garlic	Same as for Demonstration
<b>Plant protection measures</b>	Need based application of pesticides as recommended by PAU, Ludhiana	Blanket application of pesticides
<b>Fertilizer application</b>	Recommended fertilizer application	Blanket fertilizer application
<b>Weed Management</b>	Use of recommended weedicides	Use of recommended and unrecommended weedicides

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