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A CASE STUDY :

Impact of front line demonstrations on productivity of carrot cv. PUSA RUDHIRA in Dholpur district of Eastern Rajasthan

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SUMMARY : The Present study was carried out at Dholpur district of Eastern Rajasthan during 2012-13. Carrot is one of the most important vegetable crops of the country. The development of the Agriculture is primarily depends on the application of the scientific technologies by making the best use of available resources. One of the major constraints of traditional carrot farming is low productivity because of non-adoption of advanced technologies. To increase the production, productivity and quality of agricultural produce, front line demonstrations are being conducted at various farmer's field. All the recommended practices were provided to the selected farmers. The data related to the cost of cultivation, production, productivity, gross return and net return were collected as per schedule and analyzed. Result of the present study revealed that the high yielding variety of carrot Pusa Rudhira recorded the higher yield (275.71 q/ha) as compared to local check (232.14 q/ha) traditionally grown by the farmers. The percentage increase in the yield over local check was 18.74 per cent.The technology gap in terms of productivity(43.57q/ha.) were computed. The technology index values (16.45 %) was recorded.The result of the study indicated the gap existed in the potential yield and demonstration yield is due to soil fertility and weather conditions. By conducting front line demonstration (FLDs) of proven technologies, yield potential of carrot can be increased upto great extent. This will substantially increase the income as well as the livelihood of the farming community.

KEY WORDS :
Front line demonstration, Local check, Carrot, Technology, Yield

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BACKGROUND AND OBJECTIVES

Carrot (*Daucus carota* L.) is one of the most important cool weather root crop is growen all over the world. In India, the important carrot growing states are Uttar Pradesh, Assam, Karnataka, Andhra Pradesh, Punjab and Haryana. It is the second and third most important vegetable in England and Australia, respectively (Dhaliwal, 2014). It can be grown also in mild climate of the tropics. Carrot had 0.064 million ha area with the production of 1.145 million tonnes during 2012-13 (Anonymous, 2014). Being a rich source of beta carotene, a precursor of vitamin A.It also possess anti-oxidant properties, fix up harmful free radicles and prevent heart diseases. It is generally consumed as a

vegetable after cooking but also consumed fresh in salad, juice and served as an ingredient in soups and sauces. Tender roots are processed to make pickles, jam, candy and jellies. It is also used as an additive in poultry feed to intensify skin and egg yolk colour (Dhaliwal, 2014).

The carrot variety Pusa Rudhira suits to this region. A field trial was carried out at the seven farmer's field at Dholpur district of Rajasthan comes in Agro-chemalic Zone of Rajasthan III B Flood Prone Eastern Plane. Here generally in winters minimum temp. goes to 2-3^{o} and in summer maximum temp. reaches to 48^{o}C and annual rainfall is 600-650 mm per year. Due to Chambal and Parvati rivers quality of irrigation water is good. Due to nearness to the Agra and Gwalior the demand of vegetables is more. There is lot of scope of carrot growing in winter season under assured irrigation facility.

The main objective of front line demonstration (FLD) is to introduce suitable agriculture practices like high yielding varieties, seed treatment, spacing, nutrient management, pest and disease management etc. among the farmers accompanied with organizing extension programmes (field day) for horizontal dissemination of the technologies. FLD is playing a very important role for transfer of technologies and changing scientific treatment of the farmers by seeing and believing principle.

In order to have better impact of the demonstrated technologies for farmers and field level extension functionaries, front line demonstrations was conducted in a cluster of one hectare land.

Generally, the agricultural technology is not accepted by the farmers as such in all respects. There is always gap between the recommended technology by the scientist and its modified form at the farmer's level which is major absentee in the efforts of increasing agricultural production in the country. It is need of the hour to reduce this technological gap between the agricultural technology recommended by the scientists or researchers and its acceptance by the farmers on their field. In view of the above facts, front line demonstrations were undertaken in a systematic manner on farmer's field to show the worth of a new technology and convince the farmers to adopt in their farming system.

RESOURCES AND METHODS

The present study was conducted in Dholpur district of eastern Rajasthan during 2012-13. The genuine seed of carrot cv. PUSA RUDHIRA was procured and distributed to seven selected farmers. All the participating farmers were trained on various aspects of carrot production technologies. The field was prepared by deep ploughing and harrowing after *Kharif* crops. The seeds were sown in well prepared field during first week of November. All the recommended practices *i.e.* seed treatment by fungicide, spacing, recommended dose of manure and fertilizers, weed management, insect pest management were provided to the farmers in both treatments (local check and Pusa Rudhira). The data related to cost of cultivation, production, productivity, total return and net return were collected in both treatments as per schedule from all selected farmers. An average of cost of cultivation, yield, net returns of different farmers was analyzed by the formula.

Average = [F_1+ F_2+F_3.....Fn]/N

F_1 = Farmer

N = Number of farmers (4)

In the present study, technology index was operationally defined as the technical feasibility obtained due to implementation of front line demonstrations in Pea. To estimate the technology gap, extension gap and technology index following formula used by Samui *et at.* (2000) have been used.

Technology gap = Pi (Potential yield) – Di (Demonstration yield)

Extension gap=Di (Demonstration yield)–Fi (Farmers yield)

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

OBSERVATIONS AND ANALYSIS

The results obtained from the present investigation have been presented in the following sub heads:

Performance of FLD :

A comparison of productivity levels between demonstrated variety and local check is shown in Table 1. During the period of study, it was recorded that front line demonstrations, the improved carrot variety Pusa Rudhira recorded the higher yield (275.71q/ha) than local check (232.14 q/ha).

The percentage increase in the yield (18.74) over local check was recorded. Similarly, yield enhancement in different crops in front line demonstration apply had been documented by Hiremath *et al.* (2007), Mishra *et al.* (2009), Kumar *et al.* (2010), Suryawanshi and Prakash

Table 1 : Yield, technology gap and technology index of demonstration

Variables	Yield (q/ha)	Increase (%) over local check	Technology gap (q/ha)	Technology index (%)
Local Check	232.14	-	-	-
Demonstration Pusa Rudhira	275.71	18.74	43.57	16.45

Table 2 : Economics of front line demonstration

Variables	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	Benefit :cost ratio
Local Check	30000	139284	107284	4.64
Demonstration	32000	165426	133426	5.16
Additional in demonstration	2000	26142	26142	13.07*

* incremental benefit :cost ratio

(1993) and Dhaka *et al.* (2010). From these results it is evident that the performance of improved variety was found to be better than the local check under same environmental conditions. The farmers were motivated by seeing the results in term of producitivity and they are adopting the technologies. The yield of the front line demonstrations and potential yield of the crop was compared to estimate the yield gaps which were further categorized into technology index. Similar work related to the present investigation was also done by Chauhan and Pandya (2012) and Chaturvedi *et al.* (2014).

Technology gap :

The technology gap shows the difference between potential yields over demonstration yield of the technology. The potential yield of the technology (variety Pusa Rudhira) is 330 q/ha (Singh, 2013). The technology gap 43.57 q/ha was recorded. The front line demonstration was laid down under the supervision of KVK specialist at the farmers field, there exist a gap between the potential yield and demonstration yield. This may be due to the soil fertitlity and weather condition. Hence, location specific recommendations are necessary to bridge the gap. These findings are similiar to the finding of Sharma and Sharma (2004) in oil seeds at Baran district of Rajasthan.

Technology index :

Technology index shows the feasibility of the variety at the farmer's field. The lower the value of technology index, more is the feasibility of the particular technology. The result of study depicted in Table 1 revealed that the technology index value was 16.45. It means the technology carrot cv. PUSA RUDHIRA is suitable for the Dholpur district of Eastern Rajasthan. The result of the present study are in consonance with the findings of Singh *et al*. (2007) and Hiremath and Nagaraju (2009) in onion.

Economics of frontline demonstrations:

Economics of carrot production under front line demonstrations was recorded and the results of the study have been presented in Table 2. The results of economic analysis of carrot production revealed that front line demonstration recorded higher gross return (165426 Rs./ ha) and net return. (Rs. 133426) with higher benefit cost ratio (5.16) as compared to local check. These results are in accordance with findings of Hiremath *et al*. (2007) and Hiremath and Nagaraju (2009), further, additional cost of Rs. 2000 per ha in demonstration has increased additional net return Rs. 26142 per ha with incremental benefit cost ratio 13.07 suggesting its higher profitability and economic viability of the demonstration. More and less similarresults were also reported by Hiremath and Nagaraju (2009) and Dhaka *et al.* (2010).

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