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RESEARCH ARTICLE :

Impact of front line demonstrations on productivity of pea cv. AZAD PEA-1 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. Pea 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 pea 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 Pea Ajad Pea-1 recorded the higher yield (69.5 q/ha) as compared to local check (54.5 q/ha) traditionally grown by the farmers. The percentage increase in the yield over local check 27.52 was recorded.The technology gap in terms of productivity (5.5q/ha) were computed. The technology index values 7.33 per cent 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 pea 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, Pea, Technology, Yield

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BACKGROUND AND OBJECTIVES

Pea (*Pisum sativum*) is one of the most important legumes annual crop of temperate and sub tropical region of the world. It can be grown also in mild climate of the tropics. In India it is extensively cultivated in Uttar Pradesh, Bihar, Madhya Pradesh, Haryana, Punjab, Parts of Rajasthan, Himachal Pradesh, Jammu and Kashmir, West Bengal, Orissa, Maharashtra and Karnataka. It is a herbaceous annual, dwarf, semi-dwarf or tall with pinnate leaves terminal branched tendril, white flowers and straight or curved pods having small smooth or wrinkled seeds

(Swarup, 2006).In India, pea is one of the most important vegetables in terms of consumption and area covered under cultivation. Pea had 0.421 million ha area with the production of 4.006 million tonnes during 2012-13 (Anonymous, 2014). Being a rich source of protein it occupies an important place in the vegetarian diet.Due to its lower water requirement,it is an important cash crop in water deficit areas. Being a leguminous crop it enriches the soil by fixing the atmospheric nitrogen into the soil (Dhaliwal, 2014). Pea is used as a fresh processed vegetable. Immature green pods are picked and immature seeds are used as uncooked or cooked vegetable, fried or cooked in a curry along with potato, tomato or some other vegetable. It is also used for dehydration (or sun – dried) canning and freezing. Now-a-days frozen peas are commonly available in the market. India produces about 4.10 per cent of the world's pea and ranked IInd in world (Singh, 2013).

The pea variety Azad Pea-1 suits to this region. A field trial was carried out at the four farmer's field at Dholpur district of Rajasthan comes in Agro-climatic 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. 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 vegetable is more. There is lot of scope of pea growing in winter season under assured irrigation facility.

The main objective of front line demonstration (FLD) 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 pea cv. AZAD PEA-1 was procured and distributed to four selected farmers. All the participating farmers were trained on various aspects of pea 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, bio fertilize like Rhizobium and P.S.B, spacing, recommended dose of manure and fertilizers, weed management, insect pest management were provided to the farmers in both treatments (local check and Azad Pea-1). 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 = No. 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 al.* (2000) have been used.

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

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

Technology index – [(Potential Yield – Demonstration yield) x 100]/ Potential yield

OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well

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	54.5	-	-	-
Demonstration Azad Pea – 1	69.5	27.52	5.5	7.33

Table 2 : Economics of front line demonstrations

Variables	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	Benefit :cost
Local check	20000	109000	89000	5.45
Demonstration	25000	139000	114000	5.56
Additional in demonstration	5000	30000	25000	5.0*

* incremental benefit :cost

as discussions have been summarized under following 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 pea variety Azad Pea-1 recorded the higher yield (69.50 q/ha) than local check (54.50 q/ha).

The Percentage increase in the yield (27.52) over local check was recorded. Similarly, yield enhancement in different crops in front line demonstration had apply been documented by Hiremath *et al.* (2007), Mishra *et al.* (2009), Kumar *et al.* (2010), Surywanshi and Prakash (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 environment conditions. The farmers were motivated by seeing the results in term of productivity 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 and technology gap.

Technology gap:

The technology gap shows the difference between potential yields over demonstration yield of the technology. The potential yield of the technology (variety Azad Pea-1) is 75 q/ha. The Technology gap 5.50 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 fertility and weather condition. Hence, location specific recommendations are necessary to bridge the gap. These findings are similar 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 7.33. It means the technology Pea cv. AZAD PEA-1 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 pea 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 pea production revealed that front line demonstration recorded higher gross return (139000 q/ha) and net return (Rs. 114000) with higher benefit cost ratio (5.56) 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. 5000 per ha in demonstration has increased additional net return Rs. 25000 per ha.with incremental benefit cost ratio 5.0 suggesting its higher profitability and economic viability of the demonstration. More and less similar results were also reported by Hiremath and Nagaraju (2009) and Dhaka *et al.* (2010).

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