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Research Article

FRONT LINE DEMONSTRATION: A TECHNOLOGY TOOL TO ENHANCE THE FRUIT YIELD OF BRINJAL

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Abstract- The field experiment was carried out as a on farm trial among 30 farmers with 1 ha areas of brinjal in the year 2015-16. Farmers are not getting good fruit yield of brinjal. The productivity of brinjal crop continues to be quite low due to infestation of disease & insect pest & not proper selection of cultivar of brinjal. The fruit yield of brinjal crop can be increased by the demonstrating the suitable cultivars at the farmers field under the supervision of scientists working in the operational area of KVK. It is observed after trial that farmers were planting brinjal crop as per the recommended practices with suitable cultivar recorded the higher fruit yield as comparison to the farmers practices. The results of the front line demonstration brings out that technology demonstrated is feasible and economic for the farmers and viable over the farmer's practices. Percentage increase in the average fruit yield is quite high in the low input cost, so the demonstrated technology i.e. cultivar Pant Rituraj is suitable for the vegetable growers of the Banka district of Bihar.

Keywords- Brinjal, Demonstration, Farmers, Field, Front line demonstration, Impact

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Introduction

Brinjal (*Solanum melongena* L.) belong to the family Solanaceae is one of the most coupled with their adoption by the farmers and developmental policies of the government culminated in tremendous increase in area under vegetable 8.5 m ha, production 146.5 mt and productivity 17.3 t/ha in the country. India ranks second position in important vegetable crop grown on a large area in India for local consumption and also for export purpose. This crop has gained the importance of vegetable crop. The country has tremendous progress in vegetable production, especially during the post green revolution period. Development of improved vegetable varieties/hybrids/technologies through systematic research brinjal production worldwide i.e. 27.55% share of the total brinjal production in the world. In Bihar total are under brinjal cultivation is 845 lakh ha, production 13907 mt and productivity 17.3 t/ha in the year 2010-11[7]. In Banka, district vegetable cultivation is very popular and cultivated vegetables consumed locally and marketed to Kolkata. In this district area under brinjal cultivation is 1005 ha, production 29739 tones and yield is 20 t/ha (National Horticulture Board, 2012-13). In Bihar, brinjal is grown as a vegetable purpose on a large scale. But brinjal grower farmers do not have the suitable techniques to increase the fruit yield of brinjal. Due to lack of awareness regarding new varieties and improved cultivation practices farmers are facing heavy infestation of disease and insect pest in the crop causing low yield.

By conducting survey, farmer's interaction and field diagnosis, it was observed that one of the important factors for low productivity of brinjal was attributed to closer spacing, selection of inappropriate varieties and infestation of shoot & fruit borer. The optimum use of spacing or plant population has dual advantage [1].

However, information on these aspects for this region is not available. It was with this objective in view that the present study was initiated. Keeping the facts in view, importance of FLD, the KVK Banka, conducted demonstration on brinjal crop variety Pant Riturajat farmer's field under medium irrigated condition of Rabi 2015-16.

The objectives of study were as follows:

1. To compare the yield levels of local check (farmer practices) and Front Line demonstration.
2. To workout the economic feasibility of the crop (Front Line demonstration v/s local check)
3. To collect feedback information for further improvement in research and extension programme.
4. Constraints in dissemination of technology

MaterialsandMethods

Front Line Demonstration on assessment of suitable variety of brinjal to increase the fruit yield was conducted by KrishiVigyan Kendra, Banka in the year 2015-16 in 4 villages of 4 blocks Dhouriya, Amarpur, Banka & Katoria. Thirty innovative and receptive progressive farmers from all the villages were selected for conducting the trial to ensure their active participation. The demonstration of improved technology was taken in area of 0.05 ha of each farmers. Total 1 ha area was covered in 1 year for demonstration of recommended improved practices of brinjal. The experiment was laid out with brinjal cultivated variety Pant Rituraj. These varieties were compared with farmers practice i.e. treated as a control. The result was compared with the full package of practice.

The primary data on output of brinjal yield were collected from the selected brinjal farmers FLD plots, besides the data on local practices commonly adopted by the farmers of this region were also collected with the help of interview schedule and presented in term of percentage and qualitative data was converted in to quantitative form and expressed in term of percent increased yield was calculated by the using formula.

$$\text{Percentage increased yield} = \frac{\text{Demonstration yield- Local check yield}}{\text{Local Check yield}} \times 100$$

Benefit cost ratio calculated by the formula given below-

$$\text{B:C Ratio} = \frac{\text{Net Return}}{\text{Cost of cultivation}}$$

The experiment was laid out through randomized block design.
The yield data were collected for with the two recommended and one control plots (farmer practice). Their feasibility and economics variability were accessed the trial was also envisaged with four fundamental assumption [2].

(a) When the technology is not acceptable for the farmer in it recommended form and needs minor modification, refinement or change.
(b) It needs the integration of related indigenous knowledge of the farmers with the scientific recommendation in the process of refinement or modification, moreover the refinement or modification is a continuous process in the lake of available technological option specific to each microenvironments.
(c) The collaboration of farmers who has been experimenting on their own to evolve solutions to the constraints, in their farm and of the extension system which is vital in the process of technology development.
(d) The technology or practices generation through Front Line Demonstrations become farmer's recommendation comprising a basket of after natures and as the most appropriate to solve problem. Keeping above in view the Front Line Demonstrations were executed. There were performance indicator and economic indicates considered to execute the trial.

Results and Discussion

The qualitative characters and difference between demonstration package and farmers practices were also consider and analyzed in the trial. The details presented in [Table-1].

Table-1 *Difference between demonstration package and farmers practice under OFT of Brinjal*

S. No.	Particulars	Demonstration Package	Farmers practices (Local check)
1	Variety	Pant Rituraj i.e. recommended (HYV)	Badharwa Bhanta(Locally), not recommended variety
2	Cultural operations	Importance of preparing the land to get fine tillage. It needs 2 to 3 ploughing	Only 1 to 2 ploughing, which does not breaks the soil particles
3	Sowing method	Line sowing P x P, R x R=90x90 (cm)	Line sowing but closer spacing P x P, R x R= 60x60 (cm)
4	Soil testing & use of bio-fertilizers	Soil testing done and application of basal fertilizers, FYM and application of micronutrient Zinc & Boron. RDF used. N:P:K,100:50:50 kg/ha	No soil test. Farmers not applying micronutrients. Not RDF used. N:P:K,150:80:80 kg/ha
5	Seed treatment	Seed treatment with Bavistine	Not treating the seed
6	Farming situation	Medium irrigated land	Medium irrigated land
7	Plant protection	Need based insecticides and fungicides spray	Use of high dose of pesticides. Not recommended dose.
8	B:C ratio	Calculations done	Not calculated.

Yield

During one year of frontier technologies results obtained are presented in [Table-2]. The results revealed that the FLDs on brinjal an average yield was recorded 321 q/ha under demonstrated plots as compare to farmers practice 262 q/ha. This results clearly indicated that the higher average grain yield in demonstration plots over the year compare to local check due to knowledge and adoption of full package of practices i.e. appropriate variety such as Pant Rituraj, timely sowing, proper spacing, seed treatment, use of balanced dose of fertilizer (N:P:K,100:50:50 kg/ha :Zn& Bo), method and time of sowing, timely weed management and need based plant protection. The average yield of brinjal increased 9.50 per cent.

Table-2 *Yield and yield attributing character of brinjal variety Pant Rituraj under FLDs.*

Year	Variety	Area (ha)	Average yield (q/ha)		Percentage increase in yield
			Trial	Farmers practice	
2011-12	Pant Rituraj	1	321	262	9.50

The yield of brinjal could be increased over the yield obtained under farmers practices (use of non-descriptive local variety, no use of the balanced dose of fertilizer, untimely sowing and no control measure adopted for pest management) of brinjal cultivation [3].

Technology gap, Extension gap and Technology index

It is evident from [Table-3] the technology gap, the differences between potential yield and yield of demonstration plots was 79 q/ha during 2015-16. The technology gap observed may be attributed to dissimilarity in the soil fertility status, agricultural practices and local climatic situation.

Table-3 *Technology & Extension gap and Technological Index of brinjal variety Pant Riturajunder FLDs.*

Variety	Area (ha)	Technology gap (q/ha)	Extension gap (q/ha)	Technological index (%)
Pant Rituraj	1.0	79	59	19.75

Extension gap of 59 q/ha was observed during the trial which emphasized the need to educate the farmers through various extension means i.e. front line demonstration for adoption of improved production and protection technologies, to revert the trend of wide extension gap. More and more use of latest production technologies with high yielding varieties will subsequently change this alarming trend of galloping extension gap. The technology index shows the feasibility of the demonstrated technology at the farmers field. The technology index recorded 19.75 per cent [Table-3] during FLDs programme, which shows the efficacy of good performance of technical interventions. This will accelerate the adoption of demonstrated technical intervention to increase the yield performance of brinjal.

Table-4 *Economic Impact of brinjalvarPantriturajin FLDs*

Economics of demonstration (Rs/ha)				Economics of check (Rs/ha)			
Gross cost	Gross Income (Rs./ha)	Net Return (Rs./ha)	BCR	Gross cost	Gross Income (Rs./ha)	Net Return (Rs./ha)	BCR
110000	372600	262600	2.38	120000	337200	217200	1.81

Economic return

The inputs and outputs prices of commodities prevailed during the study of demonstration were taken for calculating net return and benefit: cost ratio [Table 4]. The cultivation of brinjal under improved technologies gave higher net return Rs. 262600 per ha in 2015-16 as compared to farmers practices [4]. The benefit cost ratio of brinjal cultivation under improved cultivation practices were 2.38 as compared to 1.81 under farmer's practice. This may be due to higher yield obtained under improved technologies compared to farmer's practice [5].

Feedback from farmers for further improvement in research & extension programme:

Keeping in view, the demonstration for brinjal cultivation as FLDs recorded better performance in comparison to local check. Cultivar Pant rituraj was shown better performance for all the blocks of Banka district. Banka district has wide range of

vegetation & undulated topography due to several mountainous rivers specially Chandan & Odhani and. It there positions, cultivar Pant Rituraj was performed better [4].

Conclusion

The FLD produces a significant positive result and provided the researcher an opportunity to demonstrate the productivity potential and profitability of the latest technology (Intervention) under real farming situation, which they have been advocating for long time. This could be circumventing some of the constraints in the existing transfer of technology system in the district, Banka of Bihar. The productivity gain under FLD over existing practices of brinjal cultivation created greater awareness and motivated to the other farmers to adopt suitable production technology of brinjal in the district. The constraints faced by the farmers were different for different technologies. Efforts should, therefore, be made by the extension agencies in their transfer of technology programmes to consider the constraints as perceived by the farmers in this investigations as well as personal. Therefore, for enhancing the production& productivity of brinjal crop, strategy should be made for getting the more and more recommended technologies adopted by the farmers.

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Author's Contribution

Authors conducted trial in their field areas and documented data with exhaustive efforts. All authors contributed in the data analysis, farmer's feedback and recorded needful information at their own level.

Conflict of Interest: None declared

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