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Research Article

IMPACT OF FRONT LINE DEMONSTRATIONS ON PULSE CROPS IN KAUSHAMBI DISTRICT OF UTTAR PRADESH

***Amit Kumar Keshri and Jahanara**

Department of Agriculture Extension and Communication, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj,-211007, U.P., India

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ABSTRACT

Kaushambi is one of the most backward districts of Uttar Pradesh (India) having 68.5% of area as rainfed. Maize Chickpea and Pigeon pea is the two major pulse crop grown in the district during the kharif season. Farm Science Centre known as Krishi Vigyan Kendra laid down Front Line Demonstrations on these both pulses crops by introducing some new varieties and applying scientific practices in their cultivation. The productivity and economic returns of crops in improved technologies were calculated and compared with the corresponding farmer's practices (local checks). All the crops recorded higher gross returns, net return and benefit cost ratio in improved technologies as compared to the plots where farmers were using traditional practices in their cultivation. It is suggested that location-specific integrated approaches would be needed to bridge the productivity gap of the cereal & pulses crops grown in the district.

INTRODUCTION

Technology transfer refers to the spread of new ideas from originating sources to ultimate users (Prasad *et al*. 1987). The main aim of Krishi Vigyan Kendra is to reduce the time lag between generation of technology at the research institution and its transfer to the farmers for increasing productivity and income from the agriculture and allied sectors on sustained basis. KVKs are grass root level organizations meant for application of technology through assessment, refinement and demonstration of proven technologies under different 'micro farming' situations in a district. Front line demonstration (FLD) is a long term educational activity conducted in a systematic manner in farmers' fields to worth of a new practice/technology. Farmers in the district are still producing crops based on the knowledge transmitted to them by their forefathers leading to a grossly unscientific agronomic, nutrient management and pest management practices.

As a result of these they often fail to achieve the desired potential yield of various crops and new varieties. Potential yield is determined by solar radiation, temperature, photoperiod, atmospheric concentration of carbon dioxide and genotype characteristics assuming water, nutrients, pests, and diseases are not limiting the crop growth. Under rainfed situation like Kaushambi district of Uttar Pradesh state, where the water supply for crop production is not fully under the control of the grower, water-limiting yield may be considered as the maximum attainable yield for yield gap analysis assuming other factors are not limiting crop production. However, there may be season-to-season variability in potential yield caused by weather variability, particularly rainfall. It was found that farmers were using old varieties of cereal and pulses crops without proper use of chemical fertilizers, herbicides and pesticides, resulting low production and productivity as compare to average national productivity. Keeping in view the constraints, Krishi Vigyan Kendra, Kaushambi conducted front line demonstrations on pulse crop to determine the yield potential of the crops which grown under scientific manner under FLD programme, which would also ensure livelihood, nutritional security and economic empowerment of poor households at faster pace. Khare *et al*. (2011) found that less availability of high yielding varieties, lack of conviction in the

Corresponding author:* **Amit Kumar Keshri
Department of Agriculture Extension and Communication, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj,-211007, U.P., India

new technology and weak extension support at the village level were the major constraints faced by the farmers.

With this background in view, the present study entitled "Impact of frontline demonstration of behavior changes of pulse growers in Kaushambi district of Uttar Pradesh" was undertaken with the following specific objective:

- To determine and compare between beneficiaries and non beneficiaries as regards their knowledge and adoption level of pulse production technology.
- To find out the constraints in adoption of pulse production technology.

METHODOLOGY

This study has been concluded in the Kaushambi District, has been selected by 10 villages has been selected purposively on the basis of Frontline Demonstration were done the respondents were selected by random sampling 158 beneficiaries and 158 non-beneficiaries for the study purposively, the villages were selected by the KVKs for the FLD, the data were collected through pre-structured & pre-tested interview schedule, the data were analyzed according to the need of the research.

RESULTS & DISCUSSION

In each front line demonstration, the improved variety suitable to local condition was selected and the recommended package of practices was adopted. Some of the major differences between the improved technologies adopted in front line demonstrations and farmers practices (local checks) adopted by farmers in different crops are summarized as below.

Comparison between beneficiaries and non beneficiaries as regards their knowledge and adoption level of pulse production technology

Table 1 Mean, S.D. and t-value as regards to their knowledge of pulse production technology between FLD beneficiaries and non-FLD beneficiaries

S.N.	Category of respondents	Mean	S.D.	t-value
1.	Beneficiary farmers	0.72	0.309	8.588**
2.	Non-beneficiary farmers	0.27	0.196	

**significant at 0.01 probability level

The calculated t value as regards to their knowledge of pulse production technology between FLD beneficiaries and non-FLD beneficiaries was 8.588 which was found to be significant at 0.01 probability level. Thus the null hypothesis that there is no difference between the FLD beneficiaries and non-FLD beneficiaries as regards to their knowledge of pulse production technology is rejected. Hence it can be concluded that there is significant difference between level of knowledge of beneficiaries and non-beneficiaries of FLD of pulse production. The finding is supported by Nagle (2011) and Verma (2013)

Hypothesis

There is no difference between the FLD beneficiaries and non-FLD beneficiaries as regards to their adoption level of pulse production technology.

Table 2 Mean, S.D. and t-value as regards to adoption level of pulse production technology between FLD beneficiaries and non-FLD beneficiaries

S.N.	Category of respondents	Mean	S.D.	t-value
1.	Beneficiary farmers	10.87	1.963	19.269**
2.	Non-beneficiary farmers	3.34	1.994	

**significant at 0.01 probability level

The calculated t value as regards to their adoption level of pulse production between FLD beneficiaries and non-FLD beneficiaries was 19.269 which was found to be significant at 0.01 probability level. Thus the null hypothesis that there is no difference between the FLD beneficiaries and non-FLD beneficiaries as regards to their adoption level of pulse production technology is rejected. Hence it can be concluded that there is significant difference between adoption level of beneficiaries and non-beneficiaries of FLD of pulse production. The finding is supported by Nagle (2011) and Verma (2013)

Constraints in adoption of pulse production technology
Infrastructural constraints

Infrastructural constraints comprised of four related constraints viz non availability of high yielding varieties (HYV) of seeds at the time of sowing, non availability of plants protection chemicals, non availability of fertilizers (mainly Di ammonium Phosphate) in the market at the time of sowing and lack of irrigation facilities. Among these, non availability of HYV seeds of pulses and unavailability of fertilizers (DAP) at the time of sowing were the two major constraints that were ranked I and II having a MPS of 88.76 and 82.50 respectively (Table 2). Non availability of plant protection chemicals was ranked third in order (MPS 75.76). Lack of irrigation facilities was perceived as the least important constraint (MPS 05.50).

Socio-economic constraints

Table reveals that six constraints were perceived by the farmers as related to their socio-economic conditions. Low profit obtained from pulse crops, non availability of credit in time, high cost of labour were the three major constraints in this category. These were ranked I, II, III with an overall MPS of 88.75, 82.50 and 81.75 respectively. The other constraints in this category were labour scarcity (MPS 71.75) high cost of inputs (MPS 68.75) and lack of subsidy for inputs (MPS (65.50)

Technological Constraints

An analysis of the data present in table reflects that lack of knowledge about seed rate, spacing, sowing date was ranked I on the basis of mean percent score (MPS 92.50). Lack of knowledge about seed treatment and lack of knowledge about insect pest and disease management were ranked 11 and 111 with an overall MPS of 88.75 and 82.75 respectively. The other constraints in this category were lack of knowledge about weed management (MPS 76.54) and lack of knowledge about fertilizer dosage and recommended method of its application (MPS 64.76).

Table 2 Major constraints in pulses cultivation as perceived by the farmers

S.N.	Constraints	Mean percent score (MPS) of Beneficiaries	Rank	Mean percent score (MPS) of Non-Beneficiaries	Rank
1.	**Infrastructural constraints**				
a.	Non availability of HYV seeds at time of sowing	88.76	I	73.33	III
b.	Non availability of plant protection chemicals in the market	75.76	III	83.33	II
c.	Non availability of DAP in the market	82.50	II	70.00	IV
d.	Lack of irrigation facilities.	05.50	IV	86.66	I
2.	**Socio-economic constraints**				
a.	High cost of inputs	68.75	V	53.89	III
b.	High cost of labour.	81.75	III	35.00	VI
c.	Labour scarcity	71.75	IV	55.00	II
d.	Non availability of credits in time.	82.50	II	38.89	IV
e.	Lack of subsidy for inputs	65.50	VI	35.56	V
f.	Low profit	88.75	I	34.45	VII
3.	**Technological Constraints**				
a.	Lack of proper knowledge about improved varieties, seed, rate, spacing and sowing date.	92.50	I	76.55	I
b.	Lack of knowledge about seed treatment.	88.75	II	73.45	II
c.	Lack of knowledge about fertilizer dosage and method of fertilizer application.	64.76	V	63.54	III
d.	Lack of knowledge about weed management.	76.54	IV	63.22	IV
e.	Lack of knowledge about insect pest and diseases management	82.75	III	60.68	V
4.	**Institutional Constraints**				
a.	Weak research-extension farmer linkages.	89.95	I	85.24	I
b.	Non availability of suitable literature.	77.50	III	73.65	III
c.	Lack of regulated market.	86.75	II	80.49	II

Institutional Constraints

Regarding institutional constraints it was observed that there was a weak research-extension-farmer linkage and there was no regular market nearby where the villagers could sell their produce. Weak research-extension-farmer linkage was ranked I (MPS 89.85) and lack of regulated market was ranked 11 (MPS 86.75). The third in order in this category was non availability of suitable literature (MPS 77.50).

Based on the above study it can be inferred that there are several constraints faced by the farmers in cultivation of pulses. The major constraints were non availability of HYV seeds, unavailability of fertilizers, unavailability of plant protection chemicals at the time of sowing low price of produce, lack of subsidy for inputs, lack of knowledge about seed rate, seed treatment, weed management dosage and method of fertilizer application. Similar constraints have also been reported by Yadav *et al* (2002).

The findings of the present study provides the empirical feedback to agricultural development departments, state agricultural universities and various non-governmental organizations working in agricultural and allied departments to strengthen the research-extension-farmer linkage by providing credible and timely information to the farming community. The government of India has set up a target of 32 million tonnes with the productivity of 850 kg/hectare for the period 2007-12 Yadav *et al* (2002).

The ICAR has started a programme of organizing front line demonstrations on pulses in order to motivate farmers to increase the area under cultivation thereby enhancing production. To achieve these, extension personnel should disseminate the technology related to plant protection measure with emphasis on providing knowledge and skills to farmers. Farmer programmes and result demonstrations on pulses cultivation should be organized by the extension personnel's.

The technology should be such that the farmers could get the net returns equivalent to that they get from the crops they mainly grow. Only then, will the farmers go for cultivation of pulses.

CONCLUSION

It has been concluded that sample gap existed in potential and demonstration yield in high yielding pulse crop variety due to technology and extension gap. By conducting front line demonstrations of proven technologies, yield potential of pulse crops can be increased to a great extent. This will significantly enhance the income as well as the livelihood of the farming community. The study emphasize that the needs to educate the farmers in adoption of improved technology to narrow the extension gap through various technology transfer centre like KVKs. Therefore it is suggested that these factors may be taken for consideration to increase the scientific temperament of the farmers.

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