*Int.J.Curr.Microbiol.App.Sci* (2020) *9*(2): 1151-1155

*International Journal of Current Microbiology and Applied Sciences*
***ISSN: 2319-7706* Volume 9 Number 2 (2020)**
Journal homepage: http://www.ijcmas.com

**Original Research Article** https://doi.org/10.20546/ijcmas.2020.902.135

# Front Line Demonstration on Rabi Maize: An Effective Approach for Increasing Productivity and Profitability of Tribal Farmers of Pratapgarh (Rajasthan)

**Yogesh Kanojia[1*], Prakash Panwar[2] and R. K. Damor[1]**

[1]*Krishi Vigyan Kendra, Pratapgarh, Rajasthan, India*
[2]*Department of Extension Education and Community Management, College of Community and Applied Sciences, Udaipur, Rajasthan, India*

**Corresponding author*

**Keywords**

Rabi maize, Front line demonstration, Technology gap, Technology index

**Article Info**

***Accepted:***
08 January 2020
***Available Online:***
10 February 2020

**A B S T R A C T**

Maize is an important staple food of the tribal district of Pratapgarh. Farmers can obtain higher yield and returns in rabi maize than kharif maize. But lack of suitable high yielding variety as well as poor knowledge about rabi maize production practices are ascribed as main reasons for low productivity of maize in the district. Front line demonstration is an effective and appropriate tool to demonstrate recommended technologies among the farmers. To popularize rabi maize production, Krishi Vigyan Kendra, Pratapgarh (Rajasthan) conducted 327 demonstrations on rabi maize from 2012-13 to 2018-19 in ten adopted villages. The critical inputs were identified in existing production technology through meeting and group discussion with the farmers. The seven years data revealed that an average yield of demonstration plot was obtained 60.91 q/ha over local check (51.85 q/ha) with an additional yield of 9.06 q/ha and average productivity increased by 17.55 %. The average technology gap and technology index were observed 14.09 q/ha and 18.79 %, respectively.

## Introduction

Maize (*Zea mays* L.) is the most versatile crop with wider adaptability and highest genetic yield potential among the food grain crops. The importance of maize lies in its wide industrial applications besides serving as human food and animal feed. As the demand for maize is growing globally due to its multiple uses for food, feed and industrial sectors, there is need to produce more from same or even less resources. This cereal is referred to as Miracle Crop and Queen of the Cereals due to its high productivity potential

compared to other crops of Gramineae or poaceae family members. Pratapgarh lies in south of Rajasthan and is dominated by tribal population. Farmers of district cultivate maize generally in kharif season but farmers of Dhariyawad and Pipalkhoont tehsil cultivate this crop in rabi season also due to favorable climatic condition and assured irrigation facilities. Maize is an important staple food of the tribal farmers. Lack of suitable high yielding variety as well as poor knowledge about production practices are ascribed as main reasons for low productivity of kharif and rabi maize in the district. The current maize productivity of Rajasthan and Pratapgarh district are 22.40 and 21.06 q/ha, respectively (Fourth Advance Estimate, 2018-19), which is very low as compare to its potential yield. It is a seasonal crop and annually, it can be harvested thrice, i.e., in kharif, rabi and summer seasons. Farmers of Pratapgarh district generally cultivate maize crop in kharif season but in rabi season because of assured irrigated, minimum insect-pest and weed problems farmers can achieve productivity upto 1.5 times than kharif season maize. Taking into account the above considerations, front line demonstrations on rabi maize were carried out in a systematic manner on farmers' field to show the higher yield and convincing farmers to adopt improved production and management practices for enhancing productivity of maize in rabi season.

## Materials and Methods

Front line demonstrations on rabi maize were conducted from 2012-13 to 2018-19 at various farmers' fields locations *i.e.* in villages, Jawaharnagar, Hazariguda, Sarada, Himu Tabra, Khunta of Dhariyawad tehsil and Borkheda, Richadi, Baktod, Naal pada, Pawatipada of Pipalkhont tehsil. PRA techniques were applied in these to know the priorities and constraints which were adversely affecting the yield levels. Based on PRA, front line demonstrations were planned and conducted at the farmers' field. The purpose of these Front Line Demonstration's was to know the yield gaps between front line demonstration's and farmers field and to popularize rabi maize in the Dhariyawad and Pipalkhont tehsils. During study period 327 demonstrations in 130.5 ha area were organized using improved varieties *i.e.* Bio 9681 and Bio-9682. Well before the conduction of demonstrations, trainings to the farmers of respective villages were imparted with respect to envisaged technological interventions.

The detailed guidance regarding scientific cultivation practices of rabi maize were given to the farmers to increase the awareness of improved technology and to increase productivity of rabi maize through conducting training programmes by KVK Scientists. All other steps like site and farmer selection, layout of demonstration, farmer's participation etc. were followed as suggested by Choudhary (1999). Yield data were collected from control (Farmer's practice) and demonstration plots. The front line demonstrations were conducted to study the gaps between the potential yield and demonstration yield, extension gap and the technology index. To estimate the technology gap, extension gap and the technology index the following formulae have been used (Samui *et al.*, 2000).

1. Percent increase yield = (Demonstration yield - farmers yield)/ farmers yield X 100
2. Technology Gap = Potential yield- Demonstration Yield
3. Extension Gap = Demonstration Yield- Farmer Yield
4. Technology Index = (Technology Gap/ Potential Yield) x 100

## Results and Discussion

### Yield parameters

Results of front line demonstrations conducted from 2012-13 to 2018-19 in farmers field of ten villages indicated that average yield under demonstration was 60.91 q/ha which is 17.47 per cent higher yield than local check (51.85 q/ha) Table-2. It performed better in demonstration plots owing to best management practices like integrated nutrient management, weed management, irrigation and pest management practices. Thus the FLD might have a positive impact on farming community in the district over local check. Similar yield enhancement in different crops in front line demonstration has been documented by Poonia and Pithia (2011), Patel et al., (2013) and Raj et al., (2013).

### Extension gap

The extension gap is the difference or gap between demonstration yield and farmers practices (control). Maximum extension gap 13.4 q/ha was found during 2016-17 and lowest 4.30 q/ha was in 2014-15 (Table-2). This extension gap should be assigned to adoption of improved transfer technology in demonstrations practices resulted in higher seed yield than traditional farmer practices. This emphasized the need to educate the farmers through various means for more adoption of improved high yielding varieties and newly improved agricultural technologies to bridge the wide extension gap. More use of new high yielding varieties by the farmers will subsequently change this alarming trend of galloping extension gap.

### Technology gap

The technology gap is the difference or gap between the demonstration yield and potential yield. Maximum technology gap 23.1 q/ha was found during 2015-16 and minimum was 8.10 q/ ha was recorded in 2018-19 (Table-2). The technology gap observed may be attributed to dissimilarity in the soil fertility status and weather conditions (Mandavkar *et al.*, 2012).

**Table.1** Comparison between demonstration package and existing practices under rabi maize FLDs

| S. No. | Particulars | Demonstrations | Farmers practice |
|---|---|---|---|
| **1** | Farming Situation | Irrigated | Irrigated |
| **2** | Variety | Bio-9681 & Bio-9682 | Local |
| **3** | Time of sowing | 15$^{th}$ to 30$^{th}$ October | 20$^{th}$ to 30$^{th}$ November |
| **4** | Method of sowing | Line sowing with proper crop geometry (50 cm x 20 cm) | (30 cm x 20 cm) |
| **5** | Seed Treatment | Seed treated with thiram 75% WP@3g/kg | Nil |
| **6** | Seed rate | 20-25 kg/ha | 25-30kg/ha |
| **7** | Fertilizer dose | 150:60:40 (NPK kg/ha) | 100:40:0 |
| **8** | Plant Protection | Need based application of carbofuran 3G@10 kg/ha to protect against stemborer | Nil |
| **9** | Weed Management | Atrazine @500-7500 g/ha as pre-emergence followed by one hand weeding at 30 days after sowing | One hand weeding at 30- 35 days after sowing |

**Table.2** Productivity, extension gap, technology gap and technology index of rabi maize as grown under FLD and farmers practices

| Year | Area (ha) | No. of Demo. | Yield (q/ha) | | Increase in yield (%) | Extension gap (q/ha) | Technology gap (q/ha) | Technology Index (%) |
|---|---|---|---|---|---|---|---|---|
| | | | Demo | Farmer | | | | |
| **2012-13** | 25 | 10 | 66.20 | 56.20 | 17.79 | 10 | 8.8 | 11.73 |
| **2013-14** | 25 | 10 | 59.94 | 50.20 | 19.40 | 9.74 | 15.06 | 20.08 |
| **2014-15** | 25 | 10 | 54.76 | 50.33 | 8.80 | 4.43 | 20.24 | 26.99 |
| **2015-16** | 27 | 10.5 | 51.90 | 45.40 | 14.32 | 6.5 | 23.1 | 30.80 |
| **2016-17** | 50 | 20 | 60.80 | 47.40 | 28.27 | 13.4 | 14.2 | 18.93 |
| **2017-18** | 75 | 30 | 65.90 | 57.94 | 13.74 | 7.96 | 9.1 | 12.13 |
| **2018-19** | 100 | 40 | 66.9 | 55.5 | 20.54 | 11.4 | 8.1 | 10.80 |
| **Average** | **327** | **130.5** | **60.91** | **51.85** | **17.47** | **9.06** | **14.09** | **18.79** |

**Table.3** Gross Return, Net Return, Gross cost Cultivation and BC Ratio of rabi maize as grown under FLDS and farmers practices

| Year | Cost of Cultivation (Rs) | | Gross Return (Rs) | | Net Return (Rs) | | B:C Ratio | |
|---|---|---|---|---|---|---|---|---|
| | Demo. | Farmer | Demo. | Farmer | Demo. | Farmer | Demo. | Farmer |
| **2012-13** | 18000 | 16025 | 79440 | 64630 | 61440 | 48605 | 3.41 | 3.03 |
| **2013-14** | 20500 | 19600 | 68931 | 57730 | 48431 | 38130 | 2.36 | 1.95 |
| **2014-15** | 20800 | 20500 | 69819 | 67946 | 49019 | 47446 | 2.36 | 2.31 |
| **2015-16** | 21770 | 20050 | 77850 | 68100 | 56080 | 48050 | 2.58 | 2.40 |
| **2016-17** | 22500 | 20150 | 82080 | 66360 | 59580 | 46210 | 2.65 | 2.29 |
| **2017-18** | 25950 | 24100 | 85675 | 75317 | 59725 | 51217 | 2.30 | 2.13 |
| **2018-19** | 29944 | 27464 | 120420 | 99900 | 90476 | 72436 | 3.02 | 2.64 |
| **Average** | **22781** | **21127** | **83459** | **71426** | **60679** | **50299** | **2.66** | **2.38** |

## Technology index

The Technology index shows the feasibility of the technology at the farmers' field. The lower the value of technology index more is the feasibility. During the year 2018-19, technology index was found 10.8 per cent, which shows the higher feasibility of the demonstrated technology.

## Economics of front line demonstration

The economics of rabi maize production under front line demonstrations have been presented in Table-3. The results of economic analysis of rabi maize production revealed that the average cost of cultivation in demonstration was (Rs. 22781/ha) and in farmers practice it was Rs. 21127/ha. It was observed that front line demonstrations recorded average higher gross returns (Rs. 83459 /ha) and net returns (Rs. 60679/ha) during the study period, whereas in farmers practice average gross returns (Rs. 71426/ha) and net returns (Rs. 50299/ha) were found. The benefit cost ratio of demonstration plot

(2.66) was also more than the farmers practice (2.38).

In the light of above findings, it can be concluded that use of recommended scientific packages and practices of rabi maize cultivation can reduce the technology gap to a considerable extent thus leading to increased productivity and profitability of rabi maize among tribal farmers of the district. The present study depicts that Pratapgarh has a great potential for increasing maize productivity specially in rabi season than kharif season. Moreover, extension agencies of the district need to provide proper technical support to the farmers through different education and extension methods to reduce the extension gap and better rabi maize production in Tribal district Pratapgarh.

## References

Choudhary B.N. (1999). Krishi Vigyan Kendra - A guide for KVK managers. Publication, Division of Agricultural Extension, ICAR. pp 73-78.

Fourth Advance Estimate (2018-19). Commissionerate of Agriculture, Jaipur, Rajasthan.

Mandavkar, P.M., Sawant, P.A., and Mahadik, 2012, Evaluation of Front line demonstration trial on rice in Raigad district of Maharastra. Rajstan Journal of Extension Education, 20:4-6.

Patel, H.R., Patel, F.H., Maheriya, V.D and Dodia, I.N 2013. Response of Kharif green gram (Vigna radiata L) to Sulphur and Phosphorus with and without biofertilizer application. Bioscan, 8(1):149-152.

Poonia TC and Pithia MS 2011. Impact of front line demonstrations of chickpea in Gujarat, Legume Research, 34(4): 304-307.

Raj AD, Yadav V, Rathod JH. Impact of front line demonstrations (FLD) on the yield of pulses. Internat. J Scient. & Res. Public. 2013; 3(9):1-4.

Samui, S.K., Maitra, S., Roy, D.K., Mondal, A.K. and Saha, D. 2000. Evaluation of front line demonstration on groundnut (Arachis hypogea L.) in Sundarbans, Journal of Indian Society of Coastal Agriculture Resources, 18(2): 180-182.

**How to cite this article:**

Yogesh Kanojia, Prakash Panwar and Damor, R. K. 2020. Front Line Demonstration on Rabi Maize: An Effective Approach for Increasing Productivity and Profitability of Tribal Farmers of Pratapgarh (Rajasthan). *Int.J.Curr.Microbiol.App.Sci.* 9(02): 1151-1155.
doi: https://doi.org/10.20546/ijcmas.2020.902.135