



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2018; 6(4): 1778-1780

© 2018 IJCS

Received: 01-05-2018

Accepted: 04-06-2018

**Mandira Chakraborti**SMS, Agronomy, KVK, West  
Tripura, India**TA Khan**Estate Officer, ICAR NEH  
Umiam, Barapani, Meghalaya,  
India**KK Barman**Principal Scientist, ICAR NEH  
Tripura Centre, Meghalaya,  
India

## Yield gap analysis of toria through Front Line Demonstration (FLD) in agroclimatic zones of South Tripura district

**Mandira Chakraborti, TA Khan and KK Barman**

### Abstract

A study was undertaken consecutively for two years in South district of Tripura where the Front Line Demonstration on toria variety TRC t-1-1-5-1 with scientific package of practices was conducted in the farmers' field. A total of 200 nos. of demonstration were taken to study the yield gap between the demonstrated variety and the variety grown by the farmers. Yield of both demonstration and farmers' practice were recorded and their yield gap, technology gap, extension gap and technology index were analysed. The toria variety TRC t-1-1-5-1 was found superior than the local varieties. On an average, 37.77% increased yield was accrued to the farmers as compared to local check. The net return and return per rupee invested were sufficiently high to motivate farmers for adoption of toria variety TRC t-1-1-5-1 with scientific package of practices.

**Keywords:** Toria, front line demonstration, technology gap, extension gap, yield

### Introduction

Oilseed crops have significant contribution in Indian agriculture. India is the fourth largest oilseed producing country in the world. Among the seven edible oilseed crops cultivated in India, rapeseed-mustard (*Brassica spp.*) contributes 28.6 per cent in the total production of oilseeds. In India, it is the second most important edible oilseed after groundnut sharing 27.8 per cent in the India's oilseed economy. In terms of acreage, oilseeds occupy 14.1 per cent and rapeseed-mustard alone occupies 3 per cent of the total cropped area in the country. In India, the annual production of rapeseed-mustard was about 8.17 mt covering an area of about 6.51 mha with a total productivity of 12.57 q/ha (GOI, 2011) [2]. It is estimated that 58 mt of oilseeds will be required by the year 2020, wherein the share of rapeseed-mustard will be around 24.2 mt (Bartaria *et al.*, 2001) [1].

Mustard and rapeseed is a leading oilseed crop of Tripura state. In the state it is grown in an area of 6418 ha. In the rice based cropping system of Tripura, the second crop is mostly grown under residual moisture. In such situation, toria is the most suitable crop for the rice based cropping system of Tripura where irrigation is not available for high value vegetable crop. The productivity of toria continues to be quite low (6 q/ha) on account of several biotic and abiotic stresses besides unavailability of quality seeds of improved varieties in time and poor crop management due to unawareness and non adoption of recommended production technologies. Therefore, it is very essential to demonstrate the high yielding varieties and other scientific production technologies which the farmers generally do not adopt. The available agricultural technology does not serve the very purpose until it reaches and adopted by its ultimate users, the farmers. Technology transfer refers to the spread of new ideas from originating sources to ultimate users (Prasad *et al.*, 1987) [7]. Conducting of Front Line Demonstrations on farmer's field help to identify the constraints and potential of the toria crop in specific area as well as it helps in improving the economic and social status of the farmers. With this view, KVK South Tripura has organized Front Line Demonstration with improved variety of toria along with scientific package of practices. The main objectives of the study were as follows:

- i) To exhibit the performance of recommended High Yielding Varieties of toria.
- ii) To enhance productivity level of toria which in turn will increase the income of the farmer and to transfer the scientific production technologies in the district.
- iii) To compare yield level of local check and Demonstrated variety and to study the gap analysis of toria under front line demonstration at farmers' field.

**Correspondence****Mandira Chakraborti**SMS, Agronomy, KVK, West  
Tripura, India

## Methodology

The present study on toria was undertaken in different villages of South Tripura district to popularize the toria variety TRC t 1-1-5-1 with scientific production technologies through Front Line Demonstration (FLD) during the rabi season of 2014-15 and 2015-16. Five villages namely Indiranagar, Herbatoli and Nalua, West Pilak, Laxmicherra were selected for the purpose. Front Line Demonstration of this particular toria variety was carried out after the discussion with the farmers in group meeting in the respective villages organized by Krishi Vigyan Kendra (KVK), South Tripura. The variety TRC t 1-1-5-1 has been given to the farmers based on the trails conducted by ICAR and KVK. Altogether there were 200 Front Line Demonstration (FLDs) covering 40 ha area in the selected villages. Demonstration was conducted through a number of extension activities like group meetings, awareness programme, training, field demonstration etc. Awareness programme on importance of oilseed was conducted by the Subject Matter Specialist of KVK. Several group meetings were also conducted in each villages. Training programme on the topics like improved cultivation practices of toria, Integrated Nutrient Management, Integrated Pest Management were conducted before starting the FLD in the selected villages. Besides imparting training printed leaflets on toria was distributed among the FLD farmers. The

demonstrated variety was compared with a local check. In case of local check, farmers' followed the existing practices. In general soils of the area under study was sandy loam in nature and medium to low in fertility status. In demonstration plots, a few critical inputs in the form of quality seed, balanced fertilizer, agrochemical etc. were provided. The demonstration farmers were facilitated by KVK scientist in performing field operations like sowing, spraying, weeding, harvesting etc. during course of training and visit. The yield of demonstration as well as local check were recorded and analysed according to different parameters suggested by Samui *et al.* (2000)<sup>[8]</sup>. The details of these parameters are as:

1. Extension gap: Demonstration yield –Farmers' practice yield
2. Technology gap: Potential yield-Demonstration yield
3. Technology index

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

The technologies demonstrated to the FLD farmers are mentioned in Table-1.

**Table 1:** Particulars showing the details of toria growing under FLD and existing practices

S. No	Operation	Existing practices	Improved practices demonstrated
1.	Farming situation	Irrigated medium land	Irrigated medium land
2.	Variety	local	TRC t 1-1-5-1
3.	Time of sowing	1 <sup>st</sup> fortnight of December	2 <sup>nd</sup> fortnight of October
4.	Method of sowing	Broadcasting	Line sowing
5.	Seed rate	5 kg ha <sup>-1</sup>	3 kg ha <sup>-1</sup>
6.	Fertilizer dose	20:20:20 kg N P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O ha <sup>-1</sup>	60:40:40 kg N P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O ha <sup>-1</sup>
7.	Plant protection	Need based methyl parathion 2% dust @25kg/ha to protect the crop against mustard aphids ( <i>Lipaphis errysimi</i> )	Nil

## Result and Discussion

### Yield

Yield of toria variety TRC t 1-1-5-1 was highest in comparison to local variety (Table-2). The increase in yield percentage ranged from 33.87% to 41.66% during both the year. On an average 37.77% yield advantage was recorded

under Front Line Demonstration of TRC t 1-1-5-1 with scientific package of practices as compared to local variety and traditional method of cultivation (Table-2). The similar results of yield enhancement in rapeseed-mustard crop in front line demonstrations has been documented by Mitra and Samajdar (2010)<sup>[4]</sup> in tarai zone of West Bengal.

**Table 2:** Grain yield and gap analysis of toria under front line demonstration at farmers' field

Season/year	Number of demonstration	Area (ha)	Potential yield (q ha <sup>-1</sup> )	Demonstration yield (q ha <sup>-1</sup> )	Farmers' practice (q ha <sup>-1</sup> )	Increase in yield percentage (%)	Extension gap (qha <sup>-1</sup> )	Technology gap (qha <sup>-1</sup> )	Technology index (%)
Rabi 2015-16	100	20	9.0	8.3	6.2	33.87	2.1	0.7	7.77
Rabi 2016-17	100	20	9.0	8.5	6.0	41.66	2.5	0.5	5.55
Average	100	20	9	8.4	6.1	37.77	2.3	0.6	6.66

### Gap Analysis

An extension gap of 2.1 to 2.5 qha<sup>-1</sup> was observed between demonstrated technology and farmers' practice during both the year. Average extension gap was 2.3 qha<sup>-1</sup>. Extension gap was more during 2016-17 in comparison to 2015-16. Such gap might be attributed to improved variety of toria and adoption of improved technology which result in higher yield than the existing farmers' practice. Narrow technology gap was observed during both the year. The mean technology gap of total 200 demonstration was 0.6 qha<sup>-1</sup> which was 93.33% of the potential yield. This showed that the farmers could able

to adopt the technology in correct way. The technology index showed the feasibility of the evolved technology at the farmer's fields. The lower the value of technology index, the more is the feasibility of technology. The technology index for all the demonstration during the different years was in accordance with the technology gap (Table-2). The technology index of the present study reflected the adequate proves of technology for transferring to the farmers and sufficient extension services for transfer of technology. This was in conformity with the study conducted by Katare *et al.* (2011)<sup>[3]</sup>.

**Table 3:** Economic analysis of front line demonstration on toria variety TRC t 1-1-5-1 at farmers field

Season/year	Cost of cultivation(Rs.)		Gross return(Rs.)		Net return(Rs.)		Return per rupee invested(Rs.)	
	Demo	Local check	Demo	Local check	Demo	Local check	Demo	Local check
Rabi 2015-16	15000	14800	33280	24880	18280	10080	2.22	1.68
Rabi 2016-17	15000	14800	34000	24000	19000	9200	2.27	1.62
Average	15000	14800	33640	24440	18640	9640	2.25	1.65

### Economic Analysis

Seed and fertilizers were the critical cash inputs for the demonstration and as well as farmers' practice. An additional investment of Rs.200 ha<sup>-1</sup> was incurred under demonstration. Gross return, net return and return per rupee invested was highest under demonstration in comparison to farmers' practice (Table-3). This could be due to improved variety of toria and adoption of scientific package of practices. Hence, favourable benefit cost ratios proved the economic viability of the interventions and convinced the farmers on the utility of interventions. Similar findings were reported by Sharma (2003) [5] in moth bean and Gurumukhi and Mishra (2003) [6] in sorghum.

### Conclusion

Improved variety of toria TRC t -1-1-5-1 and scientific production technologies followed in demonstration, on an average increased the yield by 37.77% over existing farmers' practice. The increment in yield cost was only Rs. 200ha<sup>-1</sup>. The amount is so less that even small and marginal farmers can afford it. The net return and return per rupee invested are sufficiently high to motivate the farmers' for adoption of new technology.

### References

1. Bacteria AM, Shukla AK, Kaushik CD, Kumar PR, Singh NB. Major Diseases of Rapeseed-Mustard and their management. NRC on Rapeseed-Mustard, ICAR, Sewer, Bharatpur (Rajasthan), 2001.
2. GOI (Government of India). Agricultural Statistics at a Glance. Directorate of Economics and Statistics, Ministry of Agriculture, GOI, New Delhi, 2011.
3. Katare, Subhash, Pandey SK, Mustafa Mohd. Yield gap analysis of Rapeseed-mustard through front line demonstrations. Agric Update. 2011; 6:5-7.
4. Mitra B, Samajdar T. Yield gap analysis of rapeseed-mustard through front line demonstration. Agri Ext. Review. 2010; XXII(2):16-17.
5. Sharma OP. Moth bean yield improvement through front line demonstration. Agri. Ext. Review. 2003; 15(5):11-13.
6. Gurumukhi DR, Mishra Sumit. Sorghum front line demonstration- A success story. Agri. Extension Review. 2003; 15:22-23.
7. Prasad C, Chaudhary BN, Nayar BB. First Line Transfer of Technology Project, ICAR, New Delhi, India. 1987, 87.
8. Samui SK, Maitra S, Roy DK, Mandal AK, Saha D. Evaluation on front line demonstration on groundnut. J Indian Soc. Cos. Agri. Res. 2000; 18(2):180-183.