

Impact of front line demonstration on productivity and profitability of Marigold in Agra region

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Abstract

The present study was carried out to evaluate the performance of improved variety with scientific package of practices on production and profitability of marigold. Front line demonstration were conducted during Rabi, 2015-2016 and 2016-2017 in total 2 hectare area with 10 demonstrations with the objective to evaluate the performance of Pusa Basanti variety with improved package of practices. Under demonstration the flower yield of Marigold was increased by 20.46 per cent over the farmer's practice. The extension gap, technology gap and technology index were calculated as 44q/ha, 43.6 q/ha and 14.66 per cent, respectively. For obtaining profitable yield of marigold farmers should be applying recommended dose of fertilizers, use of improved varietal seed, improved cultural practices, weed management & insect-pest management. Frontline demonstration on farmer's field also help to identify the constrains and potential of the Marigold crop in Uttar Pradesh state. It helps in improving the economics & social status.

Key Words: Marigold, front line demonstration, productivity, profitability, improved variety

Introduction

Flower cultivation is a profitable venture for a small & marginal farmer as the traditional crops are becoming less remunerative. Floriculture has been a major thrust area for diversification of horticulture. Growing of flowers and ornamental crops is rapidly expanding enterprise in India. Marigold flower cultivation is become popular among the farmers. It is an important annual flower crop having third rank in production after roses and chrysanthemum. Marigold is one of the commercially exploited flower crops of the genus *Tagetes* and family *Asteraceae*. It is universally popular because of ease in its cultivation, wide adaptability to varying soil and climatic conditions, long flowering duration, range of attractive colours and good keeping quality of flowers. Due to these reasons, marigold is used as cut flower and in garden displays, garlands, bouquets and stage decorations. Apart from its significance in ornamental horticulture, the commercial cultivation of marigold is a sources of income and employment to marigold as well as large farmers and this crop fetch crop more price per unit

area as compared to cereals. Marigold is used for making garlands, garden disc play, loose flower and perfume industries; marigold is one such potential flower crop for natural colour extraction.

For successful production, seed is a crucial, low cost input and occupies a prime position in increasing productivity. So, an understanding of techniques for better quality seed production is of great importance to increase the productivity of marigold under agro climatic conditions prevailing in Periyapatna taluk in Mysore district. Establishment of crop can be achieved through balanced and judicious application of plant nutrients and adopting proper spacing for plant growth. The main objective of the front line demonstration is demonstrate the newly released crop production and protection technique and its management practices at the farmers field under different agro-climatic region and farming situation.

Methods and Materials

The front line demonstrations were conducted at farmer's field during *Rabi* season of 2015-16 & 2016-17 at adopted village of KVK as per guide lines of front line demonstration (FLD) set up ICAR ATARI Zone-VIII. According to the guideline Marigold crop

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was carried out in adopted village of kukuthala in Achnera block of Agra district (U.P). The soil in the demonstration areas was sandy loam in texture with pH ranges 6.8 to 8.0. The knowledge of the farmers in this village was also estimated by taking random sample of 10 farmers in the village. The farmers were asked question about the improved agro-climatic including high yielding Marigold variety Pusa Basanti and balanced fertilizers. According to base on soil testing values FYM, NPK & ZnSO₄ were applied as per scientific practices for their efficient use compared with farmer's practices consist of local check variety (Table 1). The gap analysis, flower yield, cost of cultivation, net returns and additional return parameter were recorded (Table 2 & 3). For assessing gap between farmers practice and recommended practice before laying out the FLD through personal discussion with selected farmers, the training was organized for selected farmers about detailed technology intervention with improved package of practices for successful marigold crop cultivation. The extension activities i.e. training, scientist visit & field day were organized at the front line demonstration site and the traditional practices were maintained in case of local check. The data were collected from FLD plots as well as control plot finally, different parameter were calculated to find out technology (Yadav *et al.*, 2004).

Technology gap = Potential yield – Demonstration yield

Extension gap

= Demonstration yield - Farmers practices yield

Technology index

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

Additional return

= Demonstration return - Farmers practices return

Table 1: Details of package & practices for Marigold Cultivation

S. No.	Technical intervention	Farmers practices	Recommended Practices
1.	Variety	Local variety	Pusa Basanti, Pusa Narangi, Pusa Bahar,
2.	Seed rate	1-1.5 kg/ha	800 g/ha
3.	Soil treatment	No application	Quinalphos 25 kg/ha
4.	Seed treatment	No seed treatment	Seed treatment with Trichoderma @ 5g/kg of seed
5.	Time of sowing	25 Sept.	10-15 Sept.
6.	Fertilizer application	Broadcasting the urea	N.P.K. @ 120:100:100 and 25 kg ZnSO ₄ /ha
7.	Weed management	Hand weeding at 25-30 DAS	Atrazine 500 g a.i. ha at 1-2 DAS & hand weeding 30 DAS
8.	Plant protection	No application	Spray of Rogor 2 ml/litre for red spider
9.	Raising seedling	Broadcasting of seed in flat bed	Seed sown in line and in raised bed
10.	Quality improvement	Do not follow	Adoption of improved practices like grading etc.

Results and Discussion

Flower yield

It was observed that front line demonstration of improved technology increased productivity over respective farmer's practices (Table 2). The improved technologies recorded higher yield of marigold 252 and 260 q/ha as compared to farmer's practices 210 and 215 q/ha during 2015-2016 and 2016-2017, respectively.

Technology & extension gap & technology index

The technology gap (40 and 48 q/ha) observed may be attributed due to the dissimilarity in the soil fertility status, hence, variety wise location specific recommendation appears to be necessary to minimize the technology gap for yield level in different situation. The extension gap (42 and 45 q/ha) emphasized the need to train the farmers for adoption of improved agriculture technology. The technology index showed the feasibility of evolved technology at the farmer's fields. The lower value of technology indexes the more is the feasibility of technology. The data (Table 2) showed that maximum technology index (16.0%) was observed in the year 2015-2016.

Economics

The data analysis of *Rabi* 2015-2016 & 2016-2017 were revealed that marigold under front line demonstration recorded net (Rs. 1,61000 and Rs.1,70000/ha) and B:C Ratio (5.04 and 5.47) as compared to the local check where farmers got net return (Rs. 1,23000 and Rs. 1,28500/ha) and B:C ratio (3.73 and 3.95), respectively (Table 3).

Conclusion

From the above finding it can be conducted that front line demonstration have shown the use of better input like improved variety, seed & soil treatment, timely sowing, balanced use of fertilizer, weed, pest & disease

Table 2: Yield performance, technology gap, extension gap and technology index of marigold under farmer's practices & front line demonstration

Year	Variety	No. of Demonstration	Area (ha)	Potential yield	Yield (q/ha) Demonstrated yield	Local check	% increase yield over local check	Technology gap (q ha ⁻¹)	Extension gap (q ha ⁻¹)	Technology Index (%)
2015-16	Pusa Basanti	5	1	300	252	210	20.0	48	42.0	16.0
2016-17	Pusa Basanti	5	1	300	260	215	20.9	40	45.0	13.3
Average		10	2	300	256	212.5	20.5	44	43.5	14.6

Table 3: Economics of marigold under front line demonstration

Year	Economics of Demonstration				Economics of local check			
	Gross cost (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	BCR	Gross cost (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	BCR
2015-2016	40000	201600	1,61600	5.04	45,000	1,68000	1,23000	3.73
2016-2017	38000	208000	1,70000	5.47	43,500	1,72000	1,28500	3.95
Average	39000	204800	1,65800	5.23	44,250	1,70000	1,25750	3.84

management may be result in higher production of marigold as compared to control plot. The productivity gains under FLD over farmer's practices created awareness & motivated the other farmers to adopt improved production technology of marigold.

Reasons for low yield of marigold at farmer's field

Optimum sowing time was not followed due to non-availability of quality seed, moreover; farmers raise the nursery in traditional way by broadcasting the seed in flat bed. Use of inadequate and imbalanced dose of fertilizers especially the recommended dose of Nitrogen, Phosphorus, Potash and ZnSO₄ by the farmers could not result potential yield. Lack of knowledge about improved varieties, weeding, plant protection method & other cultural operation and post-harvest management technology are also factors responsible for lower yield.

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