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Integrated crop management practices to rate the performance of tomato under the major tomato growing areas of Lingasugur Taluk

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Abstract
Integrated crop management (ICM) demonstrations were done in 40 farmers' fields in the Lingasugur taluk of Raichur district in Karnataka state during the Kharif seasons of 2020-21 and 2021-22 with the goal of increasing cotton yield. According to the data, Integrated Crop Management (ICM) practices produced a mean yield of 234.6 kg/ha, which is 8.9% greater than farmers' methods (208.7 kg/ha). 25.7 kg/ha, 502.4 kg/ha, and 68%, respectively, were the average extension gap, technology gap, and technology index. Improved production practices resulted in a greater benefit-cost ratio (5.09) than the local check (3.96) cultivated by farmers in the area. Tomato productivity per unit area might be boosted by implementing scientifically sound and long-term management strategies. In light of the above discussion, ICM demonstrations were conducted in a methodical and scientific manner on farmer's fields to demonstrate the value of better practices and persuade the farming community of the potential of enhanced tomato production management technologies for future adoption.

Keywords: Tomato, ICM, technology, production

Introduction

Tomato (*Solanum lycopersicum*) belongs to the genus *Lycopersicon* under Solanaceae family. Tomato is one of the most important cash and commercial of tomato production in India is estimated to have amounted to 21 million metric tons with a production of 422 m tones and average productivity of 567 kg/ha (Anon., 2020). Looking into the maximum yields obtained at progressive farmer's fields in Central, North, & South zones, it is possible to double the average yield with the existing tomato technologies. In this direction UAS has introduced the average yield with the existing tomato technologies. In this direction UAS has introduced ICM demonstration (Shyamrao and Aravind 2018) [16]. This is the unique programme since the scientists are directly involved in conducting demonstrations. This also enables scientists to have firsthand information. With a view to communicate tomato production technology widely & for realizing the yields of farmers, around tomato ICM demonstrations of new technologies are laid out directly on farmers field during 2020-21 and 2021-22.

The amount to which new agricultural technology are adopted is a critical factor in the innovation diffusion process, and it is the most essential factor for increasing agricultural productivity at a faster rate. A large number of agricultural technologies have been developed, however they have not been fully embraced and utilized by farmers. The disconnect between scientists' advice and farmers' actual implementation is common. Lingasugur has done large-scale demonstrations of integrated crop management (ICM) approaches in response to the AEEC crisis.

Materials and Methods

During 2020-21 and 2021-22, ICM demonstrations were held at AEEC, Lingsugur in the Raichur district of Karnataka state in 40 farmer's fields with the goal of popularizing better tomato productivity enhancement technologies through ICM demonstrations. On-campus and off-campus trainings were held to disseminate tomato productivity increase methods. Improved practices like using Arka Rakshak, Arka Samrat, using vegetable special @4g/litre, staking techniques and spacing, using FYM-38 tonnes/ha, N-60kg, P-50kg, K-30kg and integrated pest and disease management are all examples of improved methods (Timely spray of pesticides).

The crop was harvested at maturity stage. For the study, technology gap, extension gap and technology index were calculated as suggested by Samui *et.al.* (2000) [14].

Technology gap= Potential yield – Demonstration yield

Extension gap = Demonstration yield – Farmers field

Technology index (%) = (Potential yield – Demonstration yield/Potential yield) * 100

Results and Discussion

The data were analysed, and the technology gap, extension gap, and technology index were calculated according to the formula, and an economic analysis was performed according to procedure, with the results presented in tables1and2.

Yield analysis

The average tomato yield over two years was 234.6 kg per ha, compared to 208.7 kg per ha in farmers' fields, a difference of 8.9%. The improved tomato yield in the demonstration plot was attributed primarily to the use of improved technologies such as improved hybrids such as Arka Rakshak and Arka Samrat, using vegetable special @4g/litre, staking techniques and spacing, balanced nutrient application including secondary and micronutrients, integrated pest and disease management, and proper irrigation methods. The use of bio-inputs allowed for the Mobalization of nutrients from native soil nutrients, while Trichoderma aided the crop's disease resistance. The results confirm the findings in different crops by Keshavareddy *et al.* (2018) [10], Meena *et al.* (2017) [12], Dhruw *et al.* (2012) [8], Girish *et al.* (2011) [9], Dayanand *et al.* (2011) [6] and Lathwal (2010) [11] and Dhaka *et al.* (2010) [7].

Technology gap

The demonstration yield fell short of the potential production by 502.4 kg per hectare due to a technological deficiency. The technological divide could be explained by differences in soil fertility and weather conditions. (Anuja *et al.*, 2014, Berjesha *et al.*, 2013 and Balai *et al.*, 2012) [2, 4, 3].

Extension gap

The extension gap of 25.7 kilogramme per hectare expansion gap was noted. This highlighted the importance of educating farmers through various channels in order to encourage the use of new agricultural technologies and reverse the widening extension gap. As more advanced production technologies are combined with high-yielding varieties, the alarming trend of a widening extension gap will be reversed. (Meena and Dudi, 2018, Bhatri *et al.*, 2014 and Meena and Singh, 2013) [5. 13].

Technology index (%)

Farmers will eventually abandon old technology and adopt new technology as a result of the new technologies. The technology index indicates the viability of developed technology in farmer's fields; the lower the value of the technology index, the more viable the technology. In this demonstration, a technology index of 68% was observed, indicating proper adoption of enhanced technologies. Similar findings were also found by Shalini *et al.* (2016) [15] in tomato.

Economic analysis

During the study demonstrations, the input and output prices of commodities were used to calculate gross return, cost of cultivation, net return, and benefit cost ratio (Table 2). Tomato growing with better technologies yielded a larger net return of Rs 284145/ha than farmer's practises (Rs 235591/ha), which yielded an additional Rs 48553/ha. In ICM, the tomato benefit cost ratio was 5.09. This is because to better yields obtained through new technologies when compared to farmers plots used as a local control.

Table 1: Tomato yield, technology gap, extension gap and technology index as influenced by ICM practices

Year	Cotton yield (Kg/ha)		% increase in yield in ICM over FP	Technology gap (kg/ha)	Extension gap (kg/ha)	Technology index (%)
	ICM	FP				
2020-21	233.6	207.6	12.55	689.4	26.0	74.6
2021-22	235.6	209.9	10.9	315.4	25.7	57.2
Average	234.6	208.7	11.7	502.4	25.7	68.0

Table 2: Economic analysis of tomato demonstration

Sl. No	Net returns (Rs/ha)		Additional returns (Rs /ha)	B:C	
	ICM	FP		ICM	FP
2020-21	166670	131383	35287	3.48	2.72
2021-22	401620	339800	61820	6.7	5.2
Average	284145	235591	48553	5.09	3.96

Conclusion

According to the findings, the ICM demonstration programme was effective in increasing farmers' awareness and use of diverse tomato production technology. ICM practises raised awareness and encouraged other farmers to use acceptable tomato-growing techniques. The region of high producing tomato seedling material has grown, and it will soon expand throughout the taluk, including the surrounding area. The use of critical input and a participatory approach to designing and executing the demonstration will undoubtedly aid in technology transfer to farmers.

References

1. Anonymous. FAO Statistics, 2016.
2. Anuj Kumar Singh, Kinjulck Singh C, Singh YP, Singh DK. Impact of Frontline Demonstration on Adoption of Improved Practices of Oilseed Crops. Indian Res. J Ext. Edu. 2014;14(3):75-77.
3. Balai CM, Meena RP, Meena BL, Bairwa RK. Impact of Front Line Demonstration on Rapeseed-Mustard Yield Improvement. Indian Res. J Ext. Edu. 2012;12(2):115.
4. Berjesh Ajrawat, A Manu Parmar, Mahital Jamwal. Impact of front line demonstration of oilseed crops in improved technology transfer. Journal of Oilseed Brassica. 2013;4(2):96-97.
5. Bathri, Roshani Chouhan, Sandhya Choudhary, Swarnakar VK. Impact of Front Line Demonstration on Scientific Temperament of Maize Growers in Jhabua District (M.P.), Journal of Agriculture and Veterinary Science. 2014;7(10):1-4.
6. Dayanand R, Verma K, Mehta SM. Boosting Mustard Production through Front Line Demonstrations. Indian

Res. J Ext. Edu. 2011;12:3-12.
7. Dhaka BL, Meena BS, Suwalka RL. Popularization of improved maize production technology through frontline demonstrations in south-eastern Rajasthan. Journal of Agricultural Sciences. 2010;1(1):39-42.
8. Dhruw KS, Sengar RS, Yadaw KN. Level of knowledge and adoption about recommended maize production technology. Agriculture Update. 2012;7(3&4):311-315.
9. Girish KJ, Burman RR, Dubey SK, Gajab S. Yield Gap Analysis of Major Rice's in India. J. Community Mobilization Sustain. Dev. 2011;6(2):209-216.
10. Keshavareddy G, Kamala Bai S, Nagaraj KH, Ranganath SC. Impact of Front Line Demonstration on Yield and Economics of Pigeon Pea, *Cajanus cajan* in the District of Ramanagara, Karnataka, India. Int. J Curr. Microbiol. App. Sci. 2018;7(01):472-478.
11. Lathwal OP. Evaluation of front line demonstrations on blackgram in irrigated agro ecosystem. Ann. Agric. Res. 2010;31(1&2):24-27.
12. Meena Chaturbhuj, Navab Singh, Dileep Kumar, Agarwal SK. Front line demonstration to popularize integrated pest management in cotton (*Gossypium*) among farmers of Sirohi district, Rajasthan, International Journal of Science, Environment and Technology. 2017;6(1):566-572
13. Meena ML, Singh D. Frontline demonstration for boosting the oilseeds production in Rajasthan: A case study in Pali. J. Oilseeds Res. 2013;30(1):51-54.
14. Samui SK, Maitra S, Roy DK, Mandal AK, Saha D. Evaluation of Front Line demonstration on groundnut. J. Indian Soc.Coastal Agric. Res. 2000;18(2):180-183.
15. Shalini M, Devaraja, Manjunath Gowda. Impact of Front line demonstrations on yield and economics of Tomato in Chikkaballapur district of Karnataka. Int. J. app. and Pure Sci. Agric. (IJAPSA). 2016;2(07):4-8.
16. Shyam Rao Kulkarni, Prakash Sharanappa, Aravind Rathod, Renuka Biradar. Performance of cotton under integrated crop management practices in north dry zone of Karnataka, International Journal of Science, Environment. 2018;7(5):1603-1607.