



## EFFECT OF STAKING TOMATO ON YIELD AND ECONOMICS IN SULTANPUR DISTRICT OF UTTAR PRADESH

**J. B. Singh\***

Senior Scientist/Head, ICAR –KNKV, Sultanpur \*Corresponding Author

**C. K. Tripathi**

Scientist, ICAR –KNKV, Sultanpur

### ABSTRACT

Staking Tomato is not a major vegetable crop grown in Sultanpur district of Uttar Pradesh. The major constraints of low productivity of Tomato are due to partial adoption of recommended package of practices & non-staking of tomato by the tomato growers. The present study was undertaken to address the yield gap through Staking & Non staking practices on Tomato crop. ICAR-Krishi Vigyan Kendra, Sultanpur, Uttar Pradesh conducted 20 demonstrations on tomato since 2016-17 to 2017-18 in the different locations of the districts. Non Staking practices were treated as control for comparison with Staking practices. The results showed that the Staking tomatoes given 36.17 % more yield in comparison to local practices, net profit of Rs. 1,70,130.00 with 3.43 BC Ratio. The average income of staking tomato was 320 qt/ha & Non –Staking was 235 qt/ha. The Staking tomato gives more profit of Rs.74,000/ha as compare to non – staking. The extension gap and technology gap ranged between 85 and 130 q/ha, respectively, with the technology index of 13.00 per cent during the demonstration years.

**KEYWORDS :** Staking Tomato, Yield, Extension gap, Technology gap, Technology index and B:C ratio

### INTRODUCTION

Tomato (*Solanum lycopersicon* (Mill.) belonging to the family Solanaceae is one of the most important vegetable crop that is grown in India which contributes about 11.2 per cent to world production. Tomatoes are major contributors of antioxidants such as carotenoids (especially lycopene and  $\beta$ -carotene) Phenolics, Ascorbic acid (Vit. C) and small amounts of vitamins E in daily diets (Rai.et.al.,2012). Tomato is a rich source of Vitamin A, Vitamin C and minerals like Ca, P and Fe (Dhaliwal et.al,2003). Tomato is consumed throughout the world as a fresh vegetable as well as processed products like ketchup, juice, puree, sauce and whole canned fruit. In Sultanpur, the crop is grown in an area of 481 ha with an average yield of 221.9 qt/ha per ha. Maximum day and minimum night temperature above 320 C and 210 C respectively are known to limit fruit set due to an impaired physiological process in flower and fruit setting and or due to abscission (Bhattarai & Subedi 1996).

The staking in tomato has been found to be highly profitable, by providing a net income of around Rs. 1,70,130/ ha, respectively and a total of around 24 human days of employment, respectively, to the farmers from farming regions of Sultanpur districts of U.P state. Besides the income and employment generation, staking in tomato has also enhanced the family welfare through increased income to the family, helping the farmers to reinvest into agriculture, providing better living and health conditions to the family and attaining better status in the society. Staking in tomato has provided higher income stability in terms of in yield, price and hence income compared to non staking crops. The staking in tomato has helped reduce the inequality in income distribution more across the farm families as compared to that from the other crops.

**MATERIAL AND METHODS:** The present study was carried out by ICAR-Krishi Vigyan Kendra, Sultanpur for two consecutive years from 2016-17 to 2017-18 in the farmers field in different locations of Sultanpur district. For conducting FLDs, farmers were identified/ selected following the survey suggested by Choudhary (1999). Demonstration is one such powerful tool for transfer of technology which practically exhibits the strength of new technologies in increasing yield and profit. Total 20 demonstrations were conducted in 20 farmer's fields. Each frontline demonstration was laid out on 0.2 ha area while adjacent 0.2 ha was considered as control for comparison (farmer's practice). The data on production cost and returns were collected by KVK, scientists with frequent field visits during 2016-17 to 2017-18 from demonstration plots and farmers practice plot. The data output were collected from both FLD plots as well as control plots and finally the extension gap, technology gap, technology index along with the benefits cost ratio were work out (Samui et al., 2000) as given below:

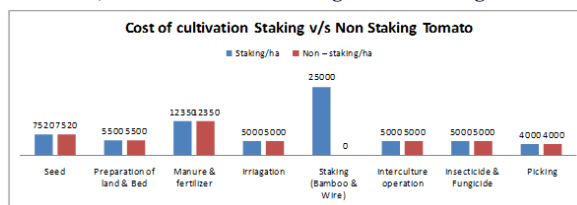
Technology gap = Potential yield - Demonstration yield  
Extension gap = Demonstrated yield - Yield under existing practice

Technology index =  $\frac{\text{Potential yield} - \text{Demonstrated yield}}{\text{Potential yield}} \times 100$

### RESULTS AND DISCUSSION

The analysis depicted in Table 1 showed the average yield of Tomato two varieties (Avinaash-2, & Himgiri) were along with Navodaya during 2016-17 and 2017-2018, respectively under demonstrated technology however, under farmer's practices the average yield were 320 and 235 q/ha during respective years. Staking methods are known to affect yield and quality of tomato fruit. The total yield of staked plants is often higher than similar plants that are not staked. KVK have trained them and taken demonstration on the farmer's field to support of the staking of tomato plant that actually increase the yield & escape from rotting of the fruit.

**Table No 1, Cost of cultivation Staking v/s Non Staking Tomato**



The above data indicates that the Gross cost of staking of tomato is Rs.69,870 and non staking is Rs. 44,870, which is exceed Rs. 25,000 only but staking gives more remunerative price than non staking.

Staking of Tomatoes is known to affect yield and quality of tomato fruit. The total yield of staked plants is often lower than similar plants that are not staked it was in farmers mind. KVK have trained them and taken demonstration on the farmers field to support of the staking of tomato plant that actually increase the yield & escape from rotting of the fruit. It could, hence, be concluded that staking technology brings about the best results for non staking tomatoes.

**Table No 2, Benefit cost Ratio of Staking Tomato**

S No	Parameter	Staking yield (qt/ha)	% increase in yield	Gross cost	Gross return	Net Profit	Profit	B C ratio
1	Non - Staking	235	-	44,870	1,41,000	96,130	-	3.14
2	Staking	320	36.17	69,870	2,40,000	1,70,130	74,000	3.43

The results showed that the Staking tomatoes given 36.17 % more yield in comparison to local variety, net profit of Rs. 1,70,130.00 with 3.43 BC Ratio. The average income of staking tomato was 320 qt/ha & Non –Staking was 235 qt/ha. The Staking tomato gives more profit of Rs.74,000/ha as compare to non – staking. In tomato, Saidi.et.al.(2008) reported the importance of additive effects for plant height, additive and non additive effects for number of fruits per plant & fruit weight while dominance effects for FYPP. However Salim.et.al.,(2009) reported non additive effects for fruit weight, fruit length, fruit width, number of fruit per plant & fruit yield per plant

**Extension gap**

On an average extension gap under two year Demonstration programme was 85 q/ha. This emphasized the need to educate the farmers through various techniques for the adoption of improved agricultural production technologies to reverse this trend of wide extension gap.

**Technology gap**

The technology gap, the differences between potential yield and yield of demonstration plots was 130 q /ha. This may be due to the soil fertility, managerial skills of individual farmer's and climatic condition of the area. Hence, location specific recommendations are necessary to bridge this gap.

**Technology Index**

**The technology index shows the feasibility of the demonstrated technology at the farmer's field. The technology index was 28.88, which shows the effectiveness of technical interventions. This accelerates the adoption of demonstrated technical interventions to increase the yield performance of tomato.**

**CONCLUSION:**

The Demonstration produced a significant positive result and provided an opportunity to demonstrate the productivity potential and profitability of the staking Tomato technology (intervention) under real farming situation. This could circumvent some of the constraints in the existing transfer of technology system in the Sultanpur district of Uttar Pradesh. The productivity gain under demonstration over existing practices of tomato cultivation has created greater awareness and motivated other farmers to adopt the demonstrated technologies for tomato production in the district.

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