



**Short Communication**

# Performance of Some Tomato Hybrids at Farmers' Field in District Kokrajhar in Assam

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## INTRODUCTION

Kokrajhar district of west Assam under lower Brahmaputra Valley Zone has great potential for vegetable cultivation and farmers of this region are growing vegetables commercially. Tomato is one of the major vegetables that grown extensively in the district during *rabi* season and most of the farmers grow traditional varieties which are not only low yielder but also susceptible to the attack of leaf curl virus. Initially in the entire Kokrajhar district, only some progressive farmers used to cultivate hybrid varieties of tomato available in the market but now the hybrid vegetable cultivation has attracted a large number of farmers and gradually gaining popularity among the farmers of the district. In fact, majority of the farmers of the area are completely unaware about the yield potential and performance of tomato hybrids available in the market which are developed by government and private organisations. Therefore, the experiment was conducted on five locations in Kokrajhar district of Assam to assess the comparative performance of three tomato hybrids namely Arka Abhijit, Arka Shresth and Rocky at the farmers' field.

## MATERIALS AND METHODS

In order to carry out the study during *rabi* seasons of 2005–06 and 2006–07, five villages namely Bajugaon, Bhomrabil No. 2, Haraputa, Matiajuri and Telipara under Gossaigaon sub-division of Kokrajhar district of Assam were selected for the on-farm farmers participatory trial on three hybrids of tomato viz. Arka Abhijit, Arka Shresth and Rocky. Total ten farmers were selected from these five villages for conducting the

experiment. The soils were mostly acidic in reaction, sandy to loam in texture and water holding capacity was medium to low. In this, two hybrids (Arka Abhijit and Arka Shresth) were from IIHR, Bangalore and one (Rocky) was from private company. The experiment was laid out in randomized block design (RBD) with three treatments and seven replications, considering the varieties as treatment and experimental plot as replication. The nursery raising of seedling was done with standard procedure of raising seedlings for transplanted vegetables and were transplanted on farmers field with a spacing of 60 cm X 45 cm. Size of the experimental plot of size 40 m<sup>2</sup> (8.0 m X 5.0 m). A fertilisers dose of 80:60:60 kg NPK/ha was applied. The entire quantity of phosphorous and potassium along with half of nitrogen was used before transplanting, while the remaining half of nitrogen was top dressed after 40 days of transplanting. Monitoring and field visits were conducted regularly to collect feedback and provide instant solution to the problems reported by the participating farmers. The observations on number of fruit per plant, fruit weight (g), yield per plant (g) etc. were recorded and the economics of cultivation was also calculated. All the observations were recorded on randomly selected twenty five plants, except the yield (q/ha), which was computed based on the net plot yield.

## RESULTS AND DISCUSSION

Among all the three hybrid varieties of tomato, Arka Abhijit performed significantly well at all the locations of the experiment. All the three hybrids significantly differed from each other in

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terms of yield and yield attributing characters and the two varieties namely Arka Abhijit and Arka Shresth exhibited superiority over the variety Rocky ( local check). In case of number of fruits per plant, the hybrid Arka Shresth registered the highest fruit number (30.5) followed by Arka Abhijit (28.3) and Rocky (26.8). However, the hybrid Arka Abhijit registered the maximum fruit weight (34.8g) and showed significant superiority than the other two hybrid varieties of tomato (Table 1). The maximum yield per plant (987.2g) was recorded in the variety Arka Abhijit. All the three hybrids of tomato were found promising at the farmers' field with a yield level of 321.5 to 365.7q/ha and field tolerance to tomato leaf curl virus. The high yielding performance of tomato hybrids at farmers field were also reported by Singh *et al* (2006). The variety Arka Abhijit registered the highest yield (365.7 q/ha) and showed an increase of 4.85 % and 13.73 % yield over Arka Shresth and Rocky, respectively. Out of five selected locations, the highest yield per hectare was recorded at the farmers' field of Bhomrabail No. 2 (Table 2) irrespective of all the three varieties and was followed by the location Telipara.

**Table 1. Comparative performance of tomato hybrids at farmers field.**

Variety	Fruit/ Plant	Fruit Weight (g)	Yield/ Plant(g)	Yield (q/ha)
Arka Abhijit	28.3	34.8	987.	365.7
Arka Shresth	30.5	30.9	941.5	348.7
Rocky	26.8	32.4	868.3	321.5
SEM ±	0.57	0.33	12.07	5.78
<b>CD(5%)</b>	<b>1.25</b>	<b>0.73</b>	<b>26.30</b>	<b>12.58</b>

The economic analysis (Table 3) revealed that the highest expenditure (Rs. 41,430/-) was incurred in cultivating tomato hybrid Rocky as compared to other two hybrid varieties (Rs.39,330/-) and the maximum net return (Rs.1,43,505/-) was obtained from the variety Arka Abhijit followed by Arka

**Table 3. Return from the cultivation of tomato hybrids.**

Variety	Yield (q/ha)	Sale Rate (₹/q)	Income (₹/ha)	Estimated Cost (₹/ha)	Net Return (₹/ha)
Arka Abhijit	365.7	500	1,82,835	39,330	1,43,505
Arka Shresth	348.8	500	1,743,80	39,330	1,35,050
Rocky	321.5	500	1,607,70	41,430	1,19,340

**Table 2. Location-wise yield (q/ha) of tomato hybrids at farmers field.**

Location	Variety		
	Arka Abhijit	Arka Shresth	Rocky
Bajugaon	363.2	347.6	320.7
Bhomrabail No. 2	390.3	350.8	323.1
Haraputa	340.5	345.3	319.9
Matiajuri	358.4	348.5	320.9
Telipara	374.6	349.7	322.2
Mean Yield (q/ha)	365.4	348.4	321.4

Shresth (Rs.1,35,050/-) and Rocky (Rs.1,19,340/-). The higher cost of cultivation is due to high price of seed (Rs.27,000/-kg) of the tomato hybrid (Rocky) of private company as compared to other two hybrids developed by IIHR, Bangalore (Rs.13,000/-kg). Therefore, farmers can save an amount of Rs.2,100/-, besides getting additional profit of Rs.24,165/- while growing tomato with low priced hybrid varieties developed by different government organization available in our country. The Cost : Benefit ratio was also highest (1:4.65) in case of Arka Abhijit and the other two hybrids i.e. Arka Shresth and Rocky gave a benefit of Rs.4.43:1 and Rs.3.88:1, respectively.

## CONCLUSION

The tomato cultivation with hybrid proved economically viable intervention for the farmers. Besides, raising the income level the intervention provides livelihood security to vegetable growers of the area. Considering the productivity and profitability, the farmers expressed satisfaction with the performance of these tomato hybrids and specially impressed with the variety Arka Abhijit because of its high yielding potentiality. The farmers of adjoining areas were also convinced and interested to adopt tomato cultivation with the hybrid varieties.

## REFERENCES

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