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Assessment of tomato varieties in Champhai District for higher productivity

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Abstract

Tomato being an important vegetable crop in Champhai District of Mizoram, its varietal assessment is an important thematic area for the welfare and livelihood security of farmers. The field experiment was carried out during 2023-2023 at Champhai District Mizoram with three Varieties using Randomized Block Design with five replications. The experiment data were collected from Plant height, no of brancher per plant, Fruit weight, number of fruit per plant and yield per hectare. The result revealed that Arka Abhed could obtain a yield recorded the highest plant yield (438.97 qtl/ha) followed by Arka Samrat (410.22 qtl/ha) whereas Arka Rakshak recorded the lowest yield of 269.86 qtl/ha.

Keywords: Mizoram, tomato, yield, on farm testing

Introduction

Tomato (*Solanum lycopersicum*) is one of the most popular, widely cultivated and consumed vegetable crops worldwide (Grandillo *et al.*, 1999) ^[1]. In India it is cultivated in 83,000 ha area with a production of 7, 90, 000 tonnes in both hills and plains. Ripened tomatoes comprised of water (approximately 90%), soluble and insoluble solids (5-7%), citric and other organic acids and minerals. It is a rich source of vitamin A and C and also contains minerals like iron and phosphorous. Furthermore, tomato is the richest source of dietaryfibres, antioxidants like lycopene and beta-carotene (Singh *et al.*, 2017. Before introducing the tomato varieties in khawzawl District, every year Mizoram has to import tomato from other neighboring state to meet the demand since tomato crop is never cultivated by farmers of Mizoram under open cultivation in large scale. Farmers of the District were unable to grow tomatoes under open condition due to the problems like bacterial wilt and blight. Keeping in view of the importance of tomato cultivation under open condition, this study was undertaken to find out the best suitable variety in the District. After the introduction of tomato varieties such as Arka Abhed Arka Samrat and Arka Rakshak by KVK Khawzawl, Champhai District Mizoram. Tomato farming has become a reliable source of income for the District farmers.

Materials and Methods

On Fram Testing was conducted at farmer's field by KVK Champhai with three varieties viz. Arka Rakshak, Arka Samrat and Arka Abhed in Randomised Block Design with five replications. The experimental site was located at 23°44'0"N Latitude, 93°20'0"E Longitude with altitude of 1192m MSL. Tomato seeds were procured from ICAR-Indian Institute of Horticultural Research, Bengaluru and used for this study, Farmers were given training on nursery raising, improved package of practices. Seedlings of 25 days old were transplanted on the mainfield with a spacing of 60 X 45 cm. Observations on Plant height, Number of branch, Number of fruit per plant, fruit weight, no. of fruits, yield per heactare were studied.

Results and Discussion

The results on the performance of different Tomato varieties are showed significant differences for all different characters observed in the experiment viz., plant height, number of branches per plant, number of fruits per plant, fruit weight and fruit yield. In the present study, plant height of different genotypes showed significant difference. The plant with highest height was observed in Arka Abhed (98.35 cm) which was followed by Arka Samrat (91.41 cm), while the shortest was recorded in Arka Rakshak 86.52 cm, (Table 1).

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The variety Arka Abhed (12.24) was reported to have maximum number of branches per plant which was followed by Arka Samrat (111.29) while, Arka Rakshak recorded the least number of branches (10.64). Such variation for number of branches were also noticed by, Karak *et al.* (2015) ^[3] and Srinivas *et al.* (2017) ^[4]. The highest number of fruits per plant was recorded maximum in Arka Abhed with 79.73 fruits per plant, followed by Arka Samrat with 74.76 fruits per plant. In contrast, fewer number were found from Arka Rakshak (65.92 fruits per plant), (Table 1). Such variation in chilli genotypes for number of fruits per plant was also

noticed by Mohanty (2003) ^[5]. The maximum fruit weight (79.73 g) was observed in Arka Abhed followed by Arka Samrat (74.76 g), while the lowest fruit weight was observed in Arka rakshak (66.97 g) (Table 1). The variation in tomato fruit weight was also reported by Rohini and Lakshmanan (2014). Maximum Fruit yield was recorded in Arka Abhed (438.97qtl/ha) followed by Arka Samrat (410.22 qtl/ha), while the least fruit yield was observed in variety Arka Rakshak (269.86 qtl/ha (Table 1). The yield variations were occurred amongst the genotypes, varieties and hybrids under varying field conditions have been reported by Mishra *et al.* (2017) ^[6].

Table 1: Growth and yield of tomato varieties

Varieties	Plant height	No of branch	No of fruit /plant	Frt weight (gm)	Yield (qtl/ha)
Arka Rakshak	86.52	10.64	65.92	66.97	269.86
Arka Samrat	91.41	11.29	74.76	74.76	410.22
Arka Abhed	93.35	11.24	79.73	79.73	438.97
SEd	0.74	0.25	1.86	1.42	3.66
CD (0.05)	1.04	0.57	4	3.05	7.07

Conclusion

The present study concluded that Arka Abhed at Champhai district was more advantageous due to their yield contributing traits which included number of fruits per plant, average fruit weight, yield per plant and yield per hectare which were recorded higher as compared to Arka Rakshak and Arka Samrat. Therefore Tomato Arka Abhed can go for large scale cultivation practices to enhance the farmers' standard of living in Mizoram's Champhai District.

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