

PERFORMANCE OF HYBRID TOMATOES IN CROP CAFETERIA: AN EFFECTIVE TOOL FOR TECHNOLOGY EVALUATION AND DISSEMINATION

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Abstract : A tomato crop cafeteria was conducted at the instructional farm of KVK Chanduli during summer season 2009-10 to assess the performance of tomato hybrids (*Solanum lycopersicon* L.) against the locally popular variety sel-22. Observations recorded on yield and yield contributing characters revealed that the maximum yield was obtained from Hybrid B.S.S. 39 (35.69 t/ha) followed by Phule Hybrid (35.02 t/ha) and Century-12(23.76 t/ha). Among the yield contributing characters, highest total number of fruits were recorded with Phule Hybrid-1 (60.35) followed by B.S.S.-39 (41.60) as compared to check, whereas average fruit weight was found maximum with HOE 303 followed by Ratna (98.66), Century-12(85.83 g), BSS-39 (70.66 g) than the check S-22 (65.70 g). Quality parameters assessed in the experiment exhibited highest ascorbic acid content with BSS-39 (31.15 mg) and Phule Hybrid-1 (29.08 mg) as compared to Check S-22(27.32 mg). Juice content was recorded highest in control variety S-22(83.60%) than the hybrids under study. Demonstration of these hybrids in crop cafeteria for relative performance and scientific production technology at a place were found very effective to upgrade the knowledge and skill of farming communities and tomato growers.

Keywords : Crop cafeteria, Performance, Quality parameters, Tomato hybrids

INTRODUCTION

Tomato (*Solanum lycopersicon* L.) is one of the most important vegetable worldwide and belongs to the Solanaceae family. World tomato production in 2001 was about 105 million tons of fresh fruit from an estimated 3.9 million ha. As it gives high yield and economically attractive, the area under cultivation is increasing day by day. This family also includes other well-known species, such as potato, tobacco, peppers and eggplant (aubergine). It has its origin in the South American Andes. The cultivated tomato was brought to Europe by the Spanish conquistadors in the sixteenth century and later introduced from Europe to southern and eastern Asia, Africa and the Middle East. More recently, wild tomato has been distributed into other parts of South America and Mexico. Tomatoes contribute to a healthy, well-balanced diet and are rich in vitamins, minerals, essential amino acids, sugars and dietary fibers. Tomato fruits are consumed fresh in salads or cooked in sauces, soup and meat or fish dishes. They can be processed into purées, juices and ketchup etc. Canned and dried tomatoes are economically important processed products. Yellow tomatoes have higher vitamin A content than red tomatoes, but red tomatoes contain lycopene, an anti-oxidant that may contribute to protection against carcinogenic substances

India ranks second in area (0.59 million ha) and production (1.115 million tons) next to china with a productivity of 18.6 metric tons /ha. The current excitement over tomato cultivation is occurred in north India due to its high yield potential and relatively good processing quality. But disease susceptibility and low yield capacity of traditional variety is limiting factors in tomato cultivation in eastern Uttar Pradesh. Whereas, tomato hybrids are not only highly productive but also contain desired

attributes i.e. greater vitality, rapid growth and development, uniformity and wide adoptability. There is pressing demand to find out location specific, high yielding suitable tomato hybrids to meet out farmer's need. It contributes 8.6% in total vegetable production in India with 7.5% area under cultivation (N.H.B database, 2009)

The present investigation was therefore, undertaken to evaluate the yield and quality of some tomato hybrids under micro climatic conditions of Chandauli district of Uttar Pradesh.

MATERIAL AND METHOD

The seeds of five tomato hybrids viz., Phule Hybrid-1, HOE 303, Century-12, Ratna and BSS-39 were used to raise seedling in nursery at instructional farm of KVK Chandauli, U.P. The planting was done at 60 x 45 cm spacing in September month for the production of autumn crops. Variety Sel-22 was also grown as check for comparison. All the scientific production technologies were applied during the study period. The fruits were harvested at full maturity from second fortnight of December and subjected to assess various yield and quality parameters i.e. number of fruits/plant, earliness, fruit weight (g), total yield, juice percentage, total soluble solids (%) with the help of hand refractometer and ascorbic acid content (mg/100 ml) by the titration method as described by A.O.A.C.(I). Randomized block design was applied to calculate critical differences at 5% level of significance.

RESULT AND DISCUSSION

It was observed that recently released tomato hybrids have higher yield as compared to variety Sel-22 at all the picking dates except 60 days after transplanting (Table 1). The maximum yield was noted in all the hybrids at second picking stage (91 days after planting) after which it decreased gradually at the

next picking. Tomato hybrid Ratna and Century-12 sustained significant market yield even upto last picking stage (120 days), whereas Sel-22 has already ceased to produce any yield. Similar results had been noticed by N.C. Nainiwal (1991).

All the tomato hybrids produced significantly higher marketable yield than check (Sel-22) except HOE 303 which showed yield statistically at par with the variety Sel-22. Maximum yield on the basis in terms

Table 1. Number of fruit production and yield of tomato hybrids.

Hybrids	Number of Fruits/plant		Marketable Yield	
	60 DAT	90 DAT	g/plant	t/ha
Phule hybrid-1	23.00	27.35	929	35.02
HOE 303	11.40	21.10	547	20.67
Century-12	13.20	21.93	629	23.67
Ratna	9.40	14.40	582	22.01
B.S.S.-39	17.06	24.40	957	35.69
Sel-22	23.80	8.40	461	17.43
CD at 5%	4.86	6.82	-	12.75

The average weight of fruits was much higher in all the hybrids as compared to Sel-22. Maximum fruit weight was observed with hybrid HOE 303 and Ratna followed by Century-12, Phule Hybrids-1 and B.S.S. 39. Similar facts have also been reported by Bajwa et al. (1969).

The juice content of tomato hybrids was recorded in percentage. The maximum juice percent was observed in B.S.S.-39 followed by Sel-22 and HOE

Table 2. Average fruit weight (g), juice percentage and content of total soluble solids (%) and ascorbic acid (mg/100 ml) of tomato hybrids.

Hybrids	Weight (g/fruit)	Juice (percentage)	T.S.S. (%)	Ascorbic acid (mg/100 ml)
Phule hybrid-1	60.16	79.00	5.00	29.08
HOE 303	103.33	83.30	4.30	24.44
Century-12	85.83	80.60	4.06	30.50
Ratna	98.66	80.00	4.26	26.24
B.S.S.-39	70.66	85.10	4.83	31.15
Sel-22	65.70	83.60	4.76	27.32
CD at 5%	10.00	0.315	0.15	2.50

Considering the facts and figures summarized as above it may be concluded that out of 5 hybrids and one check, B.S.S.-39 emerged significantly best in productivity per unit area, adoptability and overall performance followed by Phule Hybrid-1. According to these facts hybrid tomato have advantageous under Chandauli district as they yielded higher and till longer period over variety Sel-22 used as check. However the quality of the fruit from hybrids was not showing longer differences.

REFERENCES

A.O.A.C. (1975). Official method of analysis 12th Edi., Association of official analytical chemistry, Washington. D.C.
Bajwa, R.S.; Narang, A.S. and Bhatiya, I.S. (1967). Comparative study on some new varieties of tomatoes. *J. Res.* 6 : 659-693

of t/ha and g/plant was observed for hybrid B.S.S.-39 followed by Phule Hybrid-1 and Century-12.

The total number of fruits produced per plant was significantly lower in tomato hybrids than Sel-22 at 60 days after transplanting. However at 90 days after transplanting, Phule Hybrid had maximum number of fruits followed by B.S.S.-39 and Ratna. Similar trends had been reported by Johnson C.F. and Hernandez T.P. (1980).

303 and minimum was with Phule hybrid-1, while maximum T.S.S. content was recorded in Phule Hybrid-1 followed by B.S.S.-39 and Sel-22.

So for as maximum ascorbic acid content was recorded with B.S.S.-39 followed by Century-12, Phule Hybrid-1 and sel-22. The variation among all the varieties was significant and minimum ascorbic acid content was noticed in HOE-303.

Johnson, C.F. and Hernandoz, T.P. (1980). The relative study of early and total yield in tomatoes. *Hort. Science* 12: 80

Methews, R.S.; Gill, R.S. and Burges S.S. (1974). Evaluation of different hybrid cultivars of tomato in relation of growth yield & quality. *Proc.. Florida Stee. Hort. Soc.* 86: 262-265.

Nainiwal, N.S. (1991). Evaluation of tomato varieties for processing. M.Sc. Thesis submitted to Narendra Deva University of Agricultural and Technology, Kumarganj, Faizabad, Uttar Pradesh, India.

Prasad A. and Prasad R. (1987). Studies on varietal performance of tomato. *Prog. Hort.* 9: 57-61.

Sharma J.R. and Nandapuri (1984). Adoptability of some tomato varieties in Punjab, P.A.U. *J. Res.* 21: 180.

Sharma S.R.; Mahajan R. and K.K. Bajaj (1996) Biochemical evaluation of some tomato varieties. *Vegetable science.* 23 : 42-47.