



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; 7(2): 880-882
Received: 13-01-2018
Accepted: 14-02-2018

J Cheena

Department of Vegetable
Science, JVR- Horticultural
Research Station, Sri Konda
Laxman Telangana State
Horticulture University, Malyal,
Warangal, Telangana, India

P Saidaiah

Department of Genetics and
Plant Breeding, College of
Horticulture, SKLTSU,
Rajendranagar, Hyderabad,
Telangana, India

A Geetha

Department of Crop Physiology,
Regional Agricultural Research
Station, Palem, Nagarkurnool,
Telangana, India

N Tejaswini

Department of Vegetable
Science, College of Horticulture,
SKLTSU, Rajendranagar,
Hyderabad, Telangana, India

Correspondence**P Saidaiah**

Department of Genetics and
Plant Breeding, College of
Horticulture, SKLTSU,
Rajendranagar, Hyderabad,
Telangana, India

Effect of sowing dates on yield and growth of indeterminate tomato varieties under poly house conditions

J Cheena, P Saidaiah, A Geetha and N Tejaswini

Abstract

To investigate the effect of sowing dates on yield and growth of different undeterminate tomato varieties, the experiment was conducted at JVR- Horticultural Research Station, Sri Konda Laxman Telangana State Horticulture University, Malyal, Warangal district, Telangana, India for three years during July, 2013 to February, 2015. Three sowing dates *i.e.* July 15, August, 15 and September, 15 were considered as factor and tomato variety *viz.*, Heemsona, Ranganga and Shikar were considered as factor B. The experiment was laid out in FRBD with three replications. The number of fruits per plant was highest (308.87) with 15th September planting in heemsona variety and lowest with 15th July planting in Shikar variety. The planting with 15th September with Heemsona was founded better in respect of yield (77.74 t/ha) compared to 15th July planting with Ranganga variety (16.66 t/ha).

Keywords: *Couroupita guianensis* Aubl, cannon ball tree anti-inflammatory, anti-arthritic, anti-scavenging

Introduction

Tomato (*Solanum lycopersicum* L.) is one of the most widely consumed vegetable crops in the world. Tomato can play an important role in human diet. It is a valuable source of vitamins A and C as well as several minerals (Kauroud Kapoor, 2008) including calcium, iron, manganese and particularly potassium (Herm and Post, 2004; Naika *et al.* 2005). It is the second largest cultivated vegetable crop in the world after potato. Its cultivated has spread through the world occupying an area of 128.00 million ton tomato is mainly grow in China, India, USA, Italy, Turkey and Egypt. In India it occupies an area of 0.63 million ha with an annual production of 12.43 million tones and productivity of 19.60 mt/ha. In Telangana, tomato is important vegetable crop that fetches great remuneration to the farmers. It may be cultivated in open as well as in protected conditions. But, in cultivation under field conditions is not very profitable because of unfavorable weather there is a huge scope if tomato cultivation under poly house conditions especially in Telangana state. There are number of hybrids varieties which can be evaluated for their yield potential for poly house cultivation in order to harness boon in tomato productivity.

Crop productivity is influenced by the genetic characteristics of the cultivar, growing environment and management practices. Vegetables and flowers production is significantly influenced by weather conditions. The extent of its production causes considerable fluctuations in its prices. A striking balance between all season availability of vegetables and the production system are major challenges for the modern technology of crop production. Recently the protected cultivation is becoming an important production practices for creating favorable environment for the sustained growth of plant to realize its maximum potential even in adverse climatic conditions. Green house, plastic tunnels, insect proof net house and shade nets are used as protecting structures depending on the requirements and cost effeteness. Besides modifying the plants, environment, these protective structure provide protection against wind rain and insects (Hasan and Singh, 2007) [6]. Keeping the above in view, the present investigation was undertaken to study the effect of intermixture tomato varieties inside poly house under Telangana region.

Material and Methods

The experiment was carried out in poly house at JVR- Horticultural Research Station, Sri Konda Laxman Telangana State Horticulture University, Malyal, Warangal district, Telangana, India for three years during July, 2013 to February, 2015. Three sowing dates *i.e.* July 15, August, 15 and September, 15 were considered as factor and tomato variety *viz.*,

Heemsona, Ranganga and shikar were considered as factor B. The experiment was laid out in FRBD with three replications. Raised nursery beds were first prepared and drenched with captan before sowing the seeds in nursery beds. Seeds of three were sowing nursery beds on three different dates *i.e.*, 15th July, 15th August and 15th September for all the three years as per the treatments. In polyhouse, the soil was sterilized before the nursery sowing and transplanting of crop with 2% formalin solution @ 4-5 lt/mt. the soil was then covered poly thin sheet of 100 guage firmness for 48 hrs. After 2 days, poly sheet was removed and the soil stirred for another 3 days for complete elimination before transplanting of the crop. In poly house of 500 square meters 4 kg Urea, 20 kg Super Phosphate and 5.5 kg of Potash was applied before transplanting. The seedlings were transplanted at plant distance of 30 cm. The first irrigation was applied immediately after transplanting. There after 12 kg urea was applied in three equal split doses at 25, 45 and 90days after transplanting and other intercultural operations and plant protection measures were taken as and when necessary. The crop was ready for picking in the last week of February and continues giving fruits till mid-June.

Results and Discussion

Days taken to first flowering: The analysed data revealed that days taken to first flowering by tomato hybrids under poly house condition with different dates sowings were significant (Table 1). The mean no. of days from transplanting to first flower initiation varied from 31.78 to 36.70. Among the different hybrids with different dates of sowing, two hybrids *i.e.* Heemsona (31.78 days) and Ranganga (32.10 days) seed sowing at 15th September were earliest and statically significant as compared to other hybrid.

No. of clusters per plant: The significant differences were found for number of clusters per plant. The mean value for this ranged from 18.88 to 34.22. The maximum number of clusters (34.45) was produced by hybrid Ranganga with 15th September seed sowing; where as the minimum number of clusters (18.88) was produced by Heemsona with 15th July seed sowing.

No. of flower cluster per plant: The significant differences were found for number of flower cluster per plant hybrids. The minimum no. of flower clusters (8.31) was produced by Heemsona seed sowing in 15th September, whereas the minimum no. of flower cluster (6.50) was produced by Ranganga seed sowing at 15th July. The maximum number of flower clusters per plant was contributed to the height yield and influenced by genetic makeup hybrids and early set proved to be suitable date to seed sowing in the poly house.

Fruit set per cent: The perusal of results exhibited that the fruit set percentage was directly related to the fruit yield. Higher fruit set is directly correlated with more fruit yield.

The fruit set per cent was significantly affected by the date of sowing and tomato hybrids. It is evidence from (Table 1). The maximum fruit set (80.90%) was observed in the hybrid Heemsona sowing September 15th which was significantly higher than all the other hybrids evaluated in the present studies. The hybrid Shekar sowing in July 15th had the lowest fruit ser percentage (56.92).

Plant height: In indeterminate tomato varieties, plant height in a good index of plant vigour that may contribute in higher yields. The significant differences were found for plant height among the hybrids at maturity because of genetic makeup of hybrids and early sowing up of the seeds. Among all the tomato hybrids, Heemsona sowing in 15th September recorded maximum plant height of 298.54 cm, whereas minimum plant height was recorded (176.80 cm) in Heemsona sowing in 15th July.

No. of Marketable fruits per plant: The number of marketable fruits per plant was significant different among tomato hybrids with different date of sowing. The maximum no of marketable fruits per plant (308.87) was observed with 15th September sowing date in hybrid Heemsona followed by Shikar (278.15) and Ranganga, which were statistically significant compared to other hybrids. It was due to more number of flowers and high per cent of fruit set.

Marketable fruit weight: Among the different dates of sowing and hybrids Heemsona sowing in 15th September recorded highest individual fruit weight of 93.75 g, while the Ranganga sowing in July 15th produced the minimum fruit weight (48.21g). The hybrid Heemsona sowing in 15th September showed statistically significant values as compared to other varieties with other sowing dates. The higher and lower fruits weights may also be ascribed to the varietal characteristics.

Marketable fruit yield (Tons/ha): Marketable fruit yield is the major determinant variable for selecting a particular variety and date of sowing for its commercialization and income generation capability. The highly significantly differences were observed among hybrids for marketable fruit yield. The fruit yield per hectare ranged from 18.80 ton/ha to 77.74 ton/ha. Among all tomato hybrids, the maximum fruit yield per hectare was recorded in hybrid Heemsona (77.74 t/ha) sowing at 15th September which was significantly superior over all other varieties with different dates of sowing. The hybrid Ranganga with sowing date July 15th recorded the minimum yield (16.66 t/ha).

It can be concluded that the yield of tomato was significantly affected sowing dates and genotypes. Heemsona hybrid with 15th September seed sowing was suitable for maximum yield realization under poly house conditions in Telangana state.

Table 1: Plant growth characters of different Tomato hybrids under poly house conditions

S. No.	Treatments	Days to 1 st flowering	No. of cluster	No. of flower cluster in plant	Fruit se %	Plant height (Cm)	No. of Marketable fruits / Plant	Marketable fruit weight (gm)	Marketable Yield (t/ha)
T1	D1V1	34.20	18.88	6.70	57.10	176.50	112.16	63.28	18.80
T2	D1V2	36.70	12.46	6.50	58.90	178.39	146.20	48.21	16.66
T3	D1V3	35.90	24.26	6.89	56.92	181.54	97.70	54.68	14.24
T4	D2V1	33.17	25.76	7.02	67.20	178.64	156.45	108.98	45.69
T5	D2V2	34.01	19.84	7.54	69.15	191.98	131.03	90.71	33.02
T6	D2V3	34.15	25.19	7.60	72.70	229.12	128.31	63.48	23.59
T7	D3V1	31.78	33.22	8.31	86.90	289.54	308.87	93.75	77.74

T8	D3V2	32.10	34.45	7.90	75.90	295.04	274.95	78.92	58.34
T9	D3V3	32.90	26.59	7.45	75.90	264.08	278.15	64.66	50.79
CV		4.12	0.92	6.99	2.17	2.23	2.49	3.3	2.02
Factor ACD (5%)		2.17	0.27	5.18	2.09	4.94	4.51	2.24	0.76
Factor BCD (5%)		2.24	0.41	4.97	3.01	3.40	4.51	2.24	0.76
Factor A x BCD (5%)		2.92	0.51	5.10	2.97	3.74	7.82	3.88	1.31

References

1. Habtamu Tegen, Yiggaw Dessaleg, Wassu Mohammed. Influence of mulching and varieties on growth and yield of tomato under poly house. Journal of Horticultural and forestry. 2016; 8(1):1-11.
2. Vinod Sharma k, Tribhuwan Singh. Performance evaluation of tomato (*Solanum lycopersicum* L) hybrids for increased productivity under poly house condition in Temperature areas. Journal of Agricultural and crops. 2015; 1(6):68-74.
3. Hussain MF, Ara N, Islam MR, Hossain J, Akhtor B Effect of different sowing dates on yield of tomato genotypes – Journal of Agril. Research innov & Tech 2013-2015; 4(1):40-43.
4. Singh A, Jain PK, Sharma HL, Singh Y. Effect of planting date and integrated nutrient management on the production potential of tomato (*Solanum lycopersicum* mill) under poly house condition journal crop weed. 2015-11, 28-33.
5. Bhardwaj RK. Studies on spacing and time of planting in some indeterminate tomato cultivars M.Sc Thesis, DrYs parmar university of Horticulture of forestry Nauni, salar, 1993.
6. Singh B, Kumar M, Hasan M. Performance of tomato cultivars under green-house condition in Northan India J veg, Sci. 2005; 11:73-80.
7. Haque MA, Hossain AKMA, Ahoned KU. varietal response of different season and temperature in respect of yield and yield components, Bangladesh Hort. 1999; 26:39-75
8. Boamah PO, Sam Amoah lk, Owusu Sekre JD. Effect of irrigation interval on growth and development of tomato under sprinkler. Asian J Agril. Res. 2010; 4:196-203.