RESEARCH ARTICLE

PERFORMANCE OF PARENTS AND HYBRIDS FOR YIELD AND YIELD ATTRIBUTING TRAITS IN TOMATO (*SOLANUM LYCOPERSICUM* L.)

Kiran Kumar[1]*, Dhananjay Sharma[2], Jitendra Singh[3] and S.S. Paikra[4]

[1]*Department of Vegetable Science, College of Agriculture Raipur*
[2]*Department of Vegetable Science, College of Agriculture Raipur*
[3]*Floriculture and Landscape Architecture, College of Agriculture, IGKV, Raipur*
[4]*College of Agriculture and Research Station, Janjgir-Champa IGKV, Raipur (C.G.) India*
Email: kiran.nagraj90@gmail.com

Received-04.05.2020, Revised-28.05.2020

Abstract: A field experiment was conducted during *rabi* season 2017-18 in Randomized Block Design with three replications at Horticultural Research cum Instructional Farm, Department of Vegetable Science, IGKV, Raipur (C.G.). Six diverse and horticulturally superior lines of tomato were crossed with four testers in line x tester mating design. The resultant 24 hybrids (F_1's) along with their parents (six lines and four testers) were evaluated for eighteen yield and yield attributing traits in tomato. The experiment results revealed that parents 2014/TOLCVRES-3 performed best for characters *viz.*, number of flowers per cluster (6.38), number of fruits per cluster (4.84), pericarp thickness (mm) 6.18 mm and total soluble solid (°Brix) 4.49 °Brix. Fruit diameter (cm), average fruit wt. (g) and fruit length (cm) were observed in parents 2015/TOLCVRES-2 and 2015/TOLCVRES-4.Whereas fruit yield per plant (3.78 kg), days to first fruit harvest (70.99) and dry matter % of fruit (6.21%) recorded in parent H-86. Among all parents, H-86 and 2014/TOLCVRES-3 with the yield of 659.72 q/ha and 611.04 q/ha respectively were found to be better yielders. Among all hybrids PR X 14/TLCV-3, PC X 15/TLCV-2, KA X 15/TLCV-2, KA X 14/TLCV-3 and AV X 14/TLCV-1 were best performing in maximum number of quality and yield attributing traits like days to 50% flowering (27.00), maximum number of fruit cluster per plant (12.42), ascorbic acid (25.01 mg/100g), number of flowers per cluster (7.12), fruit diameter 7.00 cm, average fruit wt. (144.50 g), fruit yield per plant (3.52kg), total soluble solid (5.71 ºBrix), and number of locules per fruit (5.24). Fruit yield per hectare was observed in the cross H–86 X 14/TLCV-3 (727.58 q), followed by KA X 14/TLCV-3 (724.13 q) and H–86 X 15/TLCV-4 (705.76 q). Therefore, recommended for generation advancement and selection of desirable progeny lines useful for Chhattisgarh plains.

Keywords: Tomato, Fruit yield, Genotypes, Parents, Hybrids

REFERENCES

Anonymous (2017). Horticultural statistics at a glance 2017, Horticulture statistics division department of agriculture, cooperation & farmers welfare ministry of agriculture & farmers welfare, government of India, p: 250.

Anonymous (2017). Horticulture crops estimates for the year 2017-18 (First advance estimates). National Horticulture Board, Gurugram (Haryana).

Basavaraj, L. B., Vilas, D. G., Shivappa, M. K., Vijayakumar, D. R., Nagesh, G. C. and Reshmika, P. K. (2016). Combining ability analysis for yield and quality traits in tomato (*Solanum lycopersicum* L.). Green Farming, 7(1): 26-30.

Chauhan, V. B. S., Kumar, Raj, Behera, T. K. and Yadav, R. K. (2014). Studies on heterosis for yield and its attributing traits in tomato (*Solanum lycopersicum* L.). Int. J. Agri. Env. & Biot., 7(1): 95-100.

Gul, R., Rahman, H. U., Khalil, I. H., Shah, S. M. A. and Ghafoor, A. (2010). Heterosis for flower and fruit traits in tomato (*Lycopersicon esculentum* M.). Afri. J. Biotech., 9(27): 4144-4151.

Kumar, P. A., Reddy, K. R., Reddy, R. V. S. K., Pandravada S. R. and Saidaiah, P. (2016). *Per se* performance of dual purpose tomato genotypesfor growth, yield and quality attributes. Plant Archives, 16(2): 695-699.

Nuez, F., Prohens, J. and Blanca, J. M. (2004). Relationships, origin, and diversity of galapagos tomatoes: implications for the conservation of natural populations. Ame. J. Bot., 91: 86-99.

Padmini, K. and Vadivel, E. (1997). Studies on genetic variability and heritability in F_2 generation of tomato (*Lycopersicon esculentum* Mill.). South Ind. Horti., 45(1- 2): 1-4.

Kumar, Ravindra, Srivastava, K., Somappa, J., Kumar, Sunil and Singh, R.K. (2012). Heterosis for yield and yield components in tomato (*Lycopersicon esculentum* Mill). Ele. J. Plant Breed., 3(2): 800-805.

Sekhar, L., Prakash, B. G., Salimath, P. M., Hiremath, C. P., Sridevi, O. and Patil, A. A. (2010). Implications of heterosis and combining ability among productive single cross hybrids in tomato. Electro. J. Plant Breed., 1(4): 706-711.

Shankar, A., Reddy, R.V.S.K., Sujatha, M. and Pratap, M. (2014). Development of superior F_1 hybrids for commercial exploitation in tomato (*Solanum lycopersicon* L). Int. J. Farm Sci., 4(2): 58-69.

Singh, N. B., Wani, S. H., Haribhushan, A. and Nongthombam, R. (2012). Heterosis studies for yield and its components in tomato (*Solanum*

*Corresponding Author

lycopersicum L.) under valley conditions of Manipur. Vegetos, 25(2): 257-265.

Sujeet, Kumar and Ramanjini Gowda, P.H. (2016). Estimation of heterosis and combining ability in tomato for fruit shelf life and yield component traits using line x tester method. Int. J. Agri. Envi. Res., 2(3):445-470.

Sunil, K., Singh, Y., Baranwal, B. K., D. K and Solankey, S. S. (2013). Genetic study of heterosis for yield and quality components in tomato (*Solanum lycopersicum*) Afri. J. Agri. Res. 8(44): 5585-5591.

Vilas, C. A., Rana, M. K., Dhankar, S. K., Kumar, Vikash and Yadav, N. (2015). Studies on combining ability analysis for yield and yield related traits in tomato (*Solanum lycopersicum* L.). Enzy. Engi., 4(2): 1-5.