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## Studies on *per se* performance and combining ability in tomato under Coimbatore condition

■ M. ANAND AND A. SANKARI<sup>1</sup>

**Members of the Research Forum**

**Associated Authors:**

<sup>1</sup>Horticultural Research Station,  
Tamil Nadu Agricultural University,  
OOTY (T.N.) INDIA

**ABSTRACT :** A study on diallel crossing involving nine parents, were taken up and crosses were effected in all possible combinations. Thus, a total of 72 F<sub>1</sub> crosses and their nine parents were evaluated for various quantitative and qualitative characters. *Per se* performance of the parents for different traits revealed that among nine parents involved, P<sub>5</sub> showed superiority for yield per plant. P<sub>6</sub> was superior for single fruit weight and P<sub>2</sub> for days to fifty per cent flowering and P<sub>2</sub> and P<sub>3</sub> showed highest plant height. In case of hybrids tested the cross P<sub>3</sub> × P<sub>6</sub> was superior for plant height, days to fifty per cent flowering and yield per plant. The combinations P<sub>6</sub> × P<sub>4</sub> and P<sub>6</sub> × P<sub>8</sub> exhibited highest single fruit weight. The magnitude of GCA variances for all the characters studied were higher than their corresponding SCA variances in all 72 crosses, suggesting that all the 18 traits studied were controlled by additive gene action. Analyzing the GCA effects of parents for various traits revealed that P<sub>2</sub>, P<sub>3</sub> and P<sub>5</sub> were the best general combiners for almost all the traits. The parent P<sub>1</sub>, followed by parent P<sub>3</sub> had higher *per se* with higher GCA effects for most of the economic traits studied. Hence, the parents P<sub>1</sub> and P<sub>3</sub> could be exploited in further breeding programmes for over all tomato crop improvement. The next best choice would be P<sub>4</sub> when the breeders aim is primarily to increase the fruit yield and quality characters. The hybrid cross P<sub>2</sub> × P<sub>3</sub> exhibited more number of fruiting clusters per plant and highest single fruit weight was noticed in P<sub>1</sub> × P<sub>4</sub> and P<sub>1</sub> × P<sub>5</sub>. Highest yield per plant was recorded in P<sub>2</sub> × P<sub>3</sub>.

**KEY WORDS :** Performance, Combining ability, Tomato

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**Author for correspondence :**

M. ANAND

Horticultural Research Station,  
Tamil Nadu Agricultural University,  
OOTY (T.N.) INDIA  
Email : [anandhort@yahoo.com](mailto:anandhort@yahoo.com)