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Heterosis for productivity related traits in tomato

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Abstract **:** The extent of heterosis for yield and associated characters was studied in tomato during *Kharif* 2010, in among 45 hybrids produced from a line x tester mating design involving five lines and nine testers of diverse nature in the Division of Horticulture UAS, Dharwad, India. Appreciable amount of heterobeltosis and standard heterosis was noticed for majority of the traits studied. Among the 45 hybrids studied, most of the hybrids were significantly superior over commercial check in desirable direction for yield. DMT-1 x Arka Alok, DMT-1 x DMT-2 and DM- 3 x DMT-2 were found to be significantly superior for higher fruit yield per plant, average fruit weight number of fruits per plant over commercial check Ruchi.

Key words **:** Line, Tester, Commercial check, Heterosis, Heterobeltosis

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Tomato (*Solanum lycopersicum* L.) is an important and widely grown solanaceous vegetable crop around the world, both for fresh market and processing. It is native of Peru. It is a self-pollinated crop. It ranks second only after potato in production. In many countries it is considered as 'poor man's orange' because of its attractive appearance and nutritive value. Tomato is an annual and short lived perennial herbaceous plant. It is a typical day neutral plant and self pollinated crop, but certain percentage of cross pollination also occurs. It is a warm season crop reasonably resistant to heat, drought and grows under wide range of soil and climatic conditions. Although tomato is a self pollinated crop, heterosis is being commercially exploited on large scale.

At present in tomato, exploitation of heterosis by use of F1 hybrids is getting more and more popular. As a result of these efforts, hundreds of new cultivars have been developed since 50 years to meet the diverse needs and varied situations and climates under which tomato is grown. The development of tomato hybridization in India had great impact as it resulted in quantum jump in tomato production. In view of this, it is essential to identify the desirable F_1 hybrids with hybrid vigour. The utilization of hybrid vigour as a means of maximizing the yield of horticultural crops has become one of the most important techniques in vegetable breeding.

RESEARCH METHODS

The material consisted of five lines (DM-1, DM-3, DM-4, DM-5, DMT-1) were crossed with nine testers (Arka Alok, IMP-D, IMP-B, DMT-2, DS-1, L.No C-3, L.No C-4, L.No-14, L.No-36) with a mating design of line x tester. The resulting 45 hybrids along with 14 parents and check were evaluated in Randomized Block Design with two replications during *Kharif* 2010. Observations like plant height, number of branches per plant, number of clusters per plant, number of fruits per cluster, number of fruits per plant, average fruit weight and yield per plant were recorded. Plant height was recorded 60 days after transplanting Number of clusters per plant, number of fruits per cluster, number of fruits per plant was recorded 70 days after transplanting.