

Analysis of combining ability in tulsi (*Ocimum sanctum* L.)

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SUMMARY

Combining ability analysis was conducted for yield and its component traits in tulsi (*Ocimum sanctum* L.) Both additive and non-additive gene effects were present. Mean square due to lines, testers and line x tester were also found significant for all the characters. The crosses EC-338785 x IC-381552, EC-388890 x IC-381552, EC-388788 x IC-112607, EC-312264 x IC-112607, EC-388891 x IC-369153 and EC-174527 x IC-369153 were found the best crosses combiners for most of the seed yield fresh and dry herbage yield. Nine lines of tulsi viz., (EC-338785, EC-388895, EC-388890, EC-3287838, EC-388788, EC-312264, EC-388891, EC-112548, EC-174527) crossed with five tester viz., (IC-112607, IC-210757, IC-381552, IC-369153, EC-338773) in line x tester design. The line EC-388890, EC-387838, EC-312264 and EC-312284 were found as good general combiners for seed yield. Whereas EC-312264 and EC-388895 found for number of primary branches. The line EC-388895, EC-387838, EC-388890 and tester IC-381552, IC-369153 were found best combiner for early flowering. The line EC-388895, EC-312264, EC-388891 and EC-174527 and IC-210757 and IC-369153 were found best combiners for spike. In respect of number of flowering for line EC-838785 and tester IC-112607 were good general combiners for this trait.

Key Words : Combining ability, Tulsi

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Tulsi (*Ocimum sanctum* L.) is a widely grown, sacred plant of India. It belongs to the Labiatae family. It is called Holy Basil in English. Basil is the English name of the aromatic plants of genus *Ocimum*. Tulsi is a branched fragrant and erect herb attaining a height of about 75 to 90cm at maturity. These are aromatic because of the presence of a kind of scented oil in them. The essential oils of *Ocimum* are mainly the mono-terpenes, sesquiterpenes and phenols with their alcohols, esters and aldehydes and other *Ocimum* species are mostly connected with taxonomical, cytogenetical, chemical and pharmaceutical evaluations of the *Ocimum* species. The nature and magnitude of various types of gene effects

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(additive and non-additive) involved in the expression of quantitative traits can be worked out by various biometrical techniques available. The material undertaken for the investigation, the line x tester approach for combining ability analysis outlined by Kempthorne (1957) was adopted to ascertain the best combiner parental lines and their specific cross combinations on the basis of gca and sca effects, respectively. Thus, information generated will be utilized as guidelines for the development of hybrids in *Ocimum* (tulsi).

Combining ability is most effective tool for identifying the appropriate parents for hybridization. It is necessary to select the cross combinations with high degree of specific combining ability (SCA) and preferably the parents involved with high general combiners ability (GCA) effects. Therefore, the present investigation was undertaken to study the combining ability of parents and cross combinations for yield and its components in tulsi.

MATERIALS AND METHODS

Nine diverse genotypes namely EC-338785, EC-388895,