

STUDIES ON COMBINING ABILITY IN FORAGE SORGHUM FOR YIELD AND QUALITY PARAMETERS

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Abstract: Estimates of variance among line with respect to gca was found highly significant for all the attributes and variance among testers with respect to gca was recorded highly significant for all the traits except stem girth. The variances among crosses due to interaction between lines x testers genotypes with respect to sca were expressed highly significant for all the characters except stem girth and number of leaves per plant. Average degree of dominance $(\delta^2/\delta_g^2)^{0.5}$ exhibited partial dominance for plant height, leaf length, leaf breadth, internode length, leaf area, leaf stem ratio and green fodder yield and over dominance was observed for days to 50% flowering, number of leaves per plant, stem girth, total soluble solids and protein content. GCA effects and *per se* performance among the parents HC260, Pusa Chari23, SPV815, Pusa Chari6, HC260 and HC171 were found to be as good general combiner and the F₁'s hybrids *i.e.* HC260 x HC308, HC260 x G48, SSG-59-3 x G48, HJ513 x HC308, HJ513 x HC171, ICSV700 x HC308, UP Chari2 x G48, UP Chari1 x Pant Chari6, Pusa Chari9 x HC171 and Rajasthan Chari1 x G48 were identified with significant and positive SCA for fodder yield which may be utilized for obtaining transgressive segment in the next generation and also could be exploited for development of hybrids.

Keywords: *Sorghum bicolor*, Gene action, Combining ability, Quality parameters

REFERENCES

- Aaref, K. A. O.; Ahmad, M. S. H.; Hovny, M. R. A. and Youns, O.A. (2016). Combining Ability and Heterosis for some Agronomic Characters in Grain Sorghum (*Sorghum bicolor*. (L.) moench). *Middle East Journal of Agriculture Research* ISSN 2077-4605 Volume: 05 | Issue : 02 Pages: 258-271.
- Chikuta, S., Odong, T., Kabi, F. and Rubaihayo, P. (2017). Combining Ability and Heterosis of Selected Grain and Forage Dual Purpose Sorghum Genotypes. *Journal of Agricultural Science*; Vol. 9, No. 2, ISSN 1916-9752.
- Jain, S.K. and Patel, P.R. (2016). An assessment of combining ability and heterosis for yield and yield attributes in sorghum [*Sorghum bicolor* (L.) Moench]. *Green Farming* Vol. 7 (4): 791-794.
- Kempthorne, O. (1957). An introduction to genetics statistics. *John Wiley and Sons*. New York.; 458.
- Kumar, A. and Singh, U. (2012). Fertility status of Haryana cow. *Indian Veterinary Journal* 86:807-809.
- Kumar, P. and Shrotria, P.K. (2016). Combining ability & heterosis studies for yield & component traits in forage sorghum (*Sorghum bicolor* (L.) Moench). *Green Farming* Vol. 7 (1): 1-7.
- Panse, V. G. and Sukhatme, P. V. (1967). Statistical methods for agricultural workers. *Indian Council of Agricultural Research*, New Delhi.
- Rini, E.P.; Trikoesoemaningtyas; Wirnas D.; Sopandial, D. and Tesso, T.T. (2016). Heterosis of sorghum hybrid developed from local and introduced lines. *International Journal of Agronomy and Agricultural Research (IJAAR)* Vol. 8, No. 3, 1-9.

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