

عنوان مقاله:

Inheritance of agronomic and physiological traits in wheat under water deficit stress and normal conditions

محل انتشار:

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نویسندگان:

PhD graduate, Department of Plant Breeding and Biotechnology, Faculty of Agriculture, University of Tabriz, - - -
Tabriz, Iran

.Department of Plant Breeding and Biotechnology, Faculty of Agriculture, University of Tabriz, Tabriz, Iran - - -

.Department of Plant Breeding and Biotechnology, Faculty of Agriculture, University of Tabriz, Tabriz, Iran - - -

.Department of Plant Breeding and Biotechnology, Faculty of Agriculture, University of Tabriz, Tabriz, Iran - - -

.Department of Plant Breeding and Biotechnology, Faculty of Agriculture, University of Tabriz, Tabriz, Iran - - -

خلاصه مقاله:

To study the inheritance of several agronomic and physiological traits, an experiment was conducted in the research station of the University of Tabriz, Iran, under water deficit stress and normal conditions using the generation mean and generation variance analyses. The generations were produced from the cross of Arg and Moghan³ varieties. The experiment was conducted as a split-plot design based on randomized complete blocks with two replications. The irrigation conditions were arranged in the main plots and generations in the subplots. In the stress condition, irrigation was withheld after pollination. Based on the results of generation means analysis for flag leaf length in the normal condition and flag leaf width, flag leaf area and leaf chlorophyll content in both conditions, the additive-dominance model explained variation among generation means. For other traits, including flag leaf length under water stress condition and plant height, peduncle length, spike length, fertile tillers, days to heading, number of grains per spike, head weight, straw weight, biomass, grain yield and harvest index in both water-stress and normal conditions, the six-parameter model was fit for the generation means implying the presence of non-allelic interactions in the inheritance of these traits. Broad sense heritability and narrow sense heritability for the traits were estimated as 0.70 - 0.99 and 0.03 - 0.30 in the water-stress conditions and 0.60 - 0.99 and 0.10 - 0.55 in the normal conditions, respectively. At both conditions, the dominance genetic variance was higher than the additive genetic variance for most of the traits under study. The average degree of dominance for all characters at both water-stress and normal conditions was greater than unity which showed the existence of over-dominance gene action in controlling the traits under study. These results suggest the need for exploiting non-additive gene action by producing hybrid varieties in wheat if breeders overcome the barriers of producing hybrid seed.

کلمات کلیدی:

Gene action, Generation mean analysis, Genetic variance components, Heritability, Water deficit stress

لینک ثابت مقاله در پایگاه سیویلیکا:

