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Character association for grain yield and some of the growth parameters associated with drought tolerance in rabi sorghum

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The experimental material consisted of five lines and twelve testers and sixty hybrids developed by crossing five lines with twelve testers by line x tester fashion. The experiment was conducted during rabi 2006-07 at the sorghum research unit, Dr. PDKV, Akola (MS). The interrelationship among grain yield per plant and seven growth parameters associated with drought tolerance viz., chlorophyll content at 75 DAS, proline content, specific leaf weight, leaf area ratio at 75 DAS, crop growth rate at 60-75 DAS, relative growth rate at 60-75 DAS and net assimilation rate at 60-75DAS in rabi sorghum was studied by calculating the Genotypic and phenotypic correlation coefficients. Total chlorophyll content at 75 DAS was positively and significantly correlated with proline content, leaf area ratio at 75DAS, crop growth rate at 60-75 days after sowing and grain yield per plant. At genotypic level, proline content was significantly and positively correlated with leaf area ratio at 75 days after sowing, crop growth rate at 60-75 days after sowing, net assimilation rate at 60-75 days after sowing and grain yield per plant under water stress condition. Specific leaf weight showed positive and significant correlation at genotypic level with grain yield per plant and growth parameters such as net assimilation rate at 60-75 days after sowing, crop growth rate at 60-75 days after sowing and leaf area ratio at 75 days after sowing. Leaf area ratio at 60-75 days after sowing showed positive and significant correlation with grain yield per plant and other growth parameters such as crop growth rate at 60-75 days after sowing , relative growth rate at 60-75 days after sowing, net assimilation rate. Genotypic correlations revealed that crop growth rate at 60-75 days after sowing was positively and significantly correlated with grain yield per plant and other traits such as relative growth rate at 60-75 days after sowing, net assimilation rate at 60-75 days after sowing. Net assimilation rate at 60-75 days after sowing showed positive association between grain yield per plant both at genotypic and phenotypic level. There was positive and significant genotypic and phenotypic correlation between grain yield per plant and all the seven growth parameters indicating that increase in grain yield in rabi sorghum under drought condition is because of increase in one or more of the above characters. Thus, from this study it is concluded that all the seven growth parameters under study had shown desirable and significant correlation both at phenotypic and genotypic levels with grain yield per plant under drought condition and hence need to be considered as important parameters for increasing grain yield under drought condition.

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