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Yield Response of Spring Wheat Cultivars at Different Irrigation Rates

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Abstract:

We found in a previous study that Brazilian tall cultivars of spring wheat (*Triticum aestivum* L.) were more resistant to drought in respect of photosynthesis as compared to Mexican and Japanese semidwarf cultivars. In this study, a yield trial was performed with the same 20 cultivars to elucidate the yield and yield component responses to the soil water conditions in Cerrados, a semiarid region of Brazil. Under dry conditions, the dry matter yield of the Brazilian cultivars was significantly higher than the yields of the Mexican and Japanese cultivars. The grain yield of the Brazilian cultivars was also 34-46% greater than those of the Mexican and Japanese cultivars. Under fully-irrigated conditions, however, the Mexican and Japanese cultivars showed higher harvest indices and 18-21% greater grain yield than the Brazilian cultivars, although no practical difference was found among the cultivar groups in terms of dry matter yield. An analysis of yield components showed that the Brazilian cultivars had a larger 1000 kernel weight than the Mexican and Japanese cultivars under dry conditions, while the Mexican and Japanese cultivars had a higher kernel number than the Brazilian cultivars under fully-irrigated conditions. The reverse rotation of yield ranking among the cultivars under non-irrigated and fully-irrigated conditions is due to the fact that the Mexican and Japanese cultivars are more sensitive to soil moisture than the Brazilian cultivars.

Keywords:

Cultivar difference, Drought resistance, Irrigation, Semiarid region, Semidwarf cultivar, *Triticum aestivum* L., Wheat, Yield

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