

Abstract

Selection of drought adapted ecotypes having efficient use of water is the most important goal in breeding programs for drought stress environments. Cereal crops are mainly cultivated as rainfed crops, where grain yield is often limited by terminal drought stress. Therefore, ability of plants to withstand drought is an important aspect of crop production in water limited conditions. Therefore, identification of traits associated with water utilization of crops is important to increase crop productivity under terminal drought stress. In the Arid and semi arid tropics of Africa, short periods of intra-seasonal drought, caused by unfavourable rainfall distribution, often have stronger effect on crop growth than fluctuations in annual rainfall. The effects of water shortage (during panicle initiation, flowering and grain filling) on harvest index and plant height of pearl millet (*Pennisetum glaucum* (L.) R. Br.), were studied on-farm along during three seasons with close to average annual rainfall. In this study, six ecotypes of pearl millet [*Pennisetum glaucum* (L.) R. Br.] were evaluated under rainfed conditions to study their responses to drought and to identify the traits that are associated with drought adaptation. Data collection was done on the net plot i.e. three inner rows of each plot on plant height and harvest index. Plant height (PH) was measured from the soil level to the apices of panicles for six plants in a plot. The data recorded showed significant ($p < 0.05$) differences in millet harvest index among the six pearl millet genotypes. Pvs-Pm 1006 recorded significantly ($p < 0.05$) higher harvest index compared to other 5 genotypes of pearl millet variety, followed by Pvs-Pm 1002 while it was Kimbeere which was the lowest. Based on the present study conducted with six 6 diverse genotypes of pearl millet it can be concluded that during the present investigation, the hybrids showed better adaptability on plant height and harvest index to arid environment than the local farmer variety.