Sudan J. Des. Res. Vol. 13 (1) :90-109, 2021

Effect of Waterlogging Stress on Vegetative Growth of some Sorghum (*Sorghum bicolor (L.)Monech*) Cultivars

Rufida E. A. Ali[1] and Huda A. H. Osman[2]

Department of Botany and Agric. Biotechnology, Faculty of Agriculture, University of Khartoum

Abstract: This research aimed to investigate the effect of waterlogging on the vegetative growth of some sorghum cultivars (WadAhmed, Arfagadamk, Tabbat and AbuNafaein). A pot experiment was carried out at the Faculty of agriculture, University of Khartoum, Shambat in 2020. The plants were irrigated weekly until they reached panicle initiation stage where the plants were partly submerged in water (five cm. above the soil surface) for twenty days and the vegetative parameters readings were taken after ten and twenty days of the partial submerging. The pots were arranged in a completely randomized design with three replications. The results showed that plant height, number of leaves per plant, dry and fresh weight of the root and shoot were not significantly affected in all the cultivars used, while the stem diameter was significantly decreased (76.47%) in Tabat cultivar after ten days of flooding and significantly increased (17.65%, 50%) in Arfagadamk cultivar after the ten and twenty days of water logging, respectively. Water logging affected leaf area by a significant increase in Arfagadamk (55.97%) after twenty days immersion and Wad Ahmed (88.78%) for twenty days water logging and there were also significant increases of 64.79% and 48.72% in the length of roots in Tabat after ten and twenty days of waterlogging, respectively, and Arfagadamk (128.16%) after twenty days of flooding. Abu Nafaein was not affected by flooding stress in all vegetative measurements. The study concluded that the cultivars showed resistance to waterlogging. It

[1] Graduate student, Dept. of Botany and Agricultural Biotechnology, University of Khartoum

[2] Assistant professor, Dept. of Botany and Agric. Biotech, Faculty of Agriculture, University of Khartoum, Shambat, Sudan

recommended more research during the different stages of sorghum growth and development.

Keywords: vegetative growth, Sorghum cultivar, waterlogging