

# THE EFFECT OF POLYAMINES APPLICATION ON MILLET (*PANICUM. MILIACEUM CV. NOTRIFED*) UNDER DROUGHT STRESS

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## ABSTRACT

Drought stress hampers millet performance principally by disturbing the plant–water relations and structure of biological membranes. This study assessed the role of polyamines in improving drought tolerance in millet (*Panicum. Miliaceum cul. Notrifed*). This experiment was carried out in the greenhouse of Shahid Bahonar University of Kerman (latitude 15° 30', longitude 56° 58', altitude 1745 m). The experiment was laid out as randomised complete block design in factorial arrangement with three replications. Experiment's factors were two drought levels (50%, 100% of field capacity), three polyamines [putrescine (Put), spermidine (Spd) and spermine (Spm)], each was used at 10µM as seed priming (by soaking seeds in solution) and at 0, 0.5 and 1mM as foliar spray. Primed and non-primed seeds were sown in plastic pots with normal irrigation in a phytotron. For foliar application, 0, 0.5 and 1mM solution of Put, Spd and Spm were sprayed at five-leaf stage. Twenty days after sowing, plants were subjected to drought stress by bringing the soil moisture down to 50% of field capacity by halting water supply. Result revealed that drought stress severely reduced the millet height, number of leaf, stem diameter, leaf area index(LAI) and dry and fresh yield, while polyamines application, foliar application with 1mM concentration improved plant height, LAI, dry and fresh yield. Plant height, LAI, dry and fresh weight improved by joint effect between polyamines application and foliar spray concentration to compare control to the other treatments. However, Spm priming plus Spm foliar application with 1mM concentration was the most effective morphological qualities. Foliar application was more effective than the seed priming, and among the polyamines, Spm was the most effective in improving drought tolerance. Polyamine application together with foliar spray concentration improved plant height and leaf area index. Among the qualities were measured joint effect amongst drought stress and foliar spray concentration was increased millet height and stem diameter. Interaction between drought stress and other treatment caused to increase all trait except number of leaf. Amongst interaction effect, interaction between drought and polyamines application was improved stem diameter and interaction between drought stress and polyamines application and foliar spray concentration was just improved plant height.