

## ABSTRACT

The current study was done to find out the effect of cadmium stress on physiochemical properties of two wheat cultivars. Plants grown under different levels of cadmium stress leads to the decline in overall performance of crop. The current study was conducted to investigate the impacts of different concentrations of cadmium on germination, growth, chlorophyll contents, nutritive value and at genomic level of wheat genotypes (Faisalabad-2008 and Gundum-1). The experiment was conducted in a completely randomized design (CRD) with three replicates and five treatments i.e. Control, 5ppm, 20ppm, 50ppm and 80ppm CdCl<sub>2</sub> were used. It was found that with increasing Cadmium stress, there was a delay in seed germination and reduction in seedling length and weight. Maximum reduction in germination was observed at 80ppm. All treatments gave poor results as compared to control. Growth parameters like plant height, fresh weight, dry weight, chlorophyll contents, nutritive value (carbohydrates and proteins) were decreased by cadmium stress. Cadmium stress reduced the germination of wheat seeds to 86.03% as compared to control at 80ppm respectively. Cadmium decreased the shoot length, root length, shoot fresh weight, root fresh weight, root dry weight, shoot dry weight, chlorophyll content to 74.32%, 85.94%, 82.94%, 79.32%, 74.94%, 75.35% , as compared to control at 80ppm. Cadmium decreased length of spike, no. of spikelets, carbohydrate content, protein content to 90%, 50.34%, 94.66% and 63.9% as compared to control at 80ppm. Cadmium stress had reduced the physiochemical attributes in cadmium treated wheat plants as compared to the controlled wheat plants. Heavy metal (cadmium) treatment affected chlorophyll contents, carbohydrates as well as protein in both Faisalabad-2008 and Gundum-1. DNA isolation from the leaves of wheat cultivars was done by using CTAB method. PCR amplifications was tested with 1% agarose gel electrophoresis, results showed that physiology of plants alters under the influence of cadmium stress. Expression level of gene is low in plants grown at high cadmium concentration. From this study it was concluded that heavy metals inhibits plant growth, also disturbs plant physiology by altering chlorophyll contents and demaging macromolecules which mainly includes proteins and carbohydrates and DNA.