

EFFECT OF CHROMIUM ON SEED GERMINATION AND SEEDLING GROWTH OF GREEN GRAM (*PHASEOLS AUREUS L*) AND CHICKPEA (*CICER ARIETINUM L*)

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ABSTRACT

The objective of the study of the Hindon river water quality with respect to Cr contamination, water samples were collected from three different sites (Saharanpur, Baghpat and Gautam Budh Nagar). Cr toxicity in plants depends on its valence state. Cr exists in several oxidation states but the most stable and common forms are Cr (0), Cr (III) and Cr (VI) species. Cr (VI) as being highly mobile is toxic, while Cr (III) as less mobile is less toxic. Cr is taken up by plants through carriers of essential ions such as sulphate. Cr uptake, translocation, and accumulation depend on its speciation, which also conditions its toxicity to plants. Symptoms of Cr toxicity in plants are diverse and include decrease of seed germination, reduction of growth, decrease of yield, inhibition of enzymatic activities, impairment of photosynthesis, nutrient and oxidative imbalance. The germination study was conducted, with two varieties of Green gram (Pusa Ratna and Pusa Visha) and two varieties of Chickpea (Pusa 2085 and Pusa Green 112) under different concentrations of chromium treatment. The effect of different concentrations of hexavalent chromium Cr(VI) (10, 25, 50 and 100 mg/l) on seed germination root and shoot growth on Green gram and Chickpea. The study showed that germination and viability of seeds were negatively affected by elevated chromium concentration. Response of seedlings to chromium was more noticeable than that of seed germination.

KEYWORDS: Chickpea, Chromium, Green Gram, Hindon River, Seed Germination, Seedling Growth