

## Study the influence of UV-C radiation on growth of corn (*Zea mays*)

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### Abstract

The concern of the depletion of stratospheric ozone has led to a number of studies and increase in ultraviolet (UV) radiation may have a negative influence on the productivity of terrestrial ecosystems. In this study, seeds of corn (*Zea mays*) were exposed to UV-C radiation of 253.7 nm for different time durations 5, 10, 20, 30 and 40 minutes, separately. The corn plants were selected in this study because they can easily grow at any conditions. The exposed seeds, along with untreated seeds, were sown in plastic pots filled with autoclaved sand in three replicates with completely randomized design under plant house. Data were statistically analysed by Analysis of Variance (ANOVA) using a SAS statistical package. Seedlings were harvested after sixteen days of seed sowing. Biological (Root length, Shoot length and Chlorophyll content) and physical characters (Electrical conductivity, Refractive index and pH) of plants were measured. There were no significant differences observed in shoot lengths of seedlings produced by treated and untreated seeds (control). However, significant differences ( $P < 0.0001$ ) among treatments were observed for root lengths. Seedlings from the seeds exposed to 20 minutes of UV-C radiation had the highest root length (mean 25.8 cm), while seedlings grown from the seeds exposed to 30- and 40-minutes inhibited root growth. The total chlorophyll content of the plants gradually increased with increasing exposure times and the significantly higher chlorophyll content of (mean  $5.3 \text{ mg mL}^{-1}$ ) was recorded in seedlings from 40 minutes of UV-C treated seeds. Average pH values of seedling extract significantly ( $P < 0.0001$ ) increased from the seeds exposed to 20 minutes. Further, electrical conductivities of the plants almost linearly increased with their exposure time. Exposure of UV-C radiation to the corn seeds at different time intervals affect the physical and biological factors of seedling of the plants.

**Keywords:** Chlorophyll content, Electrical conductivity, Seedling characters, Time duration

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