

EFFECT OF 50 HZ MAGNETIC FIELD ON THE CHLOROPHYLL CONTENT OF SPINACEA OLERACEA

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Abstract

With the possibility of using magnetic field in crop production in the near future, it is important to study its effect on other components of a plant other than focusing on its effect on the yields, one of which is chlorophyll. This study was aimed at studying the effect of magnetic field on the chlorophyll content of spinach. The effects of extremely low frequency magnetic field on assimilatory pigments and carotenoids in spinach (*Spinacea oleracea*) were studied in controlled environmental conditions. During the first 60 days of growth, the plants were exposed to 50Hz sinusoidal magnetic field of 0.5 mT, 1.0 mT, 1.5 mT, 2.0 mT and 3.0 mT, intensity generated by a Helmholtz coils system for 10 minutes, 20 minutes, 30 minutes and 45 minutes daily. Plants without magnetic treatment were considered as controls. Assimilatory pigments and carotenoids were assayed by spectrophotometric methods in both exposed plants species and control ones. The data was analysed using ANOVA. The results showed that the level of chlorophyll a was found to reduce by up to 68% compared to the controls. Magnetic field exposure reduced chlorophyll content for all treatments. The chronic exposure of plants would appear to influence the assimilatory pigments and nucleic acids negatively, however its effect on the yield is insignificant.

Key words: Extremely low frequency magnetic field, assimilatory pigments, nucleic acids, *Spinacea oleracea*