BOOK OF ABSTRACTS

3rd International Conference on Plant Biology

(22nd SPPS Meeting)

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Serbian Plant Physiology Society

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ducted to investigate the effect of growth-promoting rhizobacterium *Bacillus amyloliquefaciens* on the growth of flax seedlings under different strengths of magnetic field. Seedlings were soaked in bacterial suspension and bacteria were allowed to colonize. After ten minutes of soaking, the seedlings were exposed to magnetic field of 60 and 90 mT for 24 h, in dark under laboratory conditions. Untreated seedlings were used as controls. Shoot and root length, number and length of newly formed lateral roots and biomass production were measured after 1, 3, 5, 7 and 10 days. Results indicate that the combinations of magnetic field and plant growth-promoting bacteria gave half- to two-fold better results than bacteria or magnetic field alone. The best result was achieved in seedlings treated with *Bacillus amyloliquefaciens* and 90 mT magnetic field. This work showed a significant impact of bio- and magneto-priming on the improvement of flax seedling growth and biomass productivity.

Keywords: *Bacillus amyloliquefaciens*, *Linum usitatissimum*, static magnetic fields

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Effect of seed magneto-priming on flax (*Linum usitatissimum*) seed germination and subsequent seedling growth

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In the context of seed technology, the use of magneto-priming, as a method for increasing plant production, offers advantages in comparison to conventional treatments with chemical substances. Magneto-priming is a cheap, non-invasive technique, based on the application of magnetic fields (MF) and described as eco-friendly, with proved beneficial effects on seed germination and subsequent plant biomass yield. In this study, seeds of flax (*Linum usitatissimum*), placed on moist filter-paper, were treated with 100 mT MF strength, with exposure time of 0, 24, 48, 72, 96 and 120 h and kept in dark under laboratory conditions. Seeds that were not exposed to magnetic field were used as controls. Efficacy of MF on seed germination and seedlings height, shoot and root length and biomass was evaluated. The MF promoted seed germination rate by 10%-40 %, depending of treatments, compared to control. The growth parameters were better in seedlings exposed to all magnetic treatments, with an increase of up to 60% over the control. MF treatment of 24 h had a 50% better effect than 120 h MF treatment. In addition, the best biomass yield of acclimated plants was achieved after the shortest magnetic exposure treatment. This study suggests a positive effect of stable MF on flax seed germination and subsequent growth of seedlings. Therefore, magnetic field may be useful in organic agriculture in replacing the usage of plant growth regulators.

Keywords: *Linum usitatissimum*, seed germination, static magnetic fields

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