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Efficiency of the magnetic treatment of broad bean seeds cultivated under experimental plot conditions

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abstract The tests were carried out in the Institute of Soil Science and Plant Cultivation in Puławy under experimental plot conditions in the years 2000-2001. The factor of the first order were two varieties of broad bean: Nadwiślański - a traditional form and Tim - a self-determining form, while the second factor was - 3 exposure doses of magnetic induction intensity. The magnetic treatment of the seed was done in the Department of Physics at the University of Agriculture in Lublin using a specially constructed device for the magnetic treatment of seeds prior to sowing equipped with an electromagnet with fluent regulation of magnetic induction. The research confirmed the positive effect of the magnetic treatment on the germination and emergence of both broad bean cultivars. Plant emergence was more regular after the use of the aforementioned treatment and occurred 2-3 days earlier in comparison to the control plants. The magnetic treatment of broad bean seeds prior to sowing exerted a significant influence on the increase of seed yield. However, the efficiency of this treatment was dependent on the weather. The gain in seed yield resulting from the pre-sowing treatment of seeds with a magnetic field for both forms of broad bean was due to the higher number of pods per plant and the fewer plant losses in the unit area in the growing season.

keywords broad bean, magnetic field, emergence, plant development, yield