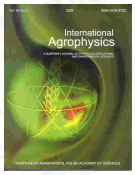

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Effect of laser irradiation on the biochemical changes in seeds and the accumulation of dry matter in the faba bean

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abstract The experiment was conducted in the greenhouse of the Institute of Soil Science and Plant Cultivation in Puławy. The aim of the studies was the evaluation of some biochemical and physiological changes in faba bean (Vicia faba minor) seeds and the assessment of the dynamics of the accumulation of dry matter in plants grown from seed treated with laser light before sowing. Irra- diation of faba bean seeds of the variety Nadwiślanski, signifi- cantly affected the activity of amylolitic enzymes in the seeds, especially in the germination initial period. Both the three- and five-fold treatment increased enzyme activity to the same degree. It was found that there was a significant effect of seed biostimulation on the scale and rate of dry matter accumulation of particular faba bean organs; the three-fold dose led to an increase in the dynamics in the above- ground part, whereas the five-fold dose, to that in the roots. The weight of vegetative organs intensively reached the pha- se of faba bean flowering; the highest increase of the total above- ground part of the weight was noted during flowering and pod setting, and was followed by a very fast increase in the weight of the generative organs. Irradiation of the seeds significantly influenced plant germination and modified the course of particular develop- ment stages of the faba bean resulting in the accelerated germina- tion and maturity of the plants.

keywords faba bean, enzymes activity, laser light, biostimulation, yield