

VERMICOMPOST AFFECTS GROWTH, NITROGEN CONTENT, LEAF GAS EXCHANGE AND PRODUCTIVITY OF PEPPER PLANTS

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Abstract

The purpose of this study was to investigate the effect of the vermicompost Lumbrical, produced by the Californian earthworm *Lumbricus rubellus*, on growth, nitrogen content, leaf gas exchange and productivity of pepper plants (cv. Gorogled 6). The experiments were carried out in 2007-2009, on experimental field of the Agroecological Centre of the Agricultural University of Plovdiv (Bulgaria). Immediately before planting, two levels of the vermicompost were applied: 50 and 100 cm³ per plant. Thirty days after planting, some of the plants fertilized with 50 cm³ Lumbrical (the third variant) were additionally fed with a solution of vermicompost (200 cm³ per plant). Prior to the experiment, chemical and microbiological analyses were performed on both the soil and vermicompost. During plant vegetation, some biometrical indices characterizing the plant growth were measured. The nitrogen concentration and nitrate reductase activity in leaves of pepper plants were determined. The leaf gas exchange was taken into account. The pepper yield and quality parameters of fruits were analyzed. The results of the present study showed that by feeding the pepper with the vermicompost Lumbrical it was possible to increase the plants' vegetative mass improve the development of their generative organs. Incorporation of the vermicompost into the soil increased the content of N in the root area. It also considerably raised the nitrogen content in leaves of pepper plants. A positive correlation between the content N in leaves and the activity of the enzyme called nitrate reductase was observed. The positive effect of the vermicompost was reflected by improved leaf gas exchange parameters and productivity of plants.

Key words: *Lumbricus rubellus*, *Capsicum annum* L., nitrate reductase, photosynthesis, nitrogen, yielding.