

Effects of biological, chemical and organic fertilizers on some physiological indices of Hairy vetch (*Vicia villosa* Roth) under greenhouse conditions

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Abstract

Physiological responses of Hairy vetch (*Vicia villosa* Roth) to biological, chemical and organic fertilizers were investigated in a completely randomized blocks design with three replicates. Fertilizer treatments consisted of three biological fertilizers and their combinations as well as incorporated with vermicompost and chemical fertilizer, resulting in 6 experimental treatments: 1- Mycorrhizae (*Glomus moseae* sp., 320 g/m²), 2- Mycorrhizae+ vermicompost (400 g/m²), 3- Mycorrhizae+ Nitroxin (*Azospirillum* sp. and *Azotobacter* sp.), 4- Mycorrhizae+ *Rhizobium* sp., 5- Mycorrhizae+ chemical fertilizer (NPK), and 6- control. Dry matter (DM), crop growth rate (CGR), net assimilation rate (NAR), leaf area index (LAI) and relative growth rate (RGR) were measured. Results showed that the effects of experimental treatments were significant for total DM, RGR, LAI and NAR, and not for RGR. The highest values of DM (83.3 g/m²), CGR (12.18 g/m².day) and LAI (3.26) were observed in Mycorrhizae+ *Rhizobium* treatment. Based on the results of this experiment, a combination of Mycorrhizae+ *Rhizobium* fertilizer is suggested for highest performance of the *Vicia villosa* Roth.

Keywords: Crop growth rate, Leaf area index, Mycorrhiza, *Rhizobium*, Vermicompost.

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