

# **XV Congress of European Mycologists**

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A microscopic image of radiolaria, which are single-celled organisms with intricate, fan-like silica shells. The shells are light brown and radiate from a central point. They are scattered across a light-colored, textured surface, possibly sand or a biological substrate. The image is slightly out of focus, giving it a soft, ethereal appearance.

# **Abstracts**

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# STUDY OF SYMBIOTIC EFFICIENCY IN BLACK MEDIC (*MEDICAGO LUPULINA*) WITH ARBUSCULAR MYCORRHIZAL FUNGUS *GLOMUS INTRARADICES*

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The present research is aimed to study controlling efficiency of arbuscular mycorrhiza (AM). The model plant and fungus are required to solve this problem. To study kinetics of AM-efficiency the black medic (*Medicago lupulina* L.) cultivar-population – cv. ARFI32 is selected. The plants are inoculated with highly efficient AM-fungus – CIAM8 from the collection of the Laboratory of Biological Nitrogen at All-Russia Research Institute for Agricultural Microbiology. It's extracted from the roots of maize cultivated in soddy podzolic soil of experimental plat of Northwest Research Institute of Agriculture. According to the data of SSU rRNA analysis CIAM8 strain refers to *Gl. intraradices*. ARFI32 plants without AM have a dwarf symptom under condition of low available phosphorus ( $P_i$ ) level in soil then the population is obligate mycotrophic plant form. AM influences are estimated on morphometrical and biochemical characteristics for black medic plants. Mycorrhization is visible on the 7<sup>th</sup> day after sowing. Positive responses to inoculation is evident ( $P < 0.05$ ) on the 14<sup>th</sup> day after sowing for P-content in shoots, leaf size and the number of leaves, on the 21<sup>st</sup> day for dry mass of shoots and also on the 28<sup>th</sup> day for dry mass of roots, plant height, content of chlorophyll *a*, band total content of carotenoids in leaves. Thus arbuscular mycorrhiza has an optimizing influence on plant growth and development.

In Pavlovskaya wild-growing population the responses of plants to inoculation with CIAM8 strain are analyzed under condition of low  $P_i$  level in soil. The polymorphism for different characteristics of AM-efficiency is studied in 50 plant lines. The variations for characteristics of AM-efficiency have a wide range: 0 ... 670% – for increase in dry mass of roots over uninoculated control, +58 ... 1241% – in dry mass of shoots, +26 ... 922% – in total dry mass, +56 ... 436% – in the number of leaves, +39 ... 269% – in the number of shoots and +14 ... 1606% – in plant height (on the 61<sup>st</sup> day after sowing). Coefficients of variation ( $C_v$ ) for different characteristics of AM-efficiency are considerable and changed from 39.4% for increase in the number of leaves to 168.6% for increase in plant height. The microscopic examination shows Pavlovskaya population is quite homogeneous in AM frequency, AM abundance in root and mycorrhiza ( $C_v = 10.2\%$ , 15.0% and 8.8%, respectively), but there is polymorphism for arbuscule and vesicle abundance in root ( $C_v = 28.5\%$  and 25.5%, respectively) and mycorrhiza ( $C_v = 29.4\%$  and 18.4%, respectively). The contrasty plant genotypes with high and low symbiotic efficiency based on different characteristics of productivity are selected. As a result of experiment the high-efficiency plant lines are obtained. These lines will be recommended for selection of high-productive cultivars.

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