

Benefits of the Mycorrhizal Fungi in Tomato Leaves Measured by an Open Photoacoustic Cell Technique: Interpretation of the Diffusion Parameters.

S. Sánchez-Rocha,¹ M. Vargas-Luna,^{1,C,S} H. Huerta-Franco,² G. Gutiérrez-Juárez,³ V. Olalde-Portugal¹

¹*CINVESTAV Unidad Irapuato, Carretera Irapuato-León, Irapuato Gto., Mexico
mvargas@fisica.ugto.mx*

²*Instituto de Investigaciones Sobre el Trabajo, Universidad de Guanajuato, Lomas del Campestre, León Gto., Mexico*

³*Instituto de Física, Universidad de Guanajuato, Lomas del Campestre, León, Gto., Mexico*

The open photoacoustic cell technique was used for measuring tomato leaves from plants with and without mycorrhizal fungi (*Glomus fasciculatum*). The oxygen and thermal diffusion parameters, from the exponential behavior of the two contributions of the photoacoustic signal, were studied. It was found that, under some assumptions, the changes in the oxygen diffusion coefficient and the thermal diffusivity, which are smaller in both cases for plants with mycorrhiza, are in agreement with the expected benefits of the mycorrhizal symbiosis. These changes, studied through the exponential parameter of the diffusion process behavior, are statistically significant ($p < 0.05$).