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Effect of *Piriformospora indica* inoculation on root development and distribution of maize (*Zea mays L.*) in the presence of petroleum contaminated soil

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The root systems of most terrestrial plants are confronted to various abiotic and biotic stresses. One of these abiotic stresses is contamination of soil with petroleum hydrocarbon, which the efficiency of phytoremediation of petroleum hydrocarbons in soils is dependent on the ability of plant roots to development into the contaminated soils. *Piriformospora indica* represents a recently discovered fungus that transfers considerable beneficial impact to its host plants. A rhizotron experiment was conducted to study the effects of *P. Indica* inoculation on root distribution and root and shoot development of maize (*Zea mays L.*) in the presence of three patterns of petroleum contamination in the soil (subsurface contamination, continuous contamination and without contamination (control)). Root distribution and root and shoot development were monitored over time. The final root and shoot biomass and the final TPH concentration in the rhizosphere were determined. Analysis of digitized images which were prepared of the tracing of the appeared roots along the front rhizotrons showed the depth and total length of root network in the contamination treatments were significantly decreased. Although the degradation of TPH in the rhizosphere of maize was significant, but there were no significant differences between degradation of TPH in the rhizosphere of +*P. indica* plants in comparison to -*P. indica* plants.