Octa Journal of Environmental Research
International Peer-Reviewed Journal
Oct. Jour. Env. Res. Vol. 1(1):30-38
Available online http://www.sciencebeingjournal.com

Scientific Planet

January - March, 2013
Research Article

EXPLORING THE MICROBIAL ACTIVITIES IN THE RHIZOSPHERES OF EXOTIC BAMBOOS

Abhaya Garg[a], Solomon Das[b], Y.P. Singh[c], Pawan Sharma[d]
[a,b,c]Forest Research Institute, Dehradun, India; [d]CSWCRTI, Chandigarh, India
Email: abhay_garg11@yahoo.co.in

Received: 17th Jan 2013 Revised: 15th Feb. 2013 Accepted: 26th Feb. 2013

Abstract: We need to believe that our atmosphere is changing- uneven climate patterns will draw us to the cliff of alarming situation of global warming. With this shift of climatic patterns, it has influenced the above and below ground entities of ecosystem. The objectives of this study were to quantify mycorrhizal association and glomalin content in seven exotic bamboo species raised in bambusetum of Forest Research Institute, Dehradun. The study further addresses activities of soil microbial community in terms of moisture, respiration, enzymes (dehydrogenase and phosphatase), carbon, aggregation and their inter-relationship besides their possible role in carbon sequestration in relation to bamboo-mycorrhizae. The study observed that *Melocanna baccifera* (40.91µg/gm/hr) recorded significantly maximum soil respiration. The dehydrogenase activity was measured highest of 92.95 µg/25ml/g/24hr in *Dendrocalamus gigantius* while lowest of 12.61 µg/25ml/g/24hr was quantified for *M. baccifera*. The maximum acid phosphatase activity was recorded in D. gigantius (18.914mg/g/hr). The alkaline phosphatase activity was recorded highest in *Cephalostachyum pergracile* (0.1502mg/g/hr) while lowest was registered in *Bambusa multiplex* (0.0432mg/g/hr). The highest microbial biomass carbon was quantified in *Bambusa polymorpha* (518.97mg/kg) and lowest was in *D. gigantius* (102.89mg/kg). Maximum root colonization was found in *Bambusa tulda* (59.05%) with maximum spores were counted in the soil collected from the root zone of *D. gigantius* (52.56/ml) and the lowest spore count was recorded in B. multiplex (13.22/ml). The maximum value of glomalin content was recorded in *C. pergracile* (84.09µg/ml) and minimum was found in B. multiplex (48.24µg/ml). The study explored the potential of soil microbes and mycorrhizae along with these exotic bamboos in mitigating the elevated CO_2, which probably becomes a suitable candidate in sequestering the carbon dioxide.