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Abstract:	Air pollution has an adverse effect on phyllospheric microorganisms. These microorganisms support plant growth and development by many ways like biological control of diseases, nitrogen fixation, production of growth regulators. Reduction in population of such microorganisms may result into poor growth and development of plants. Level of air pollutants due to rapid industrialization and vehicular emission has risen in developing state like Jharkhand. Hence, present study was undertaken to assess the effect of pollutants on phyllospheric microbial types and mass. Leaf samples of six plant species belonging to cereals (Triticum aestivum and Oryza sativa), pulses (Pisum Sativa and Cajanus cajan), shrub (Lantana camara) and tree (Eucalyptus viminalis) were collected from six industrially polluted sites and also from (unpolluted) sites for comparision. Phyllospheric micro floral isolates belonging to bacteria, actinomycetes and fungi were characterized (cultural and biochemical) and identified upto generic level The most common nitrogen – fixing bacteria obtained from the phyllosphere were also tested under field condition for their effect on growth and yield of direct seeded rice (cv. Vandana). The pollutants had significant adverse effect on phyllopheric bacterial, fungal and actinomycetes number of all plant species. Maximum reduction in bacterial, fungal and actinomycetes population at polluted sites were 48.38, 44.28 and 41.67 per cent, respectively as compared to unpolluted sites. Bacterial isolates resembling to genera Azotobacter and Pseudomonas, fungal isolates resembling to genera Trichoderma, Penicillium and Aspergillus and actinomycetes isolates resembling to genera Streptomycetes and Nocardia were common phyllospheric microorganisms on different plant species. However, diversity in the microbial community at polluted and unpolluted sites was noticed. While evaluating nitrogen –fixation abitity, it was found that isolates of Azotobacter, Beijerinckia and Klebsiella fixed 2.0 to 10.0, 2.5 to 9.0 and 2.0 to 8.0 mg per 100 ml medium, respectively. The isolates of genera Azotobacter was observed on phyllosphere of all plant species. The bacterial isolates belonging to Bacillus, Pseudomonas, Xanthomonas and Erwinia genera solubilized 5.0 to 14.0 mg per cent P2O5 and fungal isolates (Aspergillus, Penicillium and Fusarium) solubilized 9.5 to 20.5 mg per cent P2O5 when evaluated for phosphate solubilization. Three fungal isolates of Aspergillus, Trichoderma and Penicillium were evaluated for their lignin and cellulose decomposition ability and it was noticed that Aspergillus sp. were efficient decomposers of cellulose and lignin to an extent of 46.00 and 38.75 per cent, respectively as compared to control. When efficiency of most common phyllospheric nitrogen fixing bacterial isolates resembling to Azotobacter sp. was evaluated under field condition, it was observed that Spray of Azotobacter culture spray @ 100 and 75 per cent had significant positive effect on yield attributing characters and yield of direct seeded rice. These also enhanced nitrogen, phosphorus and potassium uptake by rice grain and straw under field condition. But, nutrient status of post harvest soil remained unaffected by such treatments. Each spray of Azotobacter culture significantly increased the phyllospheric bacterial count of direct seeded rice as compared to control.
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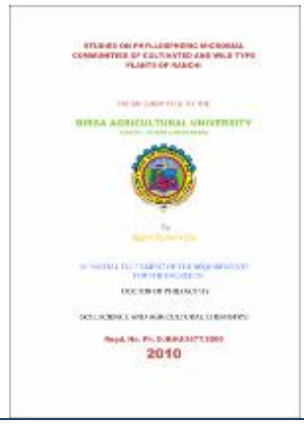

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