

Ecology of soil microflora and mycorrhizal symbionts in degraded forests at two altitudes

- [D. K. Jha,](#)
- [G. D. Sharma,](#)
- [R. R. Mishra](#)

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Summary

Microbial populations were estimated in four different forest stands at different regenerational stages, two each at higher and lower altitudes. The fungal and bacterial populations showed marked seasonal variations at both altitudes. Quantitatively, the bacterial population was higher than the fungal population. Although 25 fungal species were isolated at the lower altitude, only 15 were obtained at the higher altitude. *Penicillium chrysogenum* and *Trichoderma viride* were dominant at the lower and higher altitudes, respectively. In the more degraded forest stand at the lower altitude both the fungal and the bacterial population showed a significant positive correlation with organic C ($r=0.658$ and 0.735 , respectively), whereas in the less degraded forest stand there was a significant correlation only between the fungal population and organic C ($r=0.835$). At the higher altitude, however, a highly significant correlation ($P<0.05$) was observed between the fungal population, soil moisture and organic C in both the forest stands. Disturbance to the soil and vegetation adversely affected the microbial population, and also affected endogonaceous spores. At the lower altitude, plants in the more degraded forest stand were more mycotrophic compared to those in the less degraded stand. The level of mycorrhizal infection showed a highly positive correlation with soil moisture, organic C, total N, and available P. The spore population, however, was correlated negatively with these parameters. Three different endogonaceous genera, *Glomus*, *Gigaspora*, and *Acaulospora*, were identified during the course of investigation. *Glomus*, however, was dominant.



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Key words Altitudes · Degradation · Microflora · Mycorrhizal symbionts · Glomus spp. · Gigaspora spp. · Acaulospora spp. · Niche-ethological specialization

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