

Fungal communities from the rhizosphere and rhizoplane of *Ageratum conyzoides* L. under cropland soil

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The cropland, which is, compressed of spermosphere, rhizosphere and the rhizoplane is populated by a wide array of microbial inhabitants. These include the microflora, represented by bacteria, actinomycetes, archaea, fungi and algae and the micro- and mesofauna, such as protozoa, nematodes, acarids and collembola. Growth and development of any healthy plant may be influenced directly by stimulation of their growth and indirectly by variety of interactions among these microbial inhabitants. This work was therefore undertaken to study the rhizosphere effect, both quantitative and qualitative of *Ageratum conyzoides* L., a plant considered as an important weed, which is difficult to control. The rhizosphere and rhizoplane soil of *Ageratum conyzoides* L. was collected from the cultivated field around the campus of the University of Kalyani, Nadia, West Bengal.

ISOLATION OF FUNGI FROM SOIL

Soil dilution plate: Soil dilution plate method was used for both rhizosphere and rhizoplane study of mycoflora (Waksman and Fred, 1922).

One gm. of rhizosphere soil was suspended in 9ml of sterilized distilled water, which gave a dilution of 1:10, from which the dilution of 1:100, 1:1000, 1:10000 were made. One ml aliquot suspension was poured in sterilized Petri plates and spread carefully. Then 10-15ml PDA medium was poured in to the Petri plates.

Rhizoplane mycoflora was studied through collection of soil particles attached to the root surface. The soil suspension was vigorously shaken and different concentrations (1:10, 1:100, 1:1000, 1:10000) were made. One ml aliquot of each dilution was poured in 10-15ml PDA medium in the Petri plates. In another set of experiment, 8-10 pieces of roots were washed well in sterile water and plated into Petri plates containing PDA supplement with 0.5% streptomycin. In each experiment two replicates were used for each dilution. The plates were incubated at 28°C for 2-3 days. At the end of incubation period, fungal colonies were counted and the results were recorded. Fungi from all treatments were further isolated and identified based on published monographs and books.

Table 1: Quantitative and qualitative effect of mycofloral population in rhizosphere and rhizoplane of *Ageratum conyzoides* under cropland

| | Concentration of soil suspension | | | | Microflora |
|--------------------|----------------------------------|-------|--------|---------|--|
| | 1:10 | 1:100 | 1:1000 | 1:10000 | |
| Rhizosphere | 58 | 25 | 8 | 4 | <i>Penicillium sp.</i> <i>Trichoderma sp.</i> <i>Cladosporium sp.</i> <i>Cunninghamella sp.</i> Sterile fungal hyphae |
| Rhizoplane | 100 | 100 | 37 | 11 | <i>Penicillium sp.</i> <i>Mucor sp.</i> <i>Trichoderma sp.</i> <i>Cladosporium sp.</i> <i>Curvularia sp.</i> <i>Papularia sp.</i> Sterile fungal hyphae |

A large number of fungi were isolated from the rhizosphere and rhizoplane (Table 2). The predominant mycoflora in the cultivated soil was found to be species of *Penicillium* and *Trichoderma*. The qualitative effect in the rhizoplane was higher than in the rhizosphere in terms of fungal species. The rhizoplane was characterized by populations of *Curvularia*, *Papularia*, *Mucor* and a few sterile hyphal species. These fungal species were not observed in the rhizosphere of cultivated soil colonies of *Cladosporium* and *Cunninghamella* species, however, *Penicillium* and *Trichoderma* were observed.

The present study indicated that the rhizoplane of *Ageratum conyzoides* supported greater number of fungal colonies than the rhizosphere. The qualitative effect in the rhizoplane was also higher than in the rhizosphere in terms of fungal species variety. Species of

Penicillium, *Trichoderma* and *Cladosporium* were more frequently isolated from the rhizosphere and rhizoplane soil. Such an observation is in conformity with the finding of Ali (1997).

REFERENCES

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