

## RESEARCH ARTICLE

## Comparative study of Mycoflora of Paddy field soil in Bhandara District

Yadav AM

P. G. Department of Botany, J. M. Patel College, Bhandara- 441 904, India.

Email- aparnayadav.10@rediffmail.com

| Manuscript details:  | ABSTRACT   |
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| <p>Date of publication 18.10.2014</p> <p>Available online on <a href="http://www.ijlsci.in">http://www.ijlsci.in</a></p> <p>ISSN: 2320-964X (Online)<br/>ISSN: 2320-7817 (Print)</p> <p><b>Editor: Dr. Arvind Chavhan</b></p>  | <p>Soil contains many kinds of microorganisms. It is the loose mineral material on the surface of earth and very good culture medium for the growth of microorganisms. This study deals with the fungal diversity at various sites of traditional paddy field in Bhandara district. The soil of paddy field of Lakhani, Mohadi, Tumsar, Sakoli, Pauni and Bhandara was infected by the fungi <i>Tricoderma</i>, <i>Mucor</i>, <i>Fusarium</i>, <i>Arthrotrichum</i>, <i>Rhizopus</i>, <i>Rhizoctonia</i> and <i>Aspergillus</i>. After comparative study, it was concluded that mostly <i>Mucor</i> is dominated followed by <i>Tricoderma</i> and <i>Rhizopus</i>.</p> <p><b>Key Words:</b> Culture, Diversity, Fungal, Microorganism and Soil.</p>   |
| <p><b>Cite this article as:</b><br/>Yadav AM (2014) Comparative study of Mycoflora of Paddy field soil in Bhandara District, <i>Int. J. of Life Sciences</i>, Special Issue , A2: 59-61.</p> <p><b>Copyright:</b> © Author(s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p> | <p><b>INTRODUCTION</b></p> <p>Soil is a complex system. Many biological processes take place in soil and determine functions that provide various services within ecosystems: turn-over of organic matter, symbiotic and non-symbiotic atmospheric nitrogen fixation, denitrification, aggregation, etc. It regulates global biogeochemical cycles, filters and remediates anthropogenic pollutants, and enables food production (Kennedy and Smith, 1995; Richards, 1987). One particularly significant component of soil, are the microorganisms. Soil is a medium with solids, liquids and gases in which the mineral and organic particles form differently-sized aggregates that delimit pores . This organization creates micro-environments that are suited to microbial activity to varying extents. Recent studies have pointed out the importance of taking into consideration the distribution within the soil matrix of microbial activity hot spots (Gaillard <i>et al.</i>, 2003). Micro organisms are beneficial in increasing the soil fertility and plant growth as they are involved in several biochemical transformation and mineralization activities in soil. Type of cultivation and crop management practices found to have greater influence on the activity of soil microflora (Mc Gill <i>et al.</i>, 1980). Continuous use of chemical fertilizers over a long period may cause imbalance in soil microflora and thereby indirectly affect biological properties of soil leading to soil degradation (Manickam <i>et al.</i>, 1972).</p> <p>Fungi are fundamental for soil ecosystem functioning (Warcup, 1950). Especially in forest and agricultural soils; they play a key role in many essential processes such as organic matter decomposition and elemental release by mineralization (Christensen <i>et al.</i>, 1989).</p> |

The rate of biodegradation depends on environmental factors, numbers and types of microorganisms present and the enzymatic processes leading to the disappearance of the parent molecular structure and the formation of smaller organic species. Some of which are directly usable for cell anabolism and are converted to CO<sub>2</sub> and H<sub>2</sub>O ultimately. (Mishra *et al.*, 1991)

**MATERIALS AND METHODS**

About six Soil samples were collected from the Bhandara district, i.e Bhandara, Lakhani, Sakoli, Tumsar, Mohadi and Pauni. The potato dextrose agar (PDA) media was selected to grow fungi of soils.

**RESULTS AND DISCUSSION**

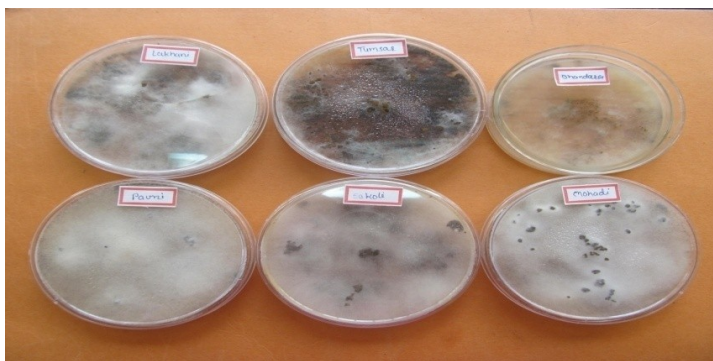
Fungal cultures were isolated and prepared temporary slides and observed under microscope. Sketches were drawn and photography was done.

Following fungal organism from the culture sample:-

- Bhandara:- *Rhizopus*, *Mucor*
- Lakhani:- *Tricoderma*, *Mucor*
- Sakoli:- *Fusarium*, *Arthrotrrys*
- Mohadi:- *Mucor*, *Rhizopus*
- Tumsar:- *Tricoderma*, *Rhizoctina*
- Pauni:-*Mucor*, *Aspergillus*

In the present investigation seven genus of fungi were isolated from the soil of paddy field. In Lakhani soil *Tricoderma* and *Mucor* is observed. In Sakoli soil *Fusarium* and *Arthrotrrys* fungus are observed. In the soil of Mohadi *Rhizopus* and *Mucor* are observed. From Tumsar soil *Tricoderma*, *Rhizoctonia* and *Mucor* are observed and from Pauni soil *Mucor* and *Aspergillus* are observed. In the Bhandara soil *Rhizopus* and *Mucor* are observed.

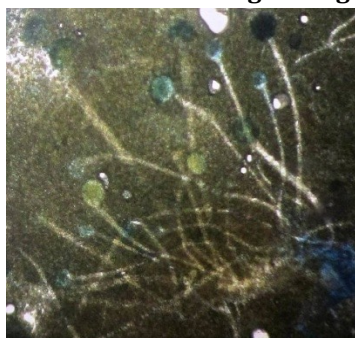
Comparative study was carried out among paddy field soil of different talukas it was found that *Mucor* is dominated followed by *Tricoderma* and *Rhizopus*. Selvaraj kalaiselvi and Annamalai Panneerselvam (2011) worked on ecology of soil fungi in paddy field of Tamilnadu, they isolated various fungal species in which the dominated species was *Aspergillus nigre* but in present study *Mucor* is dominant . On the other hand V. Manimegalai *et al* worked on paddy field of Thanjavur district, Tamilnadu, where dominant species are *Aspergillus niger* and *Aspergillus flavus*. Sethilkumar *et al.* (2009) worked on soil samples of three different places along the Muthupet mangroves in Tamilnadu out of 22 species *Aspergillus* and *Penicillium* were represented as dominated species. J.M Benila Smily *et al.* (2012) found the fungal species in rice field with paddy alone showed 13 species and *Aspergillus* is dominated. Kadar *et al.* (1999) found *Aspergillus* genus is dominated in their work.



**Fig.1 Fungal Colonies On PDA**



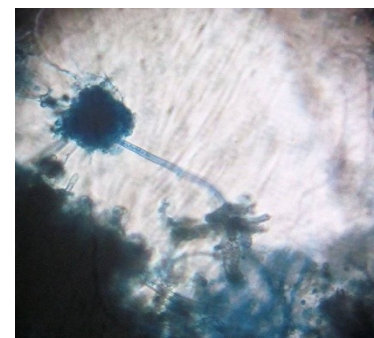
**Fig. 2 Tricoderma**



**Fig. 3 Mucor**



**Fig. 4 Rhizopus**



**Fig. 5 Aspergillus**



Fig. 6 *Fusarium*

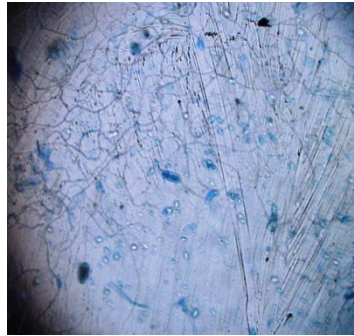


Fig. 7 *Arthrobotrys*

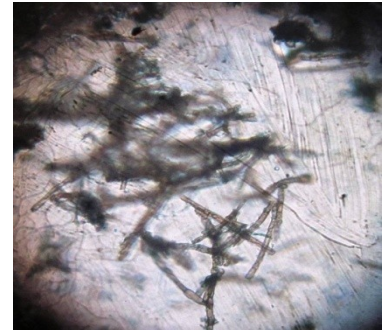


Fig. 8 *Rhizoctinia*

## CONCLUSION

Generally, top soil contains high organic matter, which in the presence of adequate moisture supply is acted upon by the microorganisms to decompose the complex organic residues into simpler forms; hence, microbial counts are generally higher in the surface soil layer as compared to the lower depths.

Soil of paddy field of lakhani, Mohadi, Tumsar, Sakoli, Pauni and Bhandara was infected by the *Tricoderma*, *Mucor*, *Fusarium*, *Arthrobotrys*, *Rhizopus*, *Rhizoctonia* and *Aspergillus*.

After comparative study, it was concluded that mostly *Mucor* is dominated followed by *Tricoderma* and *Rhizopus*.

The important factors influencing the variation in the population of fungi in the present study could possibly due to temperature, organic nitrogen and moisture content of the soil. The paddy field soil was subjected to disturbances such as irrigation, fertilizer and agricultural practices resulting in more homogeneity of soil which did not allow relatively wide fluctuation in the population of fungi. Agriculture would not be possible without microorganisms. Therefore, the soil depends upon the microorganisms for the fertility.

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