

Isolation of Fungal Species in Soil Mycoflora and around Kotturu Mandal, Srikakulam dist, AP, India

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ABSTRACT

Present study focused on isolation of fungal species from ten different soil fields using standards analytical procedures. A total of 4 fungal species were isolated were successfully and identified *mucor*, *yeast*, *penicillin* and *aspergillus* from soils in and around Kotturumandal, Srikakulam dist. *Mucor* and *yeast* were predominant of all the soil sampling locations in the most frequently isolated. *Penicillin* and *aspergillus* were not identified in the two locations. The present study reveals that growing and concurrent appearance of these species reveals that these fungal species like *Mucor*, *Yeasts*, *Penicillin* and *Aspergillus* were much adapted than the other species of the agricultural soils.

1. Introduction

Soil is most important resource for our food and its supports organisms that are essential for healthy environment¹. Due to increasing population accelerated the demand on agriculture production as well as pesticides usage contaminated soil and impacts on soil ecosystems. Contamination and poor soil management are causing problems². Consequently, the atmosphere, bodies of water and many soil environments have become polluted by a large variety of toxic compounds.

Pesticide usage may affect on target and non-target species, its resulting sometimes in useful effect and other times in harmful consequences on microbiota. Fungi are an important component of the soil microbiota and are present as mycelia bits, rhizomorphs or as spores³⁻⁴. The species richness of a fungal community and relative abundance of individual species have been considered as measures of functional activities of the group in the particular habitat⁵. The study areas i.e. Kotturumandal Srikakulam district in the quality of the soil.

2. Methodology

2.1. study area

The present study, Kotturumandal, it distances from 55kms from district head quarter of Srikakulam and the extreme north-eastern district of Andhra Pradesh. Kotturu Mandal is bounded by Kasinagar Mandal towards North, Hiramandalam Mandal towards South, Pathapatnam Mandal towards East, Seethampeta Mandal towards west. Parlakhemundi City, Gunupur City, Amadalavalasa City, Rajam City are the nearby Cities to Kotturu. All the sampling location were plain terrain with intense agriculture and another portion of the district is rocky and hilly terrain covered with forests of eastern ghats. Paddy is the main crop grown in the study area and other crops include Mesta, Ragi, Sugarcane, Bajra, Sesamum, Pulses etc. Plantation crops include Cashew, Tapioca, Mango, Banana etc.

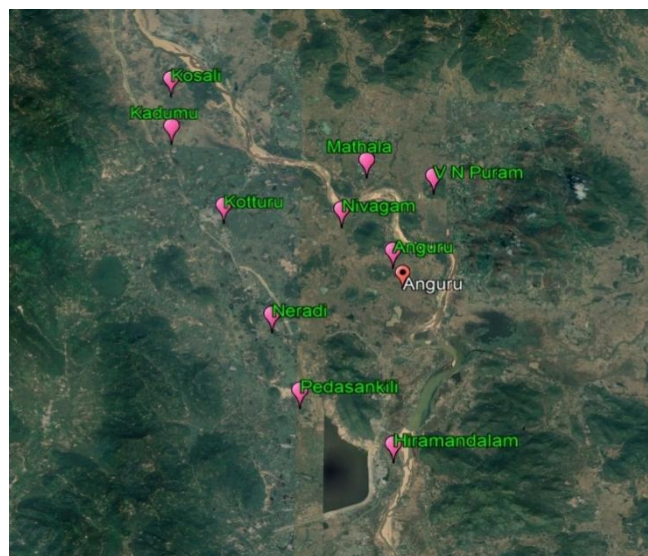


Figure.1: soil sampling locations of the study area

Table. 1: soil sampling points

Sample code	Location	Sample code	Location
S ₁	Kadumu	S ₆	Kothuru
S ₂	Mathala	S ₇	Kosali
S ₃	V.N Puram	S ₈	Neradi
S ₄	Anguru	S ₉	Pedasankali
S ₅	Nivagam	S ₁₀	Hiramandalam

2.2. Collection of soil samples

The soil samples were identified and collected based on availability and cultivated agricultural lands. Total 10 samples taken different locations in and around Kothurumandal, Srikakulam district. Therefore, soils were collected from 15cm and 30cm depths and it was prepared as homogenized

samples with help of sterilized cork borer into the ground⁶. The soil samples were collected into sterilized polyethylene bags. The soil sampling locations presented in the table:1. Soil microbial analysis done according to standard operating procedure.

2.3. Isolation of fungi from the soil samples

The serial dilution used as isolation techniques using standard techniques⁷⁻⁸. Serial dilution agar plating⁹, direct inoculation methods were employed for the isolation of soil microbes¹⁰; suspension was diluted 10^{-6} and 10^{-7} . After serially diluted samples were cultured for fungal species on Potato Dextrose Agar media¹¹⁻¹³.

3. Results and discussion

A total of 4 fungal species were isolated from 10 soil samples and all fungal isolated species were obtained in pure cultures by using standard techniques. All the fungal isolates were taken for identification of the fungal isolates through a microscope. In the present, the isolates are *Mucor*, *yeast*, *penicillin*, and *Aspergillus* were identified. *Mucor* and *yeast* fungal species were mostly dominant and common isolated species of all the sampling locations and *penicillin* and *aspergillus* species were isolated from VN puram and Nivagam soil sampling locations due to high sporulation and production of bacterial antibiotics from the *penicillium* species and production of different types of toxins from the *aspergillus* species and may inhibit and control the habitat of other fungal species⁴.

Table. 2: isolated fungal species in the study area

Location	Dilution	Total no of colonies	Spices Identified
Kadumu	10^{-6}	110	<i>Mucor</i> , <i>Yeast</i>
	10^{-7}	<30(15)	<i>Yeast</i>
Kosali	10^{-6}	61	<i>Yeast</i>
	10^{-7}	<30(16)	<i>Yeast</i>
Matala	10^{-6}	185	<i>Yeast</i>
	10^{-7}	<30(10)	<i>Mucor</i>
VN Puram	10^{-6}	70	<i>Penicillin</i>
	10^{-7}	<30(20)	<i>Yeast</i>
Nivagam	10^{-6}	115	<i>Mucor</i> , <i>Yeast</i> , <i>Aspergillus</i>
	10^{-7}	90	<i>Mucor</i> , <i>Yeast</i>
Anguru	10^{-6}	300+	<i>Mucor</i> , <i>Yeast</i>
	10^{-7}	122	<i>Mucor</i>
Kothuru	10^{-6}	300+	<i>Yeast</i>
	10^{-7}	300+	<i>Mucor</i> , <i>Yeast</i>
Hiramandalam	10^{-6}	300+	<i>Yeast</i>
	10^{-7}	300+	<i>Yeast</i>
Pedasankili	10^{-6}	300+	<i>Mucor</i> , <i>Yeast</i>
	10^{-7}	50	<i>Yeast</i>
Neradi	10^{-6}	300+	<i>Mucor</i> , <i>Yeast</i>
	10^{-7}	40	<i>Mucor</i> , <i>Yeast</i>

4. Conclusion

The present study, to assess the fungal diversity in the agricultural fields in and around Kotturu Mandal. It shows that the *yeast* identified due to anaerobic conditions of the soil in all the sampling locations. It's may have a negative effect pre-harvest

on agricultural crops and infection causes on leaves and flowers and also inhibits the other fungal species. Further studies required to reveal antagonistic characteristics on identified fungal species.

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