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AEROMYCOFLORA IN COASTAL ECOSYSTEM OF SOUTH ORISSA

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The occurrence of airborne fungal spores was studies at three different sites in a costal ecosystem of Orissa for a period of one year. An estimated total of 3786 spores were trapped using rotorod sampler method. Round spore was found to contribute maximum in all the three sites. Plantation site with dense vegetation had the highest concentration of fungal spores. But the site with only meager grasses and near the sea shore (virgin coastal sand dune) considerably influences the homogeneity of occurrence and dominance of fungal spores in air.

Keywords: Aeromycoflora; Coastal ecosystem; Distribution; Dominance.

The plant cover in the coastal belt is one of the important vegetational groups of India having certain ecological and structural features of practical interest[1]. The saprotrophs, one of the major functional components of a terrestrial ecosystem, is diverse in their occurrence. The role of saprophytes in decomposition and its potentiality depends upon their count, composition and the higher plants with which the later coexists. Apart from their presence in the soil, fungi constitute a major portion of air flora in the form of spores. The current interest in aeromycology, particularly in the field of plan pathology is reflected in forecasting and control of plant diseases.

Aerobiological survey conducted in and around human habitations and crop fields indicates the presence of rich macrospore and their seasonal variations[2-4]. No work in this aspect has yet been done in coastal ecosystem of Orrissa. The present work aims to find out the occurrence, distribution, dominance, variation and the impact of vegetation on the aeromycoflora in the noted belt and the factors influencing their eco-physiology.

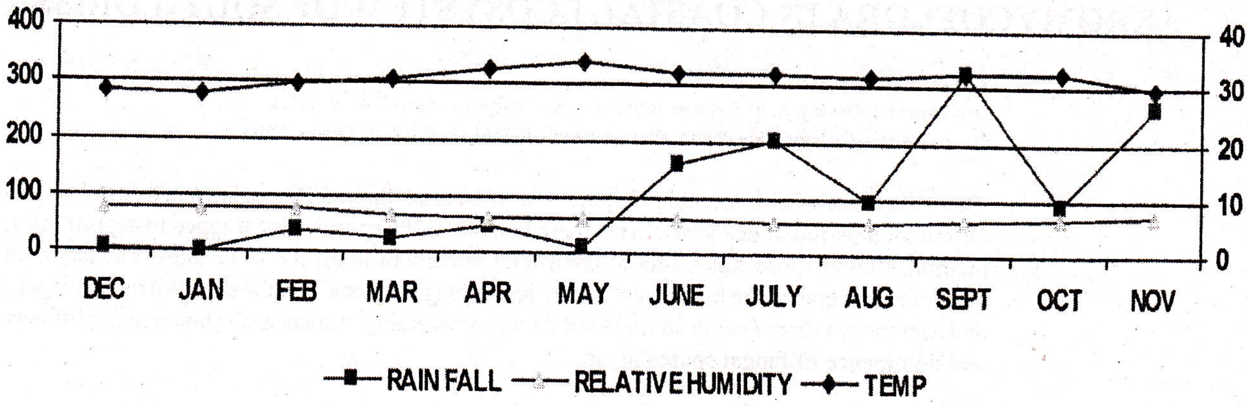
Site for spore trapping was Ganjam district of Orissa (19^0 15' longitude and 84^0 50' latitude) having 60 Kms of Sea coast along the Bay of Bengal at a height of 6-8m above MSL. Three experimental sites were selected from three different localities quite apart from each other and were designated as Site A, Site B and Site C. Site A represented a coastal sandy bed with uniculture plantation of *Casuarina equisetifolia* L., Site B comprised only of a few grasses and Site C a barren unproductive coastal sandy belt without vegetation. Sampling was done at monthly intervals. A high speed rotorod sampler was operated in the site for one hr at 2000 rpm. Cellophane paper coated with vaseline was pasted on the arm. After every rotation the paper was striped off, cut into pieces (18mm) and mounted on glycerin jelly with the cover slip. The strips were scanned under the microscope to record the spore types.

Number of spores present / cm^3 of air = Total number of spores in ten scans x 3.9. The factor 3.9 was deduced based on the scanned area multiplied by the length of the scarp of the arm per hr at 2000 rpm.

On an average, Site A registered more population than Site B and Site C (Fig.1.). Gradual fall in temperature and rainfall and rise in relative humidity (Fig.1.) enhanced the total population of airspora continuously[4,5]. The presence of maximum airspora in Site A was clear evidence of vegetation effect corroborating to Bartzakas[6] and Reddy and Ramakrishna[7]. Increase in total number of spores in all the sites during winter was akin to the findings of Kumar[3].

Of 3786 number of spores recorded, Site A contributed 1486, Site B 1210 and Site C 1090. Although, there was a marginal difference in the number of spores in the three sites of the study, the plantation site with vegetational cover had higher concentration of some specific spores like round spore, *Pestalotia, Cladosporium, Fusarium and Curvularia* (Table 1), indicated the influence of plantation on the aeromycoflora of that area. However, Site B and Site C encourages the selective presence of aeromycoflora in that locality.

The present knowledge gained on the fungal aerospora of Orissa would be of immense help, not only in detecting the hazardous bioparticles but also in suggesting suitable methods to prevent or control their



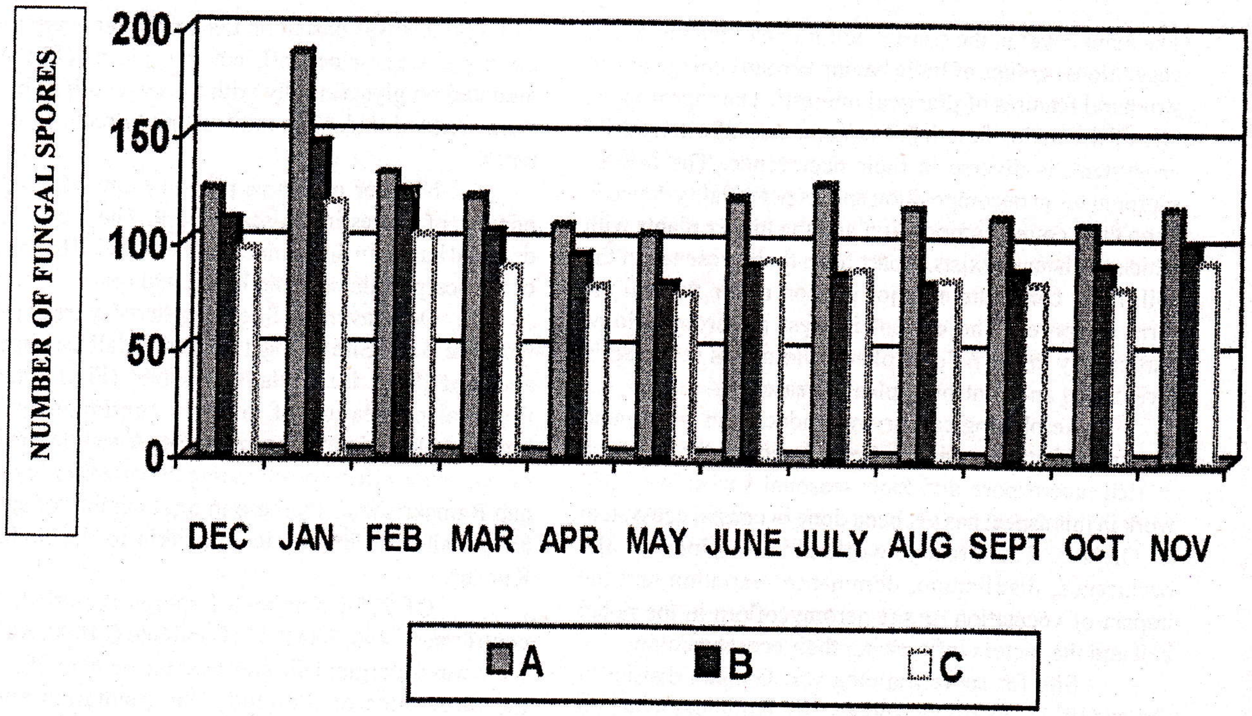


Fig.1. Monthly variation in number of spores / cm^{-3} of air in relation to temperature, relative humidity and rainfall in different sites.

effects on various substances.

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Table 1. Relative ranks of some dominant fungi based on their percentage abundance recorded at three sites.

Fungal spore	Site A			Site B			Site C		
	No. of Spore	% Contribu -tion	Rank	No. of Spore	% Contribu -tion	Rank	No. of Spore	% Contribu -tion	Rank
Round spore	301	20.3	1	228	18.81	1	295	27.1	1
Pestalotia spore	272	18.3	2	64	5.3	5	22	2.0	11
Cladosporium spore	244	16.4	3	211	17.4	2	201	18.4	2
Nigrospora spore	98	6.6	4	131	10.8	3	85	7.8	4
Fusarium spore	86	5.8	5	32	2.6	11	-	-	-
Rod type spore	83	5.6	6	48	4.0	8	49	4.5	5
Curvularia lunata	67	4.5	7	58	4.8	6	42	3.9	8
Alternaria alternata	57	3.8	8	81	6.7	4	92	8.4	3
Ascospore	48	3.2	9	-	-	-	43	3.9	7
Drechslera australiensis	41	2.8	10	58	4.8	7	40	3.7	9
Elliptical type spore	36	2.4	11	36	3.0	9	46	4.2	6
Beltrania spore	-	-	-	-	-	-	26	2.4	10
Periconia spore	-	-	-	34	2.8	10	22	2.0	12
Torula spore	-	-	-	26	2.2	12	-	-	-

(The percentage abundance of fungal spores in site A is arranged in decreasing order against which the % abundance of fungal spores isolated at other two sites are arranged).

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