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## **Incidence of Soil Protozoa in Aurangabad Vicinity**

**Shaikh Unaiza Nazneen**

Research Scholar, Department of Zoology Maulana Azad College Aurangabad, India

**T. T. Shaikh**

Assistant Professor, Department of Zoology Maulana Azad College Aurangabad, India

**J. D. Shaikh**

Head & Assistant Professor, Department of Zoology Maulana Azad College Aurangabad, India

**V. D. Jadhav**

Assistant Professor, Department of Zoology, Annasaheb Waghire College Otur, Pune, India

### ***Abstract:***

*A Preliminary survey of soil protozoan's were carried out in Aurangabad (M.S )the present study highlights some soil protozoan's which are important in ecosystem. Ciliates such as Vorticella Colpoda, Colpidium, Uronema, Arcella, Discomonas, sp. Among Sarcodina (amoeba) Dismastigamoeba, identified in samples. In enriched culture, Acella sp., Vorticella sp., amoebae and some small flagellates were also observed. It was shown that the distribution of protozoan cells was not even but greatly corporate among soil aggregates. On the basis of data generated total seven genera were identified during study period. Among these species Colpoda are dominant over other soil protozoans. In October and November the soil protozoans are abundantly found.*

***Keywords:*** Soil protozoa, Colpoda, abundant, Aurangabad

### **1. Introduction**

Protozoan's are morphologically, a single cell which is manifested all character common to living thing (Bindu2014) .Among protozoan's soil protozoan are important bio indicator and environmental monitor. Soil protozoan's has capability to survive in extreme condition, as soil dry out rapidly out rapidly. The terrestrial protozoan, when detecting approaching hostile conditions, promptly, transform into resting cysts resistant to drying, freezing and higher temperatures They excyst and proliferate when favorable conditions return (Funtani *et al* 2010). The populations of soil protozoa strongly fluctuate through time ., and parallel to the decline in protozoan numbers their rapidly decomposable tissue may enter the detritus food-web. Although the size of most protozoa in soil may range only between diameter 10 and 100 µm in diameter (Michael Bonkowski 2004). Protozoa as a factor detrimental to the soil bacteria, and, therefore, to soil fertility. Although soil protozoa occupy great importance, but it is little neglected. Present study deals with abundance and occurrence of soil protozoa to find out the status of soil protozoa in relation to population density (.Jlee *et al* 1992) reported abundance of soil protozoan.

### **2. Material and Method**

Soil sample were taken from grass lay site ensuring minimal pesticide contamination the soil as sieved to collect the fraction of particle size less then 3mm and was air dried and store at 4 degree centigrade. Soil extract prepared by boiling one part of soil in three parts of distilled water, filtering clear, and adding a small excess of CaCO<sub>3</sub>, has been used. The cultures have been incubated at 20-25°C, and examined every few days for a period of about ten days (James Sherman 1980).

Protozoa were isolated from the positive wells inoculated with higher dilutions of air-dried soil using the migration method for naked amoebae or the dilution method for flagellates according to Smirnov & Brown (2004). After sub culturing several times in medium containing the original food methanotrophs, the isolated protozoa were maintained in medium containing heat-killed E.coli as a food source. The protozoa were identified based on microscopy (Jun Murase *et al* 2008). The culture medium added and allowed to remain for a few days. The cultures were maintained throughout the year and samples taken at all seasons were inoculated. To examine cultures a little of the liquid was taken with a loop, spread out on a slide and covered with a cover slip, and then examined under the microscope immediately. To kill the organisms without distortion 2 % osmic acid has been used. Whenever possible, the protozoa have been examined in the living condition, by hanging a drop of the medium from suspension.

### **3. Result and Discussion**

Foissner (1997) was reported 10 different types of ciliates in anoxic soil. However, Schwarz and Frenzel (2003) were found 23 taxa of anoxic ciliates in paddy soil. In the present study, during the period of march 2014 to feb2015 total 98 soil sample were collected

among these the population of soil protozoa in the month of November is at peak. Total seven genera were identified, which are as follows.

### 3.1. *Sarcodina (Amoeba)*

This is the most commonly occurring soil protozoan. Contractile vacuole is single. The organism is largely responsible for devouring the bacteria. Movement is very slow. Pseudopodia are broadly lobed, very variable and short. There is a delicate membrane enclosing the body proper. On the surface there are lines which cross each other, giving a wrinkled appearance. Shells smooth, regular, with a large circular aperture.

### 3.2. *Arcella Discoides*

Pseudopodia are numerous, and have a characteristic shape. There is a single contractile vacuole, and the nucleus is single. Reproduction by fission.

### 3.3. *Colpoda Cuculus*.

Length 50 to 100 microns. Macro-nucleus is spherical. Readily encysts under unfavourable conditions. Is bean shaped and Aat dorso-ventrally. The cytostome lies at the end of a groove in the middle of the body. Is provided with long cilia which form a tuft or brush at the opening. The side of the body in front of the cytostomal region is notched or lobed, each lobe corresponding with one of the longitudinal rows of cilia which cover the body. The single large contractile vacuole is at the posterior end. There are two nuclei. One of the most commonly occurring soil protozoa.

### 3.4. *Colpidium*

Shape of the body is reniform, ventral side concave, dorsal surface convex. Oral aperture located about quarter of way down body in the concavity of the ventral surface. Oral aperture relatively small and oval in outline. The undulating membrane on the right of the aperture may be visible and there are 3 membranelles on the left which may only be seen if impregnated with the silver. Uniform somatic ciliation with the kinetics bending appearance. Pre-oral suture is 6-shaped at the anterior pole. Sometimes a tuft of short caudal cilia present. Contractile vacuole in posterior body half. Macronucleus ovoid, centrally located with an adjacent micronucleus.

### 3.5. *Uronema sp.*

Body slightly oval. Ventral side almost straight from the mouth to the front and drawn out, the dorsal side being curved. Body ciliation short and thick. Nucleus round and central. The contractile vacuole is terminal posteriorly situated.

### 3.6. *Vorticellasp.*

Body has a characteristic shape and appears to be segmented transversely. Single contractile vacuole. Cilia arranged spirally round the mouth.

### 3.7. *Stylonychia*

Elongate, oval and dorso-ventrally flattened body with a large and powerful AZM supported anteriorly by a collar. 2 rows of marginal cirri not continuous posteriorly, but 3 long, strong and prominent caudal cirri present. The genus has the typical fronto-ventral and transverse arrangement of cirri with 3 strong anterior frontal cirri. The dorsal surface has several longitudinal rows of short cilia. Macronucleus in two parts, each with an adjacent micronucleus.

Among all these colpoda species is dominant over others. In sample collections when it was kept for about a month progressive and retrogressive changes have been noted.

Amoeboid forms seen in good number in the fresh sample and diminish earlier within week; limax amoebae remain in the medium till the entire observations and dominate by number and varieties. Stylonchi sp found in diverse way, they found mostly in low temp period (from October to January) and rest of the time it absent the particular soil sample.

S.no.	Species/month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	SEP	Oct	Nov	Dec
1	Amoeba	++	++	+	+	+	+	++	++	++	+++	++	++
2	Arcella	+	+	+	+	+	++	++	+++	++	++	++	+
3	Colpoda	++	+++	++	++	+	+++	++	+++	+++	+++	+++	+++
4	Colpidium	+	+	+	+	+	+	+	+	+	+	+	+
5	Uronema	+	+	+	+	+	+	+	+	+	+	+	+
6	Vorticella	++	++	+	+	+	++	++	++	+	++	+	++
7	Stylonychia	+	+	+	-	-	-	-	-	-	+	+	+

Table 1: showing abundance of soil protozoa from march 2014 to February 2015

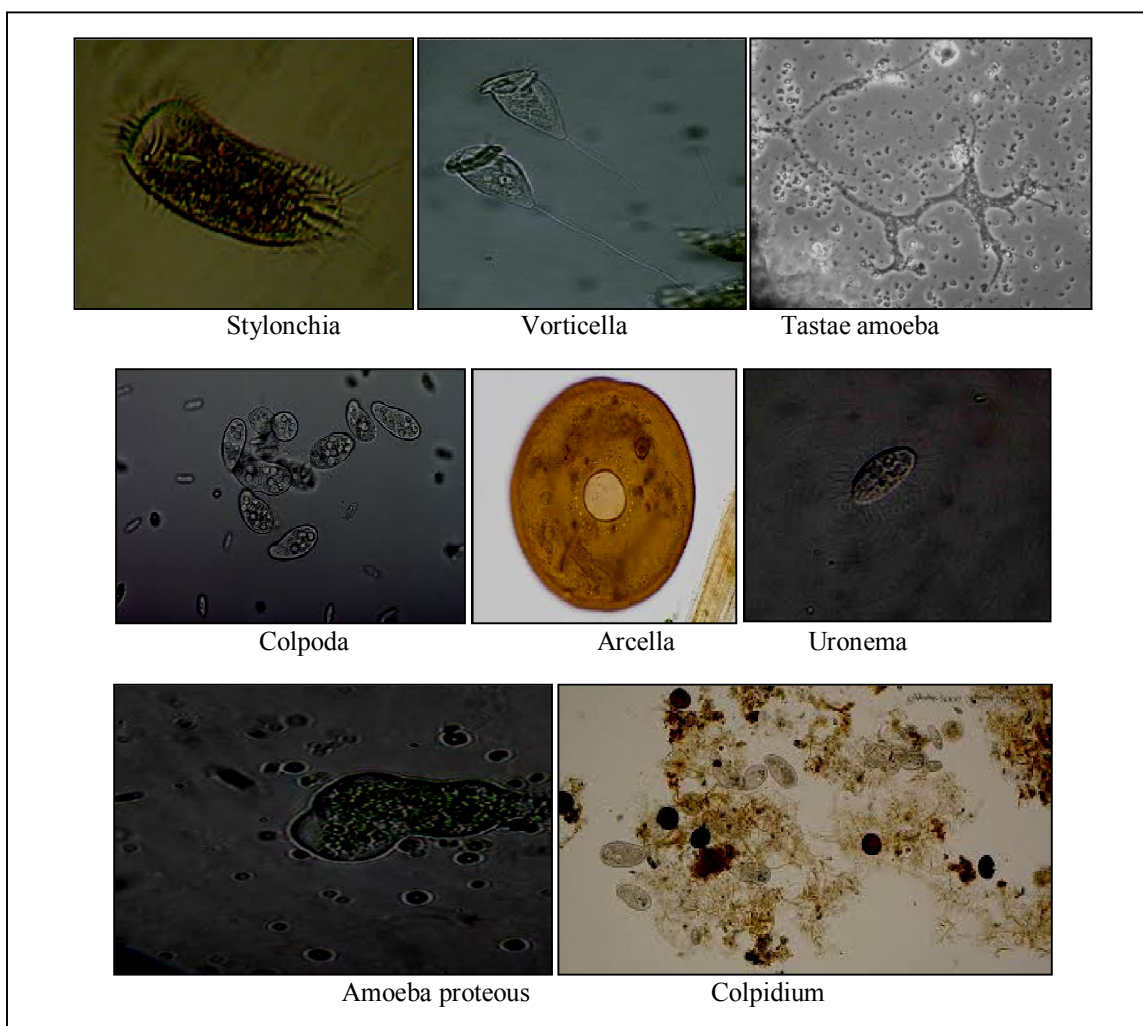


Figure 1

#### 4. Acknowledgement

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