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## **STUDIES ON THE POPULATION STRUCTURE OF SOIL MICROARTHROPODS IN SALINE AND NON-SALINE SOILS OF NORTH AND SOUTH 24-PARGANAS DISTRICTS OF WEST BENGAL**

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A good amount of works have been done on various aspects of soil arthropod fauna in different types of soil in West Bengal by Bhattacharya and Joy (1978), Bhattacharya and Roychowdhury (1979), Hazra and Chowdhury (1983), Sanyal (1982, 1991), and Sen *et al.* (1999, 2002). Besides these some attempts were also made by Bhattacharya and Roychowdhuri (1977), Sanyal (1981a, b, 1988), Sanyal and Sarkar (1983), Dey *et al.* (2005) to establish the relationship between the association of oribatid mites and salinity. The present work is an attempt to study the population structure of soil microarthropods in the saline and non-saline soils of North and South 24-Parganas districts of West Bengal.

### **MATERIALS AND METHODS**

The present study was under taken in June, 2002 to January, 2004 in some areas of North and South 24-Parganas districts of West Bengal. In all 180 soil samples were collected from North and South 24-Parganas districts during summer, rainy and winter seasons. Sampling was made by selecting a 10m<sup>2</sup> plots of cultivated and uncultivated grassland and 500 c.c. of soil sample was taken from the plot. The soil samples were taken from the rhizospheres of different plants and grass. For extraction of the soil arthropod fauna 500 c.c. of soil sample was put in a modified Tulgren Funnel apparatus using 40 watt Electric bulb as heat source. Usually the samples were kept in the funnel for 72 hours.

Apart from the extraction of microarthropods, the soil samples were analysed to determine the pH using Systronic pH meter and the soil salinity was determined by using the Refractometer. The soil temperature was recorded at the time of sampling by inserting a soil thermometer in the soil of the sampling site.

**Table-1.** shows the edaphic factors and the total arthropod population per sample of the study area.

<b>Soil type in relation to salinity.</b>	<b>Season</b>	<b>Range of pH</b>	<b>Range of soil temperature</b>	<b>Average number of arthropods in 500c.c. of soil.</b>
Non-saline alluvial soil.	Summer	6.09—8.16.	32 <sup>o</sup> c—40 <sup>o</sup> c	38.5
Non-saline alluvial soil	Monsoon	6.09—8.16	27 <sup>o</sup> c-30 <sup>o</sup> c	33.5
Non-saline alluvial soil	Winter	6.09—8.16	19 <sup>o</sup> c—23 <sup>o</sup> c	12.5
Saline soil	Summer	4.46—8.05	29 <sup>o</sup> c—30 <sup>o</sup> c	35.2
Saline soil	Monsoon	4.46—8.05	27 <sup>o</sup> c—31 <sup>o</sup> c	11.0
Saline soil	Winter	4.46—8.05	18 <sup>o</sup> c—22 <sup>o</sup> c	20.8

**Table-2.** Total arthropod population in different seasons in grasslands and cultivated lands in saline and non -saline soils.

<b>Soil type in relation to salinity</b>	<b>Vegetation</b>	<b>Season</b>	<b>Average arthropod population in 500 c.c. of soil</b>
Saline soil	Grass	Summer	53.5
Saline soil	Cultivated	Summer	16.7
Saline soil	Grass	Monsoon	15.5
Saline soil	Cultivated	Monsoon	6.5
Saline soil	grass	Winter	27
Saline soil	Cultivated	Winter	15
Non -saline soil	Grass	Summer	57.6
Non -Saline soil	Cultivated	Summer	20
Non- saline soil	Grass	Monsoon	55
Non-saline soil	Cultivated	Monsoon	12
Non -saline soil	Grass	Winter	19.5
Non -saline soil	Cultivated	Winter	6.5

### SUMMARY

180 soil samples were collected from saline and non -saline soils of cultivated and uncultivated grasslands during June, 2002 to January, 2004.

The total arthropod population was always higher in grassland samples than in the cultivated one.

Mite population was always higher in all the seasons than the collembolan in saline and non - saline soils.

Among the acarine population oribatid mites occupied about 80% and 6 species of oribatid mites have been identified and the genus *Scheloribates* shows the dominance.

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