



## **A Study on Earthworm Population Densities in Garbage Area**

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### **ABSTRACT**

Earthworms play very important role in decomposing of garbage in soil, which is defined as that nutrient fraction of the soil accessible to plant roots and depends on the chemical and physical status of the nutrients in the soil. Thus, it is important to know the significance of earthworms and also to find out the factors that diminish the earthworms' population in garbage. In south India, the species diversity of earthworms is very less and the earthworm activity is less in garbage, which may be because of un favorable environmental conditions.

**Keywords:** Earthworm, Vermicompost, Garbage ,Anova and Genstat

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### **1. Introduction**

Earthworms are known to produce vermicompost by using any organic waste like agricultural waste, city garbage, industrial waste and sewage waste. Earthworms in Nature play a major role in converting any organic waste into vermicompost, which helps in reducing noxious gases of a wide variety of organic water, eliminating the bad smell. It makes soil porous resulting in improved water infiltration, moisture retention hence it is good for rain fed and dry land crop. It arrests soil erosion through rainfall & irrigation and improves shelf like following cellulolytic microorganisms help in hastening decomposition [1&2].

Very little quantitative data is available on the ecological influence of earthworms of on urban domestic garbage. The decomposition of garbage in urban domestic nutrient content and rate of nutrient recycling in the whole sewage and garbage in urban system. However, nutrient cycling in garbage is poorly understood. Soil animals are important component of ecosystem functioning in urban domestic garbage and the earthworms are one of the major groups of these animals in the garbage [3].

As mentioned earlier they play very important role in decomposing of garbage in soil, which is defined as that nutrient fraction of the soil accessible to plant roots and depends on the chemical and physical status of the nutrients in the soil.

Thus, it is important to know the significance of earthworms and also to find out the factors that diminish the earthworms' population in sewage and garbage. In south India, the species diversity of earthworms is very less and the earthworm activity is less in garbage, which may be because of unfavorable environmental conditions [4&5].

The present investigation could generate information on the ecology of earthworms of urban environment and on the role of earthworms in decomposition of domestic garbage of urban environment.

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### **2. Materials and Methods**

The earthworms were sampled by hand sorting method in three randomly selected areas, each of size 25x25 cm and 25 cm depth in each plot (replicate) every month during two crop seasons. (July to September and June to October) each covering both rainy (June to September) and Post training (October to January) seasons. Thus, their populations were sampled eight times in total during the period. each time, an iron grid of 25 cm<sup>2</sup> size was placed on the randomly selected area and cleared up the above ground vegetation inside the frame and dug up to the depth of 25 cm in the morning hours (0600 to 0800 hrs.) The earthworms were searched and collected from each such area, put in a polythene bag and brought to the laboratory. They were washed of the adhered soil particles, soaked with filter paper to remove the water attached to their outer body wall and their number was enumerated. They were weighed (with gut content) for biomass (wet), narcotized with absolute ethanol, and sorted into various age groups such as adults (with clitellum). They were processed through 4% formalin overnight, and preserved in 80% ethanol.

Their population densities were converted to m<sup>-2</sup> across 15 treatments. The data on the population densities of adult and their biomass across the soil management treatments and seasons were analysed by ANOVA using GENSTAT

### 3.Result and Discussion

Earthworm population was recorded in garbage area. Earthworms are collected from m2 area in both areas. The results were depicted in Table 1. In Garbage area, the population was more in month of June. 12 earthworms are occurring in m2 area. They are recorded of January 2007 & 2008(60%), March (75%), April (100%), May (100%), July (60%), and October (60%) 2007.

Figure 1: Monthly Variations of Air Temperature at Garbage Area



Table 1: Percentage of Earthworms in Garbage Area During the Study Period

Month	Adult	Adult %
Jan-2007	3	60.0%
Feb	2	40.0%
Mar	3	75.0%
Apr	1	100.0%
May	1	100.0%
Jun	5	41.7%
Jul	6	60.0%
Aug	6	66.7%
Sep	2	40.0%
Oct	3	60.0%
Nov	1	25.0%
Dec	1	33.3%
Jan-2008	3	60.0%

### 4.Conclusion

Total population density of earthworms is depending upon physical and chemical factors of environment. During the study period, Air temperature and soil temperature was increasing simultaneously at the same time humidity was decreased in the months of January to May. In garbage area the highest population of adults was recorded in the month of July & August. And lowest population of adults was occurs in the month of April, May, November, and December.

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