

PREFACE

In modern days the increase in production of food grains, crops and fodders is achieved by the application of modern science technology such as crop husbandry methods. These methods involve the highly developed machinery and the use of inorganic fertilizers, organic pesticide chemicals, insecticides etc. In addition to this, improper irrigation system and over watering to crop land is creating major problem for the fertile land. Excess use of chemical fertilizers and water logging leads into soil salinity. The soil salinity is greatly affecting on population, growth, survival and breeding of the earthworms.

In western Maharashtra, especially in Sangli, Kolhapur, Satara and Ahmednagar districts, farmers are facing a great problem of saline soil due to above mentioned reasons.

The saline soil contains toxic concentrations of soluble salts like chlorides and sulphates of Sodium, Calcium, Magnesium etc. Once the soil becomes totally saline it ultimately leads into non-fertile land.

Now a days, there is great demand for various vermicomposting species of earthworms, as they prepare a good quality of compost from the organic waste such as buffalo dung, vegetables waste, farm waste etc. But, on the other side different species of earthworms are going to

eradicate in saline soil. Therefore, it was decided to investigate the effect of various saline soil samples such as total saline soil, semi-saline soil and normal soil as a control on the growth, survival and breeding of the earthworm *Eisenia foetida*. The present dissertation concerns with the analysis of physico-chemical parameters of various substrate soil sample. The morphological studies of earthworms *Eisenia foetida* is carried in terms of body weight before and after the exposure to saline soils. The behavioral studies are performed in relation to burrowing, feeding, breeding etc. The breeding of worm is studied in relation to cocoon production and hatching.

The dissertation is divided into four chapters. The first chapter gives brief idea about meaning of soil salinity, its reasons and situation of soil salinity in Maharashtra. This chapter also gives a survey about the literature on soil salinity, its effect on growth and reproduction of worm *Eisenia foetida*. The second chapter describes in detail about the collection of soil samples, selection of earthworm species and various physico-chemical methods used for analysis of soil samples. The third chapter deals in detail about various observations on morphology, behavior and breeding of earthworm in various soil samples. These observations are in the form of results. The fourth chapter describes in detail about discussion at comparative level on observation during the

worms were exposed to various soil samples. This chapter also describes the concluding remarks which is followed by bibliography.

I assume responsibility for the opinions expressed in the present dissertation and also for omission and errors, if any, in the body of dissertation. I feel and hope that many of the readers will find the present dissertation informative, interesting and stimulatory for the future research.

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