2. OBJECTIVES OF THE PRESENT STUDY

The potential of earthworms as waste processors has been well established (Haimi and Huhta, 1986; Kale and Bano, 1988; Dash and Dash, 1990, Reinecke et al. 1991). But these potentialities depend upon the growth and reproduction of these species selected for vermicomposting. Hence to realize the full potential of the compost worms as waste decomposer, it is essential to study the growth and fecundity parameters of earthworms on a variety of organic wastes.

Though reports on the growth of earthworms in specific organic waste are available in plenty, it is not possible to predict to what extent specific compost worm could exhibit the same sustained growth over a short period of time on different organic wastes. Hence a study of specific species of growth of earthworms on varied types of organic wastes would provide a solution for the above problem.

Most of the research work carried out in India with regard to waste management is uneconomical. Hence, it was felt that formulation of an integrated scheme based on complete recycling of all the residues generated is the only way to make the waste management system economical and practical. Not much work seems to have been done on the vermicomposting of Cow dung, Poultry excreta, Bat waste, Sheep dung, Goat dung, Rabbit excreta etc, using appropriate species of earthworms as well as their growth studies on these wasted organics.

Field application of vermicompost produced from organic wastes could be one of the most important attractive options of solving waste disposal problem as well as enhancing the actual nutrient status of soil simultaneously. However evaluation of the nutrient status of vermicompost is mandatory as a prelude to their use in agriculture.

Earthworms and micro organisms together have a vital role to sustain the nutrient cycle of nature. Further, during vermicomposting the earthworms and
microbes work together symbiotically. Microbes on one hand source as the primary decomposer of organic matter and on the other hand they themselves serve as food source of earthworms and play a vital role in organic waste degradation process. Furthermore micro organisms synthesize growth regulating substances which play a vital role in plant metabolism, influence plant growth and improve crop qualities. The microbial population in worm cast was found to be 10-12 times higher than in the soil and organic matter that constitute the food for the worms. Hence an estimation of microbial population in vermicompost would help to assess quality and stability of vermicompost.

Soil does not receive humus from chemical fertilizers. But the earthworms and their casts provide humus to soil and stimulate soil fertility. The vermicompost (cast) has beneficial effects on the improvement of soil properties, the greater availability of mineral nutrients, the influence of microbial hormone like substances, the establishment of beneficial free living microbes in the cast and an increase in plant growth development and crop yield.

Further it is well documented that the nutrient status of vermicompost mainly depends upon the quality of organic wastes that are used as feed material for earthworms. Hence the study of vermicompost is very essential to determine its manurial quality and nutrient effects. Such a study would be an important pre-requisite for large scale planning of high quality vermicompost production from specific organic waste thereby achieving cost effective bioremediation technology.

Hence the present research work was undertaken with the following objectives.

- To follow the growth of *E.foetida* in cow dung, Bat dung, Poultry dung, Goat dung and sheep dung.
- To follow the growth of *E.eugeniae* in cow dung, Bat dung Poultry dung and Goat dung.
➢ To follow the growth of *L. mauritii* in cow dung, Bat dung, Poultry dung and Goat dung.

➢ To study the physico-chemical characterization of fresh cow dung, Bat dung, poultry dung, Goat dung, sheep dung, Rabbit excreta and silkworm excreta and their respective vermicompost using *E. foetida*.

➢ To Study the physical-chemical characterization of fresh cow dung. Bat dung, poultry dung, Goat dung, sheep dung, Rabbit excreta and silkworm excreta and their respective vermicompost using *E. eugeniae*.

➢ To study the physico-chemical characterization of fresh cow dung. Bat dung, poultry dung, Goat dung, sheep dung and their respective vermicompost using *L. mauritii*.

➢ To carry out the microbial study of fresh cow dung, Bat dung, poultry dung, Goat dung and Sheep dung and their respective vermicompost using *E. foetida*.

➢ To carry out the microbial study of fresh cow dung, Bat dung, poultry dung, Goat dung, and sheep dung and their respective vermicompost using *E. eugeniae*.

➢ To carry out microbial study of fresh cow dung, Bat dung, poultry dung, Goat dung, and sheep dung and their respective vermicompost using *L. mauritii*.

➢ To follow the field application study of Vermicomposted cow dung, bat dung poultry dung, Goat dung, sheep dung, Rabbit dung and silkworm excreta in Bhendi (*Abelmoschus esculentus*) field.