Preface

People’s concern about issues like environmental safety, food quality and soil conservation has led to an increase in the use of sustainable agricultural practices. Organic matter such as food wastes, animal manures, yard wastes, compost and sewage sludge have been used in agriculture as they are very beneficial for plant growth and yield and for the maintenance of soil fertility. Vermicomposting is a process in which biological degradation of organic wastes takes place in controlled conditions, by the action of earthworms. It is a low cost technology and an environmental friendly process used to treat organic waste. Vermicompost is a finely divided stabilized material with low C: N ratio, high water-holding capacity and porosity in which most nutrients are present in forms which are readily taken up by plants. It improves soil structure, enhances soil fertility and increases crop yields as it is a nutrient-rich and microbiologically-active organic amendment.

In the present study, value addition in the vermicompost produced from Brassica juncea straw was analyzed. Physicochemical analysis of the straw was done and after that vermicomposts and composites were prepared in different ratios from the same straw and the value addition was assessed. The parameters taken for the analysis were pH, electrical conductivity, moisture content, nitrogen, phosphorus, potassium, organic carbon and calcium. Vermicomposts produced by the earthworm species showed higher concentration of N, P, K and Ca nutrients as compared to the substrate-the mustard straw and normal compost containing straw and cow dung. Thus, vermicomposting, based on the results observed in the present study as well as based on earlier reports has figured out to be a better technology for the management of agricultural waste (in present case, the mustard straw), normally used in brick kilns for heating, than the traditional composting to ensure better recovery of plant nutrients in a nutrient supply chain.

The studies were carried out by the author in the laboratory of Manav Institute, Jevra, Hisar (Haryana). The thesis consists of six chapters. Chapter 1 deals
with the detailed description of types of wastes, solid waste management, agricultural waste, earthworms and vermicomposting. It also covers the objectives of the study. Chapter 2 covers the review of studies done by other workers on vermicomposting and agricultural waste. Experimental design, plans, procedure and techniques employed for obtaining appropriate results are described in Chapter 3. Chapter 4 deals with the results which are exhibited in the form of tables, graphs and photographs. The results of the present study have been discussed and compared with concurrent results reported by other authors in Chapter 5. A brief summarized description of all the previous chapters and important conclusions drawn from present observations are highlighted in Chapter 6. All the references which are followed in the text are according to the prescribed format. Last section presents the list of papers published and presented.