ABSTRACT

The use of pesticides is a necessary evil of the modern agrotechnology and perhaps their demand would never like to cease. Actually they are directed against economic pests but they also affect non-target organisms. The laboratory experiments have shown that some pesticides and their metabolites are carcinogenic, mutagenic and teratogenic. They possess accumulating tendency as well as persistent nature. Their concentration is increasing day by day due to their repeated and indiscriminate use in agriculture. Repeated use of pesticides result in immunity in the target pest. For example, DDT in 1945 had effectively controlled mosquito population but within 6 years DDT resistant mosquitoes developed. Now there is no effective insecticide that can kill pasture mosquito.

Therefore, the research work presented in this thesis is related to develop simple and inexpensive methods of analysis, to synthesize and characterize some new pesticides and to fit the data of thin layer chromatography of some pesticides to the multilinear retention model. The thesis comprises of six chapters :

In chapter I different types of pesticides and their mode of action are summarized in a tabular form. The pesticidal actions, different uses and methods of analysis of dithiocarbamate pesticides are also discussed in detail in this chapter. A new selective spot test is discussed in chapter II that is based on the formation of yellow-brown copper(II)-dithiocarbamate complex for the detection of mancozeb at µg levels. Chapter III is devoted to report the details of spot-test analysis of mancozeb in soil and vegetation. It is also a new development in the area of detection of traces of dithiocarbamates. Chapter IV shows the experimental details and analytical data of a new volumetric method developed for the
standardization of mancozeb formulations. In this method versenate (ethylenediaminetetraacetic acid) has been used as the titrant in the presence of Eriochrome Black T at pH 10. The procedure used for the synthesis of some new zinc and manganese dithiocarbamates is given in Chapter V. The results of fungicidal study of these compounds have also been included in this chapter. An attempt to fit the thin-layer chromatographic data of some herbicides to the multilinear retention model is discussed in the last chapter i.e. Chapter VI.