CHAPTER – II

Aims and Objectives

The aims of the study is to set up a quantitative and qualitative estimation of tea soil microflora present in different land patterns such as rehabilitated, non-rehabilitated and non tea growing virgin soil. Populations of microbes are also to be estimated in tea soils under both biotic and abiotic stress conditions during both summer and winter seasons. This is to impart information regarding the microbial diversity of tea soil under different soil conditions, which is of great importance to reintroduce beneficial microbes in depleted areas so as to reduce the rehabilitation period.

Presence of suitable microbial antagonists in tea soil is necessary to suppress various soil borne tea pathogens. Exploitation and isolation of native microbial strains showing antagonism towards two major soil borne root disease causing fungal pathogens are to be undertaken. To keep these two serious primary root disease (Charcoal stump rot and Brown root rot) under control, introduction of antagonists i.e. microbial strains in disease infested area, during rehabilitation (just before replanting) will help in providing a positive step in reducing the disease causing soil borne pathogens in rehabilitated soil, thus minimizing the rehabilitation period. The microbial antagonists showing such potentiality can be used as a natural plant protection tool at this hour when organic cultivation of tea is gaining momentum.
The following objectives are undertaken in order to fulfill the above mentioned aims in the present study.

(i) To estimate the microbial load of tea soil of three different regions of Brahmaputra valley, under different cultivation pattern such as rehabilitated, non-rehabilitated and virgin soil during both summer and winter seasons.

(ii) To estimate the microbial population both qualitatively and quantitatively under abiotic (waterlogged and droughty areas) and biotic (charcoal stump rot and brown root rot infested areas) stress condition.

(iii) To determine the physical and chemical properties of the soil under microbial study.

(iv) To isolate and identify antagonistic microbial strains from tea soils against two primary root disease causing pathogens, *Ustulina zonata* (Lev.)sacc.(causing charcoal stump rot) and *Fomes lamaensis* (Murr.)sacc. (causing brown root rot ) with proper bioassay in laboratory and nursery trials.

(v) To conduct physiological test in order to optimize pH, carbon and nitrogen sources for mass multiplication of the antagonistic strains.