Preface
Silk, the finest thread produced by the silkworm *Bombyx mori* L. is the only natural fibre being highly exploited by the humankind. To a lay man it's a wonder how such a tiny worm produces a long fine thread. Sericulture is one of the important agricultural activities, supporting the rural people and earning good foreign exchange, adding good amount to Indian trade. Sericulture is now in practice throughout India. However, the industry in major hails from the South India only. Sericulture is unique in its vast employment and income generating potentialities. From a mere traditional practice, it has now shaped into a viable agro-industry.

Being the sole food plant for the silkworm *Bombyx mori* L., mulberry caught the attention of the researchers easily. Mulberry cultivation is the most important part of sericulture and the economics of this agro-based cottage enterprise mainly depends on the total leaf produced in a unit area over a unit time. Crop yields can be increased mainly by cultivating high yielding strains, providing better agronomic inputs and protecting the crop from pests and diseases. Of the three yield contributing factors, usage of high yielding varieties is the cheapest and effective method and mulberry is not an exception to this. In India, South India in particular, Local and Kanva-2 (M-5) are the popular mulberry varieties.

Andhra Pradesh is the second largest producer of raw silk, next to Karnataka. Anantapur stands first in raw silk production with a vast mulberry acreage, among the sericulture practicing districts of Andhra Pradesh. Sericulture is the chief agricultural crop of Anantapur, along with groundnut. Though the district is encroached by drought conditions, Anantapur is still producing highest raw silk from the state. Delayed monsoons, high temperatures, dry humid conditions are the limiting factors for the agriculture activities in this zone. For the past few years, the
agriculture industry has been facing drastic conditions and sericulture is not an exception of that. However, sericulture is practiced only under irrigated conditions in Andhra Pradesh. The semi-arid conditions of this zone are not supportive for the traditional mulberry genotypes for qualitative and quantitative produce. At this juncture, a mulberry genotype with good yield and quality is the ultimate necessity to the farmers of sericulture to sustain the sericulture industry in the district. The present investigation has been carried out to screen out the superior mulberry genotype that can produce good quality and quantity of leaf.

Presentation of this investigation has been organised into three chapters. The first chapter deals with the vegetative propagational, growth and yield studies with the selected mulberry genotypes. Propagational parameters are studied for rainy and summer seasons, in order to evaluate the best variety suitable for initial establishment of the mulberry garden. Growth and yield parameters are studied for five seasons covering rainy, winter and summer seasons. For this study, the ultimate yield contributing parameters are considered. The seasonal evaluation is done to select the superior variety that can yield best consistently over all the seasons.

As about 70% of the protein content of the silk fibre is directly derived from the mulberry leaf alone, leaf nutrient quality is considered as the important yield influencing factor for a good cocoon crop. Leaf biochemical studies are dealt in the second chapter. Seasonal variation in the leaf biochemical constituents is studied to correlate the quality and quantity of the cocoon crop.

Chapter three deals with bioassay studies carried out with the popular cross breed race PM x NB4D2 and a bivoltine hybrid CSR2 x CSR4. Under bioassay, moulting, rearing and post cocoon parameters are studied for
rainy, winter and summer seasons. The best mulberry variety that can support the best cocoon crop is the object of this study.

Finally based on the over all performance in different studies made, the V 1 and S 13 mulberry varieties are recommended for cultivation at field level under the irrigation conditions of semi-arid zone.

I hope that the recommendations from this investigation will be helpful to the farmers in choosing the appropriate varieties. Moreover, this study is expected to make useful contribution to the information on the improvement of new varieties under diverse agroclimatic conditions.