CHAPTER VII

SUMMARY AND CONCLUSIONS
Forest constitute one of the most important resources which play an important role in the economic and social development of the country. The impact of human activities has resulted in the gradual removal of forest cover from vast tracts resulting in the paucity/shortage of forest produce such as timber, pulp, fuel and fodder etc., which are utilised by men directly or indirectly throughout the world. Degradation and removal of forest cover is also observed in and around Sagar division, where the forest cover has been reduced by about 30% in the past few decades.

From the times immemorial, man is involved with the forestry. His involvement with forest trees has been of love and hate one. He grew and propagated the useful trees while at the same time has been unsparing with the axe. Adverse consequences of such activities has been observed in many other countries of the world. In a developing country such as India, wood is still an important source of fuel to millions of households in rural areas in addition to timber and pulp. It appears the situation will remain so for decades to come.

The present investigations are an effort to standardise the present knowledge of nursery practices which are adopted by the foresters without sound scientific basis for large scale afforestation and reforestation programmes. So far scientific information
about the nursery practices was lacking. An attempt has been made through these investigations to study different forest nurseries around Sagar and methods adopted by the foresters to raise seedlings and their scientific validity.

Five different nurseries around Sagar were considered for these studies based on easy approach and nearness to make frequent visits. A large number of indigenous species are raised in these nurseries through seeds. For present investigations, ten most common and important species viz. *Acacia catechu*, *Albizzia lebbeck*, *Anogeissus pendula*, *Cassia fistula*, *Dalbergia sissoo*, *Dendrocalamus strictus*, *Emblica officinalis*, *Tectona grandis*, *Terminalia arjuna* and *Terminalia tomentosa* were selected to study different parameters and their impact on germination and growth of seedlings.

All nurseries selected were surveyed as per their capacity and the methods adopted by the foresters for raising seedlings. To begin with it was estimated how many seeds weigh one kilogram in all these species to have an idea of number of seeds/ kilogram needed for sowing per hectare. The methods and time of seed collection was carefully noted and it was investigated experimentally to find out the best seed lot in terms of optimum germination percentage and seedling growth. A number of pretreatments were given to the seeds to achieve
best/ higher seed germination percentage. In all the species except Tectona grandis the best pretreatment was soaking the seeds for 24 hours in water, while in T. grandis it was 4 months soaking to achieve better germination.

The sowing time for different species was also variable. For Acacia catechu, Cassia fistula, Dalbergia sissoo, Emblica officinalis Tectona grandis, Terminalia arjuna and Terminalia tomentosa sowing time was from March to June while it was September for Albizia lebbek and Anogeissus pendula. The germination percentage of all the species in five nurseries was noted and it was recorded that best germination was achieved in seeds sown in polybags. Effect of sowing depths showed variable effect on germination in different species, it appears that it was dependent upon the size of the seeds and the particle size of the soil in the beds. The seeds fail to germinate at a depth of greater than 6 cm. There was no significant variation in the percentage germination when seeds were sown by different methods viz. broadcast, strip and pit method of sowing. For studying the effect of potting media on germination and growth of seedlings, six different media were taken. The best medium was found to be one having sand, soil and manure in 1:1:1 ratio for all the species for germination, growth of seedlings and shoot/root ratio. Effect of irrigation interval on seed germination indicated that seeds of all the species
failed to germinate in water logged conditions. The best germination in all the species was observed when pots/beds were watered once a day. On the basis of effect of light on germination and growth in these species, two categories were made, one showed best performance in semishady conditions while the other in full sunlight conditions in the open.

Effect of treatment with Ammonium nitrate showed best growth at 0.5% concentration of the fertilizer in the soil in general, of course there were some aberrations. Effect of phosphate concentration in the shoot, root growth indicated that different species have different requirements of phosphate.

Effect of IAA concentration showed a stimulatory effect at lower concentration on seedling growth, while with increase in concentration of IAA the growth showed inhibitory trend. Effect of GA showed an increase in the length of the shoot up to a certain concentration which varied for different species.

Seedlings uprooted from beds for transplantation showed poor survival, which may be ascribed to the damage caused to the root hairs. Various transplantation methods were attempted and it was concluded that the best survival of seedlings after transplantation was from polythene bags where root system remains intact.
Studies on the effect of transplantation sites on one and two year seedlings showed varying trends depending on the species and the site of transplantation. It appears that survival of a seedling at these sites was affected by a number of local variables causing a change in the microclimatic conditions. The differential susceptibility of these species to microclimatic conditions was also responsible for the survival at different sites.