CONTENTS

SUMMARY OF THE RESULTS
1 - VI

INTRODUCTION
1 - 4

REVIEW OF LITERATURE
4 - 54

MATERIAL AND METHODS
54 - 79

EXPERIMENTS AND RESULTS

EXPERIMENT- 1
To compare the impact of monoculture Eucalyptus plantation from other monoculture and mixedculture plantations on floristic composition, density and the total biomass under their canopy.

EXPERIMENT-2
To visualise the effect of the plantation on the performance of cultivated crops under agroforestry system.

EXPERIMENT-3
The influence of Eucalyptus monoculture plantation or its shelterbelts on the rabi and kharif crops of the adjoining fields.

EXPERIMENT-4
To compare the impact of Eucalyptus shelterbelt from that of other trees on the crops growing in their vicinity.

EXPERIMENT-5
To study the variation, if any, in the elemental status of the floor of the Eucalyptus tereticornis monoculture plantation.

EXPERIMENT-6
To study the phytotoxic impact of Eucalyptus tereticornis Sm. on a representative plant - Phaseolus aureus Rostb. (= Vigna radiata (L.) Wilczek) var. ML-267.

EXPERIMENT- 7
To compare the content and potential of teachable phytotoxins among different parts of Eucalyptus tereticornis Sm. tree.

EXPERIMENT- 8
The experiment was conducted with a view to:

a) assessing the degree of resistance/susceptibility of some agronomic crop seeds to germinate under the influence of phytotoxins of E. tereticornis leaves released through leaching in water.

b) Identify and quantify some morphological parameters of seeds that could serve as indicator of the allelopathic response of the crop.

EXPERIMENT- 9
To extract the chemics from the soil inhabited or free of Eucalyptus and to assess their bioefficacy to ascertain their allelopathic behaviour.

EXPERIMENT- 10
To assess the seasonal response on the content of active chemics from the soil under Eucalyptus monoculture and to study the chemics status in the soil of the fields adjoining plantation/shelterbelts at varying distances from Eucalyptus belt.

EXPERIMENT- 11
To assess the nature, composition and relative amounts of different phenolic acids released by Eucalyptus tereticornis Sm. into its environment.

EXPERIMENT- 12
To study the allelopathic impact of volatile components from Eucalyptus on crop plants.

146 - 149

150 - 158

159 - 168

169 - 175
EXPERIMENT- 13
To assess the availability of eucalypt oil on the surface of the soil under the canopy of the tree.

EXPERIMENT- 14
To study the impact of Eucalyptus oil adsorbed soil and the environment on germination and growth of Phaseolus aureus Roxb.

EXPERIMENT- 15
To compare the changes in the contents of different components of the volatile oils from E. tereticornis, E. globulus and E. citriodora during different seasons and to evaluate the allelopathic potential of the identified components.

EXPERIMENT- 16
The experiment was planned to:
(a) find the reasons of retardation of seed germination in response to volatile oils and eucalypt oil inhibitors, and
(b) predict the extent of the impact of the above chemicals at a given concentration and time.

EXPERIMENT- 17
To evaluate the contribution of major components of the
(a) phytotoxins from soil inhabited by E. tereticornis
(b) volatile phytotoxins of E. tereticornis leaves in the morphogenetic response of hypocotyl cuttings of P. aureus seedlings.

EXPERIMENT- 18
To assess the biochemical changes associated with the impact of volatile phytotoxins of E. tereticornis and E. citriodora.

SALIENT FEATURES OF DISCUSSION

CONCLUSIONS

FUTURE PROSPECTS

RECOMMENDATIONS

BIBLIOGRAPHY