CONCLUSIONS

From the subject matter discussed in the thesis, regarding the weed suppressing potential of volatile monoterpenes, following conclusions can be drawn:

1. The four test monoterpenes, citronellol, eugenol, linalool and limonene cause inhibition of germination in the test weeds - *Amaranthus viridis, Bidens pilosa, Cassia occidentalis* and *Parthenium hysterophorus*.
2. They also inhibit the seedling growth of the test weeds, in terms of seedling length and dry weight.
3. The monoterpenes adversely affect the photosynthesis of the target plants grown in Petri dishes, pots and field conditions.
4. They also adversely affect the respiratory metabolism under laboratory, dome and field conditions.
5. The biomass of the test plants decreases with increasing concentration of monoterpenes.
6. In pots, the effect of monoterpenes is somewhat lesser during the first week after spray, maximum during second and third weeks and decreases during the fourth week, because of the revival of the plants.
7. Monoterpenes exert weedicidal effect on the target weeds (killing is caused by the monoterpenes in all the weeds, especially at higher concentrations).
8. Monoterpenes cause an increase in the content of macromolecules, proteins and carbohydrates of the target species.
9. They inhibit the specific activities of the enzymes - proteases, $\alpha$-amylases, $\beta$-amylases and polyphenol oxidases while enhance the activity of peroxidases.

10. The monoterpenes increase the conductivity of the MES buffer solution containing cotyledonary leaves and radicles because the ions of the plant cell membranes leach into the buffer solution.

11. They also cause changes in the surface morphology of the treated leaves, including changes in structure, morphology, number, opening and closing of stomata.

12. They leave no / little residual activity in the soil and lesser phytotoxic effect is noticed on the crop grown in such a soil.

13. Compared to the synthetic herbicide glyphosate, monoterpenes are quicker in action.

14. Among the monoterpenes tested, citronellol is most phytotoxic while limonene, a lipophilic monoterpen, is the least phytotoxic.

15. Among the weeds, the effect of monoterpenes was more on *A. viridis* and *P. hysterophorus* under laboratory conditions (in Petri dishes) while it was more on *B. pilosa* and *C. occidentalis* under dome conditions (conducted in pots).