

CHAPTER V. CONCLUSION AND SUGGESTIONS

A. Conclusion

1. Weed residues from *Eleusine indica*, *Kyllinga brevifolia* and *Sphagneticola trilobata* exhibited clear allelopathic effects, significantly reducing the germination percentage and early growth (hypocotyl and radicle elongation) of *Lactuca sativa*.
2. Among the three species, *S. trilobata* showed the strongest allelopathic inhibition under both agar-based and soil-based conditions, followed by *K. brevifolia*, while *E. indica* displayed weaker and more variable effects.
3. The inhibitory effects were concentration-dependent, with higher weed litter levels causing progressively greater suppression of lettuce seedling growth, confirming the relevance of residue load in field conditions.
4. These findings highlight the environmental risks posed by unmanaged weed residues in agricultural systems, emphasizing the importance of proper residue management to prevent phytotoxic effects and ensure sustainable farming practices.

B. Suggestion

The tested weed species show potential as natural sources of bioherbicides. Their allelochemicals could be extracted and developed into eco-friendly alternatives to synthetic herbicides.

Future studies should:

- Isolate and identify active compounds using techniques like GC-MS or HPLC
- Explore their mode of action and effects on plant physiology
- Investigate interactions with soil microbes and environmental factors
- Validate results under real field conditions
- Assess impacts on different crops and cropping systems