

ALLELOPATHY OF TORPEDOGRASS (PANICUM REPENS L.)
AND PRELIMINARY STUDIES ON CHARACTERIZATION OF ALLELOCHEMICALS

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Allelopathic effects of torpedograss shoot or rhizome extracts (aqueous), soil-incorporated residues, and the soil (where the weed had been grown), were examined using two sensitive species, namely, Tridax procumbens L. and chilli (Capsium annum L. var. grossum). Significant inhibition of seed germination and seedling growth of both species occurred, when exposed to a concentration range of shoot or rhizome extracts in petri - dishes. Soil-incorporated shoot or rhizome residues significantly decreased the seed germination and seedling fresh weight, with the degree of inhibition dependent on percent of decaying residues in soil. Inhibition was strongest when residues had decayed up to 4-weeks than for a longer time. When grown in soil previously infested with torpedograss, but free of any rhizomes at testing, the growth of both species was significantly reduced. This reduction was dependent on the concentration of rhizomes previously removed from soil. These studies confirmed that aqueous extracts, decaying residues and rhizome exudes of torpedograss were allelopathic. These results are in good agreement with allelopathic effects displayed by other noxious perennial weeds^{1,2,3}.

Phytotoxic compounds of torpedograss were water extractable. Methanolic extracts or rhizomes (after being refluxed in MeOH, dried and redissolved in water) were strongly inhibitory to both Tridax and chilli seeds, in petri-dishes. Methylene chloride solubles from aqueous extracts of shoot or rhizomes, incorporated into sterile agar media and bioassayed, were similarly bioactive. Chemical studies have shown that the allelochemicals responsible for bioactivity are non-polar. Work is in progress to isolate and characterize the active allelochemicals.

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References

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