ISBN: 978-85-64093-07-2

The weeds smooth pigweed, crabgrass and sanguinaria exhibit different sensitivities to phytotoxic compounds present in the straws of *Urochloa ruziziensis*.

Gislaine Cristiane Mantovanelli[1], Paulo Vinicius Moreira da Costa Menezes[2], Márcio Shigueaki Mito[3], Maurício Tatsuo Emori[4], Letycia Lopes Ricardo Fiorucci[5], Rubem Silvério de Oliveira Júnior[6], Emy Luiza Ishii-Iwamoto[7]

Universidade Estadual de Maringá[1], Universidade Estadual de Maringá[2], Universidade Estadual de Maringá[3], Universidade Estadual de Maringá[4], Universidade Estadual de Maringá[5], Universidade Estadual de Maringá[6], Universidade Estadual de Maringá[7]

Cover crop residues have been reported to negatively affect germination and establishment of weed seeds, in part due to release of phytotoxic compounds (allelochemicals). Some weed species can be naturally resistant to a specific phytotoxin to which other species are susceptible, influencing the efficacy of the residue-mediated weed suppression. The aim of this study was to evaluate the sensitivity of three weeds: *Amaranthus hybridus* (smooth pigweed), *Digitaria horizontalis* (crabgrass) and *Alternanthera tenella* (sanguinaria) to phytotoxic compounds isolated from the straws of *Urochloa ruziziensis.* The aerial parts of *U. ruziziensis* were extracted with butanol and after solvent evaporation the extracted compounds (butanolic fraction, FBut) was assayed dissolved in the agar medium at concentrations of 250, 500 and 1000 µg L^{-1}. The seeds were germinated in gerbox on agar medium at a temperature of 30 °C for 7 days. Parameters of germination and initial seedling growth, as well as microscopic analysis of the roots were measured. The germination of the monocotyledon *D. horizontalis* was substantially inhibited, but the germination of the dicotyledonous *A. tenella* and *A. hybridus* was little affected. However, the initial growth of all species was very sensitive to the active components of FBut. The *A. hybridus* was the most sensitive species exhibiting marked inhibition of the root growth with an IC_{50} of 189 µg ml^{-1}. For *A. tenella* the IC_{50} was 245 µg ml^{-1} and for *D. horizontalis* 275 µg L^{-1}. *D. horizontalis* exhibited contrasting effects, because the growth of root was less affected than the stem. The morphology of the roots of the three species was substantially altered. An early onset of secondary roots was observed in all examined species. This work provided important data for the use of straws of the U. *ruziziensis* in residue-mediated weed suppression indicating species-specific differences in the sensitivity and in the mode of action of phytotoxic compounds.

Palavras-chave: *Amaranthus hybridus*, *Digitaria horizontalis, Alternanthera tenella*, microscopy

Apoio: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) e Coordenação de Aperfeiçoamento de Nível Superior (CAPES)