



First report of multiple resistance to atrazine and imazethapyrin *Bidens pilosa*

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Resistance to herbicides has become the major important problem in weed science worldwide over the last two decades. This research planned to evaluate the possible finding of a biotype of *Bidens pilosa* resistant to imazethapyr and atrazine. Two experiments were carried out in greenhouse, one for each herbicide. The resistant biotype was taken from an grain production area with history of the application of photosystem II (PSII) and ALS inhibitors herbicides located in Quarto Centenário - PR, while the susceptible biotype was collected in an area with no history of herbicide application, located in Paranavaí - PR. Representative plants of each biotype had the species identified as *Bidens pilosa* in herbarium (HUEM 29220). The treatments were arranged in a 3 x 8 factorial scheme, where the first factor comprised different biotypes (susceptible - S, resistant - R and resistant F1 - RF1); and the second factor consisted of doses of each herbicide (0, 375, 750, 1500, 3000, 6000, 12000 and 24000 g i.a. ha⁻¹ for atrazine, or 0, 12.5, 25, 50, 100, 200, 400 and 800 g e.a. ha⁻¹ for imazethapyr). The R biotype attended all the criteria for confirmation of a new weed resistance case: The resistance factor varied between 2.83 and 5.55 for atrazine, and >21 for imazethapyr. The recommended maximum dose (1500 and 106 g ha⁻¹ for atrazine and imazethapyr, respectively) of the herbicides did not control adequately the R biotype. Otherwise, doses of 547 and 100 g ha⁻¹ of atrazine and imazethapyr, respectively, controlled 80% of the S biotype. Results obtained for the F1 generation confirmed the heritability of the resistance. The summary of the data presented in this study indicates that the biotype of *B. pilosa* from Quarto Centenário (PR) is the first report worldwide of multiple resistance to herbicides atrazine (PSII inhibitor) and imazethapyr (ALS inhibitor) for this species. Studies aiming elucidate the mechanism that confers the resistance and develop strategies for management are necessary.

Palavras-chave: Hairy beggarticks, ALS inhibitor, photosystem II inhibitor, dose-response.

Apoio: CNPq, Capes, UEM