

SOURGRASS MULTI-RESISTANT TO GLYPHOSATE AND HALOXYFOP-METYL IN MATO GROSSO STATE

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Destaque: Sourgrass multi-resistant was found in Mato Grosso State. The ACCase resistance mechanism in all populations was the Trp2027Cys substitution.

Resumo: Sourgrass (*Digitaria insularis*) belongs to the Poaceae family with C4 photosynthetic metabolism. It reproduces either asexually by rhizome formations or sexually by seeds. This species is the major perennial grass weed in South America. Farmers observed decreased sourgrass control with glyphosate and haloxyfop herbicides in the Mato Grosso State. This information led us to investigate this issue, and the main goals of this work were to determine the resistance level to glyphosate and haloxyfop in four *Digitaria insularis* population from the Mato Grosso State and to investigate the resistance mechanism to the Haloxyfop herbicide. Hence, greenhouse studies were conducted in a completely randomized setup in a 5 by 10 factorial. The first factor was *Digitaria insularis* populations (BR17Din006 – susceptible reference, BR19Din117, BR19Din126, BR19Din127 and BR19Din128), and the second factor was herbicide doses: glyphosate (0, 87.5, 175, 350, 700, 1400, 2800, 5600, 11200, and 22400 g e.a ha⁻¹), and haloxyfop-metyl (0, 3.9, 7.8, 15.6, 31.2, 62.3 124.7, 249.4, 498.8 and 997.6 g ai ha⁻¹), with four replicates. The ACCase gene fragment was amplified and PCR products were prepared and sequenced in a Genetic Analyzer sequencing instrument. We confirmed multiple resistance to glyphosate and haloxyfop herbicide in the populations BR19Din117, BR19Din127 and BR19Din128, and population BR19Din126 showed resistance only to haloxyfop. The resistance factor for glyphosate ranged from 13 to 16 in resistant populations, while for haloxyfop the variation was from 3 to 7. The ACCase resistance mechanism in all populations was a target-site mutation in the ACCase gene, leading to the Trp2027Cys substitution.

Palavras-chave: *Digitaria insularis*; ACCase; EPSPS