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Alternative herbicides for controlling Glyphosate-resistant palmer amaranth (*Amaranthus palmeri*) in Brazil

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Failure of glyphosate to control Palmer amaranth was first reported in Mato Grosso-Brazil in 2015, as newly introduced weed in the country. Therefore, the objective of this research was to determine the effectiveness of 13 post emergence (POST) applied herbicides comprising five mechanisms of action in controlling two accessions of glyphosate-resistant, in two growth stages (2 to 3 and 4 to 5 true leaves). The overall behavior of the biotypes was similar. In the first growth stage studied all the herbicides studied controlled 100% of the plants (fomesafen 0.5 and 1.0 L/ha, lactofen 0.35 and 0.7 L/ha, flumiclorac penthyl 0.4 and 0.6 L/ha, atrazine 3.0 L/ha, mesotrione + atrazine 0.25 + 3.0 L/ha, tembotrione + atrazine 0.18 + 3.0 L/ha, ammonium glufosinate 2.0 L c.p./ha, paraquat 2.0 L/ha, 2,4-D 1.5 L/ha and dicamba 1.0 L/ha – doses in L of commercial product). For the second stage the only herbicide that did not provide a higher than 80% control for both biotypes was flumiclorac, however for fomesafen and lactofen the results were dose-dependent. Therefore, the overall conclusion of the research is that growth stage, rate and type of herbicide affect the efficacy of the alternative herbicides. All five mechanisms of action may be options for alternative herbicide to glyphosate resistant palmer amaranth from Brazil.

Palavras-chave: mechanism of action, accessions, biotype, growth stage