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MECANISMOS DE RESISTENCIA DE PAJA RUGOSA (*Ischaemum rugosum* Salisb.) AL  
HERBICIDA BISPIRIBAC-SODIO EN EL CULTIVO DE ARROZ

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### Abstract

Wrinklegrass (*Ischaemum rugosum* Salisb), is a weed very difficult to control in Venezuelan rice fields. The purpose of this study was to assess the bispyribac - sodium mechanisms of resistance in accessions of *I. rugosum* and its pattern of cross - resistance with others ALS - inhibiting herbicides. Three experiments were established : (1) Bioassays on synergism between bispyribac - sodium and malathion, (2) ALS activity and (3) Cross - resistance patterns bioassays. The first experiment corresponded to dose response bioassays, using the resistant (R ) accessions: IR90G, IR269P and IR301CO, exposed to increasing doses of bispyribac - sodium alone and 1000 g·ha<sup>-1</sup> a. i. of malathion applied 24 hours before (0; 5; 10; 20; 40; 80; 160 and 320 g·ha<sup>-1</sup> a. i. ) and the susceptible (S) accession IR143G (0; 0.312; 0.625; 1.25; 2.5; 5; 10 and 20 g·ha<sup>-1</sup> a. i. ). In the second experiment, plant tissue extracts from both R and S accessions were incubated with concentrations of 0, 1, 10, 100, and 1000 nM of bispyribac sodium, and in the third one were applied the recommended dosages indicated in the labels of the following herbicides; bispyribac - sodium (PTB), imazethapyr + imazapyr (IMI); nicosulfuron (SU) and penoxsulam (TP) at 40; 154; 30 and 60 g·ha<sup>-1</sup> a. i. , respectively. The results showed that the IR269P accession has two bispyribac sodium resistance mechanisms; by the alteration of the herbicide active site and a mechanism outside the site of action, a metabolic degradation mediated by the enzyme P450. It was determined that the bispyribac - sodium resistance displayed by the accessions IR90G and IR301CO is due to the alteration of the site of action of ALS.

### Keywords

ALS inhibitor, enzymatic activity, malathion, *Oryza sativa*, pyrimidinylthiobenzoate.

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