

## FIRST DETECTION OF TRP-2027-CYS MUTATION CONFERRING CROSS-RESISTANCE TO ACETYL-COA CARBOXYLASE-INHIBITING IN BARNYARDGRASS

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**Destaque:** Trp-2027-Cys mutation was the main mechanism of resistance in *Echinochloa crus-galli*, population of Tubarão, SC, Brazil.

**Resumo:** An *Echinochloa crus-galli* population collected in rice field of Tubarão (Santa Catarina State, Brazil) had the cross-resistance to ACCase-inhibitors confirmed in role plant assay in F1 and F2 generations. However, the mechanism that confers resistance to ACCase-inhibitors in this population is still unknown. The objective of this research was to detect the mechanism that conferring cross-resistance to ACCase-inhibitors in an *E. crus-galli* population of Tubarão, SC. Two assays were carried out in greenhouse at Universidade do Estado de Santa Catarina (CAV/UDESC). The first aimed to evaluate mediated by cytochrom P450 is not the cross-resistance, for that an assay was carried out in factorial scheme 2 x 8, the first factor was two barnyardgrass population (resistant and susceptible) and the second factor were eight treatments (check no treated, malathion, cyhalofop-p-butyl, quizalofop-p-ethyl, profoxydim, malathion + cyhalofop-p-butyl, malathion + quizalofop-p-ethyl and malathion + profoxydim). The result of this study showed that herbicide detoxification mediated by cytochrome P450 was no the mechanism related to resistance. So, a second study was carried out to assessed the contribution to target site mechanism in the resistance by sequencing of the carboxyl-transferase domain of the ACCase enzyme. For this, leaf fragments of two barnyardgrass population were collected, DNA was extracted, Polymerase Chain Reaction was fulfilled and the samples were sequenced. A target site resistance was detected in *E. crus-galli* population of the Tubarão, SC, with one-point mutation Trp-2027-Cys. This was the first detection of Trp-2027-Cys mutation conferring cross-resistance to Acetyl-CoA carboxylase-inhibiting in barnyardgrass. The target site resistance mechanism conferred high-level of resistance to cyhalofop-p-butyl and quizalofop-p-ethyl (aryloxyphenoxy-propionate) and low-level of resistance to profoxydim (cyclohexanedione).

**Palavras-chave:** cytochrom P450; *Echinochloa crus-galli*; paddy rice; target site resistance

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