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Determination of methionine in transgenic soybeans exposed to glyphosate

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As the enzyme EPSPS (5-enolpyruvyl-shikimate-3-phosphate synthase) has been substituted in transgenic soya crops these do not have the same efficiency in the catalyzing of the shikimic acid route. This may result in the plant's inefficient production of some amino acids such as methionine. Thus, the presence of glyphosate in the transgenic soybean plant may restrict the manufacture of this amino acid and the effects can be cited: synthesis of IAA and other plant hormones, chlorophyll synthesis, phytoalexins and lignin synthesis, protein synthesis, photosynthesis, Respiration, perspiration, membrane permeability, and more. Therefore, the work had as objective to verify the concentrations of methionine in glyphosate tolerant soybean cultivar. For this, a field experiment was carried out in a randomized complete block design with 6 treatments and 4 replicates with the genetically modified BRS *Valiosa* RR. Glyphosate treatments were applied once and without mixing (T1 = 1.5, T2 = 2.0 L.ha⁻¹ of the pc) and sequentially (T3 = 1.5 / 1.5, T4 = 2.0 / 1.5 and T5 = 2.0 / 1.5 / 1.5 L.ha⁻¹ of the pc) and T6 = control, i.e. without application of glyphosate. For the quantitative determination of methionine, reverse phase HPLC was used after derivatization with o-phthaldehyde (OPA) on Spherisorb ODS-2 (C18) column. OPA derivatives were detected by fluorescence. The obtained data were submitted to analysis of variance and F test of the statistical program ASSISTAT version 7.7 beta. For the significant analyzes, we performed the comparison between means by the Tukey test at 5% of probability. The obtained data (nMol / ml) were: T1 = 127.9; T2 = 107.6; T3 = 79.6; T4 = 79.8; T5 = 118.3 and T6 = 111.5. Comparing the averages between methionine levels in transgenic soybean exposed and not exposed to glyphosate, it was verified that there was no significant difference between them by the Tukey test at 5% probability.