

**INTERACTION OF POTASSIUM AND ALUMINIUM ON THE EXUDATION OF ORGANIC ACIDS BY SORGHUM. G.V.E.PITTA<sup>1</sup>, V.C.BALIGAR<sup>2</sup> and J.FOSTER<sup>2,1</sup>**

National Maize and Sorghum Research Center, CNPMS/EMBRAPA, Sete Lagoas, Minas Gerais, Brazil; <sup>2</sup> USDA/ARS/ASWCRL, Beckley, West Virginia, USA.

Two sorghum [*Sorghum bicolor* (L.) Moench] genotypes, Al-Tolerant, SC 283 and Al-Sensitive, Martin were grown in nutrient solution in a controlled environmental chamber. Combined K (38, 114 and 228  $\mu\text{M}$ ) and Al (0, 111 and 222  $\mu\text{M}$ ) treatments were imposed on five-day old seedlings and the experimental units (harvest) were terminated at 15m, 30m, 1h, 3h, 6h and 24 h. Nutrient solutions were collected at each time period and analysed for pH, organic acids by HPLC and elements by ICP. Transaconitic acid (TAC) was the first acid to be exuded by roots, after 15m harvest, and its amount released was higher in Al-S than in Al-T, in all Al x K treatments. With time, both genotypes exuded tartaric (TAR) and malic (MAL) acids. In Al-S genotype, increasing [K] increased exudation of these three acids, and it appears that they may act as Al-detoxifiers. In Al-T genotype, TAC was formed preferentially over TAR and MAL. A definite relationship seems to exist between K ions and exudation of organic acids. Irrespective to Al concentrations, Al-T genotype markedly depleted K, however, K depletion by Al-S genotype was much lower at higher [K]. The exudation of these organic acids appeared to be independent of the pH of solution, and their concentration ratios did not show a clear pattern, but a time-dependent process was observed.