

SCREENING MAIZE AND SORGHUM GENOTYPES FOR VARIATIONS IN ROOT PROTEINS ASSOCIATED WITH RESPONSE TO TOXIC ALUMINUM. G. M. A. Cançado^{1*}, F. T. Carvalho², R. E. Schaffert³, S. N. Parentoni³, E. Paiva³ and M. A. Lopes³, ¹Mestrando UFV, Universidade Federal de Viçosa, Viçosa (MG), Brasil, ²Bolsista CNPq, C.P. 151, Sete Lagoas (MG), Brazil, ³ Pesquisadores CNPMS/EMBRAPA, C.P. 151, Sete Lagoas (MG), Brazil.

Toxic level of aluminum is one of the major problems affecting agriculture in several regions of the world. In Central Brazil, large areas under savana-like vegetations, know as "Cerrado", show severe problems of nutrients availability associated with high levels of toxic aluminum, especially in the layers below 20-25 cm. Although technology for elimination of soil acidity is available, it is difficult to incorporate lime beyond the first 20-25 cm of soil. Maize and sorghum crops can be successfully cultivated in lime treated, fertilized cerrado soils with regular rains or irrigation. However, short periods of drought may force the plants to grow deeper roots in the search of water into layers not neutralized by liming. Genotypes not adapted to this condition may be severely injured, due to impairment of essential root functions. Therefore, it is important to develop cultivars capable of withstanding high levels of aluminum in the subsoil. The National Maize and Sorghum Research Center, CNPMS/EMBRAPA, has been developing breeding programs aimed at selection of maize and sorghum cultivars more adapted to cerrado areas, and many populations, inbred lines and hybrids with excellent levels of tolerance are already available. One of the major problems to increase efficiency of selection, manipulation and transference of aluminum tolerance to elite maize and sorghum cultivars is the lack of understanding on the mechanisms controlling this trait. We present the results of screening maize and sorghum genotypes for variations in the root protein profile which can be associated with response to toxic levels of aluminum. Tolerant and sensitive maize cultivars, as diallel crosses between tolerant and sensitive sorghum lines were grown in nutrient solutions containing high levels of aluminum, and root proteins were extracted and evaluated by SDS-PAGE. Variations in root protein profiles have been found, which open the possibility of more detailed studies on mechanisms of tolerance and development of new tools to be used in breeding programs.