

SOIL ACIDITY EFFECTS ON NUTRIENT USE EFFICIENCY IN EXOTIC MAIZE GENOTYPES V.C. Baligar¹, G.V.E. Pitta^{2*}, E.E.G. Gama², R.E. Schaffert², A.F. De C. Bahia Filho², and R.B. Clark¹. ¹USDA-ARS-ASWCR Lab, Beckley, WV 25802-0867 USA and ²CNPMS-EMBRAPA, Sete Lagoas, MG 35701-970, Brazil.

Maize (*Zea mays* L.) is the third most important cereal grown in the world. In South and Central America, maize is mostly grown on acidic soils. On these soils, yields are limited by deficient levels of P, Ca, and Mg, and toxic levels of Al and Mn. A greenhouse study was conducted with 22 maize genotypes originating from Africa, Europe, and North, Central, and South America on acid, dark red latosol (Typic Haplustox) at 2%, 41%, and 64% Al saturation. With increasing Al levels, the nutrient efficiency ratios (NER) for K, Ca, and Mg increased, and NER for P and Zn tended to reduce. Overall, Al-tolerant genotypes produced higher shoot and root weight and had higher NER for P, Ca, Mg, Zn, and Fe. Genotypes used in this study showed intraspecific genetic diversity for growth and NER of essential nutrients. It was concluded that selection of acid-soil-tolerant genotypes and further breeding of acid-soil-tolerant maize cultivars are feasible.