

IDENTIFICATION, UTILIZATION, AND ECONOMIC IMPACT OF MAIZE GERMPLASM TOLERANT TO LOW LEVELS OF PHOSPHORUS AND TOXIC LEVELS OF EXCHANGEABLE ALUMINUM IN BRAZILIAN SOILS. Ricardo Magnavaca^{1*}, A.F.C.Bahia F^{o2}, ¹Mitla Pesquisa Agrícola Ltda. CP. 800, 38409-970 Uberlândia, MG, Brazil, ²EMBRAPA/CNPMS, CP 151, 35701-970 Sete Lagoas, MG, Brazil.

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A historical review of research and development related to the identification, utilization and economic impact of maize germplasm adapted to acid soils at EMBRAPA/CNPMS is presented. Methods to identify tolerant germplasm and to select segregating materials, through field experiments in acid and fertile soils and screening in nutrient solution are discussed. Results of research including inheritance for aluminum tolerance and development of high yielding tolerant hybrids are presented. Also, results of phosphorus efficiency related to root development, internal accumulation of P and kinetics of absorption of P and N are discussed. The experience accumulated in this research program has shown that adaptation to acid soils can be associated, in the same genotype with high yield potential and yield stability, as a result of tolerance to Al toxicity and improved P use efficiency. This program has generated several commercial cultivars which have been successfully utilized in a large area of Brazil. The knowledge and experimental germplasm generated are also valuable resources which are being used to support basic studies of mechanisms of tolerance to aluminum and nutrient use efficiency. A better understanding of these mechanisms will help the development of novel strategies for selection and improved cultivars in the future.