

Genetic diversity of turmeric germplasm (*Curcuma longa*; Zingiberaceae) identified by microsatellite markers

M.S. Sigris¹, J.B. Pinheiro¹, J.A. Azevedo Filho² and M.I. Zucchi³

¹Departamento de Genética, Universidade de São Paulo (ESALQ), Piracicaba, SP, Brasil

²Polo APTA, Regional Leste Paulista, Monte Alegre do Sul, SP, Brasil

³Agência Paulista de Tecnologia dos Agronegócios, Piracicaba, SP, Brasil

Corresponding author: M.I. Zucchi

E-mail: mizucchi@apta.sp.gov.br

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ABSTRACT. Turmeric (*Curcuma longa*) is a triploid, vegetatively propagated crop introduced early during the colonization of Brazil. Turmeric rhizomes are ground into a powder used as a natural dye in the food industry, although recent research suggests a greater potential for the development of drugs and cosmetics. In Brazil, little is known about the genetic variability available for crop improvement. We examined the genetic diversity among turmeric accessions from a Brazilian germplasm collection comprising 39 accessions collected from the States of Goiás, Mato Grosso do Sul, Minas Gerais, São Paulo, and Pará. For comparison, 18 additional genotypes were analyzed, including samples from India and Puerto Rico. Total DNA was extracted from lyophilized leaf tissue and genetic analysis was performed using 17 microsatellite markers (single-sequence repeats). Shannon-Weiner indexes ranged from 0.017 (Minas Gerais) to 0.316 (São Paulo). Analyses of molecular variance (AMOVA) demonstrated

major differences between countries (63.4%) and that most of the genetic diversity in Brazil is found within states (75.3%). Genotypes from São Paulo State were the most divergent and potentially useful for crop improvement. Structure analysis indicated two main groups of accessions. These results can help target future collecting efforts for introduction of new materials needed to develop more productive and better adapted cultivars.

Key words: *Curcuma longa* L.; Natural dye; Genetic resources; Genetic divergence; SSR markers