

**Genetic diversity and relation between Common Bean Angular Leaf Spot fungus isolates from Africa and South America: genetic improvement implications**

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In the present study, the genetic diversity of *P. griseola* isolates, 33 from Africa and 52 from South America was compared using three markers of variability: virulence, isozymes and RAPDs. The three markers separated African and South American isolates in two different groups: Andean and Mesoamerican (figure 1). Both groups presented contrasting patterns of virulence phenotype and isozyme and RAPD electrophoretic profiles. The isolates from Africa and South America that formed the Andean group based on virulence also formed the Andean group obtained with isozymes and RAPDs. This consistence was also observed with the Mesoamerican group. Among African isolates, 25 were classified as Andean and 8 as Mesoamerican while in South America, 19 isolates were Andean and 33 Mesoamerican. Andean isolates were only pathogenic on the Andean differential cultivars. On the contrary, Mesoamerican isolates were pathogenic on both Andean and Mesoamerican cultivars but they were more aggressive on those cultivars with a Mesoamerican origin. However 9 African isolates classified as Andean were able to attack up to three Mesoamerican differential cultivars.

Morphological, biochemical and molecular analysis support the existence of two Common Bean groups geographically separated: the Andean group and the Mesoamerican group (1). Similarly two different groups of *P. griseola* isolates were found. Andean isolates, predominant in Ecuador, Colombia and Africa were collected from large-seeded bean cultivars. In contrast, Mesoamerican isolates, predominant in Central America and Mexico were collected from small-seeded cultivars. Present results suggest that isolates of the Andean group originated and evolved in the Andean region along with Andean bean cultivars and Mesoamerican isolates did the same along with Mesoamerican bean cultivars (2). These results also demonstrate that African isolates are very similar genetically to South American isolates. These two groups of *P. griseola* isolates are useful for selection of resistant sources and subsequent obtention of Common Bean cultivars with lasting resistance to Angular Leaf Spot.

**References:**

1. Gepts, P., and D.G. Debouck. 1991. Origin, domestication, and evolution of the Common bean, *Phaseolus vulgaris*. Pags 7-53. In: Common Beans: Research for Crop Improvement. O. Voysest and A. van Schoonhoven, eds. CAB, ORSTON, UK.
2. Guzmán, P., Gilberston, R.L., Nodari, R., Johnson, W.C., Temple, S.R., Mandala, D., Mkandawire, A.B.C. and P. Gepts. 1995. Characterization of variability in the fungus *Phaeoisariopsis griseola* suggests coevolution with the Common Bean (*Phaseolus vulgaris*). *Phytopathology* 85: 600-607.

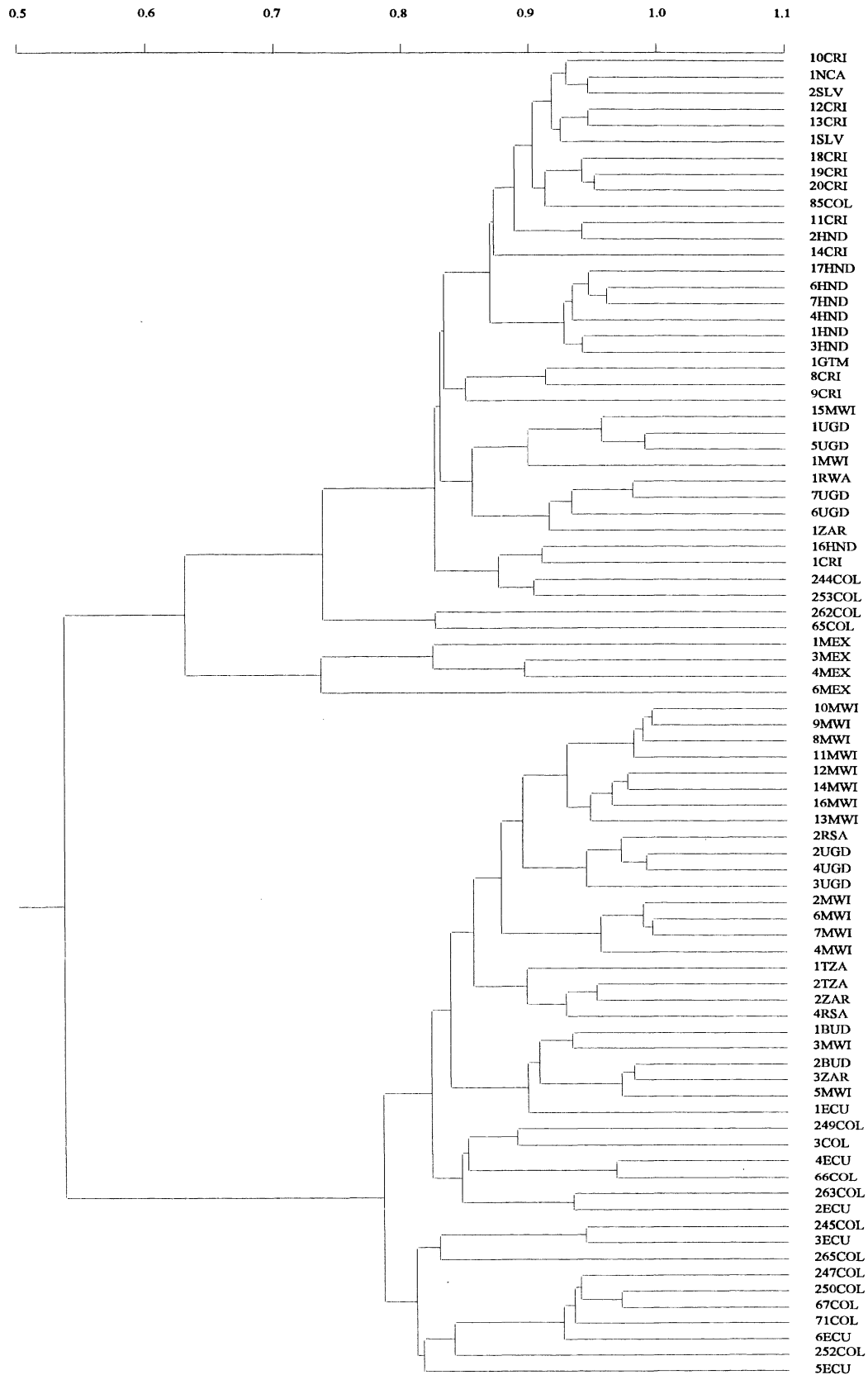


Fig. 1. RAPD data dendrogram of *P. griseola* isolates from South America and Africa.