

GENETIC DISTANCE OF IMPROVED CULTIVARS AND LANDRACES OF COMMON BEANS (*Phaseolus vulgaris* L.) FROM BRAZIL AND WILD BEANS FROM MESEOAMERICAN AND ANDEAN REGIONS

Heloisa Torres da Silva¹: Pedro Antônio Arraes Pereira¹: Catalina Romero Lopes²

¹ Embrapa Arroz e Feijão, Caixa Postal 179, 75375-000 Santo Antônio de Goiás, GO.

² Universidade Estadual Paulista (UNESP), Departamento de Genética, 18617-000 Botucatu, SP.

The majority of crosses involving common beans, have been concentrated within the *Phaseolus vulgaris* species. Indeed, bean breeders extensively utilize crosses within the cultivated bean gene pool, although some important characteristics, such as disease resistance, have been found in other related bean species. Recently, big emphasis has been put on the utilization of wild bean germplasm. Morphological, biochemical and molecular markers have been used in association with multivariate techniques, in order to evaluate the genetic diversity for many plant species.

The present study has as objective establishing the genetic distance among Brazilian improved cultivars and landraces and wild beans from Mesoamerican and Andean origin, using morphological and agronomic traits. There were 29 accessions of landraces and 25 of improved cultivars, chosen from the commercial groups Preto (black grains), Mulatinho (beige grains), Vermelho/Roxo (red and purple grains) and Manteigão (grain mixture of big size, with various colors), from various regions throughout the country. The 36 accessions of wild beans originated from the Mesoamerican and Andean regions and were chosen according altitude of adaptation (710, 1040, 1420, 1770, 2300 and 2740 m). The following morphological traits were evaluated: leaves and pod (length and width), flower (length, width and number of nervures of the bracteoles of the calyx), seed number/pod and weight of 100 seeds. The wild and cultivated accessions were grouped using the Average Linkage method and the Euclidean Average Distance was used as measurement of dissimilarity.

The dendrogram shows that the cultivated and wild accessions separated in 5 groups (Figure 1). The largest was Group 1, consisting in landraces and improved cultivars, mainly of black brown and red/purple colors. This group had only two wild beans, n° 97 and n° 99, the last one being very distant from the other accessions. Group 2 consisted exclusively of wild bean accessions, both from Mesoamerican and Andean origin, with small distances between them. Group 3 was formed by two landraces, one with red/purple (n° 19) and other with beige (n° 13) grain color, showing great average distances between them. Group 4 was formed by 18 cultivated beans, 50% being improved cultivars and 50% landraces, possessing mainly type Manteigão grains and red/purple grain color. Group 5 was formed only by one improved cultivar with white grain color and type Manteigão, (n° 53), this accession being the most divergent genotype in the sample.

The grouping method indicated that wild beans diverge widely from improved cultivars and landrace cultivated in Brazil, although the average distance among the accessions within the same group indicates a low genetic variability for the traits considered in the study.

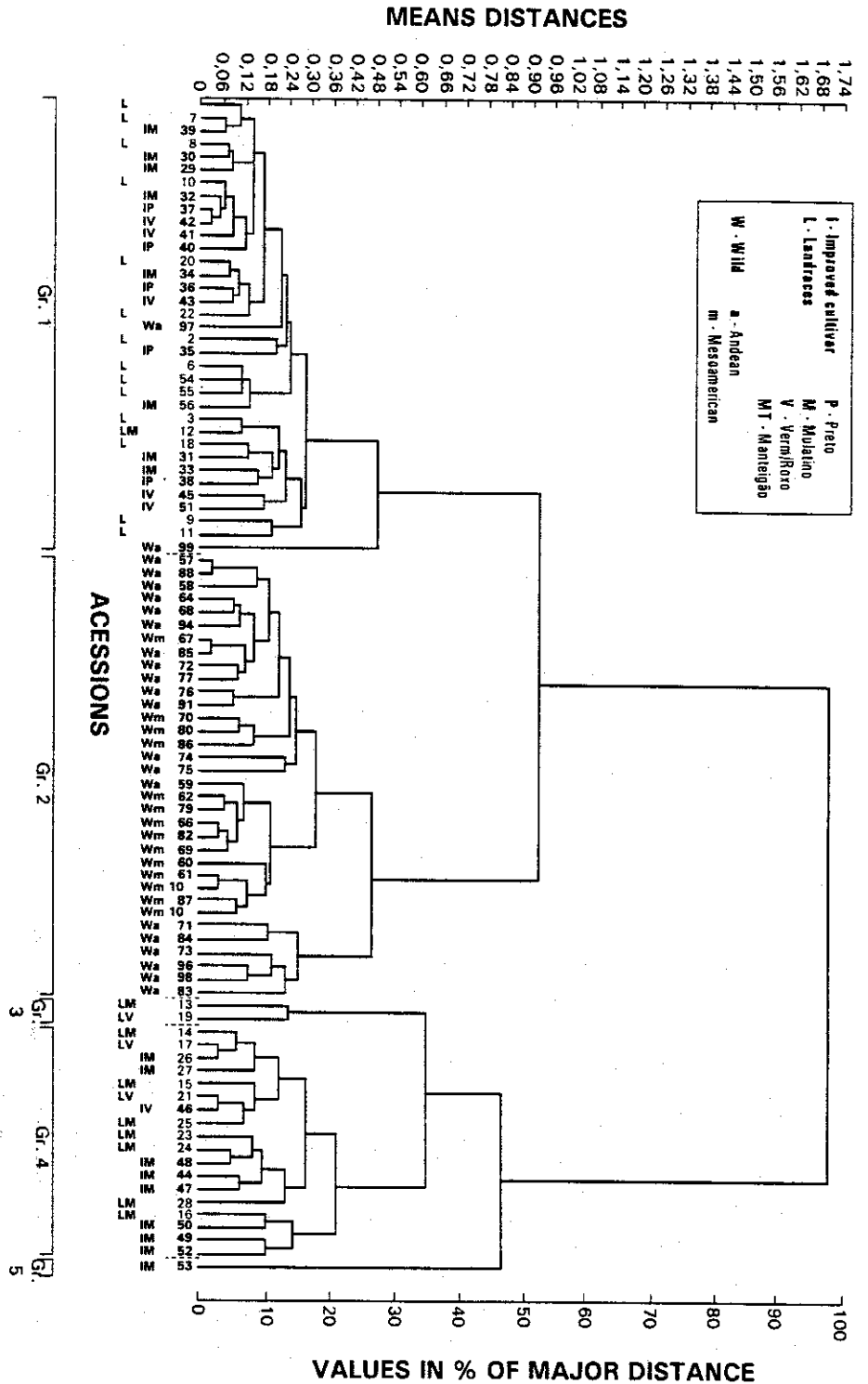


FIGURE 1. Dendrogram of means distances and bean germplasm groups obtained by the Average Linkage method and the Euclidian Average Distance.