

PHENOTYPIC STRATIFICATION OF TIMOR HYBRID COFFEE ACCESSIONS FROM THE MINAS GERAIS GERMPLASM COLLECTION

Juliana C. R. Abrahão^{1}, Deila M. S. Botelho¹, Cesar E. Botelho¹, Antônio C. B. de Oliveira², Eveline T. Caixeta², Mário L. V. Resende³, Roberth J. D. Ortiz³, Dênia P. Almeida¹, Leonor G. Guimarães⁴, Antônio A. Pereira¹*

¹Epamig Sul/ UFLA, Lavras, MG, Brazil; ²Embrapa Café, Viçosa, MG, Brazil ³UFLA, Dep.Plant Pathology, Lavras, MG, Brazil; ⁴CIFC/ISA, University of Lisbon, Portugal. *Corresponding author:julianacosta@epamig.br

Introduction

- The conservation and characterization of germplasm is a fundamental coffee breeding.
- Timor Hybrid (*Coffea arabica* x *Coffea canephora*) is valued for disease resistance and phenotypic variability.
- Morphological characterization allows the identification of superior genotypes and promotes the conservation of genetic variability.

Materials/Methods

- 151 Timor hybrids accessions (MG 266 to MG 417) evaluated in Minas Gerais Germplasm Bank.
- Morphological characteristics evaluated: plant height, canopy diameter and fruit color
- Data analysed using PCA and k-means clustering (k=3). Key genotypes as closest to cluster centroid.
- Software: R (FactoMineR, Factoextra, cluster).

Results/Discussion

- Three clusters identified:
 - Cluster 0 (MG 324): intermediate size and fruit color variability (n= 49).
 - Cluster 1 (MG 340): compact architecture, red fruits (n= 35).
 - Cluster 2 (MG 359): tall plants (n=68).
- Stratification supports crosses between contrasting morphotypes increasing the variability and efficiency of selection.

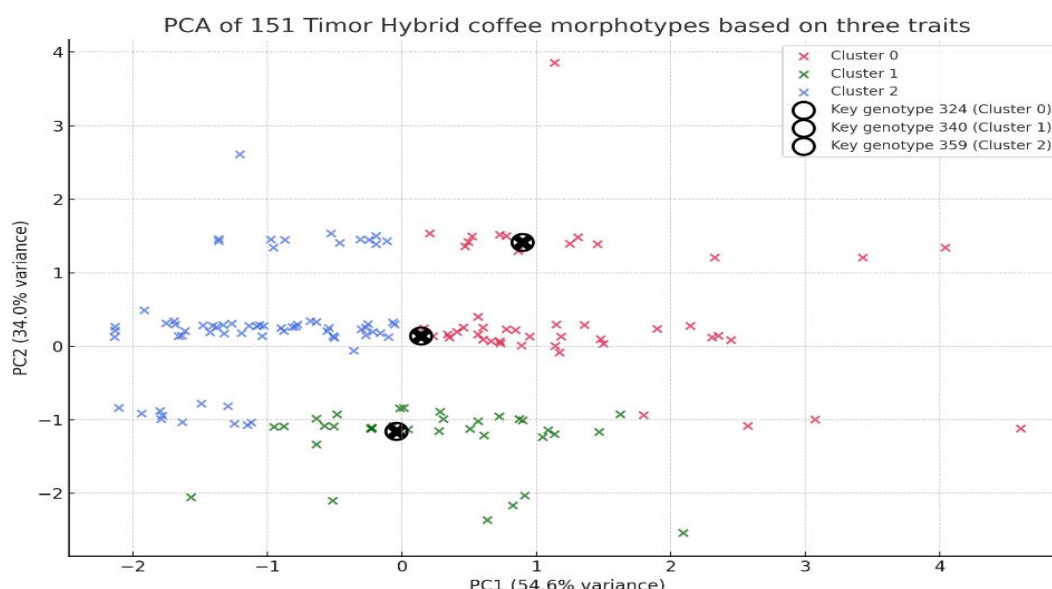


Figure 1. Principal Component Analysis (PCA) based on three morphological characteristics (plant height, canopy diameter, and fruit color) for 151 Timor hybrid accessions from the Minas Gerais coffee germplasm collection. The points represent accessions grouped into three distinct morphological clusters defined by K-means (k = 3). The first two principal components together explain 88.6% of the total variance (PC1 = 54.64%, PC2 = 33.98%). Black stars indicate the key genotypes closest to the centroid of each group: MG 324 (Cluster 0), MG 340 (Cluster 1), and MG 359 (Cluster 2).

Conclusion/Perspectives

- Clustering based on three morphological characteristics allowed us to identify distinct phenotypic patterns among the Timor Hybrid accessions in the Minas Gerais coffee germplasm collection.
- Identified ideotypes can be used for targeted breeding strategies.