



**Figure S1** - Criteria for choosing the optimal number of clusters ( $K$ ) for TESS and DAPC, and comparison of individuals' assignments obtained with DAPC optimized with a-score and TESS. a) Deviance information criterion (DIC) averaged over ten simulations (vertical black lines represent standard deviations) of  $K_{max}$  varying from 2 to 20 was used to select  $K_{max} = 14$  in TESS. b)  $K$ -means value across the number of clusters (varying from 1 to 20) indicate that DAPC may be performed with 11 *a priori* clusters. c) Although DIC values indicated  $K_{max} = 14$ , the number of general groups obtained with TESS was 10 (the other four clusters are represented in the last individual of the variety *Aruari* grown on Oxisols). Acronyms of the varieties are presented in Table 1 of the main text. d) Individuals' assignments obtained for the DAPC optimized with a-score was performed retaining five principal components.