INTRODUCTION

Sweetpotato (Ipomoea batatas (L.) Lam.) is a hexaploid species (2n=6x=90) with high levels of heterozygosity; it is an important tropical American crop belonging to the family Convolvulaceae (Austin and Huaman, 1996), which has wide variations in botanical characteristics and are readily distinguished on the basis of morphological traits, yield potential, size, shape, flesh and skin colour of roots, as well as sizes, colours and shapes of leaves and branches (Acheampong, 2012; Zhang et al., 2000). Morphological characterization has been used as a first step in assessment plant diversity for both plant genetic resources conservation and utilization (Mwanga et al., 2017). In this study, new phenomic approaches were used to increase the efficiency discriminating different phenotypes not detected by conventional morphological descriptors.

MATERIAL AND METHODS

Seventy accessions of sweet potato collected in north coast of Colombia were characterized by forty-nine parameters from conventional sweet potato descriptor. Conventional morphological descriptors.

RESULTS AND DISCUSSION

Constraints of phenotypical diversity estimation by morphological characters from sweet potato descriptor

Two main clusters were found, these two groups were differentiated mainly due to tuberous root formation (Fig. 1).

New approaches introduced for morphological characterization

Potential of morphometric and colorimetric evaluation to dissect phenotypic polymorphisms

Field description, RGB imaging-colorimetry and both joined-databases were analysed using Gower general similarity coefficient for clustering in R.

Conclusions

Conventional description using categorical parameters faced a constraint dissecting sweet potato diversity in terms of plant pigmentation, organ shapes and efficiency of vegetative growth, the inclusion of color pixel values or indexes, morphometric parameters and coverage area estimated by morphometric-colorimetric tools improved the phenotypic characterization in sweet potato and allowed to found differences that were not previously detected.