

Abstract

Pumpkin is an emerging important indigenous vegetable in Kenya, although its sale and consumption remain low, while distribution and diversity are systematically studied and reported to a limited extent. The present study sought to provide information that could spur enhanced conservation, preservation and production of preferred multi-purpose pumpkin accessions among smallholder farmers in Kenya. A survey done in 2012 collected 155 accessions, belonging to *Cucurbita moschata* (Lam.) Poir., which comprised 70 and 85 from Kakamega and Nyeri regions, respectively. The accessions were grown in the Chuka University farm and used for morphological characterization. All 26 morphological characters evaluated were significantly ($P=0.000$) different. Principal Component Analysis (PCA) reduced them to 9 Principal Components (PCs) that accounted for 82.4% total variation. The first PCs explained 50.5% variation, comprising 27.7% PC 1, 14.4% PC 2 and 8.8% PC 3. The PCA differentiated accessions by plant growth, productivity, maturity, fruit yield, seed yield, and quality factors. The high phenotypic variation explained by the PCs indicates that the discriminating traits could be used as good genitors and priority indices in pumpkin germplasm screening, selection and improvement. Total fruit weight was 0.3 kg in NY-155 and 19.3 kg in KK-65. Cluster analysis classified the accessions into four groups, with 63, 29, 25 and 6 accessions in clusters one, two, three and four, respectively. A close relationship among the variegated accessions was observed. The green-leafed accessions were grouped in cluster three. The best yielding accessions KK-65 and KK-54 were clustered separately. The sparse distribution of the green-leafed accessions was attributed to crossing-breeding with the variegated accessions in the farms. The present study showed that phenotypic characterization can be used as an inexpensive means for distinguishing related pumpkin species. Since naturalised pumpkin germplasm is slowly becoming endangered in many farming systems and the current pumpkin germplasm is highly diverse, there is need to conserve it to serve as resources for future pumpkin improvement. Kenyan farmers need to be sensitised on production and conservation of pumpkin. Interventions to strengthen informal on-farm conservation should be adopted and promoted to ensure germplasm availability in future.