The Embrapa Cassava & Fruits develops pineapple cultivars resistant to Fusariosis with equal or better characteristics of Pérola and Smooth Cayenne varieties. The aim of this study was to evaluate the physicochemical characteristics of nine genotypes of pineapple, being five cultivars (Gold, Pérola, Smooth Cayenne, Vitoria and Imperial) and four new hybrids (SC x PRI-21, SC 48 x PRI-02, PE x SC-73 e PA x PE-01). Physicochemical characterization included: evaluation of color parameters L *, C * and h * (CIELAB system, illuminant D65), acidity (% citric acid), soluble solids (º Brix), pH, ash (%), humidity (%), ratio, total carotenoids (TC in mg g⁻¹), reducing sugars (glucose %), total sugars (glucose %) and vitamin C (mg 100g⁻¹). The data were submitted to multivariate analysis of grouping, using the method UPGA and Principal Component Analysis (PCA) from the correlation matrix, using the program Statistica. The cluster analysis showed the formation of three different groups. The first was formed by the Gold variety, the second was formed by the Imperial variety and the third was formed by the remaining varieties. The results were confirmed by PCA, where the first two components explained 78.34 % of the data variation. The hybrids SC x PRI-21, SC 48 x PRI-02, PA x PE-01, PE x SC-73 were grouped with Smooth Cayenne and Pérola, and therefore represent options for their replacement. The results will contribute to the indication of promising genotypes for national and international markets.