

## ABSTRACT

The aim of this study was to investigate morphological and functional properties of six varieties and four potato clones grown in Rwanda and their potential utilization in food products. The experiment was arranged in Randomized Complete Block Design (RCBD) with three replications. The research was conducted in Busogo farm in the year 2016/17. Morphological and phytochemical composition of potatoes were analyzed. Collected data were subjected to Analysis of variance (ANOVA) using SAS version 9.2. Means separation was done using Tukey's test at 5% level of significance. The skin colours included red, white, yellow, pink and purple, while the flesh was yellow and white. Shapes were oval, oblong and round. They had shallow and medium eyes with deep eyes for Kinigi and CIP392617.54. Number of eyes were 6-12. All cultivars had potato size > 40 mm except CIP399075.22 with 90% of <40mm. Phytochemicals on fresh weight basis (FWB) were 17.80-21.52 mg/100g for total phenols, 0.24-1.46 mg/100g for total anthocyanins, 0.05- 0.19mg/100g for total carotenoids, 5.31-26.60 mg/100g for vitamin C. Orthogonal contrast revealed that varieties and clones were statistically significantly different at ( $P < 0.05$ ). On average varieties had higher phenols and higher anthocyanins, while clones were higher in carotenoids and vitamin C. Skin and flesh colours were associated with phytochemicals which are good for health. Potato cultivars in this study can be used for manufacturing of different potato products due to morphological characteristics required for each product and they are source of phytonutrients with antioxidant properties.