

Abstract

Common bean (*Phaseolus Vulgaris* L.) is a food-secure and nutritious crop globally. It plays a big dietary role; supplying proteins, carbohydrates, essential elements and vitamins to both rural and urban households. However, its cook ability is constrained by hardness which influences cooking time and cost among the rural poor households. An experiment was carried out in Seed laboratory of Kenya Agricultural and Livestock Research Institute (KALRO)-Katumani, Machakos, Kenya to investigate the effects of physical properties on cooking time of different common bean varieties (KATX69, GLPX92, WAIRIMU, EMBEAN118, KATX56, EMBEAN14, KATB9, GLP2, KATB1, KATRAM, and KATSW-13) in a complete randomized design with three replications. Data was collected on differences of physical properties of bean varieties, effects of physical properties of bean on cooking time, and differences in hardness of different bean varieties. The data collected was subjected to analysis of variance (ANOVA) using SAS (version 9.3.3) to detect differences between treatments. The results of short rains (season one), showed that Embean118 recorded significantly ($p < 0.05$) the highest length while Katsw-13 the lowest. The width didn't have significant difference among the varieties. The thickness of Embean118 was highest while Katsw-13 had the lowest. In long rains (season two), GLP2 and katram had the highest and lowest length respectively. The width of Katx56 was highest and Embean14 the lowest. Katsw-13 had the highest thickness while Katram had the lowest. In terms of hardness, KATX69 had the hardest testa in season one, while KAT SW-13 had the softest seed coat in the same season. In season two, KATRAM had the hardest seed coat while Embean 118 had the softest seed coat. Cooking time varied among the varieties where KATSW-13 and KAT B1 cooked significantly faster compared to other varieties in season one and two respectively. KATRAM took the significantly the longest time to cook in both seasons. The study recommends breeding of bean varieties with less permeable seed coat which will aid in their fast cooking as this would save cost on time and fuel.