



Changes in physical properties of black gram (*Vigna mungo*) during growth and development

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Abstract: Black gram is one of the important cereals as far as the nutritional status of people in Sri Lanka is concerned. The physical properties of black gram determine the ultimate yield during harvesting. Therefore, this work aimed to investigate the changes in the physical properties: true density, bulk density, porosity and sphericity, of black gram during growth and development. The physical properties: true density, bulk density, porosity and sphericity, of black gram were measured at seven days intervals till harvesting. Results revealed that the bulk density decreased with growing time (from $909.47 \pm 0.38 \text{ kg/m}^3$ to $537.34 \pm 1.23 \text{ kg/m}^3$); porosity increased with time from the pod formation to 14 days (from 11.2% to 69.2%) and decreased from 69.2% to 46.1% with time from 14 days of pod formation till 35 days; sphericity (from 0.8635 to 0.7862) decreased with time from 7 days of pod formation till 14 days and increased from 0.7862 to 0.8314 from 14 days of pod formation to 35 days; true density increased from 7 days of pod formation till 21 days (from $1022.99 \pm 0.48 \text{ kg/m}^3$ to $1251.07 \pm 1.51 \text{ kg/m}^3$) and decreased from $1251.07 \pm 1.51 \text{ kg/m}^3$ to $1002.39 \pm 3.37 \text{ kg/m}^3$ from 21 days to 35 days of pod formation. However, there were no significant differences in physical properties after pod formation. It can be concluded that the best harvesting time for black gram after formation of pods is 35 days. This knowledge will aid in the prevention of unwanted losses throughout the growth and development of black gram.

Keywords: Growth and development, Harvesting, Pod formation, Significant variance.