

## **C0085 EFFECTS OF PROCESSING CONDITIONS ON THE BULK DENSITY OF CASSAVA PELLETS.**

Cassava is a crop which tolerates drought, low fertility and also grown in an area with marginal soils or unfavorable climates. Cassava products can be classified into primary and secondary products. Primary products e.g. gari, fufu, starch, chips, pellets, and ethanol are obtained directly from raw cassava roots while secondary products are obtained from further processing of primary products. Cassava Pellets is one of the three basic cassava-based products traded internationally. It is processed from cassava tubers by peeling, washing, chipping, drying, milling into fine powder and finally conditioned into dough and extruded by extrusion process to produce pellets. Hence the need to study the effect of the processing conditions of cassava dough on the bulk density of cassava pellets.

In this study an experimental rig attached to a TESTOMETRIC Universal Testing Machine for the purpose of extrusion was used for the determination of the effect of the processing conditions namely speed of the machine, die diameter of the extrusion rig and moisture content of preparation of the dough on the bulk density of cassava pellet. The parameters considered were machine speeds of 1.5mm/min, 2.5mm/min, 3.5mm/min, and 4.5mm/min, die diameters of 6mm, 8mm, 10mm and 12mm, and cassava dough of moisture content levels 48.5%wb, 50.5%wb, 52.5%wb and 54.5%wb. The bulk density of the cassava dough was measured using a cylindrical container 300mm in diameter and 310mm high.

Result of the Statistical Analysis of Variance showed that the effects of all parameters and their interactions were significantly difference on the bulk density of cassava pellets at 5% level. Further test using Duncan's Multiple Range Test determined the effect of each of the parameters. Moisture content effects was seen in the moisture content 54.5%wb which had the highest mean value of bulk density while the moisture content 48.5%wb had the least mean value of bulk density. Moisture content level 50.5%wb and 52.5%wb were not significantly different from each other. Die diameter effects was also noted on the die diameter 8mm which had the highest mean value of bulk density followed by 6mm then 10mm and the least bulk density was at 12mm. Both die diameters 6mm and 8mm were not significantly different from each other at 5% level likewise die diameter 10mm and 12mm, were not significantly different from each other too. Speed of the machine effects was observed in the highest mean value of bulk density which was at speed level of 3.5mm/min and the next value by 2.5mm/min and then 1.5mm/min. The Lowest mean value of bulk density was at the highest speed level of 4.5mm/min. Mean values of bulk density, at speed levels 3.5mm/min, 2.5mm/min and 1.5mm/min, were not significantly different from each other at 5% level, Hence, Cassava dough of moisture content level of above 45.5%wb and below 55.5%wb can give quality cassava pellets.