

## Design and Testing of the AMDP Cassava Granulator

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### ABSTRACT

*A cassava granulator was designed and fabricated at the Agricultural Mechanization Development Program (AMDP), Institute of Agricultural Engineering, College of Engineering and Agro-industrial Engineering, U.P. Los Baños. The AMDP cassava granulator is composed of a hopper, rotating drum (granulating mechanism), grate, and discharge trough. The drum with four (4) sets of blades is attached to a pulley driven by a 559.5-W electric motor. The performance of the AMDP cassava granulator was determined at different drum rotational speed (602.03 rpm, 730.56 rpm, 908.91 rpm), and grate size (12.70 mm, 19.05 mm, 25.40 mm) using peeled cassava tubers. Performance was determined in terms of capacity (kg/hr), granule size less than 12.70 mm (%), and recovery (%).*

*Results showed that as the drum speed increased, capacity decreased, desired granule size (less than 12.70 mm) generally increased, and recovery increased. As the grate size increased, capacity and recovery also increased, but desired granules size decreased. The highest capacity of 1,005.39 kg/hr was achieved at drum speed of 620.03 rpm and grate size of 25.40 mm while the highest percentage of granules less than 12.70 mm was 91.79% achieved at grate size of 12.70 mm and drum speed of 730.56 rpm. The highest recovery of 90.08% was achieved at drum speed of 730.56 rpm with grate size of 25.40 mm.. The optimum values obtained from the generated predictor equations using Response Surface Method (RSM) were 908.91 rpm for drum speed, and 25.40-mm grate size. Therefore, only the pulley of the drum shall be changed to 203.20 mm to attain the optimum operating drum speed and grate size.*

*Keywords: cassava (Manihot esculenta L.), cassava granulator, granulator capacity*

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