Effect of mixing ratio and pelleting speed on physical and mechanical properties of biomass pellets from sugarcane trash

Nirattisak Khongthon, author

Abstrak

The definition of the physical and mechanical properties of sugarcane trash pellets were necessary for the design considerations relating to storage, handling and processing equipment. The mixing ratios of ground sugarcane trash:cassava starch:water content (1.0:0.25:0.85 and 1.0:0.25:1.40 by weight) and pelleting speeds (100, 120, 140, and 160 rpm) were considered to determine their effects on bulk density, true density, porosity, durability and compressive strength. The results show that the mixing ratio by weight of 1.0:0.25:0.85 and pelleting speed of 120 to 140 rpm were optimum for producing the sugarcane trash pellets. At the moisture content of 12.01% (wb), the bulk density, true density, durability and compressive strength of biomass pellets were in the range of 330.93 to 365.00 kg/m3, 860.38 to 918.43 kg/m3, 99.34 to 99.46 % and 5.15 to 6.43 MPa, respectively.