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## **INFLUENCE OF AIR FLOW RATES AND C/N RATIOS ON BIODRYING OF CASSAVA PEEL WASTE**

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### **Abstract**

Investigations were conducted on biodrying of cassava peel waste at different air flow rates and C/N ratios. Rice husk was used as bulking agent and activated sludge as amendment to adjust the C/N ratio. Three air flow rates (0.015; 0.030 and 0.045 m<sup>3</sup> h<sup>-1</sup> kg<sup>-1</sup>) were applied to each of three biodrying reactors containing cassava peel, activated sludge and rice husk mixture at three different initial feed ratios viz. 16:13:3, 17:12.5:2.5 and 18:11.7:2.3. These initial feed ratios resulted in C/N ratios of 23.7; 30.2 and 37.3. The results indicated that air flow rate of 0.030 m<sup>3</sup> h<sup>-1</sup> kg<sup>-1</sup> with C/N ratio of 30.2 produced the highest feedstock temperature of 66°C during biodrying and resulted in maximum moisture removal up to 50.65%. Under these operating conditions, the heating value of the biodried cassava peel, on wet weight basis, increased from the initial value of 3,995 kJ kg<sup>-1</sup> to the final value of 10,179 kJ kg<sup>-1</sup> which makes it suitable for use in production of refuse derived fuel. Biodrying can be an attractive waste pre-treatment option for recovery of carbon neutral green energy from agro-based industrial waste such as cassava peel.

*Key words:* agro-industrial waste, air flow rate, biodrying, cassava peel, C/N ratio

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