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**COEFFICIENT OF RESTITUTION OF SUGARCANE BILLETS  
MEASUREMENT USING AN INSTRUMENTED PENDULUM SYSTEM**

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**ABSTRACT** This research was conducted to measure the coefficient of restitution ( $e$ ) of sugarcane billets for use in a discrete element model. A pendulum system was developed and calibrated so that a completely controllable horizontal impact between two bodies was obtained and measurements of the coefficient of restitution and the corresponding impact velocity could be performed. Coefficient of restitution ( $e$ ) of billet–billet and billet–steel impacts were measured in two states of 1) wet and 2) dry surface with various impact velocities. Results showed that surface wetness decreased the values of the coefficient of restitution. In addition, because of the difference in the shape of the impact surfaces, the coefficient of restitution values of billet–steel impacts were less than that of billet–billet impacts.

**Keywords:** Coefficient of restitution, Pendulum system, Sugarcane billet