UTILIZATION OF CORN (*Zea mays*) RESIDUE AS RAW MATERIAL FOR PARTICLEBOARD PRODUCTION

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ABSTRACT

INGARAN, JELIE BITUIN & ALABAS, MARIFE M., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **May 2023, UTILIZATION OF CORN (*Zea mays*) RESIDUE AS RAW MATERIAL FOR PARTICLEBOARD PRODUCTION.**

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Particleboard is a composite panel product made of cellulose particles that are bonded together under heat and pressure with a synthetic resin or binder. The study was carried out to determine the potential of corn residue as raw material for particleboard production and the determination of its physical and mechanical properties.

The produced corn residue particleboard was tested using different corn residue ratio of 2 Corn Stalk:1 Sawdust, 1 Corn Stalk:1 Corn Husk:1 Sawdust, and 2 Corn Husk:1 Sawdust, all boards were subjected to cold-pressing method and did not underwent hot press technique. Boards produced have dimensions of 7.6 cm x 7.6 cm x 1.4 cm, and with a density of about 0.67 g/cc.

For the physical and mechanical properties of the boards, the 2 Corn Husk:1 Sawdust obtained the best particleboard ratio of having 1.30%, 14.75%, 0.69 g/cc and 8.71 MPa in thickness swelling, water absorption, density, and modulus of rupture tests, respectively. Thus, it is recommended for type 100 particleboard usage. In terms of mechanical evaluation, the particleboards can be investigated further to determine the modulus of elasticity, face and edge screw holding strength, and internal bond.

Keywords: particleboard; physical property; mechanical property; corn residue ratio

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