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IUFRO Division 5 Conference
***5.05A Using Plantation and small-
diameter timber in composites***

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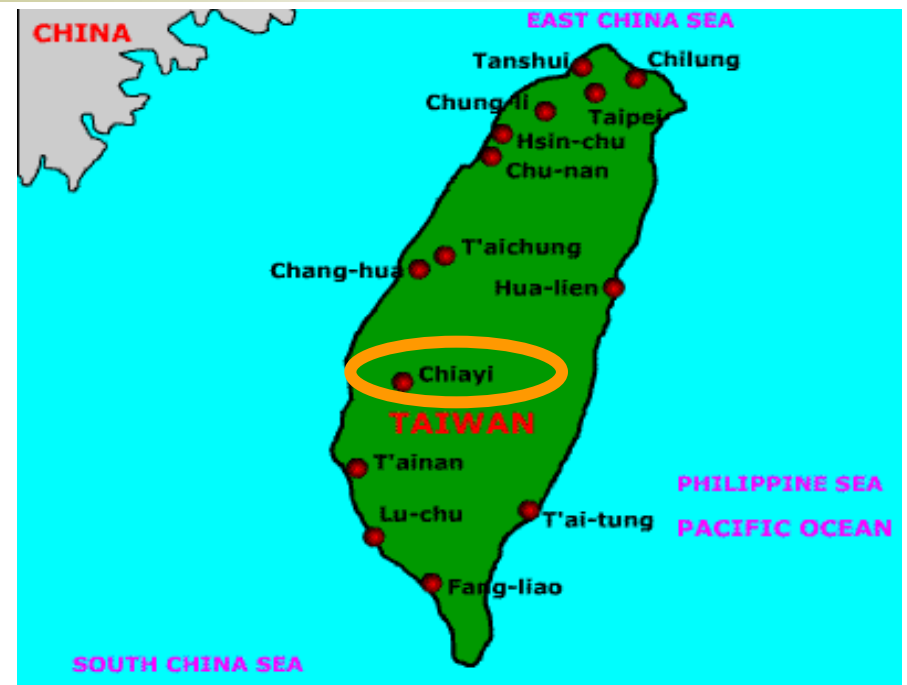
Study on Particleboard made by Using Agricultural and Forest Residues

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Aim of work and methods

- The main purpose of this study is to develop composite board from natural fiber-based residues.
- Six kinds of residues of which particle size ranges from -8+10 mesh(2.0 ~ 1.7mm) to -10+18 mesh(1.7 ~ 0.85mm) are moso bamboo, makino bamboo, thorny bamboo, rice straw, maize stalk and peanut husk.
- The binder to be used is urea formaldehyde and the resin content based on the oven-dry weight of particle is 10%. The pressing conditions are temperature (150 °C), pressure (4.2 MPa) and time (8min). The target board density is 700 kg/m³ and thickness is 10mm. The moisture content, density, thickness swelling, release of formaldehyde, internal bond, bending strength and screw holding strength of all the boards are determined following CNS 2215.

Results and Conclusions

- All of the boards except makino bamboo board have high thickness swelling (>8%).
- The maize stalk board has the best internal bond (0.28 MPa).
- The rice straw board has the best bending strength (14.84 MPa).
- The board made from strand particle and overlaid by woven thorny bamboo has the promising performances, i.e. IB(0.2 MPa) MOR(56.37 MPa), and screw holding force (1004.09 N).
- Though the peanut husk board has low bending strength, but it can be easily handled and energy saving compared to the other boards.
- Peanut husk mixed with other fiber-based materials or overlaid by veneers will be investigated later.