



KEMENTERIAN PENGAJIAN TINGGI



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UNIT PENYELIDIKAN DAN INOVASI

TAJUK PROJEK : CORN-COMP

JABATAN : KEJURUTERAAN AWAM

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1.0 PROBLEM STATEMENT



1. Commonly after harvesting time, the corn stalks removed in many ways. One of them are by burning the corn stalks. This activity may cause to environmental pollution such as air pollution since no one took action to prevent it. We saw this as a problem after did a site visit at a corn farm in Tanjung Karang, Selangor. We believe that this can be a big problem to environment and humans' life. We aware that this may effects humans life if we don't take any action about this.
2. Other than that, peoples does not see any potential in making the corn stalks as a income for Malaysia's economy. Peoples see the corn stalks as a agriculture waste without any composite potential.
3. Besides that, we concerns for farmers' safety. The corn residual become a nest for dangerous animals such as snakes, rats, scorpions and centipedes.

2.0 RESEARCH METHODOLOGY

Before we proceed with the project, we identified the problems that farmers faces with the harvesting's process. We did a site visit at a corn farm in Tanjung Karang after the harvesting time. Then we found out that the famers will burn the corn stalks or they will sell it to other farmers as animals food.

After identified the problem, we sat and had a discussion with our supervisor about this research. Then we decided to pick the corn stalks as our raw material after we analysed the problem's details. We use the term ' agricultural waste ' for our raw material. We believe if we use the agricultural waste in a proper way, we can solve the problems in future.

Next, we did some research and got some information about the agricultural waste. We found out that wood resources becomes limited from time to time because of rapid development in construction. Other than that, high demand for furnitures cause to widespread deforestation so the wood resources becomes very limited. We would like to present the corn stalks as a new non-wood resources in wood-based technology especially in composite making.

We decided to use the raw material in particle board making. We did some research about particleboard. We aware throughout the years, the production of particleboards are high but the quality of the product are low because of the limited of wood sources. So we want to investigate if the corn stalks can give a high quality of particleboard as much as ready stock particleboard.

After we did the survey on the farm, we got the material and we proceed with the process. We also did some research about the mixing material along with the corn stalks such as resin as we use Urea formeldyhde and Phenol formaldehyde. We found the suitable standard which is MS Standard.

We continue the process with investigate the sample. We put the raw material into the Wood Chipper machine. The result we got were the best condition to chip the corn stalks when it were still in air dried conditions.



We took the particle as a sample to observe moisture content and put the sample into the wood composite oven. Every 2 hours, we took out the sample and jotted down the current weight using

$$MC = \frac{AD - OD}{OD} \times 100$$

OD

For a better result, we decided to use Grytory Wood Screener in particle seizing process. The particle will divided into four sizes which is 10mm, 5mm, 3mm and 1mm.



We expect the corn stalks can be a new sources in wood-based industry especially in composite making.

3.0 SOLVING SUGGESTION

1. After did some research, we found that the stacks of corn stalks can be a nest for dangerous animals such as snakes,scorpions and centipedes.
2. To prevent environmental pollution such as air pollution. Because after the harvesting time, the farmers burns the corn stalks leads to open-burning.
3. To commercialize the corn stalks.

4.0 BENEFITS TO SOCIETY

1. Reduce the environmental pollution.
2. Leads to zero agricultural waste.
3. Presenting the corn stalks as a new composite raw material in furniture making industry.
4. Can generate income for the country as a new product.
5. Reduce high demand for wood sources.

5.0 METHOD OF USE

1. Particleboard is a common building material used in almost all types of construction projects.
2. Particleboard is available in different grades depending on the size of the particles used in the material.
3. Particleboard is an often overlooked material that can be used in cabinetry.
4. Particleboard has become a favorite for routed cabinet doors or routed panels that can be inserted into any woodworking project.

6.0 CONCLUSION

The conclusion is we expect that the corn stalks can be presented as new raw material in composite industry. Other than that, we want to reduce the high demands for wood sources as the forest is habitats for the animals and prevent any natural disaster. We also want to commercialize a non-wood material for wood-based industry especially in furniture making and carpentry. We would like to upgrade the agricultural waste to a higher level.

ATTACHMENT

DRYING PROCESS



CHIPPING PROCESS



SCREENING PROCESS

