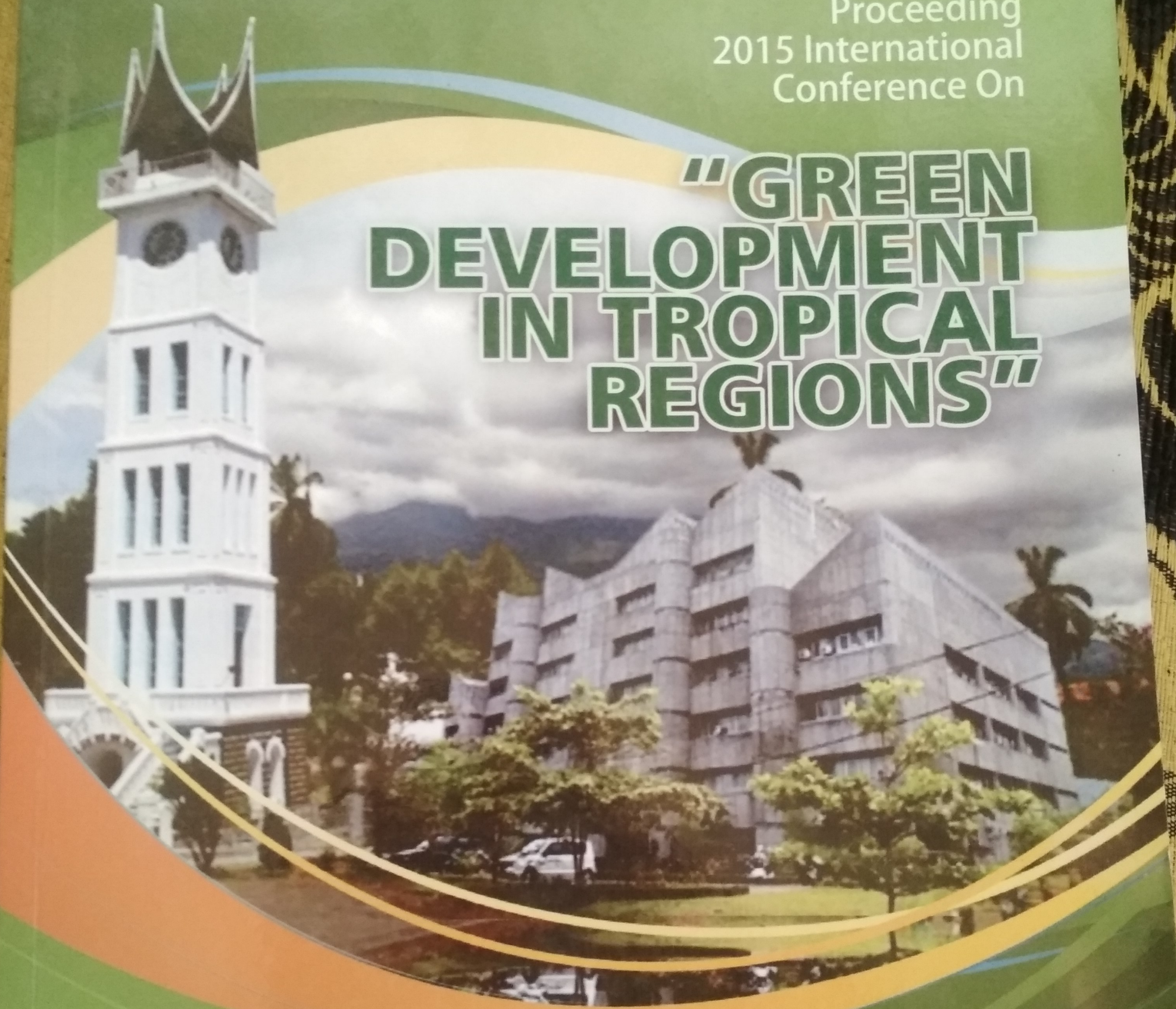


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ROLLER MILL MACHINE DESIGN TO IMPROVING QUALITY OF RUBBER PRODUCTION AT THE GROUND FARMING LEVEL

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ABSTRACT

As one of important plantation commodity, rubber contributes to country income, economic growth and job creation. Increasing of the demand leads farmers to quality. This situation was occurred because of lack of awareness in quality processing machine. Some of characteristic of low quality rubber i.e. the dark color, number contamination level, stench, composition, etc. This research objectives was to improve quality of rubber production by using roller mill, dryer and natural coagulant, to gather information about rubber sheet and to analyze about rubber quality, so that the farmer could have an alternative method in rubber processing to increase value-added of productions and would give benefit to ground farming level. The conducted research showed that sheet rubber with twice grinding by using vinegar and liquid smoke as a coagulant produced a thickness of 5-7 millimeters. This is an ideal size for sheet rubber category. On the other hand, Although it slightly smell of smoke, the rubbers produced was not smelly compared to the conventional ones. in addition, average reduction of water content of the rubbers was about 18%.

Keywords: *rubber, quality, roller mill*

INTRODUCTION

Natural rubber is one of important commodity in Indonesia, its contribute as national income, job opportunity, and advance economic growth for the region. Rubber farming in Indonesia is around 1,907 million (dirjen perkebunan, 2006). Rubber processed demand continue to rise, it show that natural rubber trade is prospective.

Traditional processing of rubber such as: lateks, rubber sheet, crepe and slab, all of this product produce in low quality. Good quality of rubber refer to dry rubber level and level of purity, as list in SNI-Bokar No. 06-2047-2002. Some of category such as no additif, be frozen with the right dose of acid, kept in the shade and dry condition.

Base on this case, gave research opportunity to conduct research to the next level, and help rubber farmer to increase their productivity. One of them was Roller Mill Machine, that design as simple as possible, efficient and environmentally friendly. And we hope will produce rubber sheet with thickness

Providing Material of Coagulant

Mixing coagulant into rubber material based on liquid smoke concentration that has given. Liquid smoke used for rubber coagulant are liquid smoke grade 2 and grade 3 were using various concentrations of liquid smoke. Experimental design used was a completely randomized design with three times repeated, the liquid smoke from coconut shell with a concentration of 5%, 10%, 15% and 20%.

Performance Test

Performance test formula as follow

$$\text{machine capacity} \left(\frac{\text{Kg}}{\text{ours}} \right) = \frac{\text{raw material (Kg)}}{\text{time working (ours)}}$$

RESULT AND DISCUSSION

The results of testing by using 30 kg of rubber "bokar" treated with tight control from making rubber purely to be bokar then obtained the following results. After grinding, the thickness obtained ranging from 3 mm to 5 mm. Rubber sheet texture that using vinegar as a coagulant obtained rubber sheet with rather smell while using liquid smoke as a coagulant obtained rubber sheet slightly smelled of smoke. This result is much better than processed by farmers with stink- smelling.

Coagulant	Weight (before-grinding)	Weight (aftergrinding)	Water losses
venegar, 5 liter	1,1	0,75	0,45
liquid smoke 10%, 5 liter	1,7	1,25	0,45
liquid smoke 15%, 5 liter	1,6	1,35	0,4
liquid smoke 20%, 5 liter	2,1	1,8	0,3

Performance test results show that this machine can grind rubber with a capacity of up to 50 kg/ h

CONCLUSION

The results showed that processing alternative are much better in improving people's quality of rubber from the purity, smell, texture and processing stage. When the results of this study can be applied at the level of smallholder farmers is expected to increase the efficiency of processing and increase the selling price.

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