



RANCANG BANGUN MESIN PERAJANG DAUN NILAM
(*Pogostemon cablin*, Benth) SECARA MEKANIS

SKRIPSI

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ABSTRACT

Patchcouly oil is produced from distillation process of *pogostemon* leaf. To facilitate the oil comes out, the *pogostemon* leaf (including its stalks) should be cut into small pieces after harvesting. Nowadays, cutting process is done manually by using manpower (worker) with a big knife as a tool. Energy required for this manual process was very high, so the worker tends to get tired easily after work for some times. Besides, the time needed for finishing the cutting process is high. With high requirement of both energy and time, the cost of production becomes increase and then will cause inefficiency and ineffective in the production. Based on these reasons, it is necessary to improve the efficiency of distillation process of *pogostemon* leaf by alternating the design of cutter machine which aimed to minimize the constraints emerged at manual cutting process. Plan design includes the functional (making of cutter knives, pad and transmission system from electromotor) and structural (making of frame which support the functional design) design. Performance test was done by treating the rotation speed per minute of knives rotation with 500 (A1) and 600 (A2) RPM and varying the distance of knives with 100 (B1) and 150 (B2) mm. Parameters measured in the performance test were work capacities (kg/hour), efficiency (percent), improvement (percent) and utilization cost analysis of machine (rupiah). The functional test resulted that the machine could work well as the design planned. In the elementary test, the highest work capacity was reached at 171.75 kg/hour (combination of A2B2). Besides, the highest efficiency of machine was reached at 93.75 percent (combination of A1B2). This highest machine performance experienced the improvement of 81.1 percent and 27.2 percent when compared to one and four workers (A2B2), respectively with manual cutting process. The expense required for utilization of this new design machine was only about Rp. 20.325.- for once cutting process with 12-15 percent water content of more than a ton *pogostemon* refine process.

Keywords: *pogostemon, distillation, cutting process, work capacity, efficiency and expense.*