

ABSTRACT

THE MODIFICATION OF CORN SHELLER MACHINE

By

NURDIN AR RASID

One of mechanical devices used to process post harvested corn is a corn sheller. Today, there are many farmers shelling corn manually with hand, so that a semi mechanical corn sheller is required. Rivanto (2009) had designed a semi mechanical corn sheller with capacity of 1.21 kg corn cobs/minute. Some problems and weakness of the machine were found. Bigger sized cob was stucked off in the frame holder while shelling the corn cob. This problem would require modifications to improve the Rivanto's machine performance and to get proper sheller cylinder.

This research was conducted from December 2012 to March 2013 in laboratory of farm machineries and equipment in Agricultural Engineering Department of Faculty of Agriculture in Lampung University. The modified part was the cylinder of sheller by using 4, 8, and 12 segments of serrations. Each cylinder received 3 treatments. The cylinder was fed by 1 cob (T1), 2 cobs (T2), and 3 cobs (T3) with three replications.

This research was successful to modify the corn sheller machine with dimension of 100 cm x 50 cm x 115 cm with three types of sheller cylinders. The mechanism principle of this corn sheller was that the sheller cylinder in the middle of holder cylinder was operated by human power through hand crank with 50 to 70 rpm.

The results showed that the highest yield (96%) was obtained by corn sheller with 4 serrations while 4% remained unshelled. The lowest yield (92%) was obtained by corn sheller with 12 serrations while 8% remained unshelled. From all treatments, the best result was corns sheller with 4 serrations fed with 3 corn cobs with percentage of 99.40% good shelled weight and 0.60% poor shelled. The lowest result with biggest damage was in the corn sheller with 8 serrations fed with 1 corn cob. The result was 97.53% good shelled and 2.47% poor shelled. The highest capacity (1.58 kg corn cobs/minute) was obtained by the corn sheller machine with 4 serrations.