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Design and Construction of a Maize Dehusking Machine for Small and Medium-Scale Farmers

Authors : Francis Ojo Ologunagba, Monday Olatunbosun Ale, Lewis A. Olutayo

Abstract : The economic successes of commercial development of agricultural product processing depend upon the adaptability of each processing stage to mechanization. In maize processing, one of its post-harvest operations that is still facing a major challenge is dehusking. Therefore, a maize dehusking machine that could replace the prevalent traditional method of dehusking maize in developing countries, especially Nigeria was designed, constructed and tested at the Department of Agricultural and Bio-Environmental Engineering Technology, Rufus Giwa Polytechnic, Owo. The basic features of the machine are feeding unit (hopper), housing frame, dehusking unit, drive mechanism and discharge outlets. The machine was tested with maize of 50mm average diameter at 13% moisture content and 2.5mm machine roller clearance. Test results showed appreciable performance with the dehusking efficiency of 92% and throughput capacity of 200 Kg/hr at a machine speed of 400rpm. The estimated production cost of the machine at the time of construction is forty-five thousand, one hundred and eighty nairas (₦45,180) excluding the cost of the electric motor. It is therefore recommended for small and medium-scale maize farmers and processors in Nigeria.

Keywords : construction, dehusking, design, efficiency, maize
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