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Design and Development of a Pepper Seed Removing Machine

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Pepper is one of the most widely used spices in the world and Sri Lanka exports about 10,000 MT of pepper. According to Central Bank records, Sri Lanka earned Rs. 17,027 million last 2015 by exporting pepper. Total supply of pepper is produced by home garden and medium scale cultivators in Sri Lanka and most of cultivations are situated in rural areas. There are several machines manufactured in the world to separate pepper seed from stem. But, most of these machines are highly automated heavy machineries thus difficult to transport from place to place. In Sri Lanka, normally conventional methods are used to separate pepper seeds from its stem, thus causing reduced product quality. In this research, portable pepper seed removal machine was developed to reduce the damages to pepper crust and the core. Six main requirements for a new portable pepper seed removing machine were identified after discussing with several pepper cultivators in Matale, Kegalle and Kurunegala districts. Functions that satisfy the identified customer requirements were established. With the established functions a morphological analysis was carried out to propose functional solution sub-systems and based on judgment several feasible products were identified. Using a weighted decision matrix, a design solution to proceed with was selected. Finally a compact and portable machine that runs by an internal combustion engine was designed and developed. This machine can be used for home garden and medium scale cultivators in Sri Lanka to reduce the product preparation time and increase productivity. Further suggestions for improvements are to be taken from the cultivators.

Keywords: pepper, peppercorn, pepper seed removing machine, pepper peeling machine