

ABSTRACT

Indonesia is a country that has resources in the form of plantations. One type of plantation owned by Indonesia is coconut. According to the Indonesian Central Statistics Agency, coconut plantations produced approximately 14 million tons of fruit from 2014 to 2018. One of the waste produced from coconut processing is testa. From the four traditional markets that located in Bandung city, which consist of the Kordon market, Kiaracacondong market, Dago market, and Palasari market, the four markets produce approximately 110 kilograms of testa waste per day and all the waste is disposed of. However, a previous research shows that the waste can be used as animal feed for tilapia. This use can be done by reducing the size of the coconut testa to close to the effective size of fish feed with a size of 3 milli meters. Therefore, the authors designed a coconut testa shredder which later can be used by coconut merchants as a means of converting waste into products. This design uses six steps of the Nigel Cross rational product design method. These steps are generating alternatives, establishing function, setting requirements, determining characteristic, generating alternatives, and evaluating alternatives. From the design step, a design for shredding coconut testa waste was produced with six main components, which are hopper with cover that has a bottom area of 5.27 cm x 5.27 cm and a top area of 20 cm x 20 cm, a blade made of stainless steel 316 L and has a length of 11.8 cm, a shredding chamber and a shredding result container with a minimum volume of 2.54 liters, a motor with a pulley that has a power of 1 hp and a rotation speed of 1400 rpm, and a switch button that is used as a connector or circuit breaker against the motor.

Keywords: Shredding tools, coconut testa waste, rational product design method