**Title:** Design, Fabrication and Performance Evaluation of Onion Topper

**Authors:** S. Sivanujan, V. Vijitha, S. Sayanthan, M. Prabhaharan

**Keywords:** Motorized knife, Man power, Onion topper, Red onion, Rotation

**Issue date:** 3rd - 4th December 2021

**Journal:** ICDA 2021 proceedings

**Publisher:** Faculty of Agriculture, University of Jaffna, Sri Lanka

**Citation:** Sivanujan, S., Vijitha, V., Sayanthan, S., Prabhaharan, M. (2021) Design, Fabrication and Performance Evaluation of Onion Topper, Faculty of Agriculture, University of Jaffna, ICDA 2021 proceedings. ISSN:2465-6143.

**Abstract:** Onion is one of the important condiments which is highly demanded by Sri Lankan to make their food delicious. Within the available varieties, red onion is very popular in Sri Lanka. It is widely grown in the Northern part of Sri Lanka and has good demand all around the country for its fine taste and aroma. In the onion production chain, the bulb separation contributes a considerable amount as a production cost. This study was aimed to rectify this issue by designing onion topper with required features. The objectives of this study are to design and fabricate onion topper, to improve the cutting and cleaning process of onion leaf and root and to reduce the time of processing while increasing the product quality. The materials were selected considering some factors like availability, applicability, durability, strength and cost of the materials. Onion with root and stalk was fed in to the machine and allowed to be processed during which the cleaning of onion by removal of dust and debris carried out by incorporating rotation via compression motor along with cutting off and removal of root and stalk of the onion, which were inhaled under high air pressure with a motorized knife. Capacity of the machine, power requirement and electricity cost were estimated. The onion topper processed 30 kg of onion within an hour with the power consumption of 0.38 kWh which accounts for 2.47 Sri Lankan rupees. Therefore, the cost of onion processing and man power requirement can be reduced through this onion topper. Consequently, the income of the farmers can be increased sufficiently. Further this machine showed less noise effect (29.98 dB) and no greenhouse effect. This onion topper can be sold in market for thirty-five thousand Sri Lankan rupees.