

MECHANICAL POLYBAG APPLICATOR FOR VEGETABLES

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Sri Lankans consume vegetables as a component of their main meals along with the staple food rice. Although *Nuwara eliya*, *Bandarawela* and *Badulla* districts are popular as large-scale vegetables producing districts, considerable number of farmers are found in all other districts in Sri Lanka. Covering fruits with transparent polythene bags is one of the practical non-chemical methods to protect fruits and vegetables from Melon fly (*Bactrocera cucurbitae*) and some beetle's attacks. As any proper mechanical poly bag applicator is not available in Sri Lanka, this study intended to introduce a user friendly and affordable polybag applicator. The main components of the polybag applicator were polybag realer, polybag carrier, fastening system and power transmission system. The total weight and height of the machine were 2.5 kg and 76.5 cm, respectively. A single operator can conveniently operate it at the field due to the low weight and simple operating mechanism. The field evaluation carried out using snake gourd vegetable dummies revealed that the actual capacity, theoretical capacity, and efficiency of the poly bag applicator were 100 bags h⁻¹, 110 bags h⁻¹ and 90%, respectively. The corresponding figures for the manual polybag application by the same operator were 76 bags h⁻¹, 86 bags h⁻¹, and 82% respectively. Data were analysed using a pooled t-test. The results showed a statistically significant difference ($p < 0.05$) between manual and mechanical applicator. The average time means value showed the mechanical applicator is better than the manual method. The material cost for the production of mechanical polybag applicator was 2500.00 LKR making it affordable for small scale farmers. According to the feedbacks of users, the weight of the machine and overall product quality is better than manual application. Therefore, the machine can be recommended to apply polybags for vegetables to control the damage of melon fruit fly.

Keywords: Affordable, Efficiency, Mechanical polybag applicator, Melon fruit fly (*Bactrocera cucurbitae*)