

Development and performance evaluation of a digger for harvesting onion (*Allium cepa* L.)

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■ **ABSTRACT** : Onion harvesting machinery like all other farm equipments has passed through various stages of development. In this study an effort has been made to develop and evaluate the performance of an onion digger. Blade made up of high carbon steel material (EN 45) was the main component having dimensions 143cm × 7cm × 1.5cm. Depth control wheels were provided to control the depth of cut by blade. Tests were conducted to check the comparative performance of developed onion digger and manual labor in the field. The digger was operated at a speed ranging 3.76 to 4.83 km/h with minimum losses at 4 km/h in first high gear at a field capacity of 0.46 ha/h. The average operational depth of 7.62 cm of the developed digger was suitable with practically no damage to the onion bulbs. The operational time of digger including and excluding the time in turning were 3.10 h/ha and 2.38 h/ha, respectively. Lift percentage, mean digger efficiency and damage percentage were 94.9, 89.8 and 5.1, respectively. It was found that there was 58 per cent and 49 per cent saving of labor and cost, respectively.

■ **KEY WORDS** : Development, Evaluation, Digger, Onion, Lift percentage, Efficiency

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