

## Field Performance Evaluation of Mechanical Weeder for Paddy

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### Abstract

Weeds are a significant impediment to paddy production. Herbicides are commonly used to manage weeds, however they have a number of side effects owing to environmental pollution. Existing commercial power weeding machine in the market have not met the required precision operation in the paddy cultivation in Sri Lanka. Farmers are discouraged to practice the row planting or row seeding which gives high yield giving due to constrains associated with existing weeding machines. Mainly, the drum spacing of paddy weeder is not suitable for Sri Lankan condition. Therefore, this research was mainly focused on design and fabrication of mechanical paddy weeder to be compatible with Sri Lankan paddy cultivation. It comprises of fingers-shaped blades mounted on two cage wheels that were attached to a gearbox using common shaft. Shaft was driven by a 1.6 hp petrol engine. Power generated by engine was transmitted to gearbox through power transmission shaft. Rotation of the cage wheels help for weeding and forward driven movement of the machine at the same time. The field performance evaluation of machine was conducted in Farm Mechanization Research Center, at Mahailuppallama. Results indicated that theoretical field capacity, effective field capacity and field efficiency; 0.0679 ha/h, 0.057 ha/h, and 83%, respectively. Newly designed power weeder required 17.5 man hours per hectare. Machine speed was 0.539 m/s. The average weeding efficiency of machine and fuel consumption were obtained as 60% and 10.4 l/ha respectively.

**Keywords:** *Paddy, Weeder, Design, Performance*