

**PERFORMANCE EVALUATION OF A PLASTIC MULCH LAYING  
IMPLEMENT**

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## ABSTRACT

**GOMEZ, WAVE NHER G.**, Department of Agricultural and Biosystem Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines. **June 2023, PERFORMANCE EVALUATION OF A PLASTIC MULCH LAYING IMPLEMENT**

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The study was carried out to evaluate the performance of a plastic mulch laying implement attached to a hand tractor. Specifically, varying tilt angle ( $15^\circ$ ,  $25^\circ$ ,  $35^\circ$ ) of the wheel mulcher for laying the plastic mulch was done to determine the optimum mulching efficiency, draft force, power requirement, field capacity wheel slippage and bed height.

Results of the study showed that setting the tilt angle of the wheel mulcher at  $35^\circ$ , field efficiency of 82.70%, and field capacity of 0.2691 ha/hr were recorded the highest compared to the results obtained from  $15^\circ$  and  $25^\circ$  tilt angles. On the other hand, the lowest draft force of 110.89 kg and power requirement of 63.74 kW were also obtained using the tilt angle of  $35^\circ$ . Results also revealed that setting the tilt angle of the wheel mulcher at  $15^\circ$ , it was found out that a 161.61 kg draft force and 69.95 kW power requirement, was the highest observed values compared to the values obtained from using  $25^\circ$  and  $35^\circ$  tilt angles. In terms of the bed height, results revealed that at  $35^\circ$  tilt angle, the lowest bed height was observed at 13.03 cm and the highest bed height of 19.03 cm was attained at tilt angle of  $15^\circ$ . In terms of width and thickness of soil cover, it shows that the tilt angle ( $35^\circ$ ) produced the lowest values at 20.47 cm and 7.23 cm and the highest values were attained using a tilt angle of  $15^\circ$  observed at 35.10 cm and 14.50 cm, respectively.

Keyword: Plastic Mulch; Fabrication; Efficiency

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