

Saran Thongsantia 2009: The Study and Development of the Walking Forage Mower for Small Scale Farmer. Master of Engineering (Agricultural Engineering), Major Field: Agricultural Engineering, Department of Agricultural Engineering. Thesis Advisor: Assistant Professor Seewalak Pataveerat, Ph.D. 135 pages.

The research attempted to design and evaluate a forage walking mower. The study consisted of a evaluation of the rotary cutter, design and construction of a prototype and evaluation of the prototype. The following indicators were used in the study : field capacity, travelling speeds, fuel consumption and power requirment of the prototype. The result properties of pangolar grasses as follows : aged of cut were 40-45 days, the everage high of pangolar were 36 centimetre, the everage density of stems were 507 stems per square metre, the everage moisture content were 75 %wb and the everage high of pangolar grass after cut were 8.08 centimetre.

The forage walking mower equipped with the rotary cutter in front of the prototype. The cutter units were 2 rotary cutter and the direction of cut rotated opposite. The prototype was found to be appropriate for cutting pangolar grass. The evaluation of the forage walking mower was baseed on the following 2 factor : forward gear, with 3 levels : 1st, 2nd and 3rd revolution velocity , with 4 levels : 1,972 2,335 2,787 and 3,339 rpm. Tested with 3 replication. The test results of the machine indicated the following optimum values : travelling speed 1.7 km/hr, field capacity 0.6 rai/hr, fuel consumption 2.7 liter/hr by 3rd gear at highest revolution velocity. By the way, The minimum values of fuel consumption 0.37 liter/hr by 1st gear at loe revolution velocity. Power requirment at optimum value was 1.6 kilowatt and minimum value was 0.6 kilowatt. The cut forage was gathered to 40 cm strip with 80 % of total cut forage.

The result of the revolution velocity was the highest revolution velocity. The sutable foward gear was the 3rd gear.

Student's signature

Thesis Advisor's signature