DESIGN, DEVELOPMENT AND PERFORMANCE EV ALUATION OF A MANUALLY OPERA TED MAIZE SEEDER

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Maize is the second most important cereal crop produced in Sri Lanka. It grows around 54,960 ha of land area yearly and total annual production is around 142,870 mt. In maize cultivation more than 75% of the production cost goes for labour. Seeding is one of the laborious and drudgery operations in maize cultivation. Hence this study attempted to develop a low cost, light weight maize seeder which can be easily operated by a single person and appropriate for small scale farmers. This device has several components such as frame, seed container, metering mechanism, seed tube, seed dipper, ground wheel and power transmission system. The machine performances were evaluated in the field of Faculty of Agriculture, Rajarata University of Sri Lanka. The results revealed that the optimum forward speed for better results was $0.2965\ kmh^{-1}$. The theoretical and actual field capacities were $0.0356\ hah^{-1}$ and $0.0249\ hah^{-1}$ respectively. Field efficiency was 70%. Seeding efficiency of the machine was 94.71%. The device can save 68.75% of labor compared to the traditional method of seeding. The force required to push the machine in the field was 90N. The machine is acceptable due to its easiness in operation, simple in design/mechanism, light in weight, low labour requirement and cost of planting and can also be used for seeding other seeds by changing the seed drum.

Key words : Field capacity , Seed metering mechanism, Seeding ef ficiency