

## Forward Speed and Draught Requirement of a Semi-Automatic Cassava Planter under Different Wheel Usage

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**Abstract :** Five varying speeds of 1.5, 1.8, 2.1, 2.3, and 2.6 km/h were used at a constant soil depth of 100 mm to determine the effects of forward speed on the draught requirement of a semi-automatic cassava planter under the pneumatic wheel and rigid wheel usage on a well prepared sandy clay loam soil. The soil draught was electronically measured using an on-the-go soil draught measuring instrumentation system developed for the purpose of this research. The results showed an exponential relationship between forward speed and draught, in which draught ranging between 24.91 and 744.44N increased with an increase in forward speed in the rigid wheel experiment. This is contrary to the polynomial relationship observed in the pneumatic wheel experiment in which the draught varied between 96.09 and 343.53 N. It was observed in the experiments that the optimum speed of 1.5 km/h had the least values of draught in both the pneumatic wheel and rigid wheel experiments, with higher values in the pneumatic experiment. It was generally noted that the rigid wheel planter with less value of draught requires less energy required for operation. It is therefore concluded that operating the semi-automatic cassava planter with rigid wheels will be more economical for cassava farmers than operating the planter with pneumatic wheels.

**Keywords :** Cassava planter, planting, forward speed, draught, wheel type

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