شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

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To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد بالاصل

DETERMINATION AND ANALYSIS OF FIELD PERFORMANCE OF A DEVELOPED COTTON TRANSPLANTER

BY

SALAH EL-DIN ISMAIL EL-KHATIB

B.Sc. (Agric. Mech.), Fac. of Agric., Cairo University, 1983
M.Sc. (Agric. Mech.), Fac. of Agric., Ain Shams University, 1992

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ABSTRACT

Salah El-Din Ismail El-Khatib, Determination and analysis of field performance of a developed cotton transplanter. Unpublished Doctor of Philosophy, University of Ain Shams, Faculty of Agriculture, Department of Agricultural Mechanization, 1998.

The aims of this study are to develop a transplanter to transplant cotton and to suitable for Egyptian conditions.

The main results in this study can be summarized in the following points :

(1) The value of force required for holding the paper pot should be higher than 43.65 N.

(2) The spring wire was 0.30 cm to avoid excessive pressure.

(3) The developed Holland transplanter (which using bare root) has less rolling resistance due to it is weight lower than Lainnen transplanter.

(4) The value of slippage power for Holland machine is less than Lainnen machine, were 0.05, 0.15 and 0.29 hp and 0.11, 0.27 and 0.44 hp, respectively for one unit but for two unit were 0.26, 0.52 and 0.77 hp and 0.37, 0.74 and 1.10 hp, respectively.

(5) By increasing speed from 0.75 to 1.50 km/hr, drawbar power for developed Holland machine were 2.22 and 4.44 hp. and 2.64, 5.28 hp for Lainnen machine, respectively that for one unit, but for two unit were 3.33 and 6.67 hp for developed Holland machine and 4.03, 8.06 hp for Lainnen machine two units respectively.

(6) When increase forward speed from 0.75 km/hr to 1.50 km/hr the fuel consumption increased from 2.25 to 2.64 lit/hr and from 2.35 to 2.90 lit/hr for developed Holland transplanter and Lainnen transplanter one unit, respectively. Also, it increased from 3.10 to 3.50 lit/hr and from 3.50 to 3.90 lit/hr for developed Holland and Lainnen transplanter two units, respectively.

(7) The required power for operation were 9.68, 10.32 and 11.35 hp for one unit developed Holland transplanter and 10.10, 10.97 and 12.48 hp for Lainnen transplanter one unit. Also, the required power for operation were 13.34, 14.41 and 15.06 for developed Holland transplanter two units and 15.06, 15.70 and 16.78 hp for Lainnen transplanter two units.

(8) The developed machine lost time was 2.18 hr/fed at forward speed 0.75 km/hr and by increasing the forward speed to 1.15 km/hr the time losses was 1.53 hr/fed. After that by increasing forward speed the time losses increased. The time losses when using Lainnen transplanter were 1.87, 1.34 and 1.84 hr/fed at forward speed 0.75, 1.15 and 1.50 km/hr, respectively.

(9) The net time needed for transplanting one feddan by a developed one row machine 9.33, 6.07 and 4.66 hr/fed where forward speed were 0.75, 1.15 and 1.50 km/hr. While the net time for transplanting cotton by one row Lainnen machine was 9.33, 6.07 and 4.66 hr/fed at the same forward speed. The theoretical field capacity of a developed and Lainnen machines were 0.11, 0.16 and 0.21 fed/hr. By increasing the forward speed from 0.75 to 1.15 km/hr the actual field capacity increased from 0.086 to 0.13 fed/hr and the actual field capacity decreased from 0.13 to 0.12 fed/hr by increasing forward speed from 1.15 to 1.50 km/hr.

(10) The field efficiency increased from 78.18 to 81.25% by increasing the forward speed from 0.75 to 1.15 km/hr after that by increasing the forward speed from 1.15 km/hr to 1.50 km/hr the field efficiency decreased from 81.25% to 57.14% for the developed transplanter.

(11) The deviation on row were 10.28, 14.90, 5.60, 7.36 and 21.66 for the manual bare root, manual paper pot, the developed Holland transplanter, Lainnen transplanter and direct seeding, respectively.

(12)The growth, yield and yield components of transplater cotton were not significantly less than cotton grown by direct method of seeding whether cotton was transplanted manually or by semi-mechanical transplanter. Although, little lower than direct seeding method transplanting by developed Holland transplanter ranked first by Lainnen transplanter ranked second but manual method gave least values. The mechanical transplanting had any measurable effects on cotton traits, it also facilitate and economize high costs of transplanting process.

(13) The developed transplanting machine costs were 136.28, 154.00 and 80.80 L.E/fed by mechanical bare root one unit mechanical paper pots one unit and mechanical bare root two units. The highest income was 4639.20 L.E/year for transplanting by developed machine. In other hand, the income of direct seeding was 4438.38 L.E/year. For this reason many say that developed machine is more economically than traditional methods. Feature may be preferring transplanting cotton to reduce pesticide operations, reduce pollution and conserve the time.