شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

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

DEVELOPMENT A HARVESTING MACHINE FOR SOYBEAN CROP

By

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B.Sc. (Ag. Mech.), Zagazig University, 1989

M.Sc. (Ag. Mech.), Ain Shams University, 1995

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ABSTRACT

Fathi Abd El–Haleam Abd El–Hady Hassan. Development a harvesting machine for Soybean crop. Unpublished Doctor of philosophy dissertation, University of Ain Shams, Faculty of Agriculture, Department of Agriculture Engineering, 2001.

Soybean (*Glycine max Merr L.*) is the mainly source for the edible oil all over the world. Egypt imported about 75 % from the yearly oil consumption. It is believed that introducing the suitable mechanization especially for harvesting operation will encourage increasing soybean local production.

The aim of the present study introduce a new design of a harvesting machine (reaper) especially for soybean crop. This machine is one row walking type attached with a power tiller 6 hp engine, designed and fabricated to be suitable for the small fields (less than 2 fed). The prilminary tests were included soybean physical properies and evaluation for the manual harvesting and double row soybean harvester (Japan's machine). The construction and development prosesses for the new design (one row walking type) reaper machine was carried out in El-Abd workshop (Benha, Qalubia), by using the available material on the local market, the process of design, development, its laboratory and performance tests are also summarized.

The soybean physical properties were, avarage stalk height (100 cm.), stalk diameter (10.5 mm), height of the first pod 5.4 cm. The plant intensity (86 plant/m^2), the self shattering losses at the recommended harvesting date was 0.015%, and the timeliness factor ranged between 0.0058% to 0.023% per day late from the recommended harvesting date. The manual harvesting losses was 9.77 %, performance rate was 64 labor–h/fed or 8-labor-day/fed. On the other hand,

the doubl row harvesting machine, total harvesting losses was about 19.4%, As far the new design reaper machine, it could operat at crop length more than 50 cm, forward speed 1.4 km/h., cutter speed 9.4 m/s, and the conveyor belt peripheral speed was 2.38 m/sec at flat planting. The average field capacity was 0.18 fed/h and the field efficiency was 85 %, the cutting efficiency was 98 %, on the other hand, the maximum total harvesting losses was 2.3 %. The fuel consumption was 0.92 l/h, and the energy requirement was 16.1 kW-h /fed and 21.04 kW-h/fed with flat and furrow planting, respectivelly.

The criterion costs for the new design reaper machine; manual harvesting and double row bean harvester was 69.3 L.E/fed; 215 L.E/fed and 545 L.E/fed, respectivelly.

Further study about physical and mechanical properties of soybean, is required to be done to modify the machine performance at high speed condition.

Key words.

Soybean, reaper, walking type, disc cutter, conveyor belt, power tiller, cutting efficiency, energy requirements, criterion costs.

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