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نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها
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بالرسالة صفحات
لم ترد بالأصل

DEVELOPMENT AND EVALUATION OF FEEDING DEVICE IN COTTON PLANTERS

BY

MUHAMMAD NOUR AL-DEAN SAFWAT AL-TENBI

B. Sc. Agricultural Sciences (General), Aleppo University, 1988
Diploma Agricultural Sciences (Fruit Trees), Aleppo University, 1989
M. Sc. Agricultural Sciences (Agricultural Engineering),
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THESIS
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2002

To

My Father's breath,

My Mother,

My Brothers, My Sister,

My Wife,

My Son "Hady",

My Daughter "Hadeel"

And My Country "Syria"

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ABSTRACT

The aim of this study was the development of feeding device in cotton planters to accept fuzzy linted Egyptian cotton seeds (*Gossypium barbadense*). The main results in this study can be summarized in the following points:

Discharge of cotton seeds decreased as the feeding device speed increased with all cell diameters, without agitator or by using agitator from any type, this is due to the insufficient time available for seeds filling.

The same behavior and trend obtained in the discharge of cotton seeds occurred with percentage of cells filling, taking into consideration differences of sizes, weights and three dimensions of the studied cotton seeds varieties.

The percentage of seed damage were found to increase by increasing feeding device speed for all cell diameters and with all types of agitator, when percentage of cells filling was less than 100 % and by decreasing feeding device speed for all cell diameters and with all types of agitator, when percentage of cells filling was more than 100 %.

There are opposite concrete correlation between germination percentage of cotton seeds and percentage of seed damage. The factors which cause and increase percentage of seed damage are the same factors which affect germination percentage of cotton seeds.

Coefficient of variation (C.V.) of longitudinal seed distribution increased as the feeding device speed increased with all cell diameters, without agitator or by using agitator from any type. In other wards the best uniformity of longitudinal seed distribution was realized at low feeding device speeds.

It is recommended to use the feeding device of 10.0 mm cell diameter (25 × 2 cells) and 6.0 mm depth with speed of 15 r.p.m. and with crank two wings agitator for planting of linted and delinted Egyptian cotton seeds.

The research realized its set up objectives as the following outcomes my be valuable contribution towards successful cotton planting operation:

1- Set of suggested equations can be used to predict with reasonable accuracy physical properties of Egyptian cotton seeds varieties from measurement of any of three dimensions (Length, width and thickness). These properties help in designing of planting machines for Egyptian cotton crop.
2- Development of test rig for appropriate testing of cotton planter (Picker wheel feeding device).
3- Development of picker wheel feeding device (cell dimensions: cell diameter and cell depth) for appropriate fuzzy linted Egyptian cotton seeds planting.
4- Addition of agitator to cotton planter (Four types: fan, spikes, one wing crank and two wings crank) to improvement of discharge of fuzzy linted Egyptian cotton seeds from the hopper of planter.

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