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DESIGN OF A SEED DRILL ATTACHED TO A POWER TILLER

BY

IBRAHIM YEHIA EL-SAYED

B.Sc.(Agric.Mech.) Ain Shams University, 1989

This thesis for M Sc degree has been

approved by:

Prof. Dr. S. A. Ibrahim.....
Prof. of Ag. Engineering, Zagazig Univ.

Prof. Dr. A. M. El-Gindy.....
Prof. of Ag. Engineering, Ain Shams Univ.

Prof. Dr. M. N. El-Awady.....
Prof. of Ag. Engineering, Ain Shams Univ.
(Supervisor)

Date of examination: 1 / 12 / 1993



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BY

IBRAHIM YEHA EL-SAYED

B. sc. Ag. Mech. Fac. of Ag. Ain Shams Univ. 1989

Under Supervision of :

Prof. Dr. Mohamed Nabil El-Awady

Head of Ag. Mech. Dept., Fac. of Ag. Ain Shams Univ.

Prof. Dr. Ahmed F. El-Sahrighi

Director of Ag. Eng. Res. Institute

Abstract

This investigation is on the design and construction of a small and simple seed-drill, suitable for small seeds such as wheat and rice. The designed seed-drill has to be operated using the power available on farm such as animal, small tractor, or power tiller.

Another principal aim is the use of materials existing on the local Egyptian market to enable national workshops to manufacture and maintain the drill.

Two group of experiments were carried out to study the effect of design factors on the seed drill performance:

1- Laboratory experiments: to find the effect of the following factors on:

1-1 Seed discharge: (a) effect of ground-wheel speeds, (b) effect of gate opening, and (c) uniformity of feeding rate from each tubes.

- 1-2 Seed damage and germination: (a) effect of ground-wheel speeds, (b) effect of gate openings, and (c) effect of feeder materials.
- 1-3 Seed distribution: (a) seed distribution in transverse direction of rows, and (b) seed distribution along the line.

2- Field experiments: to find the following points:

- 2-1 Effect of machine forward-speeds on plants distribution in transverse directions to rows.
- 2-2 Effect of covering types on germination percent.
- 2-3 Effect of ground-wheel types on: (a) slip percent, (b) draft force, and power requirements, and (c) fuel consumption.
- 2-4 Effect of forward speed on field efficiency.
- 2-5 Effect of forward speed and covering types on final grain yields per feddan.
- 3- Estimating the costs of using the machine.

KEY WORDS

seed drill - power tiller - feeder mechanism - seed tubes - furrow opener - covering device - ground wheel - seed discharge - uniformity of seed distribution - slip percent - draw-pull - power requirement - fuel consumption.

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CONTENTS

	PAGE
ACKNOWLEDGEMENT.....	ii
LIST OF TABLES.....	iii
LIST OF FIGURE.....	iv
I- INTRODUCTION.....	1
II- REVIEW OF LITERATURE.....	3
2-1 History of seed-drill development.....	3
2-2 Methods of sowing and mathematical treatment of seed distribution:	5
2-2-1 Methods of sowing.....	5
2-2-2 Mathematical treatment of seed distribution.....	8
2-3 Design factors for seed drill:	9
2-3-A Seed box.....	9
2-3-A Feeding mechanism.....	11
2-3-B-1 Types of feeding device.....	11
2-3-B-2 Design of fluted feed device and disk feeder....	16
2-3-B-3 Performance of feeding mechanism:	24
2-3-B-3-1 Feeding rate:	24
2-3-B-3-1-a Effect of ground-wheel speed of seed drill..	25
2-3-B-3-1-b Effect of speed of feeding shaft.....	29
2-3-B-3-1-c Effect of gate opening.....	31
2-3-B-3-1-d Effect of seed size.....	31
2-3-B-3-2 Seed damage.....	32
2-3-B-4 Seed distribution.....	33
2-3-C Seed tubes:	36
2-3-C-1 types of seed tubes.....	36
2-3-C-2 Flow of seed through seed tubes.....	38
2-3-D Furrow openers:.....	40
2-3-D-1 Types of furrow openers.....	40
2-3-D-2 Work process of furrow opener.....	43
2-3-D-3 Seed distribution performance of furrow opener..	44
2-3-E Ground wheel:	46
2-3-E-1 Types of ground wheel.....	46

2-3-E-2 Slippage of ground wheel.....	48
2-3-F Covering device.....	48
2-4 Power requirement for seed drill:	51
2-4-1 Resistance to motion of working parts and their power requirement.....	51
2-4-2 Draw-bar pull.....	53
2-5 Sowing rate, planting time, and yield for tested crop.....	54
2-6 Economical feasibility and appropriateness of an agricultural machine.....	56
III- MATERIALS AND METHODS.....	57
3-1 Materials:	57
3-1-1 The designed seed-drill:	57
3-1-1-1 Frame.....	60
3-1-1-2 Drive system.....	61
3-1-1-3 Ground wheels.....	61
3-1-1-4 Metering (feeder) shaft.....	61
3-1-1-5 Feeder mechanism.....	64
3-1-1-6 Seed tubes.....	64
3-1-1-7 Furrow openers.....	64
3-1-1-8 Covering device.....	64
3-1-1-9 Seed hopper and feeder gate.....	67
3-1-1-10 Markers.....	67
3-1-1-11 Draw bar.....	67
3-1-2 Power tiller specifications used in laboratory tests.....	68
3-1-3 Power tiller specifications used in Field tests.....	68
3-2 instrumentions:	68
3-2-1 Speedometer.....	68
3-2-2 Balance.....	69
3-2-2 Dynamometer.....	69
3-2-3 Graduated cylinder, measuring tape, and stop watch.....	69
3-2-5 Seeds used in the investigation.....	69
3-3 Methods of measurements:	71
3-3-1 Laboratory tests:	71
3-3-1-1 Seed discharge:.....	71

3-3-1-1-1 Ground-wheel speed.....	71
3-3-1-1-2 Gate opening.....	72
3-3-1-2 Seed damage.....	72
3-3-1-3 Seed distribution.....	72
3-3-2 Field experiments:	73
3-3-2-1 Germination percentage.....	74
3-3-2-2 Dispersion of plants around the center of rows.....	74
3-3-2-3 Power requirement:	74
3-3-2-3-a Draft force.....	74
3-3-2-3-b Power.....	74
3-3-2-4 Fuel consumption.....	75
3-3-2-5 Slip of ground wheel.....	75
3-3-2-6 Field efficiency.....	76
3-3-2-7 Final grain-yield.....	76
3-3 Estimating costs of using the machine.....	76
IV- RESULTS AND DISCUSSION.....	78
4-1 Laboratory experiments:	78
4-1-1 Seed discharge:	78
4-1-1-1 Effect of ground-wheel speed and gate opening on delivered seeds.....	78
4-1-1-2 Uniformity of feeding rate from different tubes.....	78
4-1-2 Seed damage and germination:	85
4-1-2-1 Effect of ground-wheel speed on seed damage and germination.....	85
4-1-2-2 Effect of gate opening on seed damage and germination.....	85
4-1-2-3 Effect of feeder material.....	95
4-1-3 Seed distribution:.....	97
4-1-3-1 Seed distribution in transverse direction.....	97
4-1-3-2 Uniformity of seed-distribution along line.....	99
4-2 Field experiments:	103
4-2-1 Effect of forward speed on plants distribution.....	102
4-2-2 Effect of covering device on germination.....	102
4-2-3 Effect of ground-wheel types:	104
4-2-3-1 Slip percent.....	106
4-2-3-2 Draft force and power requirement.....	110
4-2-3-3 Fuel consumption.....	119
4-2-4 Effect of forward speed on field efficiency.....	124
4-2-5 Effect of forward speed and covering types on mass of plant stems, weight of seeds	
4-3 Estimating costs of using the machine.....	127

V- SUMMARY AND CONCLUSION.....	130
VI- REFERENCES.....	130
KEY WORDS.....	145
VII- ARABIC SUMMARY.....	

LIST OF TABLES

Table	Page
2-1 Historical dates for the development of planting and cultivating equipment.....	4
2-2 Design features of seed units.....	17
2-3 Size of graded corn seeds.....	24
2-4 Resistance "K" per meter width of machine.....	52
2-5 Relationship between the draw-pull, forward speed and sowing depth under different types of soil and furrow openers.....	54
4-1 Seed discharge from tubes at different ground-wheel speeds (wooden fluted-wheel).....	79
4-2 Percentage of visible, invisible, and total seed- damage (gate opening width "0.8 cm").....	87
4-3 Seed distribution in transverse direction of the rows at different ground-wheel speeds.....	98
4-4 Frequency percent of feed rates for different ground-wheel speeds at gate opening "0.8 x 3.5 cm ² ".....	100
4-5 Cumulative percent of feed rates for different ground-wheel speeds at gate-opening width "0.8 cm".....	101
4-6 Plants distribution in transverse direction of the rows at different ground-wheel speeds.....	103
4-7 Effect of covering devices on germination percent at different speeds.....	105
4-8 Relation between slip, forward speed, and depth of sowing at different ground-wheel speeds.....	107
4-9 Relation between draft force and power requirement, forward speeds, and sowing depths at different ground-wheel speeds.....	111
4-10 Relation between fuel consumption, forward speeds, and sowing depths for different ground-wheel types.....	120
4-11 Relation between field efficiency and forward speeds.....	125
4-12 Grain yield and yield components at different forward speeds and covering devices.....	126
4-13 Cost of planting for different planting-methods.....	128
4-14 A criterion for judging the economical feasibility and appropriateness of designed seed-drill.....	129

LIST OF FIGURES

Figure	Page
2-1 Methods of sowing and planting.....	7
2-2 Distance (a) between nearest seeds and "P" for drilling, R = inter row width.....	9
2-3 Cup feed-mechanism.....	12
2-4 External force feed mechanism.....	13
2-5 External speed feed mechanism.....	14
2-6 Internal force feed.....	15
2-7 Zones of seed movement in a fluted roll feed unit.....	16
2-8 Position of seeds relative to the cells.....	22
2-9 Release and impact velocities.....	27
2-10 Seed delivery of circular mechanism (wheel type).....	27
2-11 Seeding rate for five width picker-wheels evaluated in semi-circular seed box.....	30
2-12 Drill tubes.....	37
2-13 Furrow openers.....	42
2-14 Collapse of soil in the furrow.....	44
2-15 End-wheel types.....	46
2-16 Press-wheel types.....	47
2-17 Common types of ground wheels used on seed-cum- fertilizer drill in India.....	47
2-18 Devices for covering seeds and tubers.....	50
3-1 Elevation and side view of seed drill.....	58
3-2 Components of seed drill.....	59
3-3 Furrow-opener standards on the frame.....	60
3-4 Types of ground wheels.....	63
3-5 Feed shaft and fluted wheels fixed on the frame.....	65
3-6 The different types of covering devices, and markers.....	66
3-7 Speedometer.....	69
3-8 Electronic balance.....	70
3-9 Dynamometer.....	70
3-10 Stop watch.....	70
4-1 Discharge of seeds at different ground-wheel speeds and gate openings.....	83

4-2 Discharge of seeds at different ground-wheel speeds and gate openings.....	83
4-3 Uniformity of seed delivered from each tube at different ground-wheel speeds and gate openings.....	84
4-4 Visible, invisible and total seed-damage at different ground-wheel speeds (gate opening width "0.8 cm").....	89
4-5 Germination percent at different ground-wheel speeds (gate opening width "0.8 cm").....	89
4-6 Germination percent at different gate openings and ground-wheel speeds.....	90
4-7 Germination percent at different ground-wheel speeds.....	94
4-8 The percentage of seeds found on left and right of the center line of rows at different ground-wheel speeds.....	98
4-9 Relation between seed distribution and ground-wheel speed.....	100
4-10 Cumulative percent of feed rates for different ground-wheel speeds at gate-opening width "0.8 cm".	101
4-11 The percentage of plants found in left and right of the center line of the rows at different ground-wheel speeds.....	103
4-12 Germination percent for different covering-devices at different forward-speeds.....	105
4-13 Slippage percent at different forward-speeds and sowing depths..	109
4-14 Draft force of machine at different forward-speeds and depths.....	114
4-15 Draft force of machine at different ground-wheel types and forward speeds.....	115
4-16 Power requirement of machine different forward-speeds and depths.....	117
4-17 Power requirement of machine with different wheel- types and forward speeds.....	118
4-18 Fuel consumption at different forward-speeds and depths.....	123
4-20 Field efficiency at different forward-speeds.....	125

INTRODUCTION
