



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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**EVALUATION OF ON-FARM IRRIGATION
DEVELOPMENT PROJECTS BY USING
SIMULATION MODEL**

By

REHAB MAGDY YOUSSEF MOHAMED

B.Sc. Agric. Sc. (Agricultural Engineering), Fac. Agric., Ain Shams
University, 2008

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ABSTRACT

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The research problem:

- water shortage.
- Low efficiency of surface irrigation.
- Lack of water productivity.

The experimental fieldwork was conducted at the On-farm Irrigation Development Project in Asuit Governorate, Upper Egypt.

The objective of this work was to study the performance of the improved surface irrigation system and compare it with the conventional surface irrigation system. The performance indicators were conveyance efficiency, application efficiency, field water use efficiency, and crop yield. and this research was to evaluate the modified surface irrigation systems' design under old land conditions of Egyptian agriculture based on the simulation model.

Design based on: Determine and calculate the actual water need based on the data of the crop pattern and cultivated areas, and inventory the needs of the partners in control

The development of the field irrigation system depends on the use of the main pipeline (low-pressure pipeline) instead of the current earthen mesqas and maraw's or those built above the ground, in addition to a branch pipeline either perpendicular or parallel to the main pipeline

There are main valves on the main pipeline, which in turn either feeds the branch pipeline or pours into the mesqas inside the field, and from each branch line comes out a set of exits (Hydrants) Which covers a specific area. On top of the mainline, there is a pump station to pump water directly into the mainline Data analysis revealed that:

There is a different difference in hydraulic design velocity, because the basic design with higher diameters is supposed to be, and accordingly, the speeds are very reduced, and the pressure loss is very reduced, but the cost is high.

There are technical and financial differences: The modified design of the diameters was modified based on the calculated behaviors, both in scenarios 1 and 2, according to different operating methods and the number of daily working hours. Accordingly, an economic study was conducted compared to the basic design and the modified design. It was found that the economic study is different by 50% for scenario 1 and 30% for scenario 2 less than the main design.

Keywords: Surface irrigation, Conveyance efficiency, Water use efficiency, Application efficiency, Simulation model, Irrigation Design and pipe test.

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CONTENTS

	Page
LIST OF TABLES	III
LIST OF FIGURES	IV
1 INTRODUCTION	1
2 REVIEW OF LITERATURE	4
2.1 On-farm Irrigation definition and types in Egypt	4
2.2 On-farm Irrigation system evaluation and Delivery Systems	5
2.3 Surface Irrigation Definition and types	6
2.3.1 Surface irrigation types	7
2.3.2 Advantages and Disadvantages of Surface Irrigation and Efficiency	8
2.4 Evaluation of Surface Irrigation System	10
2.4.1 Irrigation efficiencies and their types	11
2.4.2 Factors Affecting Irrigation Uniformity and Efficiency	12
2.5 Irrigation Water Management	13
2.5.1 Irrigation Management Projects in Egypt	15
2.5.2 Improvement of Egyptian surface irrigation network in the oldlands (mesqa and marwa)	17
2.6 Surface Irrigation Design	19
2.7 Model Development	20
2.7.1 Simulation model therapy	20
2.7.1.1 Definition of the simulation	21
2.7.2 Simulation model verification and validation	22
2.7.3 Advantages/Disadvantages of using simulation	23
2.7.4 Simulation model applications in irrigation	23
2.7.5 Programing using in Design	23
3 MATERIAL AND METHODS	30
3.1 Experimental Site	30
3.2 Materials	32

	Page
3.2.1	Irrigation Systems 32
3.2.2	Improved surface irrigation system 33
3.2.2.1	Description of improved surface irrigation 33
3.2.2.2	Components of improved surface irrigation network 33
3.2.2.3	Pumping unit and its components in improved surface irrigation 34
3.2.2.4	Mesqa type 35
3.2.2.5	Buried pipe (UPVC) description 35
3.2.2.6	Lining Mesqa (U- Section): 37
3.2.2.7	The buried pipes system calibration and test procedure 38
3.2.2.8	Main lines and branch lines 38
3.2.3	Traditional surface irrigation 39
3.2.4	Measuring devices 40
3.3	Methods 41
3.3.1	crop pattern and its water requirement's 41
3.3.2	design concept of modified surface irrigation systems 42
3.3.3	Water requirements 42
3.3.4	Field Study 42
3.3.4.1	Initial planning 42
3.3.4.2	Concepts of evaluating the modified surface irrigation hydraulic design 43
3.3.5	Design Outputs 44
3.3.6	Using Simulation Model technique 45
3.3.7	Field experimental work 46
3.3.7.1	Crop fields study 46
3.3.8	Determine the actual technical performance of the developed surface irrigation systems 46
3.3.9	The irrigation water amount 47
3.3.10	Advance, recession and opportunity time 47
3.3.11	Water conveyance efficiency, (WCE) 47
3.3.12	Water Application efficiency, (WAE) 48

	Page
3.3.13 Water storage efficiency, (WSE)	50
3.3.14 Water distribution efficiency, (WDE)	50
3.3.15 Water Overall Efficiency, (WOE)	50
3.3.16 Field water use efficiency, (FWUE)	51
3.3.16.1 Hydraulic guides to compare designs	52
3.3.16.2 Hydraulic Calculations	52
3.3.16.3 Using Simulation Model technique	53
3.3.16.4 scenarios	55
4 RESULTS AND DISCUSSION	67
4.1 Hydraulic designs evaluation under different scenarios	67
4.2 Irrigation water velocity under different developed scenarios	68
4.3 Irrigation water losses under different developed scenarios	68
4.4 Hydraulic evaluation of irrigation systems	69
4.5 Evaluation of the buried pipes system performance	70
4.6 Amount of applied water	71
4.7 Water application efficiency (WAE) performance	73
4.8 Yield of crops	74
4.9 Field water use efficiency	75
4.10 Price list Analysis.	76
5 SUMMARY AND CONCLUSION	78
6 REFERENCES	82
7 APPENDICES	90
8 ARABIC SUMMARY	114

LIST OF TABLES

Table No.		Page
Table 3.1	Specifications of the pumping units used in the improved surface irrigation system	33
Table 3.2	The pumping unit specifications for each mesqas	35
Table 3.3	The buried pipe components and its quantities area field 43 fed	36
Table 3.4	Crops that used in the study.	46
Table 4.1	The value of both velocity and discharge through different types of mesqas.	70
Table 4.2	The actual experimentally measured of buried pipes system.	70
Table 4.3	Effect of developed surface irrigation on productivity of crop.	75
Table 4.4	Effect of list of prices as a result of changing the design.	77

LIST OF FIGURES

Fig. No.		Page
Fig. 2.1	A multi-step approach for conducting a successful simulation study	22
Fig. 3.1	Design Discharge in the irrigation network of El-Hammam Area. (MALR - 2012)	31
Fig. 3.2	Pumping unit and the socket on branch canal.	35
Fig. 3.3	Layout for buried pipelines Mesqa (lateral canal)	37
Fig. 3.4	Layout lining Mesqa (lateral canal)	38
Fig. 3.5	branch line and its components in improved surface irrigation.	39
Fig. 3.6	Multi-pumps and earthen mesqa as used in traditional surface irrigation.	40
Fig. 3.7	Experiment layout.	52
Fig. 3.8	Original design by Autocad program	54
Fig. 3.9	Effect of traditional and pipes irrigation systems on total water applied under different lateral lengths.	56
Fig. 3.10	Evaluate the design by modifying a dropper based on the assumption to run the complete disposal of the entire network	58
Fig. 3.11	Effect of traditional and pipes irrigation systems on water saving under different lateral lengths and hydraulic calculation by Water Cad Program	59
Fig. 3.12	Effect of Reesign and pipes irrigation systems on total water applied under different lateral lengths and sizes by exl S.1	60
Fig. 3.13	Effect of Reesign and pipes irrigation systems on total water applied under different lateral lengths and sizes by water cad Program	61
Fig. 3.14	Effect of Reesign and pipes irrigation systems on total water applied under different lateral lengths and sizes	66

before Redesign by exl S.2

Fig. 4.1	Effect of velocity in all design and scenario.	68
Fig. 4.2	Effect of head loss (m) in all design and scenario.	69
Fig. 4.3	Effect of Total head loss (m) in all design and scenario.	69
Fig. 4.4	mesqa types on Applied water for irrigation number for winter crops under different mesqas types.	72
Fig. 4.5	Effect of mesqa type on applied water for summer crops	72
Fig. 4.6	Application efficiency during winter and summer seasons	74
Fig. 4.7	Field water use efficiency affected by type crop for different of season	76
Fig. 5.1	opening screen For Watercad Program	92
Fig. 5.2	Create new project	92
Fig. 5.3	The main commands of the program	93
Fig. 5.4	how to draw pipes	95
Fig. 5.5	how to make reservoir	95
Fig. 5.6	Defining the pump in 3 different ways	97
Fig. 5.7	Flexible Tables	98
Fig. 5.8	Fill in the reporting tables for each item	99
Fig. 5.9	The hydraulic analysis process started-Run process	103
Fig. 5.10	Run analysis	104
Fig. 5.11	Review of the raw results (1st Output data) and review of the design	105
Fig. 5.12	Flexible Tables Method	105
Fig. 5.13	Detailed Report	106
Fig. 5.14	Table management	107
Fig. 5.15	Pump and Reservoir Report	108
Fig. 5.16	Tools – Color Coding	111
Fig. 5.17	Final Reports	112