THE USE OF SOLAR DISTILLERS IN SALT WATER DESALINATION

By

NAGWA MOHAMED TAHA IBRAHIM

B.Sc. Agric. Eng. and Biological, Fac. Agric., Ain Shams Univ., 2015

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This thesis for M.Sc. degree has been approved by:

Dr. Mahmoud Abd Elrahman El Shazly ……

Prof. Emeritus of Agricultural Engineering, Faculty of Agriculture, Zagazig University

Dr. Ahmed Abou El-Hassan Abdel-Aziz ……..……

Professor of Agricultural Engineering, Faculty of Agriculture, Ain Shams University

Dr. Moustafa Fahim Mohammed Abd El-Salam ……

Associate Prof. of Agricultural Engineering, Faculty of Agriculture, Ain Shams University

Date of Examination: 14 / 11 / 2019

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NAGWA MOHAMED TAHA IBRAHIM

B.Sc. Agric. Eng. and Biological, Fac. Agric., Ain Shams Univ., 2015

Under the supervision of:

Dr. Mohamed Nabil EL Awady (Late)

Prof. Emeritus of Agricultural Engineering, Department of Agricultural Engineering, Faculty of Agriculture, Faculty of Agriculture, Ain Shams University

Dr. Moustafa Faheem Mohamed Abdel-Salam

Associate Prof. of Agricultural Engineering, Department of Agricultural Engineering, Faculty of Agriculture, Faculty of Agriculture, Ain Shams University

ABSTRACT

Nagwa Mohamed Taha Ibrahim: The use of solar distillers in salt water desalination. Unpublished M. Sc. Thesis, Department of Agricultural Engineering, Faculty of Agriculture, Ain Shams University, 2019.

In this study، solar energy was utilized to distillate and purify saline water throw a conventional solar still.. which is considered one of the best solutions to over come the potable water shortage in remote arid areas. The experiments were conducted at four saline water depths (1, 2, 3 and 4 cm from the still bottom) and at two levels of water salinty (15000 ppm and 35000 ppm). But this system is not popular because of its lower productivity ،so the aim of this study is to used another systems to increase the performance of the solar desalination. Wick solar still using one of the methods to increase the productivity is by decrease the volumetric heat capacity of the basin. The use of tilted wick material in the basin will increase the evaporation area and enhance the production. Research experiment was statistically designed and practically applied at the Solar Energy Laboratory, Dept. of Agric. Eng., Fac. of Agric., Ain Shams University, Cairo (φ=30°N).

The results proved that the highest quantity of distillate water rate in conventional still was 3487 mL at water depth of 1cm and water salinity of 15000 ppm in May.while, the lowest value of distillate water rate to1615 mL at water depth of 1 cm with salinity 35000 ppm in January. On the other hand the results explained that the highest amount of distillate water rate in wick solar still was 5066 mL at water salinity at 15000 ppm in May.while the loewst value of distillate water rate was 2844 mL at salinity 35000 ppm in January.

Keywords: Solar desalination; Solar still; Tilted wick; Passive solar stills; Active solar stills.

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CONTENTS

LIST OF TABLES

LIST OF FIGURES