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EVALUATION OF PARTIAL ROOT ZONE DRYING IRRIGATION UNDER GATED PIPE FOR CORN CROP

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CONTENTS

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

ABSTRACT

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Now days, Egypt is suffering from the scarcity of fresh water. Egypt is one of the event states under the water poverty line, who is identified as less than 1000 m^3 per capita per year due to the existence of dry climatic conditions in most parts of the country and limited available water resources, optimization and saving of water consumption have vital importance. Partial root-zone drying (PRD) has been proved to be an optimal water-saving irrigation technology, the aim of this study is to access to the effect of partial root zone drying (Alternate and fixed) on corn yield, water distribution efficiency and water use efficiency comparing with control irrigation and conventional irrigation.

Field experiment was conducted during the summer season, 2017 at the Agricultural research station, Etay-El-Baroud, El-Behera Governorate. Corn crop of triple hybrid, Giza- 310 was planted under irrigation regimes partial root zone drying (PRD) alternate partial root zone drying (APRD) and fixed partial root zone drying (FPRD) and conventional irrigation (CI) comparing with control irrigation .With two levels of land leveling (0.05% - 0.1%), and with three water cutting time. The experimental area was irrigated by 6 inch PVC gated pipes.

The results indicated that the APRD achieved the highest value of corn production (about 7.85 Mg. ha^{-1}) at water applied of Q_3 under slope 0.1% and improving water use efficiency (WUE) at applied water of Q_2 (1.73kg. m^{-3}) under slope 0.1%. Also, the APRD saved about 37.16% of applied water (Q_2) at slope 0.1%.

Key words

Gated pipe system -Conventional irrigation – Partial root zone irrigation (Alternate –Fixed) –Corn - Water use efficiency.