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“CHEMIGATION THROUGH SURGE FLOW TECHNIQUE”

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THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

In

Agricultural Science

(Agricultural Mechanization)

Agricultural Engineering Department,

Faculty of Agriculture,

Kafrelsheikh University

Egypt.

2019



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(Agricultural Mechanization),
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ABSTRACT

In the context, the experiment was carried out at a private farm on Tanta city, Gharbeia Governorate, Egypt during season 2017. The aim of the present work was to improving management of surge flow technique led to access high application efficiency, water distribution uniformity, fertilizer application and fertilizer uniform in comparison to traditional furrow irrigation under clay loam textured soil for corn crop in Delta Egypt. Treatments were 4, 5 and 6 pulses with 0.56, 0.75 and 0.95L/s discharges of water and chemicals injected surge applied uniformly in a 140 meters long line. Results showed that Water application efficiency of 6 pulses treatment was recorded the highest value at discharge of 0.95L/s which was 79% and the lowest value was 56% for continuous flow with discharge of 0.56L/s treatment. The best value of water distribution uniformity was obtained under surge flow with 5 pulses which was 93% at 0.75L/s, while the lowest value was occurred under continuous irrigation which was 66% at the discharge 0.56L/s treatment. Chemicals distribution uniformity best value was 63% under 5 pulses treatment through 3rd injected surge using 0.95 L/s discharge. The highest value of water productivity was obtained by 1.83kg/m³ by treatment of 6 pulses with the flow rate of 0.95L/s at fertilization in the fourth pulse compared to all other treatments. The highest value of irrigation cost was 924.5L.E/fed/season under discharge of 0.56L/s with continuous flow irrigation compared with the lowest value of it was 679.7L.E/fed/season through 6 pulses treatment at discharge of 0.95L/s.

KEYWORDS:

Surge flow, furrow irrigation, chemicals, chemigation, fertilizer, fertigation, uniformity.