ABSTRACT

Nasr Ibrahim Mohamed Abou El Nour, Optimum design of level and graded furrow irrigation system for chemigating some crops. Unpublished Doctor of Philosophy dissertation, University of Ain Shams, Faculty of Agriculture, Department of Agricultural Engineering, 2003.

An investigation was carried out in order to study the effect of land slope, furrow length and inflow rate on some chemicals properties such as soil moisture content, acidity and salt distribution , Hydraulics of water movement over and into soil , fungicide residues in water and soil. In addition the crop yield and water use efficiency were also considered after fertigation and fungigation

An experimental field was selected in clay loam soil at shalaqan area (Delta region). The field was planted by maize and pea crops under surface irrigation system. Three different furrow length i.e. 100m, 75m and 50m were used at the different designed land slope with different inflow rate.

Equations were derived to describe the relationship between graded land, furrow length, inflow rate, soil acidity, salinity, moisture content, hydraulic movement of water over & into soil and fungicide residues in water and clay loam soil under the condition.

The obtained results indicated that the higher maize and pea yield was achieved with graded land , 75m furrow length and 2 L/s inflow rate .

Key words: furrow length, inflow rate, intake depth, chemigation, fungigation, tolclofos-methyl, fungicide residue, salinity, acidity, moisture content, water use efficiency, infiltration, deep percollation, uniformity, runoff, depth need, advance, recession, opportunity time, maize and pea crop.

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