

EFFECT OF ORGANIC MANURE AND MULCHING ON SOIL MOISTURE DISTRIBUTION UNDER DEFICIT DRIP IRRIGATION SYSTEM FOR POTATO.

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ABSTRACT

Field experiment was conducted in Al- mameer region 50 km west of Baghdad at east longitude $43^{\circ} 88' 8.0''$ and north latitude $33^{\circ} 0' 27' 42.0''$ during autumn season 2010, The soil was classified as typical torrifuvent that silt loam texture , to study the effect of organic manure(Animal residual) and soil mulching(peatmoss+wood excelsior) on moisture distribution under deficit drip irrigation. Split- split with R.C.B.D design was applied with three replications. The study includes three levels of deficit drip irrigation(100% , 75% ,and 50% from Epan. secondary treatment was included organic manure(sheep+cows+poultry) mixture percent 1/3 both of type with three levels(without organic manure,(5ton.ha⁻¹),and (10ton.ha⁻¹). where the sub secondary treatments included soil mulching with plant residual mixed from (peatmoss+wood excelsior) and without mulching .3 kg.m⁻² of plants residual was added mixture percent 50:50%.The distribution of moisture in soil treatments were measured in three stages during the growth season for potato yield after (45, 60,and100 day of planting) for the distance 0-30 cm in vertical and horizontal from the emitter. The graphs of moisture distribution were constructed using surfer program(version 9).Results showed that moisture content decreased far from drippers vertically and horizontally ,with great rates under level irrigation 50% from Epan. But with advancement plant growth stages(Initial stage , tuber development and ripening stage)notice increased moisture content for soil. It caused advanced growth stages to increased adding water depth depend on rooting zone. Which was for control treatment and depth 10-10 cm 16.5%,13.3% and 11.4% adding 100%,75% and 50% from Epan respectively in growth season initial. But when adding two level from organic manure (10 ton.ha⁻¹) with mulching and notice increase moisture content when added this level which was moisture content value 29.5%,23.8% and 19.8% for the depth 10-10 cm when adding 100%,75% and 50% respectively in growth season end.

Key words : moisture distribution,organic manure,mulching,deficit drip irrigation, potato.