

Comparison of surface and drip irrigation regimes on growth and yield of banana (*Musa* AAA) in Gezira, Sudan

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ABSTRACT

The experiment was established in the Horticultural Research Centre Farm of the Agricultural Research Corporation (ARC), between November 2009 and October 2011. Five irrigation treatments were applied under drip irrigation system. These were 40%, 60%, 80%, 100% and 120% of crop evapotranspiration (ET_c). The traditional surface irrigation was used as a control. Drip irrigation was applied every other day. In surface irrigation method, irrigation scheduling was every 3 days at the beginning, then the interval was increased gradually to every 5-10 days depending on the prevailing weather conditions. Results on growth parameters varied depending on the quantity of water applied under drip irrigation system. Applying water at 100% and 120% of ET_c under drip irrigation resulted in either higher or equal performance on all growth parameters tested relative to the surface irrigation. However, bunch weight for the mother plant and the first ratoon crops of banana were significantly variable by drip irrigation. The highest bunch weight was obtained with 100% and 120% of ET_c compared to surface irrigation. Drip irrigation treatment of 100% of ET_c increased yield by 23% and at the same time saved irrigation water by 74% compared to surface irrigation. The highest irrigation water productivity (1.4 and 1.43 kg/m³) was obtained with 100% and 120% of ET_c under drip irrigation and the lowest (0.30 kg/m³) was produced with surface irrigation.