Physiological studies on fertilization mango trees grown in sinal

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This study was conducted in two successive seasons (2003 and 2004) on Sukkary mango trees cultivar grown in an private orchard at wade El-tequnologia region in Sinai east Suez canal , Ismailia Governorate to the study response of mango trees to three organic manure sources (poultry manure , sheep dung and compost), olive oil waste water at 25 or 50 L. ree and inoculation the soil with mixed (N-fixation and phosphate dissolving bacteria) on growth, nutritional status, yield and fruit quality of mango trees.One hundred and forty four trees Sukkary mango cultivar (seven years old) nearly uniform in shape, size of growth and planted on a sandy soil at 7 + 7 meters distances and irrigated through drip irrigation system were selected.All trees under investigation were subjected to the same agricultural care usually done in the orchard .The experiment was involved three factors in split split plot completely randomized block design .The main plots were organic fertilizers ,sub plots were olive oil waste water and sub sub plots were biofertilization .1-The first factor involved the three organic fertilizers in addition to the check treatment :-a-Poultry manure (10 m3/feddan) added to soil in the end of December.b-Sheep dung (10 m3/feddan) added to soil in the end ofDecember.c-Compost-agriculture waste (50 kg/tree) added to soil in the end of December2-The second factor was two levels of olive oil waste water oliveoil waste water at 25 or 50 L/tree added to soil in the end of December and the control treatment .3-The third factor consisted from biofertilization treatment (one liter from Azotobacter, one liter from Azospirilillum and one liter from phosphate dissolving bacteria (PDB)) were mixed, dissolved in 140 liter water and added at 2 liter tree in the first of February and unbiofertilization treatment.The following measurements were recorded :-VI-1-Vegitative growth :-The vegetative growth parameters as (shoot length,number of leaves per shoot, leaf length, leaf width, leaf shape index and leaf area).VI-2-Nutritional status :-Macro elements (N, P, K, Ca, Mg%) and microelementsFe, Mn and Zn as ppm) as indicator to nutritional status of Sukkary mango trees.VI-3- Leaf chlorophyll contentVI-4-Flowering measurements and yield indicators :-Yield indicators of Sukkary mango trees grown in Sinai i.e., (sex ratio % , malformed panicle, fruit set %, fruit DROP percentage , yield as number and weight of fruits per tree).I-5- Fruit quality :-VI-5-1-Physical properties :-Fruit physical properties of Sukkary mango trees grown in Sinai i.e., (fruit weight (gm), fruit volume (cm3) , fruit length (cm) , fruit diameter (cm) and fruit shape index).IV-5-2-Fruit chemical properties :-Fruit chemical properties of Sukkary mango as (total soluble solid (TSS) % , total acidity % , TSS acidity ratio, vitamin C (mg100m1 juce) ,total sugars % , reducing sugars % and non reducing sugars %).IV-6-Soil chemical properties :-Soil chemical properties at the end of experiment in Sinai i.e., (EC, mmhos cm , pH, organic carbon , organic matter , total nitrogen and ON ratio).IV-7-Soil microbial content:-Total bacterial counts , counts of Azotobacter , Azospirillum and phosphate dissolving bacteria (PDB).The obtained results in both seasons could be summarized as follows :-VI-1-Vegetative growth :-1- Generally organic manure sources (poultry manure, sheep dung and compost) increased all vegetative growth parameters. However, poultry manure treatment surpassed the other two treatments number of leaves per shoot followed by compost, but compost treatment surpassed the other two treatments in shoot length, leaf length, leaf width, leaf shapeindex and leaf area followed by poultry manure and sheep dung gave the lowest increase in all vegetative growth parameters during both seasons.2-Single use of olive oil waste water at 25 or 50 L.1tree enhanced all vegetative growth

parameters compared with untreated trees and using it at 25L. ree was better than at 50L1tree during both seasons of study .3-Inoculate trees with biofertilization gave the highest values of all vegetative growth parameters compared with uninoculated trees .4-Fertilization mango trees with organic manure and inoculation with biofertilization gave better results than single organic fertilization in both seasons . In addition , compost + biofertilization gave the highest values in all vegetative growth parameters except number of leaves per shoot which increased with poultry manure + biofertilization5-Use olive oil waste water at 25 or 50 L. ree and organic manure had positive result than single organic manure . Besides, using olive oil waste water at 25 L. rcc and organic manure was better than using it at 50 LAtree with organic manure and compost + olive oil waste water at 25 L. ree surpassed on other combination in all vegetative growth parameters except number of leaves per shoot which increased with poultry manure + olive oil waste water at 25LAtree .6-Using biofertilization with olive oil waste water at 25 L.1tree gave the highest values compared with use olive oil waste water at 50 L. tee in all vegetative growth parameters during both seasons of study .