Effect of Some Citrus Rootstocks on Gold Nugget Mandarin Behavior and Improve Productivity and Quality under Delta Condition

BY

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ABSTRACT

This investigation was carried out during three seasons (2018/2019;2019/2020; 2020/2021) through two sub- main experiments on 12 years old identical "Gold Nugget" trees *Citrus reticulata* Blanco (Wilking mandarin x Kincy mandarin). Grown at 2×6 ^{M} in silt soil under an Immersion irrigation system in a private orchard at Al Qalyubia Governorate, Egypt. Experimental I: studded the effect of some citrus rootstocks troyer citrange *Citrus sinensis* 'Washington' x *Poncirus trifoliate* "Tr"; sour orange (*Citrus aurantium* L.) "SO" and volkamer Lemon (*Citrus volkameriana*) "VOL" on Gold Nugget mandarin trees performance. Experimental II: improving tree productivity and fruit quality of Gold Nugget trees budded on volkamer Lemon (*Citrus volkameriana*) "VOL" by using some horticultural treatments (fruit thinning, foliar nutrition substances and Climate anti stresses) treatments. Results indicated that **Experimental I:** the three rootstocks fluctuated in its effect on Gold Nugget tree growth performance, whereas, "Tr" rootstock gave the highest values of spring cycle flushes, increasing of tree canopy, fruit set %, leaf photosynthesis pigments, total carbohydrates%, leaf K%, "Fe & Zn" ppm, productivity and TSS%. "SO" rootstock record the highest: shoot thickness, increasing of the tree canopy, number of spring flushes, total carbohydrates %, leaf N%, peel thickness and juice vitamin C & TSS/ Acid ratio. "VOL" rootstock gave the highest: number of leaves/shoot, leaf area, tree canopy volume, number of summer flushes, number of flowers, leaf "N &Ca" %, "Fe & Zn" ppm, fruit weight & peel thickness and TSS/ acid ratio. **Experimental II:** fruit thinning significantly increased: leaf area, tree canopy volume and TSS/ Acid ratio, both spring or Summer growth cycles, leaf carbohydrates, leaf "N &" K %, "Fe & Zn" ppm; Potassium nitrate foliar application statistical improved: shoot thickness, number of leaves/ shoot, spring growth cycles, chlorophyll a and total chlorophylls, Dry Matter%, leaf K %, "Fe &Zn" ppm; *spirulina platensis* algae gave the highest: number of leaves/ shoot, number of flowers and fruit set %, leaf K %, "Fe, Zn & Mn " ppm, number of fruits/tree and tree yield efficiency, juice Vitamin C and a mixture from potassium sulfate+ zinc sulfate + salicylic acid significantly increased: both spring or summer growth cycles, leaf chlorophyll a & b, total chlorophylls, leaf: N %, "Zn& Mn" ppm, tree yield as kg/tree and kg/ M^3 and physical properties.

Keywords: Gold Nugget, Thinning, KNO3, *spirulina platensis* algae, Fruit quality.

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