EFFECT OF FOLIAR APPLICATION OF ZINC, POTASSIUM AND GIBBERELLIC ACID ON FRUIT QUALITY,YIELD AND LEAF MINERAL CONTENTS OF BALADY MANDARIN AND WASHINGTION NAVEL ORANGE TREES

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ABSTRACT

The effect of foliar application of zinc, potassium and gibberellic acid on yield, fruit quality and leaf mineral composition of Balady mandarin (*citrus deleciosa,*Ten) and Washington navel orange (*citrus sinensis* L. Osbeck) trees was investigated in a field study on alluvial clay loam soil at El-Fayum, Egypt during two successive seasons (2000 and 2001). Different foliar treatments of Zn (50_{ppm}), K (100_{ppm}) and GA_3 (10_{ppm}) concentrations alone or in combinations with each other were used. The obtained results revealed that the fresh fruit weight, fruit diameter, peel percentage, juice volume, vitamin C and yield have been significantly responded with the used treatments . Also, the used treatments led to significant decreases in the juice acidity percentage of Balady mandarin and Washington navel orange compared to the control. TSS percentages in the fruit juice of Washington navel orange were higher as a result of the used treatments compared to the control. However, TSS of fruit juice of Balady mandarin trees were differed among the used treatments and seasons. Leaf nitrogen, phosphorus, potassium, zinc, manganese and iron contents were found to be significantly or insignificantly affected by use treatments. The effective role of the used foliar treatments in improvement of fruit quality, yield and leaf mineral contents has been apparently established. Therefore, foliar application seems to be valuable in concerning the wide spread occurrence of nutrient deficiencies, in addition to improving the productivity and quality of both Balady mandarin and Washington navel orange fruits, as well as avoiding their uptake difficulties. A combination of the foliar application of N, K and GA3 at certain concentration was clearly superior for Balady mandarin and Washington navel orange trees as an agro-management technique for fertilization. This may be attributed to the statement that the foliar applications of Zn, K and GA_3 supply and balance the deficient nutrients in the plants as a stimulator to some enzymatic reactions and growth regulators effect. Thus, under the conditions of current experiment the yield, fruit quality and leaf mineral composition of Balady mandarin and Washington navel orange had been markedly affected to various degrees by foliar applications of Zn, K and GA_3 and this depends on concentrations, combinations and application spray techniques.