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ABSTRACT

Rania Mohammed Abdel-Hamid. Chemical and Physical Interactions between Plant Growth Regulator and some Pesticides in Vineyards. Unpublished M.Sc. Thesis, Department of Plant Protection, Faculty of Agriculture, Ain Shams University, 2008.

The present study aimed to throw light on the interactions between one of the plant growth regulator and some pesticides in vineyards. The obtained results indicated that there were a physical compatibility between used agrochemicals Sumithion, Sumi-eight and the plant growth regulator GA3 at their field dilution rates in both soft and hard water. This work was carried out during both 2006 and 2007 seasons on twenty years old vigorous fruitful Thompson seedless grapevines grown in private vineyard at Kalubia governorate. Data indicated the great influence of the two tested pesticides and the plant growth regulator when used alone and in their mixtures on their degradation pattern. More degradation was recorded with the mixture of the two tested pesticides and plant growth regulator compared with each one alone in all intervals during the two seasons. The corresponding recommended pre-harvest intervals (PHI) were 7 and 5 days at the two seasons after application for diniconazole alone and its mixture with fenitrothion and GA3, respectively. The PHI,s reached 9 and 7 days for fenitrothion alone and its mixture with diniconazole and GA3, respectively. On the other hand, the PHI,s were 4 and 2 days for GA3 alone and its mixture with the two tested pesticides, respectively. The obtained data indicated the great role of exposure to different temperatures on the degradation rates of the two pesticides and the plant growth regulator. In this respect, the mixtures of the two pesticides with the plant growth regulator showed more degradation than each one alone or each one mixed with the plant growth regulator. Data

also indicated the great role of UV-rays and direct sunlight on the degradation rate of the two tested pesticides and the plant growth regulator. Data clearly showed that the mixture of (diniconazole + fenitrothion + GA3) had the highest degradation rate than its content when exposed separately to UV-rays and direct sunlight. The decomposition rate with exposure to sunlight was much more than that occurred with UV-rays.

Results showed that GA3 alone or in combination with the pesticides increased T.S.S and reducing acidity for both seasons. The GA3 treatments in combination with the pesticides or alone significantly increased the total yield, cluster weight, berry weight, size, length, width, bunch compactness and rachis weight, berry shape become global at both seasons of 2006 and 2007**.**

Key words: Compatibility, Diniconazole, Fenitrothion, Plant growth regulator (GA3), Residues, Thermal and photodegradation, quality, Thompson seedless grapes

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I. INTRODUCTION

Grape (*Vitis vinifera*) is one of the most widely-grown fruit crop in the world. Thompson Seedless grape cultivar ranking as the most important table grape variety grown in Egypt. Worldwide, the planted areas of grapes are estimated by 24 million feddan and the total yield exceeds than 60 million ton. In Egypt, the grape is planted in different type of soils and represents the second position between fruit crops after citrus.

In this respect, the protection of grape crop from the attacking of pests is considered as a key factor for the mass production of fruits. However there are a wide range of pests including insects, nematodes, fungi, bacteria, virus and weeds **(Abdel-Attey, 1994).** Such pests are affecting significantly the quality and quantity of grape production. To protect grape crops from the target pests it was followed different techniques of pest control, i.e. agricultural, legal, mechanical and chemical among others. As chemical control techniques, pesticides have been used in a wide variation of agricultural application in grape crops to control insects, pathogens and combat weeds.

Grape crop is mainly subjecting to infestation with mealy bugs, powdery mildew and berry rot. The insecticide fenitrothion (Sumithion) is recommended for controlling mealy bugs and thrips, while the triazole fungicide diniconazole (Sumi-eight) is recommended for controlling powdery mildew and berry rot according to pest control program**, (Ministry of Agriculture and Land Reclamation, Egypt ,2001).**