MONITORING OF PESTICIDAL RESIDUES IN CERTAIN COMPONENTS OF AGRO ECO-SYSTEM IN KALUBIA GOVERNORATE

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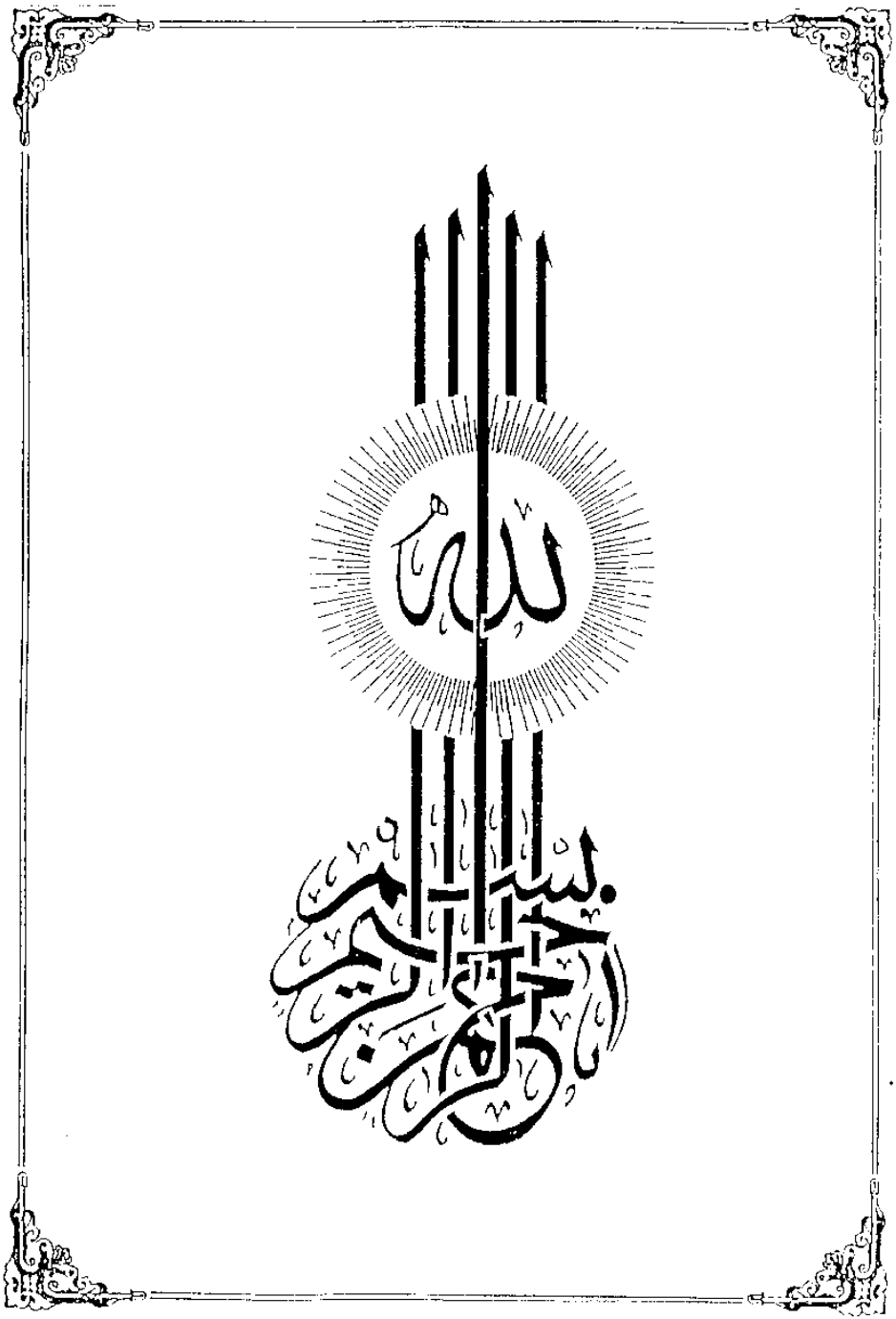

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ABSTRACT

Khaled Abd El-Aziz Mohamed . Monitoring of pesticidal residues in certain component of agro-ecosystem in Kalubia Governorate. Unpublished Doctor of Philosophy dissertation , University of Ain Shams Faculty of Agriculture, Department of Plant Protection. 1995.

Residues of certain organophosphorus and synthetic pyrthroid insecticides on vegetables under plastic house conditions were studied. The initial deposit, degradation behaviour and pre harvest interval (PHI) of the tested insecticides were the criteria of concern. As for t1/2 's (residue half lives), fenpropathrin, fenitrothion, malathion and pirimiphos-methyl insecticides showed t1/2's of (4.326, 3.839, 3.640 and 2.318 days), (6.026, 5.680, 5.372 & 3.960 days) & (6.143, 6.021, 5.457 & 4.559 days) on cucumber, pepper and tomato fruits, respectively. The corresponding calculated PHI were [>14, >14, 4.40 & 7.50 days], [6.40, >14, 12.75 & 8.80 days] & [8.85, 12.00, 3.30 & 7.85 days] for the same insecticides on treated vegetables, respectively. Also distribution of isoprothiolane (Fuji-one) fungicide residue in an agro eco-system of paddy rice was studied and data indicated that the majority of isoprothiolane deposits were found on rice leaves and surrounding soil. Negligible residues was found in the other components of rice agro-ecosystem especially sediment and irrigation water. Drainage water was found free of fungicide residues within all experimental intervals. At harvest, rice grain contained very low residues of the fungicide. In addition monitoring of insecticide residues in soil, drainage water, milk, cheese, bee honey and certain edible vegetables and fruits in market basket was carried out. Data indicated presence of insecticidal residues of different

chemical groups, especially organochlorine as major contaminants and organophosphorus, carbamate and synthetic pyrethroids as minors. Organochlorine insecticides were detected in soil, milk, cheese samples, while no or traces monitored in drainage water samples. Bee honey samples were found free of some chlorinated hydrocarbons. In general, the presence of these compounds was found to be less than the maximum residues limits (MRL's). On the other hand O.P's in general were not detected in soil and drainage water system, with few exceptions. Chlorpyrifos-ethyl and fenitrothion were detected in some soil samples at certain periods. Bee honey samples contained malathion . In addition O.P's residues were found contaminating milk and cheese samples. As for synthetic pyrethroids, fenvalerate was detected in soil samples and fluvalinate was detected only in honey samples. Carbamate insecticides carbaryl and methomyl were detected in` one of the analyzed soil samples. Market basket survey of vegetable and fruit samples indicated the presence of organochlorine, organophosphorus, carbamate and pyrethroid compounds at different levels higher than MRL's in certain cases which is of much concern. Decontamination of insecticidal residues from vegetables and fruits through laboratory processing indicated that certain technological treatments could free vegetables of insecticidal residues.

Key words:

Monitoring - Decontamination - Pesticidal residues - Soil -Drainage water- Milk- Dairy products- Bee honey - Vegetables - Fruits- Kalubia governorate.

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