

تقصى وتقدير مستويات بعض المتبقيات الكيميائية فى  
بعض  
الخضروات بدولة الكويت

رسالة مقدمة من  
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(1992)

لاستكمال متطلبات الحصول على درجة الماجستير  
فى العلوم البيئية

قسم العلوم الأساسية البيئية  
معهد الدراسات والبحوث البيئية  
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صفحة الموافقة على الرسالة

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الخضرواف بدولة الكويت

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صدق الله العظيم

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**ABSTRACT**

## **ABSTRACT**

**Tarek Rashed Mohamed Al-Ameeri. M.Sc. Degree Thesis, Ain Shams University, Institute of Environmental Studies and Research, Basic Environmental Science Dept., 2010.**

### **Monitoring and determination of some chemical residues in and on vegetables in Kuwait**

Based on the most frequently traditions related to the commonly used pesticides, data collected from the answers of 30 questionnaires that covered the investigated farms showed that most of the farmers in Kuwait, exhibited improper behaviour in relation to selection of pesticides, preparation and practices of their disposal.

Depending on the most frequently and commonly used pesticides, the organophosphorous, pirimiphos-methyl and the synthetic pyrethroid Lambda – cyhalothrin compound were studied throughout the present investigation to throw light on their residual activity on some vegetable crops at Kuwait. As for the degradation of these insecticides on lettuce and tomato, data indicated the occurrence of complete dissipation within 7 days in case of Lambda-cyhalothrin, and 8 days in case of pirimiphos-methyl residues on lettuce and tomato from application, respectively.

The obtained results indicated the great influence of temperature of exposure on the degradation of both tested pirimiphos-methyl and Lambda-cyhalothrin. The higher the temperature of exposure was, the higher the degradation and vice versa.

**Key words:** Pirimiphos-methyl, Lambda-cyhalothrin, Persistence, Pesticide, Residues, Vegetables, tomato, lettuce, Dissipation, Thermal decomposition.

# Summary

## **V. SUMMARY**

The present work was conducted in El-Wafrah sector, Kuwait to investigate the present situation of traditional practices in relation with pesticide application by the field workers through questionnaires. The persistence of synthetic pyrethroid Lambda-cyhalothrin and the organophosphorous, pirimiphos-methyl on tomato fruits and lettuce leaves during growing season (March-April 2007) under green house condition, was also studied. The role of temperature on decomposition of two studied insecticides under laboratory conditions was also considered.

The obtained results could be summarized as the following:

### **1. Pesticide consumption in Kuwait:**

- 1.1. Kuwait pesticides values reached 2.98, 2.76 and 2.07% of total Arab value during 2003, 2004 and 2005, respectively.
- 1.2. Insecticides occupied the majority of registered pesticides in Kuwait followed by fungicides. Among the total of 111 registered products, insecticides accounted 57.65% (64 product) and fungicides showed 25.22% (28 product).

- 1.3. Considering pesticides consumption in Kuwait, insecticides shared the majority showing 79.11, 80.02 and 80.70% of the total during 2000/2001, 2002/2003 and 2004/2005, respectively. The corresponding consumption of fungicides reached 19.41, 19.48 and 19.30, respectively.

## **2. Questionnaire outputs by farmers:**

- 2.1. 63.33% read and follow the instruction on the pesticide label.
- 2.2. About 70% know and apply pre-harvest interval (PHI).
- 2.3. 66.66% spraying pesticides early of the season.
- 2.4. 20% Attending the training program.
- 2.5. 43.33% acquainting the existence of prohibited pesticides.
- 2.6. 56.66% don't know about organic agriculture.
- 2.7. 56.66% wearing protective clothes.
- 2.8. 16.66% of owners periodically check the employers.
- 2.9. About 13.33% of owners keeping records on the medical situation of farm workers.

## **3. Residues of lambda-cyhalothrin and pirimiphos-methyl on lettuce and tomatoes:**

- 3.1. Data indicated the important role of insecticide type, crop species and time after application in determining the residues of treated plants.

- 3.2. Pirimphos-methyl showed faster dissipation than lambda-cyhalothrin on both lettuce and tomatoes. The longer the time after application, was the higher the rapid dissipation of insecticide residues and vice versa.
- 3.3. Data showed the higher initial deposit of lambda-cyhalothrin on lettuce leaves compared to tomato fruits, reaching 181.58 and 99.60 ppm., respectively. The  $t_{1/2}$ 's were 4.6 and 4.7 days, respectively. In case of pirimiphos-methyl, the initial deposit reached 5.75 and 4.37 ppm, respectively. The  $t_{1/2}$ 's were 2.7 and 4.8 days, respectively.
- 3.4. The proposed pre-harvest intervals of lambda-cyhalothrin under the experimental conditions were 32 days on lettuce leaves and 42 days on tomato fruits. The degradation rate (K) being 0.15 and 0.11 with the same crops, respectively.
- 3.5. Considering pirimiphos-methyl, the degradation rate (K) being 0.28 and 0.09 on lettuce leaves and tomato fruits, respectively. The proposed Pre-Harvest Intervals (PHI) were 15 and 10.3 days on the same leaves and fruits, respectively.