Name of Candidate: Fayez Ahmed Alkhlaif **Degree:** M.Sc.
Title of Thesis: Pesticide Residues Analysis of Chlorpyrifos-ethyl, Penconazole and Imidacloprid on Tomato Fruits and Their Stability Under Environmental Conditions
Supervisors: Dr. Ahmed Abd El-Salam Barakat
Dr. Sayed Abbas El-Mahy
Department: Economic Entomology and Pesticides
Branch: Pesticides
Approval: 24/ 9/2011

ABSTRACT

This study was planned to investigate the following points:

1. Persistence of chlorpyrifos, penconazole and imidacloprid residues on and in tomato fruits.

2. Comparison between big and small tomato fruits for the initial deposit of tested pesticides.

3. Determination of the dissipation rates, half-life values and pre-harvest intervals (PHI) for tested pesticides.

4. Investigating the effect of washing with tap water on the removal of the pesticide residues from tomato fruits.

5. Investigating the impact of some environmental factors *i.e.,* ultra-violet and sun light on the persistence of tested pesticides.

The initial deposit of chlorpyrifos on unwashed small fruits was higher than that of big fruits, it was 0.427 and 0.383 ppm, respectively. The high initial deposit of chlorpyrifos on small fruits may be due to the higher surface area of small fruits than big fruits per one kilogram, which received the spray solution of chlorpyrifos. The half-life values of chlorpyrifos (**RL_{50}**) on and in unwashed small and big fruits were 4.95 and 4.33 days, respectively. The initial deposit of penconazole on unwashed small fruits was higher than that of big fruits, it was 0.053 and 0.046 ppm, respectively. The obtained residual half-life values of penconazole (**RL_{50}**) on and in unwashed small and big fruits were 3.65 and 2.89 days, respectively. The initial deposit of imidacloprid on unwashed small fruits was higher than that of big fruits, it was 0.155 and 0.09 ppm, respectively. The estimated half-life values of imidacloprid (**RL_{50}**) on and in unwashed small and big fruits were 11.55 and 5.33 days, respectively. Washing removed 21.78 and 16.19% of the initial residues of chlorpyrifos found on unwashed small and big fruits, respectively. While for penconazole, the corresponding values were 43.4 and 52.17% and for imidacloprid the values were 27.10 and 15.56%. The calculated half-life periods were 1.47, 1.07 and 6.3 hours for chlorpyrifos, penconazole and imidacloprid, respectively, when exposed to sunlight. Moreover, the dissipating rate of chlorpyrifos was more rapid than penconazole and imidacloprid when exposed to UV-light. The statistical half-life times for chlorpyrifos, penconazole and imidacloprid were 1.05, 1.44 and 3.47 hours, respectively, after exposure to UV-light.

Keywords: Residues analysis, chlorpyrifos-ethyl, penconazole, imidacloprid, tomato, pesticides.

Name of Candidate: Sharihan Mostafa Mohamad **Degree:** M. SC.
Title of Thesis: Efficacy Enhancement of Four Bio-control Agents Against *Spodoptera littoralis* (Boisd) by Fluorescent Brightener and Lignin.
Supervisors: Dr. Hany Mahmoud Ashour Badawy
Dr. Dalia Ahmed Barakat
Dr. Said Ali Aid El-Salamouny
Dr. Saad Mohamed Mousa
Department: Economic Entomology and Pesticides **Branch:** Pesticides
Approval: 22 / 10 / 2011

ABSTRACT

Efficacy enhancement of four bio-control agents: Spintor 24% SC (Spinosad), Neemix 4.5% EC (Azadirachtin), Protecto 10% WP (*Bacillus thuringiensis*) and *S. littoralis* nucleopolyhedrovirus (*Spli*NPV) against *S. littoralis* second instar larvae using Fluorescent Brightener-28 (FB) and lignin was studied in the laboratory and in tomato field.

In the laboratory these bio-control agents were arranged according to their LC_{50} values in the following descending order: Spintor 24% SC (0.097 µg/cm^2), Neemix 4.5% EC (0.119 µg/cm^2), Protecto 10% WP (0.262µg/ cm^2) and *Spli*NPV (1469.388 PIB's/mm^2). There was no enhancement in the efficacy of Spintor 24% SC or Protecto 10% WP at LC_{10} and LC_{25} values when FB was added at any one of the three concentrations 0.01, 0.1 and 1.0%. On the contrary, the efficacy of Neemix 4.5% EC or *Spli*NPV were enhanced by combination with tested of concentrations FB. The estimated LT_{50} value of tested larvae decreased when FB was added at 0.01, 0.1 and 1.0%. The addition of 1% FB to *Spli*NPV at LC_{10} caused a decrease in larval weight of *S. littoralis* . Also, the effect of simulated ultraviolet on bio-control agents with or without lignin was evaluated.

The data indicated that the persistence of Spintor and Neemix when lignin was added at 1% is not prologed. On the contrary, the persistence of Protecto and *Spli*NPV at LC_{90} values was affected by their combination with 1% lignin. The most protection effect was recorded in case of adding 1% lignin to *Spli*NPV at LC_{90} value, which gave 63.95% OAR (original activity remaining) compared to 0.0% OAR for *Spli*NPV without lignin.

Field trials of these bio-control agents were applied in tomato with the recommended rates: Spintor 24% SC (50 ml/fed), Neemix 4.5% EC (75 ml/100 L water), Protecto 10% WP (300g/fed.) and *Spli*NPV (4.2 X 10^{11}/fed). There was enhancement in the efficacy of Neemix 4.5% EC and *Spli*NPV by combination with FB 1% concentration. The latent effect of Neemix 4.5% EC and *Spli*NPV on the larval and pupal duration, and number of eggs/ female was studied. Effect of simulated sunlight on some bio-control agents with or without lignin was also studied.

Obtained data indicated that the persistence of Spintor and Neemix at LC_{90} values under sunlight was not affected by addition of 1.0% lignin. On the contrary, the persistence of Protecto and *Spli*NPV at LC_{90} values was affected under simulated sunlight by their combination with 1% lignin.

Key words: activity enhancement, Fluorescent Brightener, Lignin, Neemix 4.5% EC, nucleopolyhedrovirus, Protecto 10% WP, *S. littoralis*, Spintor 24% SC.

POTENCY OF DIFFERENT INSECTICIDES AGAINST THE COTTON BOLLWORMS IN RELATION TO PESTICIDE RESIDUES IN BOLLS

By

NANCY NAGUIB HASSAN MAHMOUD

B.Sc. Agric. Sci. (Plant Protection), Fac. Agric., Cairo Univ., Egypt, 2004.

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE

In

Agricultural Sciences

(Pesticides)

Department of Economic Entomology and Pesticides
Faculty of Agriculture
Cairo University
EGYPT

2011

APPROVAL SHEET

POTENCY OF DIFFERENT INSECTICIDES AGAINST THE COTTON BOLLWORMS IN RELATION TO PESTICIDE RESIDUES IN BOLLS

M. Sc. Thesis
In
Agric. Sci. (pesticides)

By

NANCY NAGUIB HASSAN MAHMOUD

B.Sc. Agric. Sci. (Plant Protection), Fac. Agric., Cairo Univ., Egypt, 2004.

Approval committee

Dr. MOHAMED ABD-EL-RAZEK EL-SAYED.....
Head of Research of Pesticides, Agricultural Research Center

Dr. AHMED ABD-EL-SALAM BARAKAT.....
Professor of Pesticides, Fac. Agric., Cairo University

Dr. HAMDY EL-SAID EL-METWALLY .....
Professor of Pesticides, Fac. Agric., Cairo University

Dr. SAYED ABBAS AHMED EL-MAHEY.....
Professor of Pesticides, Fac. Agric., Cairo University

Date: / /

SUPERVISION SHEET

POTENCY OF DIFFERENT INSECTICIDES AGAINST THE COTTON BOLLWORMS IN RELATION TO PESTICIDE RESIDUES IN BOLLS

M. Sc. Thesis
In
Agric. Sci. (Pesticides)

By

NANCY NAGUIB HASSAN MAHMOUD

B.Sc. Agric. Sci. (Plant Protection), Fac. Agric., Cairo Univ., Egypt, 2004.

SUPERVISION COMMITTEE

Dr. HAMDY EL-SAID EL-METWALLY
Professor of Pesticides, Fac. Agric., Cairo University

Dr. SAYED ABBAS EL-MAHEY
Professor of Pesticides, Fac. Agric., Cairo University

Name of Candidate: Nancy Naguib Hassan Mahmoud **Degree:** M.Sc.
Title of Thesis: Potency of Different Insecticides Against the Cotton Bollworms in Relation to Pesticide Residues in Bolls
Supervisors : Dr. Hamdy El-Said El-Metwally El-Desouky
Dr. Sayed Abbas Ahmed El-Mahey
Department : Economic Entomology and Pesticides
Branch : Pesticides **approval : / / 2011**

ABSTRACT

The life table, efficacy of certain insecticides against P.gossypiella and their effect on the larval population and infestation with both pink (*p. gossy*piella) and spiny (*E. insulana*) bollworms were studied during two successive cotton growing season. The persistence of lambda cyhalothrin and chlorpyrifos in and on cotton bolls was also investigated .

Esfenvalerate gave the highest effect on 1, 2 and 3 days old eggs whereas profenfos and chlorpyrifos gave the highest effect on 4 days old eggs.Esfenvalerate was the most potent compound against larvae and moths while hexaflumuron was the least potent compound.Esfenvalerate highly decreased Mx, Lx, Ro, $r_{m,}$ e^{rm} values and increased T and DT values compared to other compounds.

Esfenvalerate gave the highest reduction (76% and 78.7%) in larval population and infestation, respectively, in 2006 cotton season and the highest reduction (65.3% and 54.7%) in larval population and infestation respectively, in 2007 cotton season. Hexaflumuron gave the least reduction (43.3% and 58.8%) in larval population and infestation, respectively, in 2006 cotton season and the least reduction (13.3% and 11.8%) in larval population and infestation, respectively, in 2007 cotton season.

The residues of lambda cyhalothrin and chlorpyrifos in cotton bolls were determined externaly and internaly. The total recovered amounts of choroyrifos was 199.4, 81.5, 30.3, 7.63, 3.1, 1.5, 0.83 and N.D .while the corresponding values for lambada cyhalothrrin were 18.75, 14.05, 10.08, 8.03, 4.43, 4.08, 1.84 and N.D. for initial deposit 1, 3, 5, 7, 10, 14 and 21 day, respectively.

Key words: Cotton, insecticides residue, life table, bollworms, insecticides

Name of Candidate: Khaled Rabea Abdel Aziz Ahmed **Degree:** M.Sc.
Title of Thesis: Studies on abamectin pesticide residues in horticultural crops.
Supervisors: Dr. Mohammed Abdel Hady Kandil
Dr. Hamed Khairallah Said
Dr. Sohair Ahmed Gadalla
Department: Economic Entomology and Pesticides
Branch: Pesticides **Approval: 2 / 6 / 2011**

ABSTRACT

The present study planned to investigate the following points:

1. Persistence of abamectin residues on and in cucumber, orange and strawberry fruits.

2. Determination of the dissipation rates, half-life values and pre-harvest intervals (PHI) for abamectin.

3. Investigate the effect of home processing on the removal of the abamectin residues from treated crops.

4. Investigate the impact of some environmental factors *i.e.*, different degrees of temperature, ultra-violet light and sun light on the persistence of abamectin.

Field experiments were carried out to study the residual behavior of abamectin on orange; strawberry and cucumber. The effect of household processing (peeling and squeezing for orange and washing for strawberry and cucumber) were studied. The used pesticide (abamectin) in the field dissipated gradually and disappeared completely after 12, 14 and 9 days for orange, strawberry and cucumber, respectively. The half-life time for abamectin was calculated to be 3.93, 6.16 and 2.2 days for orange, strawberry and cucumber, respectively. The three crops can be harvested safely (PHI) after 10, 11 and 6 days for orange, strawberry and cucumber, respectively. The household processing was found to be effective on the dissipation of the used pesticide especially peeling and squeezing in orange, the pesticide was not detected after these two processes. Washing with running tap water was also effective in strawberry and cucumber, as it reduces the pesticide gradually until the pesticide dissipated completely after 11 and 6 days, respectively.

Key words: Abamectin residues, PHI and household processing.