

## The Philippines, its butterflies and the threat of systemic pesticides

The Philippines harbour a great diversity of diurnal butterflies. Roughly 927 species and 939 subspecies are known to exist, divided in 239 Genera and 6 Families. This extraordinary richness reflects the enormous biodiversity of Asia and S.E. Asia, but is also the result of the speciation that took place on and between the about 7,107 islands with their great variety of climate and habitat that make up the Philippines. It has to be feared that a number of butterfly species linked to primary forest may eventually disappear as, presently, only 10% of the original primary rainforest cover is left. This mostly happened after the Second World War because of ruthless exploitation, lack of management, corruption and a burgeoning population now reaching 100 million. In spite of this, the Philippines are today still remarkably rich in butterflies and well-known for that.



PHILIPPINE BUTTERFLIES BELONGING TO FAMILIES OF PIERIDAE, PAPILIONIDAE, DANAIDAE AND NYMPHALIDAE

## Different Habitats



As from the seventies of the last century, the Philippine lepidopterist Romeo Lumawig (1925- 2010), born on Marinduque, a small island to the south of Luzon, not only started to build up the most important butterfly collection of the country, but also initiated captive breeding of butterflies. The butterfly pupae production industry became established in the late 1970's when live displays of tropical butterflies were first built in Europe. Since that time displays of live tropical butterflies have become popular throughout the world with exhibits in most European countries, USA, Canada, Mexico, Argentina, South Africa, Singapore, Hong Kong, Japan, Australia, and New Zealand. Thus, the Philippines, with Marinduque as its center, became rapidly one of the world's chief producers of pupae of common butterflies followed by breeders in countries of S.E. Asia, Africa, Central- and South America. Whilst the exact value of the industry is difficult to determine, it is known that the amount of money being repatriated to the above countries exceedsr US\$ 10,000,000 annually, while the industry provides employment for more than 5000 families in the developing world.

In the Philippines, a programme has started with pilot projects on the islands of Mindanao (Davao and Bukidnon) and northern Luzon (Banaue), later on to be followed by those planned for Palawan and Mindoro, in cooperation with the Department of Environment and Natural Resources. Butterfly breeding had so far not been developed on these islands despite the great potential they possess. To raise awareness of biodiversity issues and to prevent forest depletion amongst all the participants are goals in this livelihood programme.

With the arrival on the world market of the systemic pesticides (Neonicotinoids and Fipronil) - mainly produced by a few companies in Germany, Switzerland and China - in the middle 1990's, the Philippines belonged to the over 120 countries now importing these neurotoxic pesticides of a new generation on a largely unknown scale. At present three neonicotinoids are now being used there under 11 product names for application to 16 different crops and registered with the Fertilizer and Pesticide Authority. However, data on volume of importations of these products as well as data on volumes of usage are not available, and data on importations are often used as an indicator of usage. In July 2012, at the conference of the RAMSAR Convention on Wetlands of International Importance adopted a resolution on rice cultivation and usage of pesticides was adopted in Bucharest, Romania, urgently requesting moderation from rice producers and manufacturers of pesticides as well as further research on the impact of the use of pesticides in rice paddies as aquatic habitats. On Luzon, largest landmass of the Philippines, it is known that Imidacloprid and Fipronil (the use of the latter being forbidden in China because of its toxicity) are now extensively being used in rice production.



Rice Field in Bicol (south Luzon)



Photo by: Sylvia Villareal (IRRI)  
Upland Rice Field- Banaue Rice Terraces

## List of Pesticides Imported by Chemical Firms in the Philippines

| <u>ACTIVE INGREDIENT</u> | <u>PRODUCT NAME</u> | <u>NAME OF COMPANY</u>              | <u>USE/S</u> | <u>CROP/S</u>    | <u>PEST/S</u>  | <u>APPLICATION RATES</u>           |
|--------------------------|---------------------|-------------------------------------|--------------|------------------|--|------------------------------------|
| CLOTHIANIDIN             | DANTOP              | Jardine Distribution Inc.           | I            | Mango            | Hopper, tipborer, floral thrips, cecid fly/capsid bug  | 12.5-15.62 g/100 L                 |
|                          |                     |                                     |              | Eggplant<br>Rice | Eggplant hopper, aphids<br>Green leafhopper, brown & white backed planthopper, leaf folder, stem borer, black bug & rice bug | 90-95 g/ha<br>60-70 g/ha           |
|                          | DANTOTSU 16 WSG     | Sumitomo Chemical Philippines, Inc. | I            | Mango            | Hopper, tipborer, floral thrips, cecid fly/capsid bug  | 12.5-15.62 g/100 L                 |
|                          |                     |                                     |              | Eggplant<br>Rice | Eggplant hopper, aphids<br>Green leafhopper, brown & white backed planthopper, leaf folder, stem borer, black bug & rice bug | 90-95 g/ha<br>60-70 g/ha           |
| IMIDACLOPRID             | ADMIRE SL 200       | Bayer Cropscience, Inc.             | I            | Mango            | Leafhopper   | 200-250G/1000L water               |
|                          |                     |                                     |              | Banana           | Flower thrips  | 0.5 ml prod./l. water              |
|                          |                     |                                     |              | Pineapple        | Mealybug   | 28L/ha                             |
|                          | CONFIDOR 100 SL     | Bayer Cropscience, Inc.             | I            | Okra             | Leafhopper   | 25 mL/ha                           |
|                          |                     |                                     |              | Mango            | Hoppers  | 200-250 mL/1000L water             |
|                          |                     |                                     |              | Banana           | Flower thrips  | 1.0 mL prod./L water               |
|                          |                     |                                     |              | Watermelon       | Thrips, aphids   | 150-200 mL/ha                      |
|                          |                     |                                     |              | Citrus           | Rindborer, mealybug, scale insects   | 0.375-0.875 L/ha                   |
|                          |                     |                                     |              | Cabbage          | Diamondback moth, flea beetle  | 250-300 mL/ha                      |
|                          |                     |                                     |              | Sugarcane        | Termites   | 0.2-0.3 L/ha                       |
|                          | GAUCHO 350 FS       | Bayer Cropscience, Inc.             | I            | Asparagus        | Asparagus thrips   | 150 mL/ha                          |
|                          |                     |                                     |              | Corn             | Seedling maggot, ants, field crickets & mole crickets  | 75-100mL product/18 to 20 Kg seeds |
|                          | GAUCHO 70 WS        | Bayer Cropscience, Inc.             | I            | Corn             | Seedling maggot  | 35-45 g product/ 20kg              |

| <u>ACTIVE INGREDIENT</u>               | <u>PRODUCT NAME</u> | <u>NAME OF COMPANY</u>     | <u>USE/S</u> | <u>CROP/S</u> | <u>PEST/S</u>  | <u>RATES</u>                     |
|--|---------------------|----------------------------|--------------|---------------|--|----------------------------------|
| THIAMETHOXAM                           | ACTARA 25 WG        | Syngenta Philippines, Inc. | I            | Rice          | Green leafhopper, brown planthopper, white backed planthopper & rice bug<br>Black bug            | 30-40 g/ha<br>40-60 g/100L water |
|  | CRUISER 350 FS      | Syngenta Philippines, Inc. | I            | Stringbean    | Aphids, leafhopper   | 10-30 g/hill                     |
|  |                     |                            |              | Eggplant      | Aphids, leafhopper   | 10-30 g/hill                     |
|  |                     |                            |              | Mango         | Leafhopper   | 105.6-123.2 g/ha                 |
|  |                     |                            |              | Pineapple     | Mealybug   | 100-200 g/ha                     |
|  |                     |                            |              | Corn          | Seedling maggot  | 200-600 mL prod/100 kg seeds     |
|  |                     |                            |              | Rice          | Green leafhopper, brown planthopper, white backed planthopper                                    | 25-44 mL prod/40 kg seeds        |
| THIAMETHOXAM+<br>CHLORANTRANILIPROLE   | VIRTAKO 40 WG       | Syngenta Philippines, Inc. | I            | Rice          | Green leafhopper, rice stemborer   | 75-100 g/ha                      |
|  | VOLIAM FLEXI 300 SC | Syngenta Philippines, Inc. | I            | Eggplant      | Fruitborer, cutworm, shootborer, leafhopper, whiteflies, aphids, flea beetle & 28-spotted beetle | 100-200 mL/ha                    |
|  |                     |                            |              | Cabbage       | Diamondback moth, cutworm, aphids  | 75-125 mL/ha                     |
|  |                     |                            |              | Stringbeans   | Podborer, cutworm, leafhopper, aphids & white flies  | 100-200 mL/ha                    |
| THIAMETHOXAM+<br>LAMBDCYHALO-<br>THRIN | ALIKA 247 ZC        | Syngenta Philippines, Inc. | I            | Potato        | Whiteflies, aphids, thrips   | 100-200 mL/ha                    |
|  |                     |                            |              | Stringbeans   | Green leafhopper, aphids, mites  | 100-200 mL/ha                    |
|  |                     |                            |              | Eggplant      | Whiteflies, green leafhopper, aphids   | 100-200 mL/ha                    |
|  |                     |                            |              | Bittergourd   | Leafhopper, thrips, aphids   | 100-200 mL/ha                    |
|  |                     |                            |              | Mango         | Leafhopper, tipborer   | 6.0-12.0 mL/100L water           |
|  |                     |                            |              | Corn          | Asian corn borer, earworm, cutworm, leafhopper & aphids  | 250-400 mL/ha                    |
|  |                     |                            |              | Banana        | Flower thrips  | 1.0-3.0 mL/liter                 |

Seen the fast declining butterfly populations on the European Continent - in France alone 16 species are, reportedly, on the verge of disappearing - a study on the impact of neonicotinoid insecticides on butterflies is being carried out at Stirling University, Scotland, there is sufficient reason to worry about the fate of butterflies, other invertebrates, including aquatic life, in the Philippines. Its Protected Areas and Wildlife Bureau is planning a survey of pesticide usage in the surroundings of the Protected Areas in cooperation with the IUCN Task Force on Systemic Pesticides. Possibilities for research on the impact of neonicotinoid pesticides on biodiversity and ecosystems at the University of the Philippines in Laguna, in cooperation with Universities elsewhere, are being looked into.