



**I R A C - B R**

COMITÊ BRASILEIRO DE AÇÃO A RESISTÊNCIA A INSETICIDAS

[www.irac-br.org.br](http://www.irac-br.org.br)

Luis Pavan  
Chairman

- **IRAC-BR Update**
  - **History**
  - **Members**
  - **Projects**

# History

- Established: 05 / May / 1997
- Board of Directors : two years term of office
- Members: **15** + 1
- Consultants: 2
- Fees (2014):
  - Entry: R\$ 10,000 (~**US\$ 4,000**)
  - Annual: R\$ 10,000 (~**US\$ 4,000**)
- Meetings:
  - twice a year - next meeting: **April 14<sup>th</sup> (40<sup>th</sup>)**

# Members

Arysta | BASF | BAYER | Dow AgroSciences | DuPont | FMC | Iharabras | Milenia  
Monsanto | Nufarm | Ouro Fino | Sipcam-UPL | Syngenta | Sumitomo | UPL | MAPA



## Board of Directors

**President:** Luis Pavan (Dow AgroSciences)

**Vice-President:** Odnei Fernandes (Bayer)

**1º Treasurer:** Francisco Lozano (Bayer)

**2º Treasurer:** Cristiane Muller (Dow AgroSciences)

**1º Secretary:** Rosana Serikawa (Dupont)

**2º Secretary:** Ximena Vilela (Ihara)

## Consultants

**Dr. Celso Omoto (ESALQ/USP)**

**Dr. Raul Guedes (UFV)**

# Research Projects

- *Spodoptera frugiperda*
- *Tuta absoluta*
- *Alabama argillacea*<sup>1</sup>
- *Grapholita molesta*<sup>1</sup>
- *Bemisia tabaci*
- *Euschistus heros*
- *Chrysodeixis includens*
- *Helicoverpa armigera*
- *Tetranychus urticae*<sup>2</sup>



<sup>1</sup> Concluded

<sup>2</sup> Institutional

# *Bemisia tabaci*

- **Researcher: Dr. Marcelo Poletti - Promip**
- Base Line and Field Monitoring :  
imidacloprid, acetamiprid, thiamethoxam,  
clothianidin, spiromesifen, buprofezin,  
pyriproxyfen, diafenthiuron.
- Tomato
- São Paulo, Minas Gerais & Goiás.
- Method:
  - Eggs: Topical Assay
  - Nymphs: Topical Assay
  - Adults: Leaf Dip Assay



# Bemisia tabaci

Produto	Estágio	n <sup>a</sup>	CL <sub>50</sub> (mg i. a. L <sup>-1</sup> ) (95% I.C.)	Coef. Ang. ± EP	χ <sup>2</sup>	g.l. <sup>b</sup>
ACETAMIPRIDO	adulto	3.193	52,8 (45,5-60,6)	1,5 ± 0,1	7,8	6
	ninfa	2.686	2,3 (2,0-2,5)	2,0 ± 0,1	4,5	6
IMIDACLOPRIDO	adulto	2.999	130,75 (114,23-148,78)	1,6 ± 0,1	4,18	4
	ninfa	3.479	21,90 (19,36-24,55)	1,4 ± 0,1	6,11	7
CLOTIANIDINA	adulto	3.118	84,70 (79,23-90,30)	2,6 ± 0,1	3,25	4
	ninfa	1.647	106,46 (75,03-169,57)	1,2 ± 0,1	7,92	4
TIAMETOXAM	adulto	3.784	58,2 (51,9-64,3)	3,4 ± 0,2	6,7	4
	ninfa	4.065	57,5 (51,6-64,1)	1,9 ± 0,6	10,6	6

# Bemisia tabaci

Produto	Estágio	n <sup>a</sup>	CL <sub>50</sub> (mg i.a. L <sup>-1</sup> ) (95% I.C.)	Coef. Ang. ± EP	χ <sup>2</sup>	g.l. <sup>b</sup>
DIAFENTIUROM	adulto	3.974	156,7 (145,7-168,0)	2,0 ± 0,1	0,9	3
	ninfa	2.131	46,1 (43,2-48,8)	4,0 ± 0,2	1,8	2
ESPIROMESIFENO	ninfa	1.093	15,84 (11,17-20,25)	3,6 ± 0,34	15,90	6
BUPROFEZINA	ninfa	3.112	6,42 (4,23-8,20)	2,4 ± 0,20	21,1	5
PIRIPROXIFEM	ovo	3.223	0,02 (0,01-0,02)	1,8 ± 0,1	20,2	4
	ninfa	1.851	11,5 (4,6-23,4)	0,9 ± 0,1	6,1	3



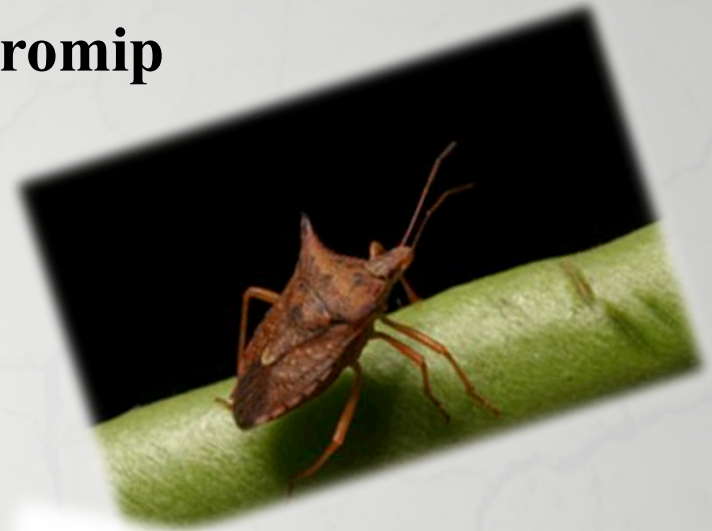
# Bemisia tabaci

	Município / Estado	Denominação	Data de Recebimento
01	Piracicaba/SP	SUS	junho/09
02	Araguari/MG	Araguari-1	novembro/11
03	Araguari/MG	Araguari-2	junho/12
04	Lins/SP	Lins-1	dezembro/11
05	Lins/SP	Lins-2	dezembro/11
06	Lins/SP	Lins-3	dezembro/11
07	Cosmópolis/SP	Cosmópolis	maio/12
08	Monte Mor/SP	Monte Mor	maio/12
09	Sumaré/SP	Sumaré	outubro/12
10	Rio Verde/GO	F. Goiás	março/13

(\*) **Confirmação Biótipo B** – Profa. Dra. Renate Krause Sakate (FCA/UNESP)

# *Euschistus heros*

- **Researcher: Dr. Marcelo Poletti - Promip (2013)**
- **Methodology Validation:**
  - Bean Dip Assay (IRAC # 028)
  - Topical Assay (IRAC # 029)
- Thiamethoxam, LCH, acephate
- Soybean



# IRAC Method Validation

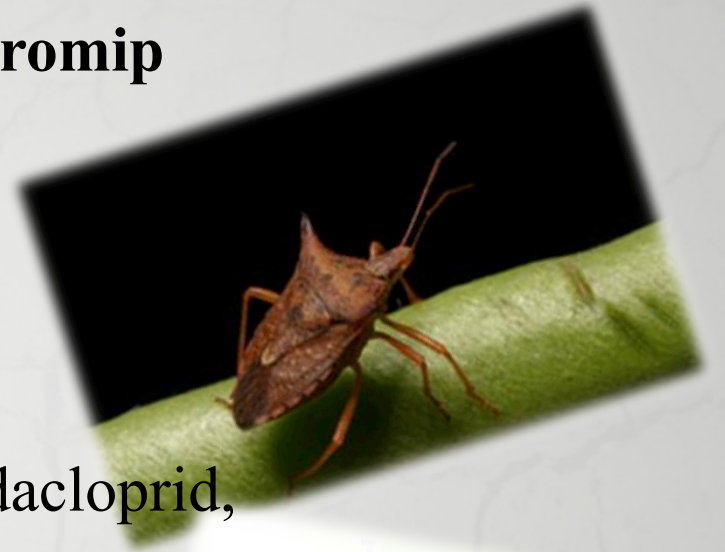
**Tabela 1** - Caracterização toxicológica dos inseticidas thiametoxam (Actara 250® WG), lambda-cyhalotrina (Karate Zeon 50® CS) e acefato (Orthene 750® BR) para a população suscetível de referência de *Euschistus heros*, utilizando os métodos de aplicação tópica e ingestão (imersão de vagens).

Produto	Bioensaio	n <sup>a</sup>	CL <sub>50</sub> (µg I.A. L <sup>-1</sup> ) (IC95%)	Coef. Ang. (±EP)	χ <sup>2</sup>	g.l. <sup>b</sup>
thiametoxam	Tópico Topical	1.185	2,1 (1,8-2,3)	2,1 ± 0,1	3,1	5
	Ingestão Bean dip	980	683,5 (538,2-886,6)	1,8 ± 0,2	5,8	5
lambda-cyhalotrina	Tópico	1.156	15,4 (10,0-22,2)	1,5 ± 0,1	4,7	3
	Ingestão	906	528,1 (426,4-656,7)	2,8 ± 0,3	7,7	5
acefato	Tópico	1.018	214,6 (195,3-235,5)	2,2 ± 0,1	3,5	4
	Ingestão	731	1.566,4 (1350,8-1776,0)	3,1 ± 0,3	5,0	5

<sup>a</sup> Número de insetos avaliados; <sup>b</sup> graus de liberdade.

# *Euschistus heros*

- **Researcher: Dr. Marcelo Poletti - Promip (2013/14 season)**
- Methodology:
  - Topical Assay (IRAC # 029)
- Thiamethoxam, LCH, Acephate, Imidacloprid, Betacyfluthrin
- Soybean
- Field populations from - RS, PR, SP, MS, GO, MT



# *Chrysodeixis includens*

- **Researcher: Dr. Marcelo Poletti - Promip**
- **Base Line and Field Monitoring:**  
Seven active ingredients from Bayer, Dow, DuPont and Syngenta
- Soybean
- BA, MT, GO, MS and PR
- **Challenges: to find susceptible population**



# *Helicoverpa armigera*

- **Researcher: Dr. Celso Omoto – ESALQ/USP**
- **Base Line and Field Monitoring:**  
Seven active ingredients from Basf, Bayer, Dow, DuPont.
- Soybean
- BA, MT, GO, MS and PR
- **Challenges: to find susceptible population**



- **GBio (Bt crops)**
  - Better Interaction (IRAC/APPS)
  - Harmonized Recommendation in Progress
  - **RIB / LAPHFR in Brazil not yet endorsed by IRAC-BR**
- Meeting Scheduled for Apr 8<sup>th</sup> (ABRASEM/APPS, ANDEF, CIB, IRAC-BR e AgroBio)
- **Diamides**
  - Integrated into IRAC-BR
  - Commun Action Plans (i.e. Movie, speeches)
  - **Schematic rotational program (by crop & pest) not yet endorsed by IRAC-BR**

# Educational – 2014 Events

- Entomological Society of Brazil Congress – Sep/14
  - Mini-Course / 8 hours / Dr Celso and Dr Raul
  - Round Table / MoA / New Insecticides / 3 – 4 speeches
  - Round Table / Bt Crops RM / Dr Celso
- Speeches at Key Events and Agriculture Regions
  - 21 planned through Consultants
- V Resistance Management Symposium by ESALQ/USP
  - Rio Verde, GO - Jul/14



- **Institutional**
  - IRM Movie in Portuguese (~10 minutos) in progress
  - New Home Page in progress
  
- **Invited Members from the Industry Association / Sindicato to attend IRAC-BR Meetings**
  - ANDEF / CropLife Brazil
  - SINDIVEG

# Challenges !!!

- Lack of specialists on IRM;
- Data generation;
- **Data Release Barriers (bad news)**;
- Complexity of agroecosystem;
- Awareness professionals and farmers.





Thanks,  
see you soon !!!



**FIFA WORLD CUP**  
**BRASIL**

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