Insecticide Resistance Action Committee

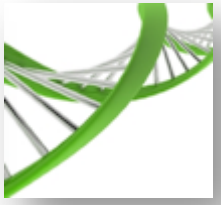
Lepidoptera Working Group
2016 Update

Luís Teixeira

Dublin

April 5th 2016




Lepidoptera WG SMART Objectives 2016

1. Maintain currency of the global IRM guidelines based on new experiences, new active ingredients, and application methods.
2. Improve Lepidopteran educational and communication tools
3. Transition country diamide working groups to resistance action groups
4. Initiate compliance process to align IRM recommendations among company product labels.
5. Assess usability of “diamide” bioassay methods for lep products

Lepidoptera WG Members

Representative	Company
Adeline Bertrand	ADAMA
Sebastian Coggiola	ADAMA
Werner Heck	BASF
Siddharth Tiwari	BASF
Nigel Godley	Bayer
Ralf Nauen	Bayer
Eric Andersen	Cheminova/FMC
Jim Dripps	Dow
Maria Torne	Dow
Andrea Bassi	DuPont
John Andaloro	DuPont
Luis Teixeira	DuPont
Nobuyuki Nonaka	Nihon Nohyaku
Brian Duggan	Nufarm
Jan Elias	Syngenta
Robert Senn	Syngenta
Daniel Zommick	Valent
Dirk Ave	Valent
Total = 18	Total = 10

IRAC

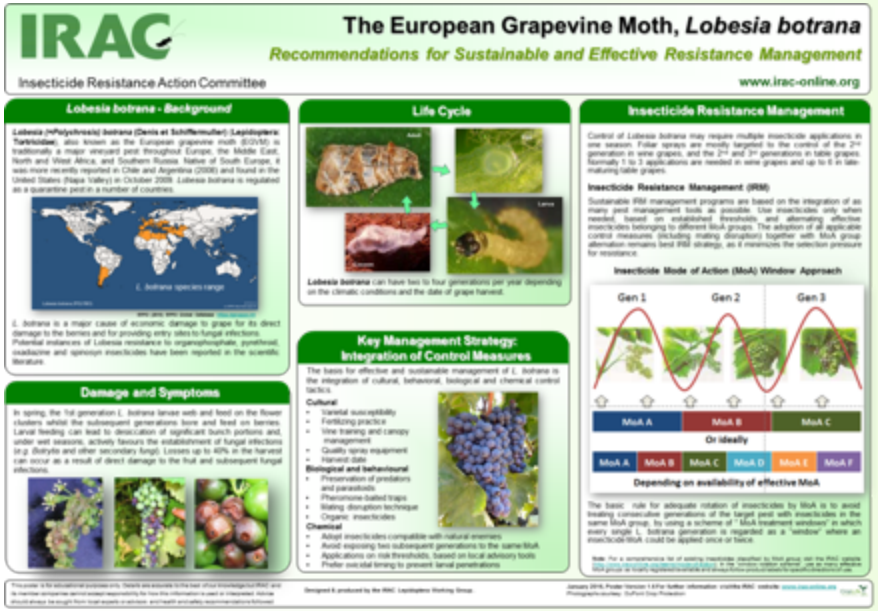
2015/16 Action Item Status

ACTION ITEM	LEADER	TIMELINE	Completed when
Determine Lobesia poster status; Finalize FAW poster; Decide future poster need	J. Dripps	4Q2015	At meeting
Update versions of IRM label language and acquire team approval	Robert	4Q2105	At meeting
Revise global guidelines (include non-lep control in IRM strategies, seed treatment, revise label language versions) and get team approval	Nigel	4Q2015	At meeting
Coordinate company label IRM language compliance process: max # of apps, quality IRM language, mode of action icon. Choose first round of country labels (2/company) to upgrade: Leps in USA, Brazil, China, India, Italy, Spain,	John A.	2016	At meeting
Assist Russell to decide pest/market to implement joint IRAC Task Team project…. Suggestions: Yellow stemborer / Striped Stemborer Tuta absoluta Soybean looper Asian Corn Borer		1/2Q2016	Lep team will assist with Tuta task team

2015/16 Action Item Status (cont.)

ACTION ITEM	LEADER	TIME	Completed when
Update country team members list	Luis	4Q2015	Ongoing
Involve non-diamide companies in CRAG – Invite ISK reps	Team	4Q2015	Done
Finalize country liaisons – distribute leaders among companies	Luis	4Q2015	At meeting
Assess bioassay methods developed for Diamide products vs leps if they can be used for non-diamide products.	Jan/Luis	1/2Q2016	At meeting
Evaluate IRAC "Benefits of IRM to Grower" pamphlet (ID education/ information items at the point of sale that have greatest impact)	John A	1Q2016	Done
Create a basic IRM PowerPoint presentation from guidelines		1/2Q2016	To be done

Posters



IRAC

IRM label language

Insecticide Resistance Management (IRM)

- **Avoid exclusive use of Group X insecticides throughout a crop cycle for a pest species with more than one generation.**
- Apply ____ (product name) and other Group X insecticides using a "window" approach to avoid exposure of consecutive insect pest generations to the same mode of action. **A "Treatment Window" is defined as the period of residual activity provided by a single or sequence of product applications with the same mode of action within an approximate 30 day (15 - 45 days depending on local generation time from egg to adult) period. Generally, this "Window" should approximate the length of a generation of the target pest.** Multiple successive applications of ____ (product name) are acceptable if they are used to treat a single insect generation or are used within a window.
- Following a "window" of ____ (product name) or other Group X insecticides, rotate to a "window" of applications of effective insecticides with a different mode of action.
- For short cycle crops (< 50 days), consider the duration of the crop cycle as a "Group X insecticide treatment window", thus alternate to different modes of action during subsequent plantings at the same farm location.
- The total exposure period of all "Group 28-active windows" applied throughout the crop cycle (from seedling to harvest) should not exceed 50% of the crop cycle.

Insecticide Resistance Management (IRM)

General recommendations

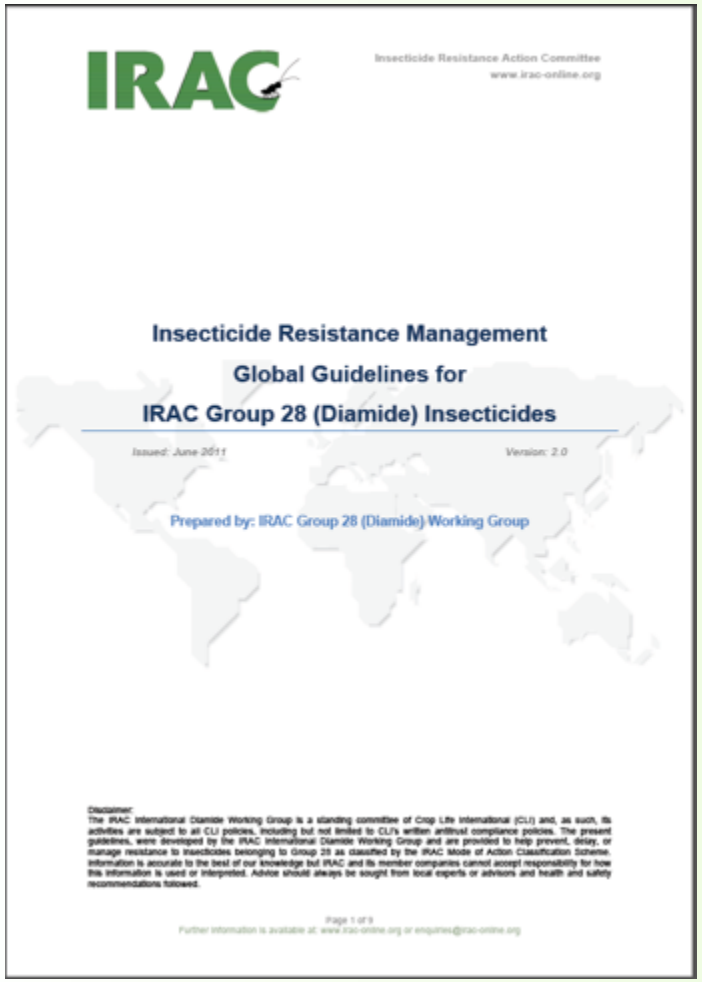
- ____ (product name) contains _____ (active ingredient name), a Group 28 Insecticide.
- Unless directed otherwise in the specific crop/insect sections of the label, Tthe following practices are recommended to prevent or delay the development of insecticide resistance to ____ (product name) and to Group X insecticides:
- Apply ____ (product name) or other Group X insecticides using a "window" approach to avoid exposure of consecutive insect pest generations to the same mode of action. Multiple successive applications of ____ (product name) are acceptable if they are used to treat a single insect generation.
- Following a "window" of ____ (product name) or other Group 28 insecticide, rotate to a "window" of applications of effective insecticides with a different mode of action.
- For short cycle crops (< 50 days), consider the duration of the crop cycle as a "Group X insecticide treatment window", thus alternate to different modes of action during subsequent plantings at the same farm location.
- The total exposure period of all "Group X-active windows" applied throughout the crop cycle (from seedling to harvest) should not exceed 50% of the crop cycle.

Insecticide Resistance Management (IRM)

General recommendations

- In order to Avoid treating consecutive generations of the target pest with products having the same mode of action. Apply ____ (product name) using a "window" approach, alternating blocks of treatments with ____ (product name) or products with the same mode of action followed by blocks of treatments with other effective products with different modes of action. For short cycle crops (< 50 days), consider the duration of the crop cycle as a "window", thus alternate to different modes of action during subsequent plantings at the same farm location. The total exposure period of all "Group X active windows" applied throughout the crop cycle should not exceed 50% of the crop cycle

Lepidoptera Guidelines



IRAC

Insecticide Resistance Action Committee
www.irac-online.org

Insecticide Resistance Management

Global Guidelines for

IRAC Group 28 (Diamide) Insecticides

Issued: June 2011 *Version: 2.0*

Prepared by: IRAC Group 28 (Diamide) Working Group

Disclaimer:
The IRAC International Diamide Working Group is a standing committee of Crop Life International (CLI) and, as such, its activities are subject to all CLI policies, including but not limited to CLI's written antitrust compliance policies. The present guidelines, were developed by the IRAC International Diamide Working Group and are provided to help prevent, delay, or manage resistance to insecticides belonging to Group 28 as classified by the IRAC Mode of Action Classification Scheme. Information is accurate to the best of our knowledge but IRAC and its member companies cannot accept responsibility for how this information is used or interpreted. Advice should always be sought from local experts or advisors and health and safety recommendations followed.

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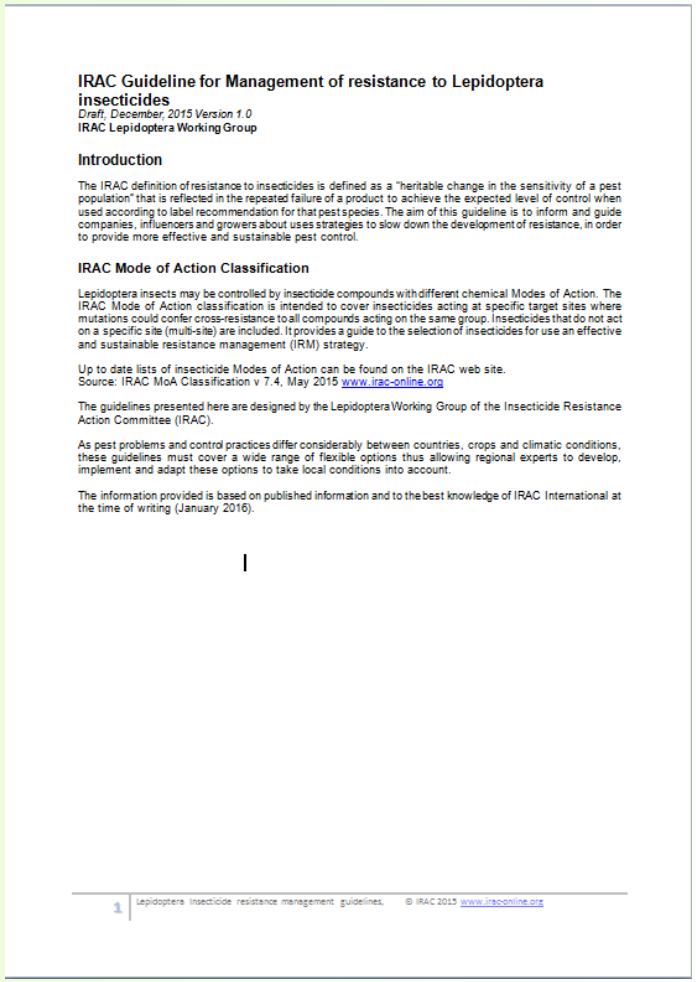
Further information is available at: www.irac-online.org or enquiries@irac-online.org



IRAC Guideline for Management of resistance to Lepidoptera insecticides
Draft, December, 2015 Version 1.0
IRAC Lepidoptera Working Group

Introduction

The IRAC definition of resistance to insecticides is defined as a "heritable change in the sensitivity of a pest population" that is reflected in the repeated failure of a product to achieve the expected level of control when used according to label recommendation for that pest species. The aim of this guideline is to inform and guide companies, influencers and growers about uses strategies to slow down the development of resistance, in order to provide more effective and sustainable pest control.

IRAC Mode of Action Classification

Lepidoptera insects may be controlled by insecticide compounds with different chemical Modes of Action. The IRAC Mode of Action classification is intended to cover insecticides acting at specific target sites where mutations could confer cross-resistance to all compounds acting on the same group. Insecticides that do not act on a specific site (multi-site) are included. It provides a guide to the selection of insecticides for use an effective and sustainable resistance management (IRM) strategy.

Up to date lists of insecticide Modes of Action can be found on the IRAC web site.
Source: IRAC MoA Classification v 7.4, May 2015 www.irac-online.org

The guidelines presented here are designed by the Lepidoptera Working Group of the Insecticide Resistance Action Committee (IRAC).

As pest problems and control practices differ considerably between countries, crops and climatic conditions, these guidelines must cover a wide range of flexible options thus allowing regional experts to develop, implement and adapt these options to take local conditions into account.

The information provided is based on published information and to the best knowledge of IRAC International at the time of writing (January 2016).

IRAC

Label Alignment and IRM compliance project

IRAC LEP TEAM COMPANIES - LABEL ALIGNMENT PROJECT

IRM ELEMENTS	IDEAL LABEL RECOMMENDATION	LABEL CRITERIA TO DETERMINE UPGRADE	RECOMMEND UPGRADE
CHEMICAL CLASS AND MODE OF ACTION IDENTIFICATION	1. MOA number (IRAC MoA icon) is on the first page <u>if allowed.</u> If not then appears in the IRM text, if allowed. GROUP 28 INSECTICIDE 2. Identify chemical class for active ingredient in label text and MoA number, if allowed.	Either 1 or 2 is on the label and there is a good reason why both cannot appear.	NO
		None of the two recommends appears on the label but country regulators allow	YES
MAXIMUM USE LIMITATION	1. Includes statements that communicate the maximum number of applications (preferred) or maximum amount of active ingredient in a company's product per cropping season. 2. includes use limitation in DFU table (especially if it for different crops). 3. Stipulates the total maximum # of applications of <u>same active ingredient</u> or <u>same MoA products</u> that can be applied per cropping season.	All three appear	NO
		1 and 2 appear and there is a good reason why all 3 cannot appear	NO
		No definition of maximum number of applications ro amount of active inegredient per cropping seaosn	YES
IRM STATEMENT AND QUALITY	Includes the most thorough of the proposed three IRM statements (most, modete, least comprehensive shown below) based on allowance by country label regulator OR **<u>Contains the "REQUIRED" label statements, if allowed.</u>**	**<u>Contains the "REQURED" statements.</u>** OR Includes the most thorough of the proposed three IRM statements (high, medium lowest quality) based on allowance by country label regulator.	NO
		<u>Contains the "REQURED" statements.</u> OR The medium or lowest quality IRM label statement appears and the most highest quality statement is not allowed by regulators	NO
		<u>Does not contain the "REQURIED" statements</u> OR any of the important elements of the proposed three IRM statements. Compliance is not met.	YES

Next task team: *Tuta absoluta*

1500 IRAC Task Team 2: Mediterranean - *Tuta absoluta* (tomatoes)

Planning session taking into account learnings from Brazil. Objectives; what needs to be done; who will lead/participate; what resources required.

- Introduction & purpose of Task Teams (2') – R. Slater
- Introduction into problem of *Tuta absoluta* in Europe (15') – A. Bassi
- Summary of existing activities by IRAC & others (10') – L. Teixeira/J. Andaloro
- Define objectives of Task Team (10')
- Define project team & lead (5')
- Identify any IRAC/CropLife resources required (5')

Country group liaisons

Representative	Company	Country groups by company	Country groups			
Adeline Bertrand Sebastian Coggiola	ADAMA	2	France	Israel		
Werner Heck Siddharth Tiwari	BASF	0				
Nigel Godley Ralf Nauen	Bayer	3	India	Philippines	Turkey	
Eric Andersen	Cheminova/FMC	1	Chile			
Jim Dripps Maria Torne	Dow	3	Australia Spain	Korea		
Andrea Bassi John Andaloro Luis Teixeira	DuPont	10	Italy Argentina Brazil	Morocco Indonesia Mexico	Japan S Africa	Malaysia USA
Nobuyuki Nonaka	Nihon Nohyaku	0				
Brian Duggan	Nufarm	0				
Jan Elias Robert Senn	Syngenta	4	China	Thailand	Vietnam	Taiwan
Daniel Zommick Dirk Ave	Valent	0				

Country Group Review

- Argentina ✓
- Australia ✓
- Brazil ✓
- Chile ✓
- China ✓
- France✓
- India✓
- Indonesia✓
- Israel✓
- Italy✓
- Japan ✓
- Korea ✓
- Malaysia✓
- Mexico ✓
- Morocco✓
- Philippines✓
- South Africa ✓
- Spain ✓
- Taiwan✓
- Thailand✓
- Turkey✓
- USA✓
- Vietnam✓

Argentina

- Met 3Q and 4Q 2015
- Name the highest risk insects and crops the team is targeting:
  - Helicoverpa gelotopoeom (armigera, potentially) – Pseudoplusia / Soybean
  - Spodoptera / Corn (Potential)
- No significant issues involving diamides. This current campaign is very rainy (El Niño effect) with little pest pressure (even in Spodoptera in Hx/Bt corn).

Australia

The IRMRG have an annual meeting. Last meeting on 22nd March, 2016.

Insecticide Resistance Management Review Group (IRMRG)- a technical group advising on insecticide resistance management strategies representing CropLife members for registered insecticides used in Australian production systems.

-TIMS has ratified the maximum use of four (4) Group 28's per cotton crop

per season.

– TIMS has ratified a cut-off spray date for use of Altacor in dry pulses and a start date for use in cotton so that a one generation break exists for Helicoverpa spp.

Department of Agriculture and Food

Diamondback Moth (DBM) Insecticide Resistance Management (IRM) Strategy Western Australia

Update 20 Sept. 2015

Consult product labels and/or permits for registrations for specific vegetable brassica crops and application information.
This strategy is part of integrated pest management (IPM) for vegetable brassica crops — cauliflower, broccoli, cabbage and Brussels sprouts.

Crop stage	Window 1: 1 July–31 Dec	Window 2: 1 Jan–30 June
Seedling treatment	Group 28 + Group 4A[1] **Durivo®** WHP 42[2] AI: **chlorantraniliprole + thiamethoxam**	A shorter window is recommended due to longevity of product
Early	Group 11 Bt's AI: ***Bacillus thuringiensis*** WHP not required	
Mid to late	Group 5 **Success™ NEO** WHP 3 AI: **spinetoram**	Group 6 **Proclaim®** WHP 3 AI: **emamectin benzoate**
	Group 28 **Belt®** AI: **flubendiamide** WHP 3[2] **Coragen®** AI: **chlorantraniliprole** WHP 7[2]	Group 22A **Avatar®** WHP 7[2] AI: **indoxacarb**
Late	Group 13 **Secure®** AI: **chlorfenapyr** WHP 7	Group 2B **Regent®** WHP 7 AI: **fipronil**
	Group 3A **Synthetic pyrethroids (SP's)** AI: **alpha-cypermethrin, cypermethrin** WHP 1 AI: **lambda-cyhalothrin, tau-fluvalinate[3], permethrin** WHP 2 AI: **esfenvalerate, gamma-cyhalothrin** WHP 2	
	Group 1B **Organophosphates (OP's)** AI: **maldison[4], acephate** WHP 3[5] AI: **chlorpyrifos** WHP 5 AI: **prothiofos[6]** WHP 7	

WHP = withholding period in days. AI = active ingredient

[1] **Durivo®** contains active ingredients from Group 28 and Group 4A. Do not apply **Belt®** or **Coragen®** in **Durivo®** treated crops.
[2] **Durivo®**, **Belt®**, **Coragen®** and **Avatar®** have different WHP for leafy brassicas and other vegetable brassica crops.
[3] **Tau-fluvalinate** is only registered for cauliflowers. [4] **Maldison** is registered for cabbage and cauliflower only. [5] WHP for **acephate** on broccoli is 14 days.
[6] **Prothiofos** is not registered for cauliflower.

IRAC

Brazil

- Met March 18, 2016
- IRAC-BR is engaged to implement and provide guidance for IRM
- Bt soybean approval as new mode of action
- Bt cotton adoption as new mode of action
- Authorities is aware about IRM issues
- Partnership with researcher and consultants
- Reported by Celso Omoto at Bahia state some frequency of individual for Spodoptera frugiperda. Also there is some failure control of Chlorantraniliprole for Leucoptera coffeella at Bahia state. Decrease of control of Chrysodeixis includens for diamides in different region

Chile

- No response

China

- Last meeting: 4th December, 2015, Nanjing, China
- All of us thought the Diamides Resistance Monitoring in last 6 years (2010-2015) was very significant and this kind of cooperation was efficient and fruitful.
- After 6-year resistance monitoring, what more activities should be done in next step should be discussed.
- Training on resistance management is still meaningful and necessary in future in China.
- The possibility of cooperate in the E-fate study of Diamides or others.
- Dr. XM Zhang confirmed the group's achievement and proposed further wishes and requirements.

France

- No recent meetings

2014-15 FRANCE Country RAG

TEAM STATUS

1.Date team was formed: 21th November 2014

2.Number of meetings in 2014 and 1st Q 15: 1 meeting in 2014

3.Name the highest risk insects and crops the team is targeting: Topics to be addressed during the next meeting

4.List team members and current coordinator:

DuPont:
Main contacts (R&D): Amandine Picard (amandine.picard@dupont.com) & Gwenael Champroux (Gwenael.L.Champroux@dupont.com)
If needed (Marketing) : Jean-Robert Roos, Patrick Bergougnoux, Aurelie Morin
Syngenta :
Main contacts : Sebastien Vautrin (sebastien.vautrin@syngenta.com), François Sénéchal, Céline Thibault.
Team coordinator: Amandine Picard

India

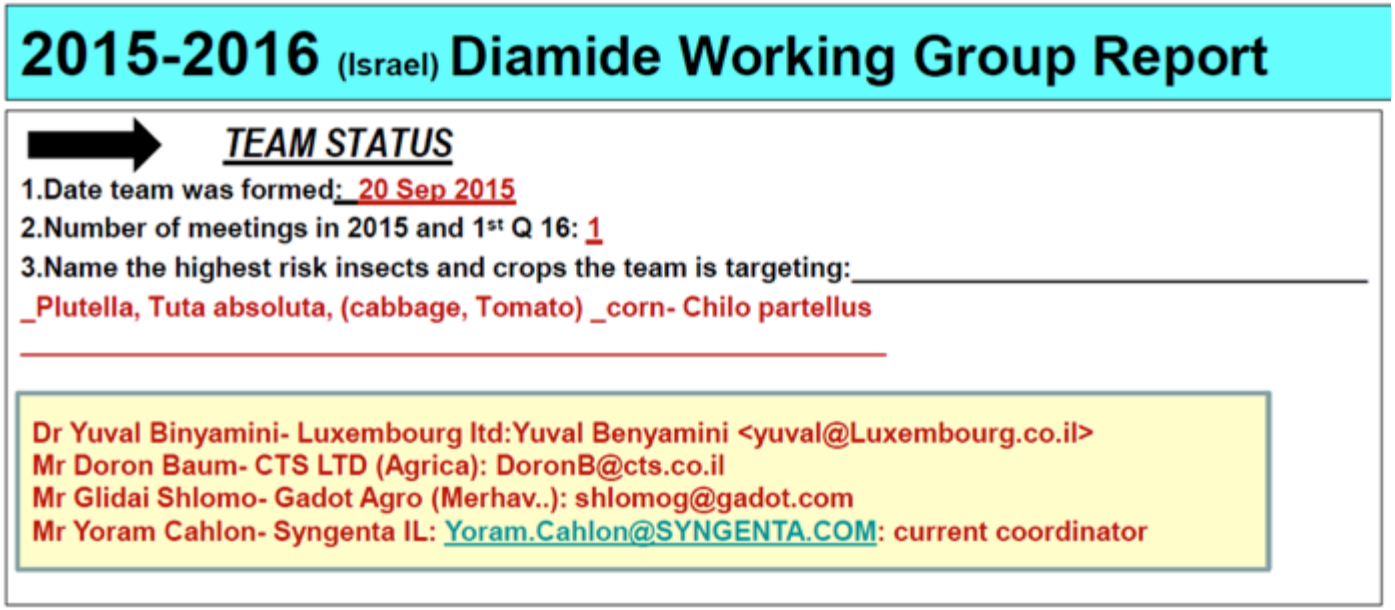
- Last meeting Sept 10th 2015
- Key crops: rice, cabbage, eggplant, tomato, pigeonpea, chickpea
- Looking for agreement on joint monitoring program
- Stakeholders agreed to share finding of Resistance monitoring programme within the group (Once in a year)
- Next meeting April-May 2016
- Support is required to take up the IRAC Initiative forward by coordinating the member companies in the country for frequent discussion

Indonesia

- Meetings in October, 2015 and February, 2016
- Key priorities: 1. Lepidoptera 2. Sucking Insects
- - Train The Trainers event occurred in Oct 2015; Alignment with local experts ongoing.
  - Meeting with Stewardship Committee from Croplife Indonesia: agreed to incorporate resistance training material into CLI member Stewardship training material. Will use recent IRAC Grower Benefits and YouTube. Already being translated.

Israel

- No recent meetings



2015-2016 (Israel) Diamide Working Group Report

TEAM STATUS

1.Date team was formed: 20 Sep 2015

2.Number of meetings in 2015 and 1st Q 16: 1

3.Name the highest risk insects and crops the team is targeting:

_Plutella, Tuta absoluta, (cabbage, Tomato) _corn- Chilo partellus

Dr Yuval Binyamini- Luxembourg ltd:Yuval Benyamini <yuval@Luxembourg.co.il>
Mr Doron Baum- CTS LTD (Agrica): DoronB@cts.co.il
Mr Glidai Shlomo- Gadot Agro (Merhav..): shlomog@gadot.com
Mr Yoram Cahlon- Syngenta IL: Yoram.Cahlon@SYNGENTA.COM: current coordinator

Italy

- Latest meeting: 06 October 2015
- Tuta absoluta resistance update
- Lobesia botrana monitoring sensitivity update
- Review labels of chlorantraniliprole and cyanthraniliprole based products for IRM chapter
- Agree IRM strategy for new crops and pests

Japan

2. Try to meet before the end of March if you have not met within the past 6 months.

The team had F2F meetings three times on 14 Sep, 22 Dec and 7 Mar.

3. Send me any team meeting reports created in the last 6 months…BY MARCH 30….

See attached.

4. Report any new resistance developments, concerns or issues…..BY MARCH 30

Oriental tea tortrix (*Homona magnanima*) was reported newly as declining susceptibility to Diamides in the meeting of Japanese Society of Tea Science and Technology on 18 November, 2015. See attached.

Additionally, decline of susceptibility of smaller tea tortrix (*Adoxophyes honmai*) had been reported in 2014 as attached.

Korea

- No meeting within last 6 months
- No new report on new resistance developments, concerns or issues in Korea, yet.

Malaysia

- No response

Mexico

Team:

1. **Meetings:** 2 meetings:1 F2F and 1 Audio - F2F 1st March 22 2013, -28th 2013 at Homero office. Audio 7 September 2015
2. **Target insects and crops:** Plutella (crucifers); Liriomyza (peppers)
3. **Country IRAC group open to all companies:** in process

1. The IRM languages for all labels has been established for pioneer active ingredients
2. Implemetation of a standard presentation for all companies (plan to communicate properly MoA).
3. Strategy to communicate and educate

1. Within country:
   Monitoring Strategy and program
2. From global Diamide WG or IRAC:
3. Guideline to develop and implement IRM strategies on core crops
4. Presence in local forum to extend the IRM strategies with core users

Morocco

- No activity in the last two years

Philippines

- No activity in the last two years

The original IRAC team of the Philippines is not anymore active since late 2014.

Most of the original members have not been the nominated representatives of the different companies to CropLife.

CropLife Stewardship committee: IRM was not part of the projects and there was no specific team for IRM.

Our last campaign for IRM was in 2014 with mango

Will have a CropLife meeting on April 5 next week

South Africa

- Last meeting: March 18
- IRAC actions to be discussed next meeting
- Resistance testing: A great concern is the fact that no facility in South Africa can currently do resistance testing, no cultures are kept as reference or baseline studies done, we can only report suspected cases no resistance or shifts in sensibility. The ARC (Agricultural Research Council) in Potchefstroom under great financial pressure, Assistants of Dr A. Erasmus no longer financed. Industry as whole need an independent body to do testing and concentrate on problem cases identified during previous year/s. DvH to discus with Dr. Kobie de Ronde (Syngenta) SANSOR possible involvement, feedback next meeting.
- ETS audits: report on possible benefit if companies do get audits, e.g. yearly, DuPont every 2 years, etc.
- Resistance clause on labels: ask possible retired entomologists, e.g. Dr. J Brits to review labels, some of the registrations are very old and wording out of date.

Spain

- Meetings: 2 for IRAC Spain (15th March / 24th November), next will be 10th of May, 1 for the Diamide WG (15th March 2015)
- No resistances confirmed, though some increase of LC50 in Tuta populations has been observed.
- P. Bielza has found same Sicily mutation in Spanish populations, though at low frequency. This means a high resistance risk if RMS is not followed (IPM and Food Chain go against it).
- Priority list: Lepidoptera: GNORAB (tomato), HELIAR (veggies), CARPPO (apple)

Taiwan

2-3 meeting per year; Highlights of last meeting minutes:

I. Review last meeting minutes:

A. II. Company updated status:

DuPont and Syngenta will summarize yearly trainings and works in the end of 2015.

III. Education materials:

A. Carson: Provide education material after Syngenta conference in November.

B. Ted: Provide current CropLife ppts.

C. Wenyi and Anita: Prepare of CropLife poster. (Re-design, translation, amount, and etc.)

BAPHIQ (Bureau of Animal and Plant Health Inspection and Quarantine) resistance group meeting in Feb 2016

IV. 2016 plans:

Complete the education materials and launch a WDG IRAC member in-housed training.

Will raise proposal to ask CLT board meeting support education training materials budget

After established the education materials and plans, invite BAPHIQ and TACTRI to join.

Compile new resistance developments, concerns, or issues in a short email

Ans: No issue at this moments.

Thailand

- No activities within TH IRAC working group since 2013
- Some concerns about diamides in rice which has sign to start resistant due to use rate is higher than previous years
- Proposal: Invite and to organize the first meeting. This should be done by the company leading insecticide business in Thailand (e.g. Bayer crop protection)
- Invited companies should be: Syngenta, Nihon, TJC, Bayer, Dow, BASF and DuPont
- Main emphasis of first meeting should be on rice.

Turkey

- Last meeting January 2015

USA

- Face to face and several teleconferences
- Targeting vegetable pests: DBM, Beet armyworm, leafminers, loopers
- IRAC-US Symposium
- ICE Symposium
- ESA Resistance Management Policy Statement

Vietnam

- No activities in 2015
- Company monitoring on leaffolder was done in Mekong delta

- Actions discussed with Nguyen Thi Mai Chi (Syngenta head R&D Vietnam)

  Invite all international companies (Bayer, DuPont, Dow, Adama, BASF, FMC,…)

  Follow the IRAC guideline for country working groups.

Lepidoptera WG meeting agenda (Wed)

10:00 Welcome, introductions and reminder of antitrust guidelines

10:10 Review 2015/16 Lepidoptera WG activities

10:20 Country updates: The liaison presents summary slides.

- Group status, meetings, reports of resistance, label alignment, proposed IRM strategies
- Challenges/highlights, requests from country WGs to the Lepidoptera working group
- Guidance/communications to country WG
- Review liaison assignments

12:00 Lunch

13:00 Lepidoptera WG discussion

- Label Review Compliance project
- Review Brazil task team effort and key learnings
- Discuss Lep WG contribution to new Tuta Task team (form a committee)
- Review current diamide guidelines and transition to Lep IRM guidelines

14:30 Coffee/Tea

14:45 Lepidoptera WG discussion (Contd.)

- Review/Edit SMART objectives
- Finalize Lobesia and FAW posters
- Other topics? Research findings?

17:30 Session closed

Lepidoptera joint meeting with Biotech (Thu)

1. Joint session with Biotech WG
   - Insecticide/Biotech integrated opportunities
   - Insecticide/Biotech statement – revisions and potential inclusion of seed treatments
   - BMP discussions – opportunity for future interactions e.g. expansion to needs across Latin America, Asia, S. Africa
2. Excellence Through Stewardship (ETS) – brief history on the IRM efforts; discuss potential for expansion needs from chemistry efforts
3. Any further opportunity/need for Task Team efforts?
   - Puerto Rico opportunity will be driven by IRAC---US
   - Others?

Thank you

- Five conference calls
- Multiple revisions of posters and guidelines
- Label collections