Insecticide Resistance Action Committee

## IRAC Coleoptera Working Group

# Pollen Beetle Resistance Monitoring 2017

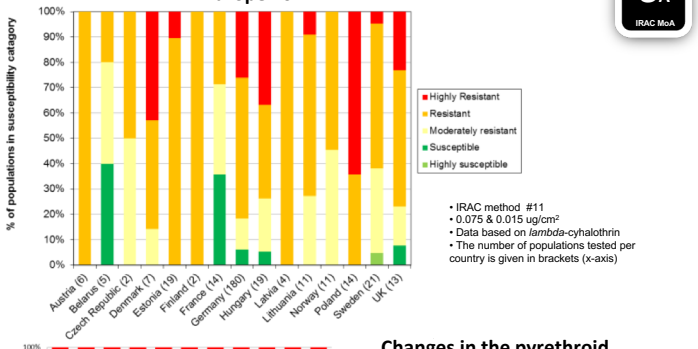
www.irac-online.org

## Introduction and Background

Pyrethroid resistance has been recorded in European populations of the pollen beetle (*Brassicogethes aeneus;* syn. *Meligethes aeneus*) since 1999, when it was first reported in Eastern France. The IRAC Coleoptera Working Group brings together expertise from agrochemical companies and independent researchers in order to monitor the development and spread of resistance in pollen beetles and other coleopteran pests of oilseed rape. Pyrethroid, neonicotinoid, organophosphate and indoxacarb susceptibility is measured by the use of insecticide coated glass vial assays. Results of the 2017 susceptibility monitoring program are presented in this poster. More details of the methods used in this survey can be found on the IRAC website (www.irac-online.org).

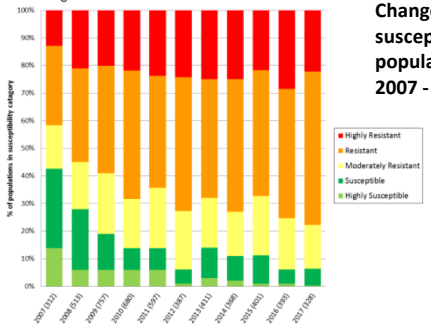
### Pyrethroid susceptibility of pollen beetle populations in Europe 2017

3A IRAC MoA




- IRAC method #11
- 0.075 & 0.015 ug/cm²
- Data based on *lambda*-cyhalothrin
- The number of populations tested per country is given in brackets (x-axis)

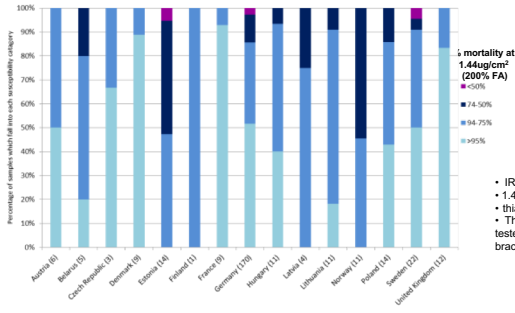
### Changes in the pyrethroid susceptibility of pollen beetle populations in EU between 2007 - 2017




Susceptibility surveys conducted in Europe between 2007 and 2017 suggest that in general pyrethroid resistant populations of pollen beetle have been on the increase at least until 2007. There are suggestions that the proportion of resistant populations have stabilised at about 85-90% since then. However, we have to consider that the countries and number of samples included in the survey have varied during each year.

### Neonicotinoid susceptibility monitoring 2017

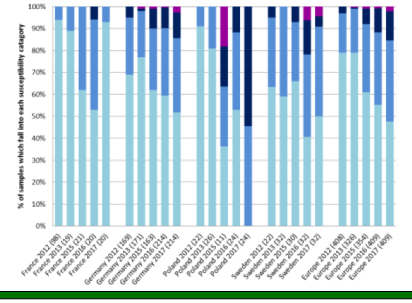
4A IRAC MoA




- IRAC method #21
- 1.44ug/cm²
- thiacloprid
- The number of populations tested per country is given in brackets (x-axis)

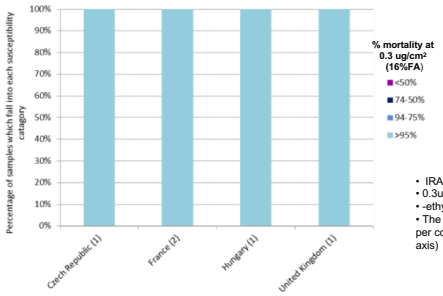
### Changes in neonicotinoid susceptibility in selected countries and EU (total) between 2012 - 2017

4A IRAC MoA




### OP susceptibility monitoring 2017

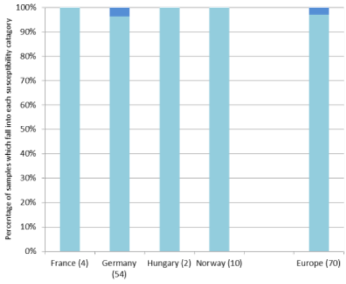
1B IRAC MoA




- IRAC method #25
- 0.3ug/cm² chlorpyriphos, either
- -ethyl or -methyl form
- The number of populations tested per country is given in brackets (x-axis)

### Indoxacarb susceptibility monitoring 2017

22A IRAC MoA




- IRAC method #27
- 0.225ug/cm²
- indoxacarb
- The number of populations tested per country is given in brackets (x-axis)

## Summary & Recommendations

- In the majority of countries surveyed, pyrethroid resistant populations of pollen beetle dominate (> 60% are resistant).
- Samples of pollen beetle collected 2016 in Spain, Greece and Romania showed high levels of pyrethroid sensitivity, however no samples were collected from these countries in 2017.
- In 2017 less than 10% of pollen beetle populations (n=328) surveyed in Europe could be classified as pyrethroid susceptible.
- After an initial decline in the number of susceptible pollen beetle populations observed in Europe since the IRAC survey began in 2007, only small variations in the percentage of pyrethroid susceptible and resistant beetle populations have been observed since 2010.
- The majority of populations tested across Europe remained susceptible to neonicotinoid insecticides. The percentage of populations with a lower sensitivity (<75% mortality) increased from 8% to 16%, however there was also an increase in the number of populations where less than 50% mortality was observed, with most samples originating in Poland.
- There is currently no evidence to suggest that the lower sensitivity observed in the survey correlates with a reduced performance of neonicotinoid containing insecticide products which are used under field conditions, however resistance management practice should be implemented to avoid further susceptibility decline.
- There was no evidence of changes in organophosphate and indoxacarb susceptibility observed in the European countries surveyed.
- In order to prevent further insecticide resistance development, it is recommended that insecticides with different modes of action are utilised in an effective resistance management program, dependent on local insecticide availability and national use guidelines. IRAC guidelines for resistance management in oilseed rape can be found on the IRAC website (www.irac-online.org).
- IRAC would like to thank all of those who contributed to the survey.



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Visit to IRAC web-site for further details at www.irac-online.org

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