



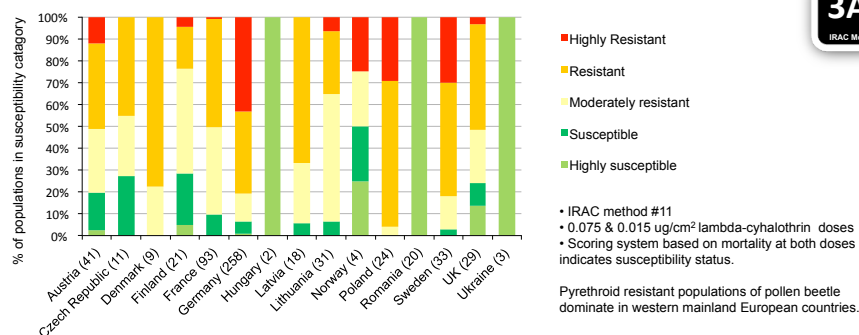
# Pollen Beetle Resistance Monitoring 2011

### Introduction and Background

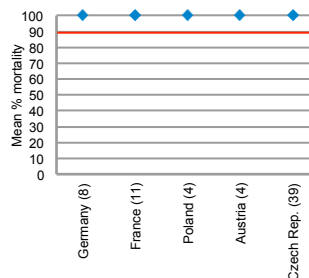
Pyrethroid resistance has been recorded in European populations of the pollen beetle (*Meligethes aeneus*) since 1999, when it was first reported in Eastern France. The IRAC Coleopteran Working Group brings together expertise from agrochemical companies and independent researchers in order to monitor the development and spread of resistance in pollen beetles and other coleopteran pests of oilseed rape.

Pyrethroid, neonicotinoid and organophosphate susceptibility is measured by the use of insecticide coated glass vial assays. Results of the 2011 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 2011



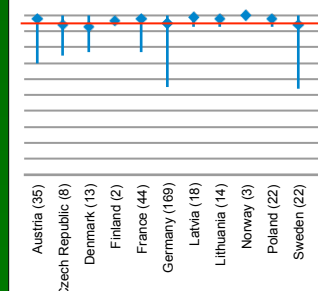
### 1B Organophosphate susceptibility



- IRAC method # 25
- 0.3ug/cm<sup>2</sup> chlorpyrifos-ethyl dose
- > 90% mortality indicates susceptibility.

All European populations of pollen beetle tested were susceptible to organophosphates based on the IRAC recommended discriminating dose.

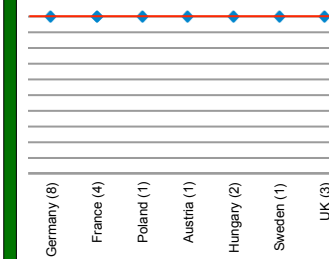
### 4A Neonicotinoid susceptibility



- IRAC method # 21
- 1.44ug/cm<sup>2</sup> thiacloprid dose
- > 95% mortality indicates susceptibility.

Most populations were susceptible to neonicotinoids, but there is some variation in response which needs to be observed in future monitoring programs.

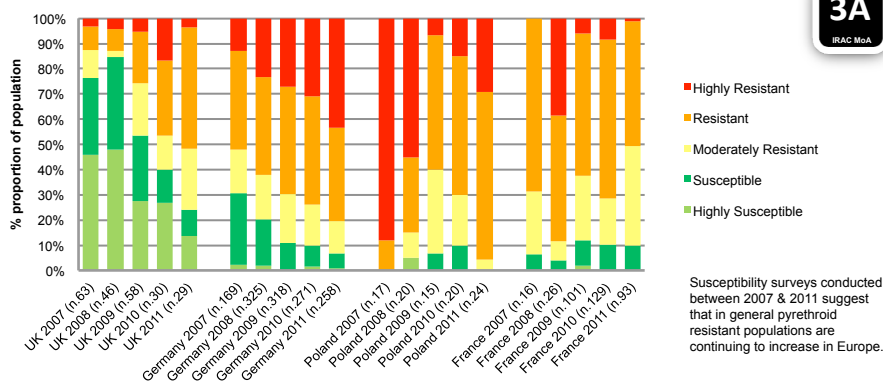
### 22A Indoxacarb susceptibility



- IRAC method # 27
- 0.255ug/cm<sup>2</sup> indoxacarb dose
- 100% mortality indicates susceptibility.

All European populations of pollen beetle tested were susceptible to indoxacarb based on the IRAC recommended discriminating dose.

### Changes in the pyrethroid susceptibility of pollen beetle populations 2007 - 2011



### Summary & Recommendations

- Pyrethroid resistant populations of pollen beetle were the dominant population type in all the countries surveyed, except Romania, Ukraine and Hungary.
- The survey indicates that pyrethroid resistant populations are increasing in frequency across Europe. With largest increases (2010 to 2011), observed in the UK, Poland, Latvia\* and Finland\*. There are some indications of a decline in resistant populations in the Czech Republic compared to surveys in previous years.
- Most populations were susceptible to neonicotinoids, but there is some variation in response which needs to be observed in future monitoring programs.
- All populations of pollen beetle tested were susceptible to organophosphates and indoxacarb based on the IRAC recommended discriminating dose.
- 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, dependant 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. Participants are too numerous to name, but their contributions are very much appreciated.

\*Data not presented on poster.