

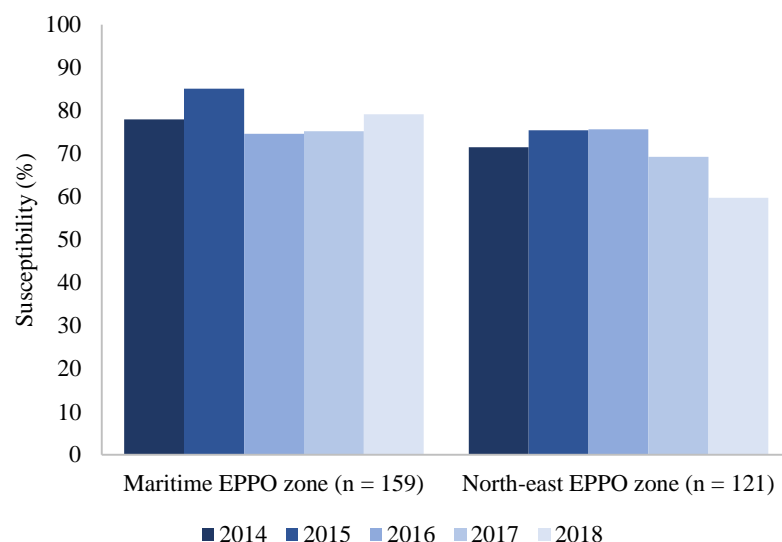
# Pollen Beetle Resistance Monitoring

## Introduction and Background

Pyrethroid resistance has been recorded in European populations of the pollen beetle (*Brassicoglyphus aeneus*) since 1999, when it was first reported in Eastern France. NORBARAG is a Nordic Baltic collaboration for pesticide resistance research and pesticide efficacy evaluation. The NORBARAG network includes representatives of research institutes and of the agrochemical companies operating in the Nordic-Baltic region. NORBARAG is independent, but maintains contacts to HRAC, FRAC and IRAC which only have

representation from the agrochemical industry. Pyrethroid and neonicotinoid susceptibility is measured by the use of insecticide coated glass vial assays. Results of the susceptibility monitoring programs from 2014-2018 from countries within the NORBARAG region (Denmark, Sweden, Norway, Finland, Latvia, Lithuania and Estonia) are presented in this poster. More details of the methods used for the surveys can be found on the IRAC website ([www.irac-online.org](http://www.irac-online.org))

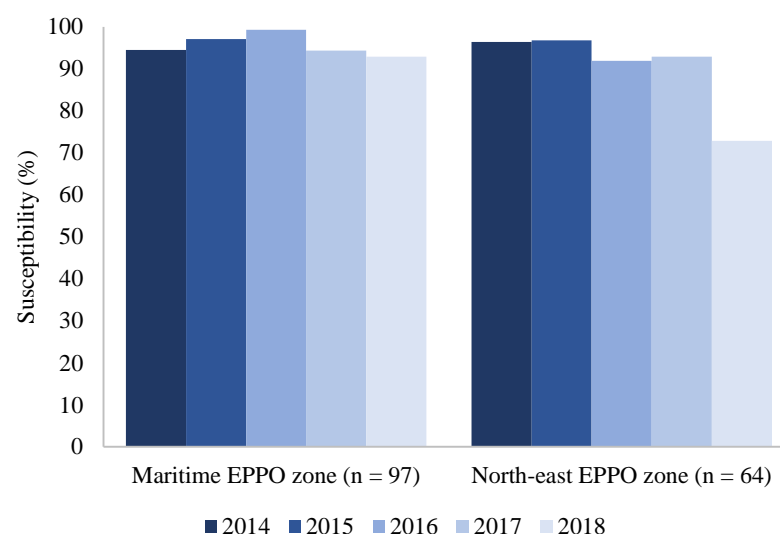
## $\lambda$ -cyhalothrin susceptibility (3A IRAC MoA)



- IRAC Method 011
- 75 ng/cm<sup>2</sup>  $\lambda$ -cyhalothrin

Susceptibility surveys conducted in the NORBARAG region between 2014 and 2018 suggest that  $\lambda$ -cyhalothrin resistance is widely spread throughout the region. In the Nordic countries, efficacy of  $\lambda$ -cyhalothrin remained stable over the time period, but decreased in the Baltic countries. However, we have to consider that the number of samples included in the survey have varied during each year.

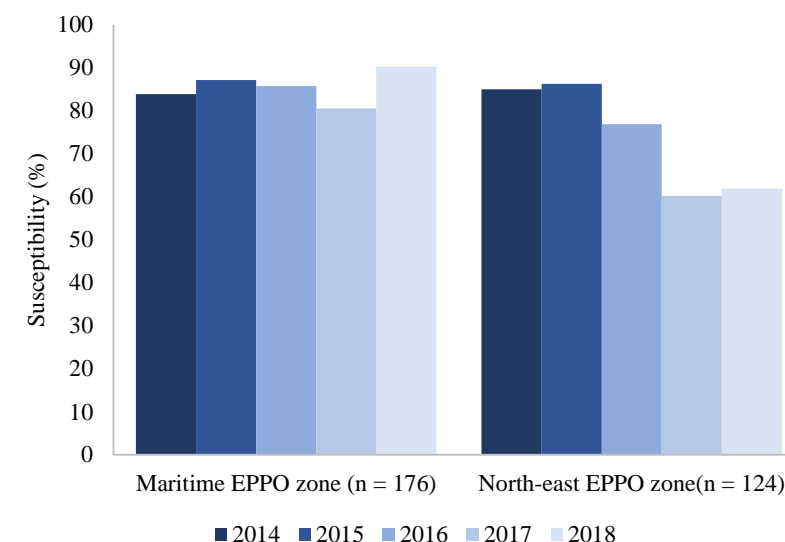
## $\tau$ -fluvalinate susceptibility (3A IRAC MoA)



- IRAC Method 011
- 480 ng/cm<sup>2</sup>  $\tau$ -fluvalinate

Susceptibility surveys conducted in the NORBARAG region between 2014 and 2018 suggest that  $\tau$ -fluvalinate remains effective. Efficacy of  $\tau$ -fluvalinate was maintained in the Nordic countries, but decreased in the Baltic countries. However, we have to consider that the number of samples included in the survey have varied during each year.

## Thiacloprid susceptibility (4A IRAC MoA)



- IRAC Method 021
- 720 ng/cm<sup>2</sup> thiacloprid

Susceptibility surveys conducted in the NORBARAG region between 2014 and 2018 suggest that thiacloprid remains effective. Efficacy of thiacloprid was maintained in the Nordic countries, but decreased in the Baltic countries. However, we have to consider that the number of samples included in the survey have varied during each year.

## Summary

- $\lambda$ -cyhalothrin resistance is widely spread throughout the NORBARAG region. Efficacy of  $\lambda$ -cyhalothrin was maintained in the Nordic countries, but decreased in the Baltic countries from 2014 to 2018
- $\tau$ -fluvalinate remained effective from 2014 to 2018. Efficacy was maintained in the Nordic

countries, but decreased in the Baltic countries over recent years

- Thiacloprid efficacy was maintained in the Nordic countries, but decreased in the Baltic countries over recent years. The shift in susceptibility in recent years could indicate a possible issue with controlling pollen beetles in the field.