



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

Corso di Dottorato in Scienze,
Tecnologie e Biotecnologie
Agro-Alimentari

Corso di Dottorato in Scienze, Tecnologie e Biotecnologie Agro-Alimentari

Ph.D Seminar

7 Febbraio 2020

Via G. Amendola 2, Reggio Emilia

Pad. Besta, aula 1/A

Ore 10.00-12.00

Insects and pest control in a changing climate

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Abstract

Agricultural losses from insect pests are estimated up to 20-50%. These losses are projected to increase under future climate conditions. Ectotherms are especially sensitive to an increase in temperature as their basic functions strongly depend on the environmental temperature. There is strong evidence that climate change is already modifying species vulnerability, geographical range, phenology, voltinism, interactions and community composition. These reports illustrate that the effect of climate change depends on species taxonomic group or location and varies in type and strength. The potential effect of future climate change on insect pests and their natural enemies based on different emission levels and regional climate scenarios was quantified in various studies. These future projections indicate changes in distributions with expansions northward and uphill and contractions southward and downhill. Additionally estimated changes in seasonal phenology includes earlier spring occurrence, extended flight period and a change from uni-voltinism to multi-voltinism. Decreased winter mortality will also lead to pronounced population densities early in the year. Furthermore, also changes in species interactions as insect-host plant, host-parasitoid, competition or decoupling of mutualism are realistic scenarios. Besides a shift in the distribution and phenology of native pest species, it is evident that the number of non-native species will increase and that climate change will promote their establishment. The role of biological control in the management of invasive species and how that might change in the future will be discussed with historical and current examples.

Tim Haye, PhD, is Head Arthropod Biological Control at CABI Europe-Switzerland Centre, Delémont. Research on classical biological control of insect pests with particular emphasis on host-range assessment and non-target impacts of parasitoids. Investigation of the impact of climate change on agricultural pests and their natural enemies. Broad background in entomology, ecology, behaviour and rearing of arthropod biological control agents. Investigation of natural enemies of insect pests invasive in Europe. Coordinator of several projects for biological control of agricultural insect pests in Canada, China, India, Mexico and of projects for biological control of *H. halys* and Risk assessment for *T. japonicus* in Switzerland and Europe.