

Programme

Summer School Insects as Food and Feed, from producing to consuming



Course leader

Arnold van Huis, Emeritus professor
Wageningen University & Research | Laboratory of Entomology

Date: 3 July – 7 July 2023 (welcome reception Sunday evening the 2th)

Location: Wageningen, The Netherlands

Organisation: Wageningen Academy

Telephone number support: + 31 317 484093

List of speakers

Prof.dr. M. (Mik) Van Der Borght	Professor Faculty of Engineering Technology, KU Leuven, Belgium
<i>Ing.</i> J. (Jonas) Claeys	Advisor Insect Rearing, Inagro, Belgium
Prof.dr M. (Marcel) Dicke	Professor Laboratory of Entomology, Department of Plant Sciences, WUR, The Netherlands
Dr A.R.H. (Arnout) Fischer	Associate professor Marketing and Consumer Behaviour, Department of Social Science, WUR, The Netherlands
Dr L. (Lotte) Froominckx	Postdoctoral researcher Thomas More, Belgium
Jan-Willem Heesakkers	Project Manager R&D, Bühler Insect Technology, The Netherlands
Prof.dr.ir. A. (Arnold) van Huis	Emeritus professor, Laboratory of Entomology, Department of Plant Sciences, WUR, The Netherlands
Dr R. (Robert) Kok	Emeritus professor, Department of Bioresource Engineering, McGill University, Canada
A. (Antoine) Lecocq	Assistant Professor, Department of Plant and Environmental Sciences, University of Copenhagen, Denmark
N.P. (Nathan) Meijer	Junior researcher Toxicology, BU Toxicology Novel Foods & Agrochains, Wageningen Food Safety Research (WFSR), The Netherlands
Chelsea Miranda, PhD	Postdoctoral Research Associate, F.L.I.E.S. Facility, Department of Entomology, Texas A&M University TAMU, USA
Dr Apr. S. (Sabine) Van Miert	Research Manager @RADIUS Research, Lecturer Biomedical Laboratory Technology, Thomas More, Belgium
Dr <i>ir</i> D.G.A.B. (Dennis) Oonincx	Researcher Animal Nutrition group, Department of Animal Sciences, WUR, The Netherlands
<i>Ing.</i> M. (Marian) Peters MBA	CEO New Generation Nutrition, The Netherlands
<i>Ir.</i> N. (Niek) Steeghs	Chief Insects Officer – Biotech R&D Operations Director, Ynsect NL, The Netherlands
S. (Sergiy) Smetana PhD	German Institute of Food Technologies, Germany
Dr T. (Teun) Veldkamp	Senior researcher Animal Nutrition, Wageningen Livestock Research, WUR, The Netherlands
Dr D. (Dries) Vandeweyer	Postdoctoral researcher, Research Group for Insect Production and Processing, KU Leuven, Belgium

Sunday 2 July 2023

Evening programme with drinks & bites

Location: [Fletcher Hotel-Restaurant De Wageningsche Berg](#) | Tel: + 31 317 495911
Address: Generaal Foulkesweg 96, 6703 DS Wageningen

- 19.30 Registration and Welcome
by Wageningen Academy
- 20.00 Introduction
by course leader Arnold van Huis
- 20.30 Short introduction *by all participants*
- 21.30 End evening programme

Monday 3 July 2023

Location: Wageningen Campus, BUILDING TBD | Room TBD
Address: TBD

Ecosystem services and environment

- 08.30 Welcome with coffee and tea
- 09.00 Introduction Summer School and introduction case/assignment
Arnold van Huis
- 10.00 Exploring the potential of insects for the benefit of humanity: ecosystem services; pollination, waste disposal, insects as food and feed, insects in recreation and potential moderators
Marcel Dicke
- 11.00 Small break
- 11.30 Environmental effects of producing insects: ammonia and greenhouse gas emissions, environmental risks
Sergiy Smetana
- 12.30 Lunch on Wageningen Campus

Industry challenge

- 13.30 Challenges in industrial mealworm production systems
Niek Steeghs
- 14:15 Assignments, introduction group work
- 15:15 Small break
- 15:30 Group work
- 17.00 End of course day

Tuesday 4 July 2023

Location: Wageningen Campus, BUILDING TBD |
Room TBD
Address: TBD

Ento-technology

- 08.30 Welcome with coffee and tea
- 09.00 Production technology and design (ento-technology): Part 1. Setting the stage
Robert Kok
- 10.30 Small break
- 11.00 Production technology and design (ento-technology): Part 2. Systems and challenges
Robert Kok
- 13.00 Lunch on Wageningen Campus
- 14.00 Production technology and design (ento-technology): Part 3. Processing
Robert Kok
- 15.30 Small break

Insect's health

- 16.00 Maintaining a healthy colony
Antoine Lecocq
- 17.15 End of course talks
- 18.30 Informal dinner (Wageningen City Centre)
- 21.00 End of course day

Wednesday 5 July 2023

Excursion day trip to Campus Geel and the [Insect Pilot Plant](#), Belgium

*Thomas More University of Applied Sciences and University of Leuven
Campus Geel, Kleinhoefstraat 4, 2440 Geel, Belgium*



07.00 **Departure touring car from Wageningen Campus to Campus Geel**

! Meeting point in front of Forum/Radix, Wageningen Campus

09.00 Welcome with coffee and tea

Research Group for Insect Production and Processing, Faculty of Engineering Technology, University of Leuven, Campus Geel

09.30 Presentations of the research programme

- Insect research at the Research Group for Insect Production and Processing (IP&P), with focus on microbiological research
Dries Vandeweyer
- Chemical research at IP&P and introduction to the SymBIOnt building
Mik Van der Borght

Short break

11.00 Visit to research facilities

12.30 Lunch

Radius, Thomas More University of Applied Sciences

13.30 Presentation of the research programme

- Insect rearing: Optimization of the reproduction and nursing process (30 min)
Lotte Froominckx
- Insect rearing: The multi-angle approach of Inagro's Insect Research Centre (IRC) (30 min)
Jonas Claeys
- Insects: a source of nutrients and biobased chemicals (30 min)
Sabine Van Miert

15.00 Break

15.00 Visit to research facilities / the Insect Pilot Plant

17.15 Small dinner

18.15 Transport back to Wageningen Campus

20.00 **Expected return at Wageningen Campus**

Thursday 6 July 2023

Location: Wageningen Campus, BUILDING TBD | Room TBD
Address: TBD

Special production systems

- 08.30 Welcome with coffee and tea
- 09.00 Black soldier fly:
Part 1. How to maintain in colony (incl genetics) and
Part 2. How to grow larve
Chelsea Miranda
- 10.45 Small break
- 11.00 Black soldier fly: Part 3. Quality assurance
Chelsea Miranda
- 12.00 Lunch on Wageningen Campus
- 13.00 *Group picture at the Wageningen Campus by WUR photographer*

Insects as feed

- 13.15 Insects as feed
Teun Veldkamp

Nutrients and food technology

- 14.15 Nutrient content of insects
Dennis Oonincx
- 15.15 Small break
- 15.30 Processing and conservation
Jan-Willem Heesackers
- 16.30 Group work
- 17.15 End of course day

Friday 7 July 2023

Location morning:

Wageningen Campus, BUILDING TBD | Room TBD

Address: TBD

Food safety and legislation

08.30 Welcome with coffee and tea

09.00 Food safety
Nathan Meijer

09.45 Food legislation
Nathan Meijer

10.30 Small break coffee and tea

Consumer & marketing

11.00 Consumer attitudes, marketing, promotion
Arnout Fischer

12.00 Lunch on Wageningen Campus

Outreach: challenges

13.00 Challenges of companies dealing with edible insects
Marian Peters

14.00 Participants present their results in groups of 4/5 incl. discussion
- including drinks -

16.30 Course end messages and certification ceremony

17.00 Goodbye drinks

