

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: 29 August-2 September 2022 (welcome reception Sunday evening the 28th)

Location: WAGENINGEN, The Netherlands

Organization:

Wageningen Academy

List of speakers

A. (Andreas) Baumann	Head of Insect Technology, Bühler Group, Switzerland
Prof.dr. M. (Mik) Van Der Borght	Professor Faculty of Engineering Technology, KU Leuven, Belgium
Prof.dr L. (Leen) Van Campenhout	Professor Faculty of Engineering Technology and Coordinator Research Group for Insect Production and Processing, 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 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
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
S. (Sergiy) Smetana PhD	German Institute of Food Technologies, Germany
N. (Niek) Steeghs	Chief Insects Officer – Directeur R&D, Ynsects Nederland, The Netherlands
J.K. (Jeffery) Tomberlin, PhD, D-ABFE	Professor & AgriLife Research Fellow, Department of Entomology, Texas A&M University TAMU, USA
Dr T. (Teun) Veldkamp	Senior researcher Animal Nutrition, Wageningen Livestock Research, WUR, The Netherlands

Sunday 28 August 2022

Evening programme

Introduction course with drinks & bites

Location: Fletcher Hotel-Restaurant De Wageningse Berg, Wageningen

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

Monday 29 August 2022

Location: Wageningen Campus, building nr xxx, room xxxxx

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 Guided tour Wageningen Campus
- 14.30 Challenges in industrial mealworm production systems
Niek Steeghs
- 15:30 Small break
- 16:00 Assignments, introduction group work
- 17.00 End of course day

Tuesday 30 August 2022

Location: Wageningen Campus, building nr xxx, room xxxxx

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 with coffee/tea
- 11.00 Production technology and design (ento-technology): Part 2. Systems and challenges
Robert Kok
- 13.00 Lunch on Wageningen Campus
- 14.00 *Group picture at the Wageningen Campus by WUR photographer*
- 14.15 Production technology and design (ento-technology): Part 3. Processing
Robert Kok
- 15.45 Small break with coffee/tea

Insect's health

- 16.00 Maintaining a healthy colony
Antoine Lecocq
- 17.15 End of course talks
- 18.30 Informal dinner at restaurant
- 20.30 End of course day

Wednesday 31 August 2022

Location: Wageningen Campus, building nr xxx, room xxxxx

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
Jeff Tomberlin
- 10.45 Small break
- 11.00 Black soldier fly: Part 3. Quality assurance
Jeff Tomberlin
- 12.00 Lunch on Wageningen Campus

Insects as feed

- 13.00 Insects as feed
Teun Veldkamp

Nutrients and food technology

- 14.00 Nutrient content of insects
Dennis Oonincx
- 15.15 Small break
- 15.45 Processing and conservation (pre-recorded)
Jan-Willem Heesakkers
- 16.25 Check-in
- 16.30 Online live Q&A online with *Andreas Baumann*
- 17.15 End of course day

Thursday 1 September 2022

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 from Wageningen Campus to Campus Geel
! Meeting point Radix building, Wageningen Campus**

Radius, Thomas More University of Applied Sciences

09.00 Welcome with coffee and tea

09.30 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

Short break

11.00 Visit to research facilities / the Insect Pilot Plant

12.30 Lunch

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

13.30 Presentations of the research programme

- Insect research at Research Group for Insect Production and Processing with focus on the ENTOBIOTA project and the SymbIONt building
Leen Van Campenhout
- Tasks and activities of research group in the H2020 SUSINCHAIN project
Mik Van der Borght

15.00 Break

15.30 Visit to research facilities

17.15 Small dinner

18.15 Transport back to Wageningen Campus

20.00 **Expected return at Wageningen Campus**

Friday 2 September 2022

Location: Wageningen Campus, building nr xxx, room xxxxx

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 Small break

14.30 Participants present their results in groups of 4/5 incl. discussion

16.00 Evaluation and certification ceremony

17.00 Goodbye drinks at Wageningen Campus

