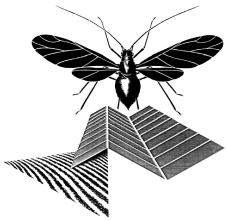
37e Nederlandse Entomologendag

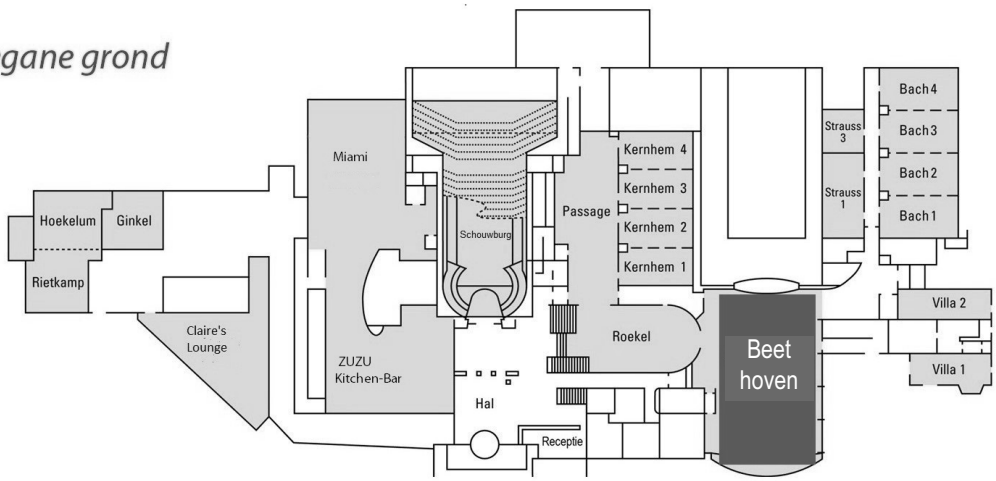
19 december 2025
De Reehorst
Ede

Programma
Abstracts

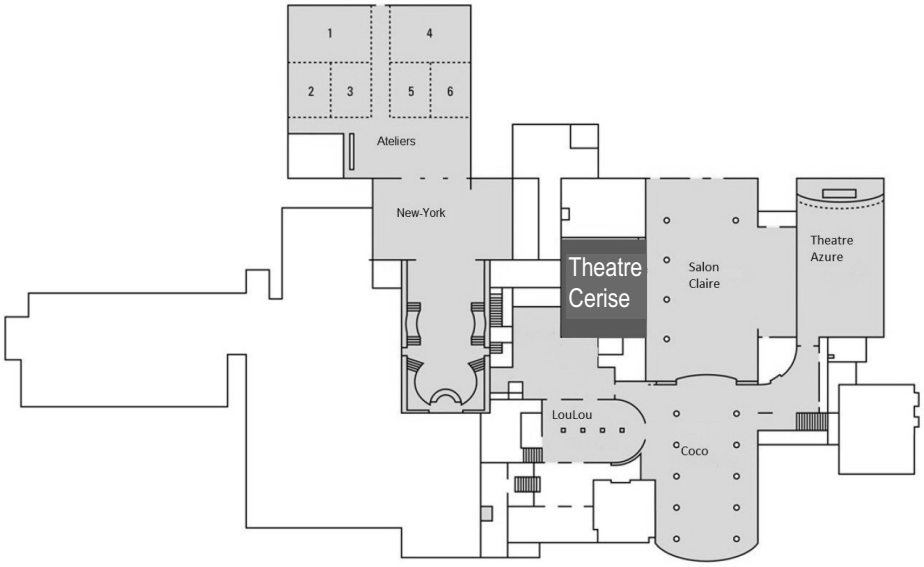


Sectie Entomologendag
van de Nederlandse Entomologische Vereniging

Begane grond



Souterrain



ALGEMENE INFORMATIE
GENERAL INFORMATION

Locatie

De 37e Entomologendag wordt gehouden in congrescentrum De Reehorst, Bennekomseweg 24, 6717 LM Ede. De Reehorst is zeer goed met openbaar vervoer te bereiken. Het ligt op 5 min. loopafstand van het treinstation Ede-Wageningen. Automobilisten kunnen in Ede de routeborden 'De Reehorst' volgen. De Reehorst ligt ten zuiden van het station, aan het begin van de Bennekomseweg. Er is ruime parkeergelegenheid.

The 37th Entomologendag will be held in De Reehorst, Bennekomseweg 24, 6717 LM Ede. De Reehorst is most easily reached by public transport: it is located at about 5 min. walking from train station Ede-Wageningen. By car: after reaching Ede, follow the signs 'De Reehorst'. De Reehorst is situated just south of the train station, at the beginning of the Bennekomseweg.

Inschrijf- en informatiebalie / *Registration and Information desk*

De balie is open vanaf 08:30 uur. Hier kunt u terecht voor inschrijven, algemene informatie en het ophalen van uw naambadge.

The desk will be open at 08:30 hrs. Here, you can register, obtain your badge, and get information throughout the day.

Dagindeling / *Timetable*

08:30	Aanmelden bij de balie en ontvangst met koffie of thee. Posters ophangen. Voorbereiden presentatie / *Registration, welcome with coffee or tea. Mounting of posters. Prepare for presentation*
10:00	Opening en plenaire lezing door Felix Wäckers (Biobest, BE) / *Plenary lecture*
11:00	Koffie, thee, postersessie / *Coffee, tea, posters*
11:30	Start parallelle sessies
12:30	Lunch, postersessie / *posters*
13:30	Vervolg parallelle sessies
14:50	Koffie, thee, postersessie / *Coffee, tea, posters*
15:10	Vervolg parallelle sessies
16:15	NEV Dissertatieprijs en plenaire lezing / *NEV Dissertation award and plenary lecture*
16:45	Borrel, postersessie / *Drinks, posters*
18:00	The end

Organisatie / *Organization*

NEV, Sectie Entomologendag / *Netherlands Entomological Society, Section Entomology Day*

Productie programmaboekje / *Abstract booklet*:
Jan Bruin (janbruin@bred.nl)

Gaarne uw badge inleveren bij vertrek
Please, return your badge before leaving

Invited Plenary Lecture

Plants in control: how plants manage pests and beneficials

FELIX L. WÄCKERS
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Research on biological pest control and its application has largely focused on direct interactions between predators/parasitoids and their herbivorous prey/host. The role of the plant in shaping this interplay is often overlooked. As a result, we miss out on the various mechanisms through which plants can actively interact with the natural enemies of their pests. Here we will look at a selected number of plant traits that are thought to have evolved as means for plants to optimize the pest control services of arthropod predators and parasitoids. Approaches will be presented through which one could test whether such plant features actually represent defensive traits. In addition, we will discuss evidence for the impact of these plant traits on predator performance. Moreover, recent studies have shown that the impact of some groups of arthropod predators extends beyond pest control, to include the suppression of key pathogens. This forces us to rethink the evolution and functioning of plant indirect defensive traits. Finally, we will investigate how we can implement these plant traits in modern crop production systems and how they may help increase the efficacy and resilience of biological control. A range of concrete examples will be presented showing how plant-based pest and disease control solutions may contribute to productive farming systems, and provide robust alternatives to pesticide use.

THEATRE CERISE

11:30

1.1 Sticky hairs, a blessing or burden for biocontrol?

GERBEN J. MESSELINK, JULIA VAN LEEMPUT, SOPHIE LE HESRAN & ADA LEMAN
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Tomato plants have sticky hairs that protect the plants from important pests, such as thrips and various species of aphids. However, several pest species are adapted to the characteristics of tomato plants. Moreover, glandular hairs are not selective and can also affect natural enemies such as predatory mites and parasitoids. Therefore, in a tritrophic context, it is not obvious that sticky hairs are beneficial for pest control. Here, we discuss three approaches to biocontrol in tomatoes.

BACH 1

2.1 Agroecology: it's about time for oviposition-induced cue use

NINA FATOUROS
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Egg parasitoids face significant challenges in locating and selecting suitable hosts, often relying on oviposition-induced plant volatiles (OIPVs). *Trichogramma* wasps utilise OIPVs not only to locate host eggs but also to assess their quality from a distance. These novel insights highlight the significance of time-sensitive and host-specific chemical signalling. The practical implications for biological control, including the manipulation of volatile cues through synthetic application, elicitor use, and crop breeding strategies, are discussed.

3.1 Sex determination in the black soldier fly

KRITI SHRESTHA, ADEYEMI AKINADE, ANNA RENSINK, BREGJE WERTHEIM, LEO W. BEUKEBOOM & ELZEMIEK GEUVERINK
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The black soldier fly (*Hermetia illucens*) is an important production insect. We investigated the genetics of its sex determination. The genes *transformer* and *doublesex* display sex-specific splicing. mRNA of transformer and its co-factor transformer2 are maternally provided to the developing embryo. Female-specific TRA protein lacks the canonical autoregulation domain suggesting a novel regulator upstream.

11:30

11:50

1.2 Biological control of thrips in leek cultivation

JOES TEN THIJ & ELKE KLEIN HOLKENBORG
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Leek growers seek sustainable thrips control. We tested three methods: *Lobularia maritima* (banker plants), *Orius majusculus* (predators), and compost, compared to insecticides and no control. Field and on-farm trials in the Netherlands showed that Lobularia and *Orius* reduced thrips as effectively as insecticides. Compost had no effect. These findings support biological control to reduce insecticide dependence in arable crops.

2.2 Comparing field efficacy of egg parasitoid lines

NIEK PALMEN & JIRRE KRIJNEN
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Trichogramma wasps are important for biocontrol, though their field performance varies. Here, we tested whether four distinct iso-female *Trichogramma evanescens* lines performed differently in the field even after all being reared under the same conditions for multiple years. After field release and recapture, we found differences between these lines in, i.a., parasitism rate and dispersal. This suggests that, even between lines of the same species, parasitoid effectiveness can vary widely.

12:10

1.3 Biocontrol of *Thrips tabaci* in onions

I. SIEVERS, S. FEI, B. ALLEMA & T. BUKOVINSZKY
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In this research, a combined method of conservation and augmentative biological pest control was investigated for controlling *Thrips tabaci* in field onions. Lobularia banker plants supported *Aeolothrips* spp., which spread in onions and showed density-dependent predation. *Orius laevigatus* was unable to establish itself in onions. It was found that conservation biological pest control can improve thrips control, while augmentative releases did not significantly enhance control.

2.3 Morphometrics and DNA in *Trichogramma* taxonomy

VEERLE VAN BEECK
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Even though *Trichogramma* egg parasitoids are widely used as biocontrol agents, many taxonomic mysteries remain. I aimed to address this by integrating DNA barcoding methods with morphometric analyses. During my project, I was able to identify key genital and flagellar traits for species separation, potential misidentifications, and a new species candidate. Underscoring the value of combined approaches for reliable species identification.

11:50

3.2 Molecular validation *Bombus terrestris* csd candidates

FLORIANNE VAN GERWEN & KELLEY LEUNG
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Bumblebees are important pollinators, both in the wild and in greenhouses. All species have single locus complementary sex determination; homozygosity at this locus results in infertile diploid males, causing a problem for colony survival. To date, no csd locus has been identified for bumblebees, but there is found a possible csd region with nine coding genes in *Bombus terrestris*. During my thesis project, I tested these genes as csd using PCR with eggs from different time-points.

12:10

13:30

1.4 Crop diversification reduces damage by herbivores

LUUK CROIJMANS
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Crop diversification may contribute to pest management in a sustainable manner. We studied insect communities and cabbage yield across five cropping systems differing in diversity. The most diverse system increased both yield and herbivore richness, showing that more herbivores do not always mean lower yields. Cropping design thus shapes pest impacts and can enhance sustainable production.

4.1 The role of endosymbionts in aphid–fungal ecology

ZILAL SULEIMAN ALKADOUR, JORDY J.H. LITJENS, BART A. PANNEBAKKER & BAS J. ZWAAN
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This study tests whether the facultative endosymbiont *Regiella insecticola* alters susceptibility of the potato aphid *Macrosiphum euphorbiae* to five entomopathogenic fungal isolates. All fungi caused rapid, complete aphid mortality and reduced reproduction. *Regiella* imposed fitness costs and showed only strain-specific, context-dependent effects on fungal impact.

13:50

1.5 Why model farm landscape for natural pest control?

L. MANSIER, H. TEN BRINK, A. JANSSEN & P.C.J. VAN RIJN
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Pest-regulating insects gain from both crop and non-crop habitats that give shelter, prey, or floral resources, yet it is hard to study the relative importance of these habitats with field work alone. Modelling helps to fill this gap. It can offer predictions, improve our understanding of complex systems, uncover flaws in empirical design, is less resource intensive than field work, give input in empirical research direction, and force a clear view of which factors drive or limit pest control.

4.2 Microbial enhanced defence against caterpillars

KRIS A. DE KREEK, RIETA GOLS, JOHANNAH M. DE ZEEUW, ILVA VAN DAM, THIJS VAN BERLO, ROB NIJHOF, MICHAEL REICHELT, JONATHAN GERSHENZON, MARCEL DICKE & KAREN J. KLOTH
kris.dekreek@wur.nl

We assessed how insect attack by the caterpillar Mamestra brassicae can change microbial composition in the rhizosphere of wild and cultivated cabbage accessions, and whether this affects plant defence against these caterpillars. Microbial changes resulted in increased or reduced level of resistance depending on the cabbage accession. These effects were associated with specific chemical and microbial signatures in and around the roots and jasmonic acid-related defence gene expression in leaves.

5.1 Can biological control traits be selected?

SOPHIE R. CHATTINGTON, JIAQI CHEN, BART A. PANNEBAKKER & KELLEY LEUNG
kelleyleung@gmail.com

Selection to improve biocontrol traits requires knowledge of their heritability and whether populations have enough genetic variation for selection. We reviewed reported values for these for insect biocontrol traits. There was strong indication of selectability for numerous traits: surprisingly, heritabilities for complex life-history traits were as high as those for morphology, and low for insecticide resistance. This demonstrates good potential for artificial selection of biocontrol traits.

5.2 Functional impact of single nucleotide variants

JULIA BEETS, ESTELLE MEIJBOOM, REMY RAVENHORST, MIRTE BOSSE, JACINTHA ELLERS & KATJA M HOEDJES
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Advances in genome sequencing technology in the past decades have provided powerful tools to associate genetic variants with complex phenotypes that drive evolutionary adaptation, but identifying causal from neutral variants or to assess the impact of individual nucleotide variants (SNPs) has remained difficult. We address this with a combination of functional impact prediction and precise genomic manipulation using CRISPR/Cas9 in the fruit fly, *Drosophila melanogaster*.

6.1 *Aedes japonicus* colonization of the Netherlands 13:30

ADOLFO IBÁÑEZ-JUSTICIA, SUNNY VERDONKSCHOT, WIETSE DEN HARTOG, KARST DE BOER, FRANS JACOBS, PATRICIA BOR, ESTHER VAN DER HULST, BRAM JANSSEN & ARJAN STROO
a.ibanezjusticia@nvwa.nl

The Netherlands faces an accelerated invasion by the Asian bush mosquito (*Aedes japonicus*), which first appeared in 2012 and has rapidly colonized the country's southern regions since 2020, following an expansion from German populations. This presentation will analyze the most recent and increased records of the species' geographical expansion, focusing on the integrated active and passive surveillance methods used to track its spread.

6.2 *Culicoides* surveys in The Netherlands 13:50

KARST DE BOER, FRANS JACOBS, MATHILDE UITERWIJK & ARJAN STROO
k.j.deboer@nvwa.nl

With an increasing threat of diseases in livestock and wild animals, e.g., bluetongue disease, the Centre for Monitoring of Vectors performed surveys for *Culicoides* biting midges in The Netherlands. The aim was to gain a broader understanding of the spread and occurrence of *Culicoides* species. This presentation will provide some background on the methods of the performed surveys. Results from midges caught in forests, wetlands and brackish waters will be presented and discussed.

14:10

1.6 Biodiversiteit-regenererend beheer van eikenprocessierups

TON STOKWIELDER & JUUL VERSCHUUREN
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De eikenprocessierups (EPR) als voorbeeld van hoe je ter plaatse aanwezige natuurlijke vijanden van een plaagdier kunt faciliteren: sluipvliegen, sluip- en bronswespen en koolmezen. Beheren van de plaagdiersoort in plaats van bestrijden: EPR behoudt zijn plek in het ecosysteem terwijl de overlast aanvaardbaar blijft. Cruciaal daarbij zijn: monitoring van dieren in lokale EPR-nesten, inzet van vlinderfilterhotels, en doordacht beheer van kruiden voor nectarvoorziening van parasieten.

4.3 Pollination of plants under insect attack

HANNEKE A.C. SUIJKERBUIJK, ERIK H. POELMAN, GUUSJE BONNEMA & KLAAS BOUWMEESTER
hanneke.suijkerbuijk@wur.nl

Pollinating insects need plant rewards such as nectar and pollen for food. Species differ in their needs and foraging methods. However, they all evaluate flowers for their suitability. If chewing or sucking herbivores alter plant physiology, pollinators may notice. As such, plants mediate indirect interactions between insect herbivores and insect pollinators. In this talk, I will discuss the effects of insect herbivory on the abundance, diversity and behaviour of various pollinator species.

14:30

1.7 Control of peach aphid with a Koppert IPM strategy

FRANCISCO GONZALEZ, KAY MOISAN, STEVEN VOET, KELLY ARKOUMANEA & ROXINA SOLER
fgonzalez@koppert.nl

A new insecticide-resistant Myzus persicae strain was found in sweet peppers of the Netherlands, raising concerns in the '100% Groen Geteeld' project. We tested IPM strategies using biological control agents (BCAs) in semi-field and greenhouse trials. Chemical and botanical insecticide-only approaches failed to control the pest, while our preventive IPM – particularly through banker plants – successfully controlled aphids and secondary pests, showcasing Koppert's robust crop protection strategy.

4.4 A parasitoid's adaptation to the Asian ladybird

LAYLA MIENTJES & PETER DE JONG
laylamientjes@gmail.com

The Asian ladybird *Harmonia axyridis* became invasive in the Netherlands after its introduction as a biological control agent. The native parasitoid wasp *Dinocampus coccinellae* was initially unsuccessful in exploiting this species. However, we found that more wasps successfully emerged from field-collected *H. axyridis* than from the native seven-spot ladybird, *Coccinella septempunctata*. This suggests that *D. coccinellae* is adapting and may help control this invasive species.

14:10

5.3 Functional validation of mite effector genes

ERNESTO VILLACIS-PEREZ, SANDER DE ROUCK, MERIJN KANT & THOMAS VAN LEEUWEN
e.a.villacisperez@uva.nl

The interaction between herbivory cues and receptors mediates plant immunity. Herbivorous mites produce salivary proteins that elicit or suppress plant immunity. Understanding the effect of these proteins on plant immunity is fundamental to developing durable plant breeding strategies. To assess the function of effectors, we knocked out candidate genes in the two-spotted spider mite, infested plants with wildtype or mutant mites, sequenced the plant transcriptome, and quantified mite fitness.

6.3 The impact of urban greening on vector biology

LAURA J.A. VAN DIJK, TESSA M. VISSER, MATHILDE MERCAT, COLOMBINE BARTHOLOMÉE, FLORENCE FOURNET, CÉLINE SUTTER, SOPHIE CLAUZON, MAGDALENA ALCOVER AMENGUAL, XAVIER FERNANDEZ CASSI, MARIA BOURQUIA, SALMA BOUZIANE, ADOLFO IBÁÑEZ-JUSTICIA, RENAUD MARTI, JEROEN SPITZEN, CONSTANTIANUS J.M. KOENRAADT & FREDERIC SIMARD
laura.vandijk@wur.nl

The world is urbanizing rapidly. While the greening of cities can promote biodiversity, it may also create suitable habitats for blood-feeding and disease-transmitting arthropods. In this study, we aim to set up a large-scale sampling campaign of mosquitoes and sandflies across cities in the Netherlands, France, Spain and Morocco, for an entire year (2026). Our results will inform a responsible development and planning of greening cities in the future.

14:30

5.4 Catching them all: iflaviruses in Lepidoptera

ASTRID BRYON, DEVIN VAN VALKENGOED, VERA I.D. ROS & ANNE KUPCZOK
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We screened public sequencing data to identify iflaviruses in Lepidoptera, uncovering 1,548 complete genomes from 56 hosts, including 170 potentially novel species. Using these data, we reconstructed an *Iflavirus* phylogeny and highlighted possible host switches. Our study improves understanding of *Iflaviridae* diversity and their potential as biological control agents.

6.4 House-dust insecticides and mosquito resistance

AKBAR A. GANATRA, LOUKAS-IAKOVOS VITALIOTIS, HEMANT TRIPATHI, LAVEL MWANGA MOONGA, MULIMA MWAKABELA, MALAMA KABWE, RIMA OSMAN, STEVE SAIT, RUPERT QUINNELL, MARTIN SIMUUNZA & CONSTANTIANUS J.M. KOENRAADT
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Insecticide resistance threatens malaria control. We examined whether household dust serves as a reservoir of residues exposing *Anopheles*. Dust from 19 Zambian houses contained cypermethrin, profenofos, imidacloprid, fipronil, and amitraz metabolites. Bioassays showed these levels were below acute LC_{50}s but caused sublethal effects at environmentally relevant doses, suggesting chronic low-level exposure may contribute to resistance selection.

15:10

7.1 Soil predators eat thrips in onion fields

STIJN DE GOUW, ANNE HOOGENBOOM, PETER KARSSEMEIJER, PETER BALK, BAS ALLEMA, BART PANNEBAKKER, JOOST VAN DEN HEUVEL & SUZANNE LOMMEN
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Onion thrips (*Thrips tabaci*) is a main pest of onions. Soil predators occur in onion fields, but little is known about their actual consumption of thrips in the field. We sampled small spiders and carabid and staphylinid beetles from 17 Dutch onion fields. Using molecular gut content analysis, we found that all 15 taxa selected ate onion thrips. This underlines the value of conserving soil predators to contribute to thrips control.

2.4 Life history variation in *Trichogramma* populations

S.R. CHATTINGTON, B.A. PANNEBAKKER & N. FATOUROS
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Geographic and rearing histories can shape life history strategies. We compared *Trichogramma evanescens* populations deriving from field collections along a North–South cline of Germany and from a commercial mass-reared line. Females parasitised *Ephestia* eggs at three temperatures under fed or unfed conditions. Measuring female longevity, parasitism rate, development time, emergence success and sex ratio, we assess population variation, reaction norms and explore links to geographic origin.

15:30

7.2 *Amblydromalus limonicus* best against thrips in cold condition

NATALI NACEV, CHRISTEL VAN LEEUWEN, MARKUS KNAPP & ANTON BEKENDAM
abekendam@koppert.nl

Five predatory mites – *Amblydromalus limonicus*, *Amblyseius andersoni*, *Amblyseius swirskii*, *Neoseiulus cucumeris*, and *Transeius montdorensis* – were tested for predation and oviposition on first-instar thrips at 14°C, 16/10°C, 18°C, and 22°C. *A. limonicus* consistently predated most larvae and laid the most eggs, while *A. andersoni* performed poorly at 14°C, contrary to expectations. These findings help improve thrips biocontrol in low-temperature crops such as strawberries.

2.5 Winning early: protecting plants from insect eggs

LINZIHAN FAN, KLAAS BOUWMEESTER, LOTTE CAARLS & NINA E. FATOUROS
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Breeding crops resistant to leaf-chewing insects has been challenging, leaving farmers reliant on pesticides. Our emerging approach targets resistance to insect eggs, preventing larvae from hatching. Some *Brassica* species exhibit a Hypersensitive Response (HR)-like cell death upon egg deposition, reducing egg survival. I will present our progress in identifying candidate R genes in *Brassica nigra* and outline ongoing validation efforts.

15:10

8.1 Hybridization, conservation and adaptive potential

JONNA KULMUNI
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The consequences of hybridization can be complex as it can simultaneously lead to deleterious and beneficial fitness consequences. Yet, understanding the fitness of hybrids is important for conservation: hybridization can help populations to persist and adapt to changing environment if the fitness benefits outweigh the costs. I aim to highlight scenarios where hybridization promotes the persistence of biodiversity and the implications of hybridization for conservation of adaptive potential.

15:30

8.2 Monitoring arthropod diversity in agroecosystems

BAS ALLEMA
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We examined trade-offs in monitoring arthropod diversity over multiple years during a transition from monoculture to strip-cropping. To balance temporal and spatial sampling with taxonomic detail, we combined image-based counts from yellow traps (Diopsis camera), wingbeat sensors (eVolito), pitfall traps and DNA techniques to capture changes in community composition.

15:50

7.3 Why do we still use insecticides?

MARCEL DICKE
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In 1962 Rachel Carson wrote her compelling book 'Silent Spring' on the profound problems of pesticides. Now, more than 60 years later, our food system is still largely based upon the use of pesticides. Despite decades of research into alternatives by entomologists. What went wrong? Can we turn the tide? What is needed?

2.6 Egg-killing in Pieridae: investigating *Pontia*

JESSE GEBRAAD, NINA FATOUROS & NIEK PALMEN
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This research is focussed on egg-killing in Pieridae, specifically on the genus *Pontia*. Some plants are able to perceive an egg and respond to it with a hypersensitive reaction (HR). This is visible as necrosis and increases mortality among the eggs. This interaction is known in Dutch *Pieris* species, but little is known about the closely related genus *Pontia*. HR-induction, hostplant use and oviposition behaviour were studied for *Pontia daplidice* and *Pontia callidice* in the Pyrenées-Orientales.

16:15

NEV Dissertatieprijs / *NEV Dissertation award*

Invited Plenary Lecture

16:15
THEATRE CERISE

To be announced (surprise)

15:50

8.3 Belowground battles: root fly resistance in *Brassica*'s

SHUHANG WANG, ROELAND E. VOORRIPS, GREET STEENHUIS-BROERS, ROLAND MUMM, RIC C.H. DE VOS, DENNIS TE BEEST, KOEN PELGROM, MARTIJN VAN KAAUWEN, BEN VOSMAN, JOOP J.A. VAN LOON & MARCEL DICKE
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The cabbage root fly (*Delia radicum*) is a major pest of *Brassica* crops. High level of antibiosis resistance was identified in *Brassica fruticulosa*. Genetic analysis in an F2 population of *B. fruticulosa* revealed one major QTL for resistance. Metabolomic profiling resulted in tentatively identified secondary metabolites, including glucosinolates, that linked to constitutive and induced resistance. These findings support breeding for root fly resistance as part of integrated pest management.

16:15

NEV Dissertatieprijs / *NEV Dissertation award*

Invited Plenary Lecture

16:15
THEATRE CERISE

To be announced (surprise)

Entomological research in Mongolia

ANDRÉ VAN ECK
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Highlights of entomological research in Mongolia are presented, giving an impression of the wide variety of landscapes and habitats in Mongolia. Entomological collecting expeditions are organised by Netherlands based BioMongol Foundation. Participation is open for anyone who wants to explore and publish on the arthropod fauna in Mongolia.

Biocontrol of *Anthonomus pyri* and *Anthonomus pomorum* using EPFs

SREELEKSHMI SURESH, TIBOR BUKOVINSZKI, KARIN WINKLER, ANNE VAN DIEPENINGEN & ELS VERSTAPPEN
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The pear bud weevil (*Anthonomus pyri*) and apple blossom weevil (*Anthonomus pomorum*) are major pests in pear and apple in the Netherlands. Their concealed larvae make control difficult. This study tested six entomopathogenic fungal isolates against adult weevils under lab conditions. Mortality and fungal infection were monitored for 50-60 days. Results showed significant variation in virulence and species–isolate interactions, highlighting EPF as potential biocontrol agents for *Anthonomus* weevils.

Plants spatial defence to withstand insect attacks

MAXENCE LONGUEMARE, MARK STERKEN, ALESSIA VITIELLO & ERIK POELMAN
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Plants face attacks from diverse herbivores differing in feeding habits and timing. In wild *Brassica nigra*, early herbivory triggered systemic signaling but did not limit later resistance. This signaling initially affected local responses and depended on insect identity, timing, and co-occurrence, yet local defensive responses quickly shifted to the dominant threat. This suggests plants use spatial defence strategies to rapidly prioritize and respond to prevailing local herbivore pressure.

Impact of genetic variation in *Drosophila melanogaster*

JULIA BEETS, JULIA HÖGLUND, BERNARD Y. KIM, JACINTHA ELLERS, KATJA M. HOEDJES & MIRTE BOSSE
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Understanding how genetic variation shapes phenotypic diversity is a key challenge in biology. FlyCADD is a computational tool that predicts the functional impact of any single nucleotide polymorphism in *Drosophila melanogaster* by integrating >650 genomic features to score variants functional impact. FlyCADD enables genome-wide SNP impact assessment, aiding causal variant identification, understanding of natural variation, and optimization of CRISPR designs for functional genomics research.

Flying high: honey bees using fungi as drugs

JIMMIE ZEELENBERG
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Animals use adaptive behaviors such as animal medication to combat parasites and pathogens, actively employing environmental substances to prevent or treat infection. Honey bees, which are highly susceptible to pathogens and rely on behavioral immune defenses, provide an excellent model for studying such interactions. This research investigates whether fungi contribute to honey bee health and pathogen resistance, offering new insights to strengthen pollinator resilience and ecosystem stability.

Trade-off between growth and defence

LAURA A. ZUIDEMA, DIAMANDO KOKKINOU, MILITSA ACHYROPOULOU, LILLY EGBERINK & ERIK H. POELMAN
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To maximize fitness, plants have to balance growth and defence in a way that allows them to outcompete neighbouring plants. It is commonly believed that a trade-off exists between plant growth and defence. In this experiment, plants were grown under low red:far-red light to mimic plant–plant competition. We measured plant growth, defence, and insect responses to test whether plant–plant competition reduces plant defence against insect herbivores.

Insect gustatory receptors in crop protection

LORENZO CORSICO & ALEXANDER HAVERKAMP
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Insect–plant interactions generated molecules potentially applicable as alternatives to pesticides. To showcase this, we will leverage the screening tool LC/MS-ReceptomiX to investigate the interaction between *Erysimum* spp. and *Pieris* butterflies. *Erysimum* spp. developed cardenolides, a new class of deterrents detected by *Pieris* spp. via taste receptors. Our aim is to identify the specific plant deterrent–insect taste receptor interactions and contribute to the development of safe biodeterrents.

***Myzus persicae* on purple-flowered peppers**

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Aphids threaten pepper production, and reducing insecticide options call for alternative control strategies. We investigated *Capsicum* species showing more resistance to *Myzus persicae* than the cultivated *C. annuum* using reproduction and electrical penetration graph assays. Some resistant accessions belonging to *C. cardenasii* and *C. pubescens* were found. EPG results suggest resistance is located in the sieve tubes. Future research focuses on the underlying resistance mechanisms.

Tools to reveal plant defenses against insects

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We use a multi-method approach to study plant resistance to insects. Large-scale greenhouse assays enable rapid selection of resistant plants. Implementation of electrical penetration graphs (EPG) can reveal feeding behavior differences between plants. When resistance seems phloem-based, phloem sap is collected via EDTA or stylectomy to link metabolites to resistance. This workflow links phenotypic screening, feeding behavior, and phloem composition to strengthen breeding of insect-resistant crops.

LMC theory in *Nasonia* species

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This study tested local mate competition (LMC) theory in two parasitoid wasp species: *Nasonia giraulti* and *Nasonia longicornis*. We created scarlet-eyed marker strains using CRISPR-Cas9 to track individual parasitization patterns in multi-female experiments. Sex ratios were compared across varying foundress numbers to examine how different foundress densities influences sex allocation strategies.

Historical identifiability of non-native ants

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Accurate taxonomic identification of invasive species is essential for monitoring and preventing their introduction, establishment, and spread. The Netherlands has at least 49 invasive ant species (Hymenoptera: Formicidae), many of which are nontrivial to identify. In this study, we show the lag (or sometimes lead) between the first reported introduction of an ant and their inclusion in a commonly used key, and whether this affects detection on citizen science platforms.

AI-aided monitoring of insect attraction to light

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Insect declines highlight the need for accessible, cost-efficient monitoring while light pollution studies require better insight into how and when illumination influences insect attraction. We present two camera-based studies on insect attraction to light: (i) a low-cost AI-assisted workflow that reliably estimated arrival times under different light intensities, and (ii) a spectral experiment showing early and colour-dependent attraction in Diptera and later timing of attraction in Lepidoptera.

Genetics of egg development speed in *Tribolium*

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Climate change affects insect species that overwinter as eggs. Warm winters lead to faster egg development, which causes mismatches between hatching time and the availability of food sources. To predict whether wild populations harbor enough genetic variation to adapt, we identify targets of selection on egg development speed in the model beetle *Tribolium castaneum*. We use RNAi, qPCR and CRISPR-Cas9 to validate candidate genes from sequencing data of artificial selection lines.

Aphid and whitefly resistance in *Cucurbita*

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Cucurbita crops are threatened by aphids and whiteflies, which are controlled with chemicals. As an alternative, resistant varieties could be used. So, we screened accessions for resistance and identified putative resistance sources. Then, we made crosses between resistant and susceptible accessions to create a mapping population for QTL analysis and characterization of resistance mechanisms. This way, our research contributes to the development of resistant *Cucurbita* varieties.

West Balkan cave invertebrate biodiversity

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The Dinaric karst is believed to be home to the world's highest cave biodiversity. Using morphological and molecular analyses we aim to identify invertebrate species from caves in Montenegro and Bosnia-Herzegovina which are threatened by plans to build hydropower dams. Using phylogenetic approaches, this project also aims to investigate the gene flow between caves as well as the evolutionary processes underlying the distribution and speciation of invertebrates in the region.

Effect van buurgewassen op *Thrips tabaci* in ui

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Tabakstrips is een groot probleem in ui, met opbrengstverliezen tot 40%. Teneinde een chemievrije oplossing te vinden, is onderzoek gedaan naar het effect van buurgewassen op deze tripsen. Er blijkt een verband tussen de schade en afstand tot het buurgewas bij wortel en een bloemenstrook. Deze bloemenstrook trekt in juli veel rovers aan, vooral rooftrips. Verder is geen verschil gevonden in schade en aantallen tussen een perceel met versus zonder insecticiden.

Ecology of bumblebee leaf-damage behaviour

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Maintaining temporal synchrony between plants and pollinators is a key ecological process when facing environmental change. Bumblebee (*Bombus terrestris*) workers respond to pollen scarcity by damaging plant leaves. However, the broader ecological and adaptive significance of bumblebee leaf damaging behavior is uncertain. We show bees also damage plants in natural settings and examine ecological drivers, plant preferences, and potential effects on pollinator fitness.

The function of p53 in haplodiploid wasps

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Advances in the Maternal Effect Genomic Imprinting Sex Determination mechanism of *Nasonia* have led to the discovery of *wom*, a chimeric gene containing a p53 duplication, regulating female development. p53 itself has also been implicated as a crucial element in sex determination. To elucidate whether p53 maintains its orthologous 'guardian of the genome' function, I will be characterizing the role of p53 in cell regulation (polyploidy, development, cell cycle arrest) in *Nasonia* and other wasps.

RNAi to investigate Ophio–ant interaction

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The parasitic fungus *Ophiocordyceps camponoti-floridani* infects carpenter ants and manipulates their behavior, possibly by secreting effector proteins. These proteins may interfere with host pathways by binding to host target proteins, potentially causing changes. We investigate the molecular function of these putative effector genes and aim to understand which host pathways are affected. We establish RNAi as a molecular tool to perform genetics assays in the host.

Supporting natural enemies with functional plants

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This PhD explores the potential of functional plant strips around greenhouses and plant islands within greenhouses to enhance biological pest control of aphids, particularly by green lacewings (Neuroptera: Chrysopidae). Establishing and sustaining populations of *Chrysoperla carnea* in greenhouse environments remains a serious challenge. This study investigates how functional plants can attract, sustain, and support lacewing populations, to improve pest control efficacy.

Integration of biocontrol agents: a case study

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A new variant of *Myzus persicae* aphids, with reduced sensitivity to insecticides, was discovered in the Netherlands, challenging the effectiveness of chemicals and making biological solutions the sole defense strategy. Consequently, aphids in sweet pepper are now identified as a top red flag by the '100% Groen Geteeld' project. We show that a Koppert IPM strategy successfully controls *M. persicae* in sweet pepper, using only biocontrol agents. Beyond aphids, 100% green solutions also guarantee success in controlling other primary and secondary pests in sweet pepper, such as thrips and spider mites.

Biodiversiteit-regenererend beheer van eikenprocessierups

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De eikenprocessierups (EPR) als voorbeeld van hoe je aanwezige natuurlijke vijanden van een plaagdier kunt faciliteren: sluipvliegen, sluip- en bronswespen en koolmezen. Beheren van de plaagdiersoort in plaats van bestrijden: EPR behoudt zijn plek in het ecosysteem terwijl de overlast aanvaardbaar blijft. Cruciaal daarbij zijn: monitoring van dieren in lokale EPR-nesten, inzet van vlinderfilterhotels, en doordacht beheer van kruiden voor nectarvoorziening van parasieten.

Divergent detritivore and plant response to grazing

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We investigated how large herbivore grazing affected plant and macrodetritivore communities along a salt marsh inundation frequency gradient on the island of Schiermonnikoog. Preliminary results indicate that macrodetritivores and plant species communities diverge in their response to large herbivore grazing, with predominantly negative effects on macrodetritivore and positive effects on plant species communities.

Belowground battles: root fly resistance in *Brassica*'s

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The cabbage root fly (*Delia radicum*) is a major pest of *Brassica* crops. High level of antibiosis resistance was identified in *Brassica fruticulosa*. Genetic analysis in an F2 population of *B. fruticulosa* revealed one major QTL for resistance. Metabolomic profiling resulted in tentatively identified secondary metabolites, including glucosinolates, that linked to constitutive and induced resistance. These findings support breeding for root fly resistance as part of integrated pest management.

Program 37th Dutch Entomology Day, 19 December 2025

08:30	**Registration and coffee** in foyer							
10:00	**Theatre Cerise**: **Opening** by chair 'NEV-Sectie Entomologendag', **Plenary lecture** Prof. Felix Wäckers (Biobest): *Plants in control: How plants manage pests and beneficials*							
11:00	**COFFEE BREAK / POSTER SESSION** IN FOYER							
ROOM	**Theatre Cerise**		**Bach 1**		**Beethoven 1-2**		**Bach 3-4**	
	1. Plant-insect interactions in biocontrol		**2. Egg parasitoids (I)**		**3. Sex determination**			
11:30	1.1 Messelink	Sticky hairs, a blessing or burden for biocontrol?	2.1 Fatouros	Agroecology: its about time for oviposition-induced cue use	3.1 Shrestha	Sex determination in the black soldier fly		
11:50	1.2 ten Thij	Biological control of thrips in leek cultivation	2.2 Palmen	Comparing field efficacy of egg parasitoid lines	3.2 van Gerwen	Molecular validation *Bombus terrestris* csd candidates		
12:10	1.3 Sievers	Biocontrol of *Thrips tabaci* in onions	2.3 van Beeck	Morphometrics and DNA in *Trichogramma* taxonomy				
12:30	**COFFEE BREAK / POSTER SESSION** IN FOYER							
	1. Plant-insect interactions in biocontrol - continued		**4. Trophic interactions**		**5. Genetics**		**6. Vector biology**	
13:30	1.4 Croijmans	Crop diversification reduces damage by herbivores	4.1 Suleiman Alkadour	The role of endosymbionts in aphid–fungal ecology	5.1 Leung	Can biological control traits be selected?	6.1 Ibáñez-Justicia	*Aedes japonicus* colonization of the Netherlands
13:50	1.5 Mansier	Why model farm landscape for natural pest control?	4.2 de Kreek	Microbial enhanced defence against caterpillars	5.2 Hoedjes	Functional impact of single nucleotide variants	6.2 de Boer	*Culicoides* surveys in the Netherlands
14:10	1.6 Stokwielder	Biodiversiteit-regenererend beheer van eikenprocessierups	4.3 Suijkerbuijk	Pollination of plants under insect attack	5.3 Villacis-Perez	Functional validation of mite effector genes	6.3 van Dijk	The impact of urban greening on vector biology
14:30	1.7 Gonzalez	Control of peach aphid with a Koppert IPM strategy	4.4 **UES MSc Thesis Award:** Mientjes - A parasitoid's adaptation to the Asian ladybird		5.4 Bryon	Catching them all: iflaviruses in Lepidoptera	6.4 Ganatra	House-dust insecticides and mosquito resistance
14:50	**COFFEE BREAK / POSTER SESSION** IN FOYER							
	7. Biological control		**2. Egg parasitoids (II)**		**8. Biodiversity & conservation**			
15:10	7.1 Lommen	Soil predators eat thrips in onion fields	2.4 Chattington	Life history variation in *Trichogramma* populations	8.1 Kulmuni	Hybridization, conservation and adaptive potential		
15:30	7.2 Bekendam	*Amblydromalus limonicus* best against thrips in cold condition	2.5 Fan	Winning early: protecting plants from insect eggs	8.2 Allema	Monitoring arthropod diversity in agroecosystems		
15:50	7.3 Dicke	Why do we still use insecticides?	2.6 Gebraad	Egg-killing in Pieridae: investigating *Pontia*	8.3 Wang	Belowground battles: root fly resistance in *Brassica* 's		
16:15	**Theatre Cerise: Plenary award ceremony, incl. NEV Dissertation Award + lecture awardee**							
16:45-18:00	**DRINKS / POSTER SESSION** IN FOYER							