

Circular agriculture

New legislation needed | p.4 |

Malaria research

No follow-up yet to Willem Takken's study | p.14 |

Thesis tips

How to get a first-class result | p.24 |

RESOURCE [EN]

For everyone at Wageningen University & Research

no 20 – 20 June 2019 – 13th Volume

'Small steps are not enough'


Esther Turnhout on the alarming findings in the IPBES biodiversity report | p.20

**INTERNATIONAL
EDITION**

Tom + Robin PSI PlantScreen

WUR staff work with all kinds of apparatus. This time we meet Tom Theeuwen, a PhD student at the Laboratory of Genetics.

WILL THE BEST ROCKCRESS PLEASE STAND UP?

Arabidopsis, or rockcress, is the model plant in the plant sciences. But no two rockcress specimens are alike. Tom Theeuwen studies differences in photosynthesis in rockcress from all around the world. He does so with the help of the Robin PlantScreen – known to its friends as Robin. Tom wants to know which genes are behind those differences. In the photo, he is putting a tray of plants into the machine to measure them. He can deduce how efficient the photosynthesis is from the way the plant uses the light.  RK, photo Sven Menschel

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 Three colleagues share their story



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 They *do* feel at home here

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RELATABLE BIODIVERSITY

Biodiversity is an abstract concept. Okay, it's all about species, and the more species there are, the better. But the value of biodiversity often means more to us once we're talking about a single species. An elegant, beautiful species such as the swan on the pond at the Forum, for instance. The pair that has brooded there for years brought eight cygnets into the world in May. Eight fluffy little bundles of swan joy. Not one of them has survived. The suspicion is that a large pike gobbled up the little ones.

Coverage of this on the *Resource* website drew emotional reactions. 'Terrible, that pike must go,' say some readers. 'Rubbish, pike are valuable for biodiversity too,' says the opposite camp. Emotion versus reason, as happens so often where animals with a high cute factor are concerned. Facilities and Services now plans to get a committee of ecologists to decide whether the pike gets to stay (see page 6). A response that fails to do justice to the emotional side of the story. Or, predictably, to any future cygnets. Perhaps there should be some sociologists, psychologists and philosophers on that committee too.

Roelof Kleis, editor



>> [More insight into why frogs' feet stick. PhD candidate Julian Langowski's research could lead to new materials for surgeons, for instance. | p.8 |](#)

FRED DE BOER IS TEACHER OF THE YEAR

Associate professor of Resource Ecology Fred de Boer has won this year's Teacher of the Year Award, announced the student jury on Monday. This is the first time De Boer has won the prize. 'I didn't see this coming.'

The jury picked De Boer because he is 'extremely enthusiastic' and 'a master of the use of examples to clarify a message'. Jury chair Suzanne Ruiten: 'With his boundless enthusiasm, Fred tries to get his passion for nature and ecology across to his students in a way that helps them understand the subject completely. His lessons are quite theatrical.'

De Boer received a replica of the statue in front of the Leeuwenborch, *De Leermeester* (The Tutor),

and 2500 euros to spend on educational objectives of his own choosing. The other four shortlisted teachers, Jessica Duncan, Hannie van der Honing, John Beijer and Huub Savelkoul, receive the same amount. 'This prize makes me emotional,' said De Boer after the

His lectures are quite theatrical'

award ceremony. 'I am just a small cog in the wheel of the network. This is not my achievement; this is a prize for 15 people who work together.'

The prize-giving ceremony was held on Monday 17 June in Impulse. The winners of the Thesis Award and the Excellent



PHOTO: GUY ACKERMANS

▲ Fred de Boer: 'This prize makes me emotional. I'm just a small cog in the network.'

Education Prizes were announced at the same time. Rector Arthur Mol closed the ceremony with some remarks on the importance

of the education prizes. 'The university is not just about excellent research, but about excellent education too.' **LZ**

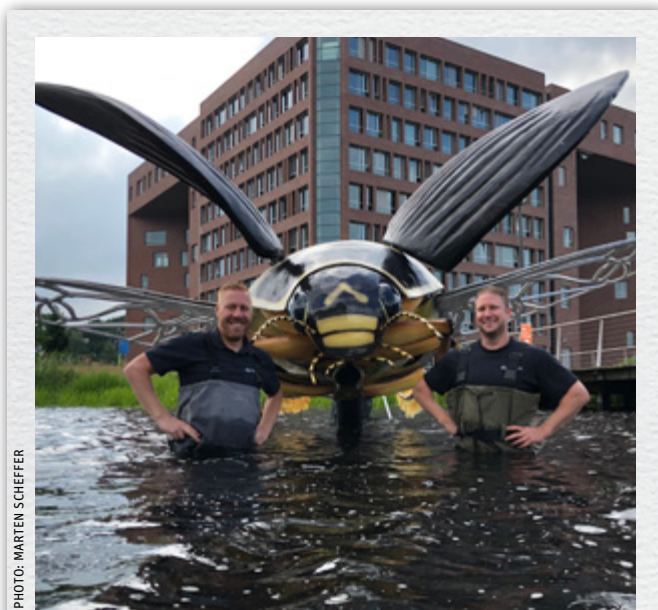


PHOTO: MARTEN SCHEFFER

Guardians of the beetle

The beetle in the pond between the Forum and Orion was restored to its correct position last week. Strong winds had blown the insect off course back in March. The artwork now has two guardian angels, too. 'Guardians of the beetle,' the beetle's instigator Maarten Scheffer calls them. Ronald Vermeer (right) and Willem Rutten were given a short course in 'beetle care' and will take care of the artwork's maintenance from now on. **RK**

CIRCULAR PLAN: NEW LEGISLATION ON THE WAY

The Ministry of Agriculture, Nature and Food Quality's implementation plan, which Minister Schouten presented this week, is not a blueprint for circular agriculture in the Netherlands. But it does herald a new policy on manure, the market and food waste.

Anyone at the presentation who expected the minister to set out a detailed route to circular agriculture was in for a disappointment. The implementation plan is really just a summary of existing projects and initiatives that aim at facilitating the transition to circular agriculture. The minister stressed that farmers should start experimenting and make their own decisions.

Schouten certainly wants to support the transition with new policies. A crucial component will be the manure policy. The minister wants not only to reduce the surplus of manure, but also to upgrade animal manure so it can replace artificial fertilizer, and to promote manure separation, which makes preci-

sion fertilization possible and cuts ammonia emissions in agriculture.

There is also a need for new legislation to reduce food waste in the farming sector. The minister wants to see more reuse of animal and plant waste in the food supply chain. That will require new rules. And thirdly, the minister wants supermarkets and livestock feed companies to work with the farmers on implementing circular agriculture. In other words, she wants supermarkets to pay better prices for food produced this way. She cannot enforce that, but the Netherlands Authority for Consumers and Markets is going to systematically assess the distribution of profit margins throughout the food supply chains. Farmer organizations can then use this information in discussions with the supermarkets' powerful purchasing organizations. Ultimately, it is the consumer who should pay for circular agriculture, in Schouten's view. **AS**

See too the Vision feature on page 9.

'DISCIPLINES NEED ONE ANOTHER'

Science scholars in the Young Academy are calling on their colleagues to sign a petition criticizing the recommendations of the Van Rijn Commission. They agree more money is needed for science and technology, but not at the expense of other academic subjects.

If it is up to the Van Rijn Commission, science and technology degree programmes will get more cash. Only the four technical universities will benefit from this; all the other universities will get less funding. Academics working in science and technology are pleased with the proposed investments but not if other academic areas suffer as a result.

Last week, science scholars at the Young Academy started an online petition in which they advocated 'more gradual growth' in education and research in their disciplines. 'We think it is damaging for Dutch academia as a whole and the sciences in particular that academic disciplines and scholars are being pitted against one another in this way,' they write.

Around 200 scientists have now added their signatures to the petition. It is a declaration of solidarity, says astronomer Frans Snik of Leiden University, one of the people behind the petition. 'Academic disciplines need one another. Van Rijn's advice is incredibly destructive for academia as a whole.' **HOP**

IN BRIEF

>> E-BIKE2WU

Going to work by e-bike

Ten WUR employees are going to work by e-bike or speed pedelec for two weeks from Wednesday 19 June, courtesy of a new campaign, E-bike2WUR. Any staff member can sign up to this campaign, which runs for a year and for which eight e-bikes and two speed pedelecs have been purchased. The latter are particularly popular. **RK**



>> ENROLMENT FOR FOOD TECHNOLOGY Not 50 but 16 per cent down

In an earlier report on preliminary student registrations, *Resource* incorrectly stated that the number of BSc students of Food Technology looked set to drop by 50 per cent. That is not the case. By mid-May, there were 50 fewer registrations than last year, which represented a drop of nearly 25 per cent. In the latest review, at the beginning of June, Food Technology had 35 fewer registrations, a drop of 16 per cent. **AS**

>> WUR COUNCIL

New names

Wageningen PhD students have elected Judith Poelman and Max Finger Bou to represent them on the WUR Council. Both PhD students will join the Council from September. There was a choice of five candidates. Out of the nearly 2000 PhD students, 465 voted. FingerBou, who is doing a PhD in Microbiology, got 176 votes, while 120 votes went to Poelman, a PhD student in Hydrology and Quantitative Water Management. **AS**

COLUMN|VINCENT

To: former minister Jeroen Dijsselbloem

Dear Jeroen,

While everyone was still getting worked up about WUR President Louise Fresco's seat on the supervisory board of Syngenta, you were appointed chair of nature society Natuurmonumenten. Congratulations! A Wageningen man, who was once an Animal Sciences student and recently became chair of our own Supervisory Board, now heading the country's biggest nature conservation organization — that's great news. You are forgiven for switching to Agrarian Economics after a matter of weeks.

But Jeroen, we do need to talk about that club of ours. *Ours*, yes, because I am one of Natuurmonumenten's 700,000 members. The society seems to be wavering. It employs some of the most expert ecologists yet it is increasingly asking the general public what it should do about nature management, with constant surveys about big game and recreational use, for example.

In spring, there was a furore about tree felling in nature areas. Natuurmonumenten immediately announced they would not be felling any more trees until — you've guessed it — they had consulted the public. The questionnaire can still be filled in; just google '*enquête boomkap*'. Even if you can't tell the difference between a beech and an oak, you can still give your opinion.

Of course it's important to have broad support but I don't think nature management should be governed by the vagaries of public opinion. Natuurmonumenten was originally founded in protest at plans to dump Amsterdam's household waste in Lake Naarden. If they had first held a survey among the people of Amsterdam, that lake would no longer exist. So, Jeroen, please let Natuurmonumenten create support for proper nature management rather than trying to find out what form of management has support. **B**

Vincent Oostvogels (23) is exploring the delicate interface between nature management and food production through his two Master's programmes, Forest and Nature Conservation and Animal Sciences



PIKE IN FORUM POND IS HOT TOPIC

The fate of the pike in the Forum pond lies in the hands of the Garden Committee. The fish is the prime suspect in the case of the eight missing cygnets.

The cygnets were the babies of the pair of swans that have nested at the Forum pond for years. But not one of the eight is still alive. They are assumed to have fallen prey to a roughly 80 centimetre-long pike that lives in the pond. The question is: what now? Should the pike go or should we let nature take its course?

Park manager Elike Wijnheijmer of Facilities and Services wants to put this question to a few WUR experts, including aquatic ecologist John Beijer and the Garden Committee of the Environmental Sciences Group, which manages the natural gardens at Atlas and Lumen. 'It's a very sensitive issue. People soon

get emotional where animals are concerned,' says Wijnheijmer. 'I don't want to take a position on this too hastily.'

'It's a sensitive issue. People soon get emotional where animals are concerned'

Ecologist John Beijer was at the pond every day in the past few weeks, doing practicals with his students. Besides a large pike, there are young pike, rudd, bitterling and common roach in the pond. 'For several years, and that is good. Large pike occasionally take a chick but they prefer fish. And there is a good stock of fish now.'

Another possible explanation of the disappearance of the cyg-



PHOTO: ASKHAT ZHANI BEKOV

▲ The swan family at the Forum in happier times. All eight cygnets have now been eaten or stolen.

nets is that they were stolen. Cygnets have been stolen in Lelystad, it was reported last week. But there is no proof of such a theft on

campus, though. The CCTV camera near the nest is focussed on the bridge and the footage is deleted after seven days. **✎ RK**

FOUR TIPS FOR BETTER CONSULTATIVE BODIES

Directors and managers at WUR could improve its consultative bodies, says '(Mede)zeggenschap 2.0', a commission looking at this issue. The commission will come with specific proposals in September.

Student and staff councils at WUR should be more fun, more challenging and spend more time debating matters of substance and issues on the ground. These were arguments made by the Kampman commission, which came up with proposals a year ago for increasing the attractiveness of university and institute councils. Then another commission got to work turning these recommendations into detailed suggestions. That commission is nearly finished, say the members Martijn Scheen (corporate HR director), Sophie Galema (Student Council chair) and Mark Sterken (PSG works council).

The commission spent the past few months visiting the local consultative bodies and the Board of Directors and asking them what tips they had. That resulted in a top four, which the commission is now working out in more detail.

1. Managers should be more appreciative of staff who are appointed to a consultative body. 'At present, council work is often seen as difficult to combine with your real job,' explains Sterken.

'Managers should be more appreciative of council work'

2. Communication between council members in the different science groups and the central council needs to improve a lot. The councils should talk to one another more often; just sending your minutes is not enough. Better communication could help, for example, in getting a proper discussion of work pressure going. That is a complex topic that operates at different levels.
3. The directors should get the consultative bodies involved at an early stage in tricky

issues such as reorganizations. Too often, plans are fleshed out first. If the directors inform the council immediately, they will know what kind of problems they can expect and can adjust the plan in good time.

4. Consultative bodies need to develop new procedures that allow non-members to be brought in temporarily to discuss policy. The councils could, for example, invite working groups and experts to contribute their ideas. That would make the consultative bodies more diverse, with a greater say for professors and PhD candidates, for instance.

The suggestion by WUR Council chair Daniel de Jong to make the councils smaller did not make the list of recommendations. 'That is difficult from a legal point of view,' says Scheen. Neither is a recommendation being made to limit the period in office of council members. Galema: 'We don't want to impose restrictions on anyone. We hope that a positive approach will boost the number of candidates and bring an end to the situation of "lifelong council members"'. **✎ AS**

NO SMOKING ON CAMPUS FROM NEXT YEAR

Wageningen campus is to be a smoke-free zone in just over a year. That much has been decided. The main questions now are how it will be done, and where the campus begins and ends.

Smoking has been banned in the buildings on campus for a long time. But smoking is allowed in the grounds, with special smokers' shelters dotted around them. As of August 2020, however, no smoking will be allowed there either. The government has said that by that date the grounds of educational institutions, including university campuses, must be smoke-free. A project team is going to work out how to implement the smoking ban, the WUR Executive Board decided this week.

In a way, the government has overtaken WUR, explains Peter Booman of Facilities and Services. "The Executive Board decided



It is not clear yet whether the smoking ban will apply to Campus Plaza

last year to make the campus smoke-free in phases by 2023. So now that has to be August 2020.' Time is running out, then, while there are still some issues to iron out.

The main point to clarify is how far the smoking ban extends. For example, says Booman, whether it covers Campus Plaza and the student accommodation there. 'The student rooms at Campus Plaza are personal space, of course. And the square is not ours but DUO's.' Nor is it clear whether the ban applies to businesses on the campus or to off-campus WUR sites.

Further subjects of discussion are how to phase the implementation of the ban and how to enforce it. And thought is being given to how to help students and staff who want to stop smoking. **✉ RK**

What do WUR staff think of the smoking ban on campus? Read their views on page 22-23.

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RESOURCE

FINDING OUT WHY FROGS' FEET STICK

Tropical tree frogs owe their adhesive ability to a 'Dutch' principle, Van der Waals forces, says PhD candidate Julian Langowski.

How is it possible that tree frogs seem to climb effortlessly and can even hang upside down on wet surfaces? Langowski has gone some way to solving the mystery. He recently got his PhD with distinction in the Experimental Zoology group. The doctoral student mainly focused on the subcutaneous structures of the frogs' adhesive toe pads, about which very little was known. 'The surface of the pads is where the interaction with the substrate takes place,' says Langowski. 'But what also matters is how the adhesive surface is connected to the rest of the animal.'

A layer of connective tissue that links the epidermis of the pads to the frog's finger bones turned out to be crucial. This connective tissue appears to be oriented in such a way that it helps the pads to cope with the frictional forces that act on a frog on a vertical surface. According to Langowski, this is an important indication for the adhesive mechanism.

The skin of tree frogs is covered in mucus. Until now, the adhesive capacity of tree

frogs' feet was mainly attributed to wet adhesion, in which capillary action plays an important part. The surface structure of the adhesive pads seems to support this assumption at first glance. The pads consist of a pattern of small hexagonal pillars (10 micrometres in diameter), which in turn are covered with pillars at the nanoscale (0.3 micrometres).

'The morphology of the foot indicates a significant role for Van der Waals forces'

The spaces between the pillars, which are filled with mucus, ensure a capillary effect and thus adhesion. But such capillary forces only act perpendicular to the surface. That does not fit with the subcutaneous collagen that seems to help take up the vertical forces parallel to the surface. Van der Waals forces, weak electromagnetic forces between atoms or molecules that are named after the Dutch Nobel Prize winner Johannes Diderik van der Waals, can explain the orientation of the collagen. Langowski: 'I am not implying that wet adhesion does not occur, but the morphology of

the foot indicates a significant role for Van der Waals forces.' From that viewpoint, the pillars serve as a drainage structure. 'When the frog sets its foot down, the layer of mucus is squeezed out through the channels between the pillars, to allow as close contact with the substrate as possible.'

The idea is that the study of tree frog feet will lead to new materials and instruments, for example for surgeons and robots with grippers. **📷 RK**



▲ Wet adhesion cannot fully explain the adhesive capability of frogs' feet, says PhD candidate Julian Langowski.

PHOTO: SHUTTERSTOCK

NOT MUCH POINT IN SHOOTING WOLVES

Hunting down wolves is not an effective way of limiting their numbers in the Netherlands. In fact, shooting them might have the opposite effect, suggests a model study by Master's students Zoe Delamore and Kim van Vliet.

In the Master's course on Agent-based modelling of complex adaptive systems, the two students set their sights on the wolf. A nice choice, says Professor of Artificial Sociality Gert-Jan Hofstede. 'Complex systems are not chaotic, but they are not linear either. Depending on the circumstances, small changes in such systems can have far-reaching consequences.' The arrival of the wolf in the Netherlands is one such system, says Hofstede.

The students used the model Netlogo to simulate the wolf's colonization. The model is based on the habitat map made by the Wolves in the Netherlands foundation, showing the areas of the

country that are suitable for wolves. A set of parameters based on the behaviour of the wolf and the degree of human intervention literally creates a picture of the progress of that colonization.

According to the computer model, there will never be more than about 65 wolves living in the Netherlands. This matches earlier estimates by Wolves in the Netherlands and a study by Wageningen ecologists. What is remarkable is the finding that management by culling would have little impact on the wolf population. 'Shooting them in the Netherlands only wouldn't help,' says Hofstede. 'They'll just keep on coming in from Germany. What's worse, if you start shooting wolves, they'll start roaming further afield and be more likely to attack sheep.' Hofstede wants to work with Wolves in the Netherlands to expand the model and make it a useful instrument for policy support. **📷 RK**



AGRICULTURE HYPES ARE TRICKY IN AFRICA

Popular new farming methods such as conservation agriculture don't help African farmers. They stand to gain the most from flexible approaches that respond to the conditions on their farm, shows Esther Masvaya's PhD research in Zimbabwe.

Many NGOs and donors in Africa have embraced the conservation agriculture (CA) approach to farming. CA farmers plough little or not at all, leave crop remains on the land and apply crop rotation and intercropping. A popular example of CA agriculture is growing maize in combination with legumes and without any artificial fertilizer.

'This approach has been hugely hyped up,' says Katrien Descheemaeker, Esther Masvaya's co-supervisor. 'It is a form of agriculture that works well in large-scale farming systems in the US and Australia, but in small-scale farming systems in Africa there are a lot of catches.' Crop remains, for example, cannot be left on the land without the farmer losing a source of livestock feed. And sometimes farmers are better off ploughing to combat weeds. It is fine to grow nitrogen-fixing pulses, says Descheemaeker, but they rarely produce enough nitrogen to compensate for the loss of nitrogen

from maize farming. In Masvaya's field trials in Zimbabwe she got the best results with a combination of artificial fertilizer and animal manure.

Another hype is climate-smart agriculture, where the intention is to adapt to climate change and reduce greenhouse gas emissions. This too is tricky in the African context, says Descheemaeker. 'To get decent harvests, you need artificial fertilizer and animal manure, but they increase greenhouse gas emissions.'

The problem for farmers in Zimbabwe is that they have relatively

'It would be better if NGOs offered a combination of options'

little land and work in a wide variety of climatic conditions. Descheemaeker: 'They respond to that with a diverse production system that minimizes risks. They shouldn't follow a rigid, set approach but cherry-pick the useful elements. So I think it would be better if NGOs offered a combination of option, with a warning for each option: this works under these conditions.' **AS**



PHOTO: SHUTTERSTOCK

▲ Agricultural methods such as conservation agriculture are not necessarily appropriate for farmers in Zimbabwe.

VISION



'High-tech agriculture can be circular too'

Minister of Agriculture, Nature and Food Quality Carola Schouten presented an implementation plan for circular agriculture this week. The minister should be sure to look at the various existing forms of circular agriculture, says honours student Anne Hendriks (Plant Sciences). She and some fellow honours students made a documentary about circular agriculture.

You were amazed by the many forms of circular agriculture being practised?

'There is a polarized discussion going on: soil-bound and organic versus efficient and high-tech. As a consumer, this can give you the idea that regular and organic farming are worlds apart from each other. But when we made the documentary *Kringlooplandbouw doorgrond* (an analysis of circular agriculture), we noticed that high-tech can be circular too. We visited a horticulturalist who grows vegetables in water, so without soil. That is very sustainable: all the water with the nutrients goes back into the farming system. But that is not the image people have of circular agriculture. And that is logical, because it's not easy for a consumer to select products from circular agriculture. The only distinction you can see in the supermarket is between conventional and organic.'

What struck you the most while you were making the documentary?

'I saw horticulturalists with solar panels and geothermal energy with which they heat houses in the neighbourhood. I didn't know it could be as sustainable as that. We also went to an organic cheese factory that initially had difficulty marketing its cheese. The farming system and feed regime made that cheese much more expensive than regular cheese. The company only started getting that price for it when they were able to stand out for exceptional flavour, and not for the narrative that the company is very sustainable. Farmers are always looking for the right form of circular agriculture for them.'

If I was Minister Schouten, I would...?

'Incentivize sustainable agriculture in all cropping, horticulture and livestock systems. And I would consult supermarkets about a label so that consumers can see which products meet the circular criteria.' **AS**

Watch the documentary *Kringlooplandbouw doorgrond* on resource-online.nl

RESEARCH ON INSECT FARMING FOR LIVESTOCK FEED

The Netherlands organization for Scientific Research NWO is going to invest four million euros in a major study on the further development of insect farming for livestock feed in the Netherlands. Wageningen entomologist Marcel Dicke will lead the project.

The study focusses both on the production and welfare of insects and on the health and welfare of poultry that consumes insects. Supply chain development and the economic robustness of the insect sector will also be addressed. Besides knowledge, the project will provide recommendations for investors, legislators, supermarkets and educational institutions.

What makes this project unusual is that it involves specialists from four science groups: entomologists, economists, ethicists, consumer scientists, food safety experts and animal scientists. They will be working together with immunologists, microbiologists, entomologists and ecologists from the University of Groningen, HAS University of Applied Sciences Den Bosch, and government agencies. Three companies from this brand new sector will be involved as well. One of them Protix, breeds black soldier flies as livestock and fish feed.

The research is funded from the Dutch National Research Agenda. **AS**

WHICH TROPICAL DISEASES WILL REACH THE NETHERLANDS?

Disease-carrying insects are moving north due to climate change. So researchers from WUR, Erasmus MC and other institutes are going to study how the Netherlands can better prepare itself for the arrival of vector-borne diseases.

The Laboratory of Entomology will collaborate with researchers from Nijmegen, Rotterdam and Utrecht, the National Institute for Public Health and the Environment (RIVM), the Netherlands Food and Consumer Product Safety Authority (NVWA) and blood banks across the Netherlands. The researchers have received nine million euros from the Netherlands Organization for Scientific Research (NWO) and have a total of 10 million euros to spend. The Entomology group will appoint two PhD candidates. The research leader will be the Rotterdam virologist Marion Koopmans.

The researchers will mainly focus on mapping the influence of climate change on the spread of vector-borne diseases, explains Wageningen entomologist Willem Takken. As temperatures rise, mosquitoes are advancing towards Northern Europe, and the risk of new infectious diseases is increasing. Vector-borne diseases that are already present, such as Lyme's disease, could claim more victims, too.

The tick season will get longer, says Takken, which increases the risk of people contracting Lyme disease.

The researchers will investigate whether the insects carry new viruses and parasites and whether these are able to spread further once they are here. WUR has a research lab with the highest safety level, in which researchers infect mosquitoes with viruses and monitor how they spread. This will enable WUR and Erasmus University to assess the risks of the West Nile virus, Zika virus and dengue fever. **AS**



▲ Tropical insects such as the *Aedes aegypti*, or yellow fever mosquito, are bringing diseases to the North.

BREEDING FARMED FISH IS A PRECISE BUSINESS

Livestock breeders develop animals with particular traits such as a high milk yield or resistance to disease. Breeding programmes for farmed fish are a relatively new thing, however. Kasper Janssen studied how you can optimize fish-breeding programmes and adapt them to the goals of the fish farm.

Wild fish are genetically adapted to life in the wild, and not to life at a fish farm. As a result, it is not always efficient to farm wild fish. Breeding programmes can help to improve the situation. The parent fish with the best genes are selected to produce the next generation. This is still relatively rare in aquaculture. 'Breeding is a question of making choices,' says

Janssen, who graduated with a PhD in the Animal Breeding and Genomics chair group on 4 June. 'Because if you emphasize one characteristic, you nearly always do so at the expense of something else.' Which trait is it best to select for, then? To decide that, Janssen says you first need to know how it will benefit the business. A lot of research has been done on this for farm animals such as cows or chickens, but the economic value of 'fish traits' is still fairly unexplored territory. Janssen developed a bio-economic model, a computer model of a fish farm. He then looked at how profitable a company would be, independently of the traits selected for. Janssen: 'With this model you can, for example, calculate the additional profit for a company if a fish grows one per cent faster, or produces one per cent more food.' On this basis, a

company can choose which traits it wants to emphasize.

There is no one-size-fits-all solution, says Janssen. 'There are specialized breeding companies that provide fish farmers with eggs and young fish. But there are also integrated companies that both breed and raise fish. So they benefit directly from their breeding programme. Companies will have to adapt the choices they make in their breeding programme to their objectives.' He thinks much can be gained by ironing out inefficiencies. 'The best programme doesn't stand out on just one point, but performs reasonably well across the board.' **TL**



PROPOSITION

Top sport at the computer

Competitive gaming is no child's play, reckons PhD graduate Wouter de Bruijn. He's a fanatical gamer himself, and he always made time for it while he was working on his PhD. So he came up with the proposition: 'Considering the level of skill, talent and dedication required to excel at eSports, they qualify as real sports.'

'eSport is already established as a serious sport. Players often train for 14 hours a day. There is a worldwide eSports organization, just like FIFA for football, and spectators flock to stadiums to see their heroes play live. Teams are sponsored and scouts look

for young talent. You can earn good money at the top.

In 2017, the International Olympic Committee proved to be surprisingly open to recognizing eSports as an Olympic sport in future. You don't have to work out fanatically for it, but it does require incredible levels of precision and fine motor skills. Top gamers can often think of and make 300 moves per minute. You must be fit because a tournament can go on all weekend and you need to stay mentally sharp. You also need to keep a close eye on what your opponent is doing and adapt your tactics to that.

Teams have an 'in-game leader' who directs the players and decides on the strategy. It is

impossible to predict in advance how a competition will go, and that makes it interesting to watch.

'eSports require incredible levels of precision and fine motor skills'

At one point I tried to get involved at the amateur competition level. In the end I didn't manage to get a team together. Actually, I don't think I'm good enough for that anyway.' **TL**



PhD candidates are required to append a few propositions to their thesis. In this feature they explain their most provocative proposition. This time, Wouter de Bruijn, who got his PhD on 7 June for his study of the antimicrobial activity of defence compounds in legumes and cereals.

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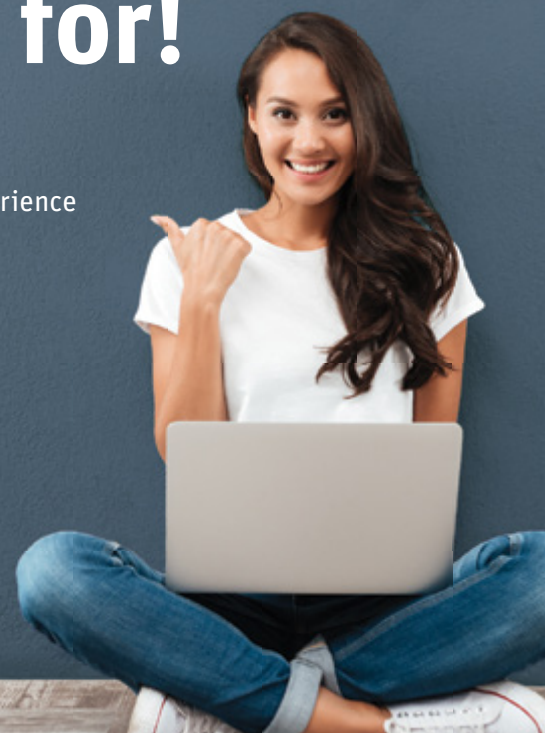
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RESOURCE

Voor iedereen van Wageningen University & Research



Small steps aren't enough —
we need to change the system'

Standing up for biodiversity

Plants and animals are facing decimation, according to an IPBES report. WUR professor Esther Turnhout was one of the authors. She says we can still prevent much of the damage, as long as we are prepared to make drastic choices — including at WUR. 'Wageningen is partly responsible for the current state of biodiversity.'

text Roelof Kleis *photo* Aldo Allesie

In its report, IPBES claims that one million plant and animal species are threatened with extinction. How bad is that?

I think that's bad. I see the diversity in life as something worthwhile. It hurts to know that we humans are making such a major contribution to that decline. A lot of people feel that way. On top of that, we can't survive without that diversity.'

IPBES estimates that there are 8.1 million species. One million of them will disappear in the worst-case scenario. And we don't even know about most of them. So what is the problem?

'The discussion about that million is a pity because it distracts us from the real issue: the decline in the number of species and the speed



with which we're destroying habitats. It's all going so fast that we will eventually get into serious trouble. The report gives five underlying causes, with the key one being the use of land for agriculture. A lot of land is suffering deforestation for the production of soya, palm oil and meat. That is still increasing.'

IPBES calls for 'transformative action'.

What is that?

'The message is that incremental changes — little steps — are not enough. We need to change the system. That is not a revolution in the sense of getting rid of everything and starting all over again, but it does mean tackling the roots of the problem, the deeper

causes. Nature conservation isn't the answer; we won't get there with bigger national parks or more protected areas. We shouldn't be maintaining damaging policies on the one hand and spending extra money on nature management on the other. We need to press the buttons that matter.'

What does that mean at the national and international levels?

'It is time for governments and big companies to take action. Governments need to create a more favourable climate for sustainable production and consumption. They can do that through legislation and regulations, taxes and subsidies. Companies need to keep to stricter rules and be more transparent about the extent to which they contribute to the loss of biodiversity.'

'The marches and demos give me hope'

What can WUR do?

'In response to the report, quite a lot of people have said to me that Wageningen is actually partly responsible for the current state of biodiversity. Those people have a point. The dominant view in Wageningen is still that we need industrial, export-focused agriculture to feed the world. The voices proposing alternative approaches are not being heard so much.'

But aren't we in the middle of a transition to more sustainable, circular agriculture?

'I'm not so optimistic about that. Circular agriculture is a step in the right direction but it's not necessarily good for biodiversity as well. The development of knowledge about nature-inclusive agriculture could use some extra support. We have the technical solutions but there is too little knowledge about how we can implement them and scale them up, and how we can bring about that transformation. Wageningen may be changing, but the rest of the world has not yet seen much sign of this. That's what I hear from the general public, other universities and ministries. Extra effort is needed to make that visible. That also requires explicitly dealing with and being open about the past. One of the comments I get is that Wageningen should really start by saying "sorry". I can understand that.'


What can you and I do to stop the decline in the number of species?

'I find that a difficult question. Consumer behaviour is important but I don't think that's the crucial thing at the moment. You shouldn't make the general public, as individuals, bear responsibility for the conservation of biodiversity. That detracts attention from the role of big companies and governments.'

Surely I can choose the sustainable option in shops?

'Only people with enough money can do that. It's an elitist issue. I find the whole idea of freedom of choice quite weird — letting consumers choose from five chicken labels that differ in the quality of life. Lots of people would be fine with restrictions on that freedom of choice.'

So only sustainable products on the shelves?

'Yes. The real task for the general public where biodiversity is concerned is not as consumers but as political actors. I have found social phenomena such as the climate marches and Extinction Rebellion quite inspiring. That is what ordinary people can do: show they mean it, that problems with pollution, climate change and the extinction of species are too serious to be left to individual consumers. The marches and demos give me hope. That is the way forwards. We have one big problem and that is that we aren't treating the planet — our home — sustainably. It is clear that if we continue like this, life will become a lot less pleasant.' 

IPBES: 'UNPRECEDENTED DECLINE IN NATURE'

Biodiversity is declining faster than ever before in human history. That is the conclusion of the first Global Assessment by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which was presented in Paris in early May. About 150 experts were involved in the report. Esther Turnhout, professor of the Politics of Environmental Knowledge, was one of the authors of the chapter on policy options that could lead to a better future.

Successful Wageningen approach stalls in Africa

No cash for malaria island II

Three years ago, Professor Willem Takken made the international press with his malaria research on the Kenyan island of Rusinga. He and his colleagues had managed to make big inroads into the disease with their odour traps. But there is still no sign of a follow-up study.

text Albert Sikkema photo Melchert Meijer zu Schlochtern

In the summer of 2016, WUR presented the results of a successful malaria project on Rusinga. The 4300 homes on the Kenyan island had each been given an odour trap to catch the malaria mosquitoes in the house and a solar panel to provide the trap with electricity. As a result, the malaria mosquito population fell by 70 per cent between 2012 and 2015, and the number of new malaria cases dropped by 30 per cent. The conclusion: odour traps are a very effective instrument for combating malaria in Africa.

The successful practical experiment was set up by Willem Takken, professor holding a personal chair in Medical Entomology. He has spent his entire scientific career fighting malaria with biological tools. This time, he was successful because a carefully chosen mix of odours that was developed in Wageningen lured the malaria mosquitoes into the trap in large numbers. The experiment made headlines around the world. Apparently, financiers were queuing up to fund follow-up studies by Takken on Rusinga and in other parts of Africa.

‘We believe in this approach and will continue to submit project proposals’

REJECTED PROPOSAL

But three years on, there is no sign of a follow-up project. ‘It is not that easy,’ says Takken’s colleague Sander Koenraadt, ‘because you need a large amount of cash.’ Koenraadt wrote a proposal for practical tests in Kenya and Malawi in which odour traps around the home would be

combined with impregnated cotton in the home to ward off the mosquitoes. The cost: 32 million euros. His proposal was rejected last year by Unitaid, a large international NGO that aims to improve public health around the world.

Koenraadt thinks he knows why. ‘The substance used to impregnate the cotton still needs to be registered, and additional toxicological tests are required. Unitaid doesn’t want to pay for those tests and this approach won’t be recommended by the World Health Organization until that happens.’

The odour trap has also yet to get a positive assessment from the WHO. ‘The WHO wants us to demonstrate the impact of the trap in reducing malaria in two independent studies. We have done the first study and now we are looking for funding for the second practical test; the WHO itself doesn’t have money for that.’ All in all, the Wageningen approach for tackling malaria is getting stuck in the validation phase. But Koenraadt is not giving up. ‘We believe in our approach and will continue to submit project proposals.’

LETHAL DISEASE


Willem Takken is confident there will eventually be a follow-up study. ‘Everyone agrees that we need a third method alongside mosquito nets and drugs if we are to defeat malaria. That means we need to reduce the mosquito population outside the home. The options then are odour traps and biological pest control targeting the mosquitoes and mosquito larvae.’ The need for this is as great as ever, says Takken. ‘There are still an estimated 200 million people around the world with malaria. Every year, several hundred thousand people die of the disease.’





Takken is trying to persuade the Global Fund to Fight AIDS, Tuberculosis and Malaria to fund the odour trap study. This international fund, with money from a group of rich countries, is investing in mosquito nets and drugs but is not yet funding methods for dealing a blow to the malaria mosquitoes. Takken is also looking into whether the Bill and Melinda Gates Foundation is willing to support the research again. 'We received money from the Gates Foundation back in 2005 for large-scale tests of our odour mixes. That led to the breakthrough that made the practical test on Rusinga possible.'

MEANWHILE IN KENYA

How are things going now on the malaria island in Kenya? Koenraadt and Takken have not been back in recent years. Takken: 'The last I heard was that all the solar panels are still working but about half the odour traps have stopped functioning. There could be all kind of reasons for that. Can people still get hold of the bait mixtures, which need to be refreshed every three months? Or have people stopped maintaining the odour traps because the malaria has been curbed to such an extent? We don't know because we haven't been able to get funding for a follow-up in the area.' 


▲ The successful experiment with mosquito traps in Kenya was the work of Willem Takken. He says there is an urgent need for a follow-up. 'Every year, hundreds of thousands of people die of malaria.'

WILLEM TAKKEN'S ACHIEVEMENTS

Willem Takken, professor holding a personal chair in Medical Entomology and the man behind the malaria island project, retired on 13 June. He sees the practical test in Kenya as his 'finest hour'. 'I remember I was surprised that the research proposal made it. Then the results were positive and the project became world news.' But Takken can look back on other achievements too. He became the founding father 15 years ago of tick research in the Netherlands. 'No one was researching ticks back then even though there were more and more patients with Lyme disease. I started studying where the ticks were, how many there were and what the infection rate was per area. Then I set up the tick radar with Arnold van Vliet, then the public health institute RIVM got involved, and now we have a solid group of tick researchers.'

Takken was also a key adviser to the ministry of Agriculture when there was an outbreak of bluetongue among sheep in Limburg in 2006. 'On the first day of my holiday, I got a phone call asking me to come at once, because sheep were dying. No one had expected this disease in the Netherlands so the politicians were in panic mode. We worked out within a week what kind of midges had transmitted the viral disease.'

TRIAL ON THE AFSLUITDIJK

Could mussels help keep the power plant clean on the Afsluitdijk (the dyke that closes off the IJsselmeer)? Brenda Walles of Wageningen Marine Research hope to answer this question with the help of tanks of mussels she installed at the power plant last week. The company REDstack generates 'blue energy' in the plant using the differences in salt levels between seawater and freshwater. But the membranes between the two kinds of water soon become clogged with sludge from the seawater. This is where Walles's trial comes in. 'The mussels in the tanks filter the sludge out of the water and spit it out as pseudofaeces, which sinks to the seabed,' explains Walles. She expects the first results of her trial at the end of the summer.  TL, photo Bram Belloni





‘It’s a question of knowing your limits’

Working with a disability

Like all educational institutions, Wageningen has got to create jobs for people with a disability. The process has its ups and downs and the 2018 target of 136 was missed by a long way. But there are success stories too.

text Tessa Louwerens *photos* Aldo Alessie and Roger Cremers

Anja van Druten had been working for an insurance company for 40 years when she was made redundant after a reorganization. Her disability made it very hard for her to find a job. ‘Nobody was eager to take on a 60-year-old who could only work a maximum of 16 hours a week because of rheumatic diseases.’ The Jobs Agreement Act came to the rescue and Van Druten got a ‘participation job’ at WUR (see inset). ‘I do odd jobs for different departments, like digitizing dossiers or looking for additional information.’

NEW APPROACH

WUR is required by law to create jobs for people like Van Druten. The institution currently has 31 such jobs, which is well below the legal quota, set at 136 for 2018. Human Resources Manager Els Dieleman is currently studying why there are still so few participation jobs. ‘Up to now we tried to spread these employees over the different science groups, but that is far too disjointed,’ she explains. ‘And it doesn’t help that the research institutes have been having a hard time financially for the past few years.’

MADE-TO-MEASURE

According to Dieleman, a radical change of approach is called for. In order to table a workable proposal, she is looking for good examples of employees with a disability who work successfully within WUR. ‘I want to hear about the experiences of these staff and their colleagues, to find out how a team can make sure it works.’

Wopke de Kroon, an internal job coach at the Social

Sciences Group, helps people with a disability to find a suitable job at WUR. Each placement is made-to-measure, she says. ‘Some of these people have been out of work for years and they are often extremely nervous about a job interview. I hold informal interviews to get to know each other, focussing on the possibilities and not on the disabilities. People can often do the work just as well, but they might need a quiet workplace or a shorter working day. This idea of starting your search by looking at the person rather than the job description still needs to take root in WUR.’

PARTICIPATION JOBS

With a view to helping people with a disability to get jobs, the Dutch government decreed in the Jobs Agreement Act (formerly the Participation Act) that between 2013 and 2026, a total of 125,000 ‘participation jobs’ should be created, 25,000 of them in the government or semi-government sectors. It is up to municipalities or the social security agency UWV to determine who qualifies for such jobs. Their names go into the Target Group register. Because the target for 2026 is most unlikely to be reached, a Quota law was passed in 2018, stipulating that employers must make a certain percentage of their jobs participation jobs. From 2022, employers that don’t fulfil their quotas will face a fine of 5000 euros per job they failed to create per year.

‘I find hard deadlines and phone calls difficult’

Daan van Buuren, administrator in the Liaison Office, department of Social Sciences (24 hours per week)

‘I used to dream of becoming a judge, but that proved impossible, partly because of my disability. When I was 18 I was diagnosed with Asperger’s, nowadays known as the autistic spectrum disorder (ASD). First I studied Social and Legal Services and then I did an applied university degree in law, but I didn’t finish it. After that I did voluntary work for a while. I came to WUR more than a year ago through a participation vacancy. My colleagues know I have a disability but I try to avoid the word autism. Not that it’s a secret, but autism is a very broad term and it means different things to different people. Also, it makes it look as though you are passing on the responsibility to other people and expecting them to adjust. I don’t think that’s very realistic. I have to learn to deal with it myself. I try to see what effect my autism has. Where does it cause problems? And how could my colleagues help with that, specifically? For example, I can’t do a lot of things at the same time, and I have difficulty with hard deadlines. I find phone calls difficult too, because I don’t know exactly what people are going to ask. So that’s something I’d rather not do. But there are so many other things that I can do or can learn to do. I concentrate on those. At the Liaison Office we maintain contracts, with research financiers, for instance. I do all sorts of support tasks, like making sure the dossiers are in order and complete. I really like the legal side of it: finding out what the rules are and looking into what they mean and whether it’s right. That goes very well, although I do notice that colleagues sometimes find it hard to delegate to me. It doesn’t always save time because by the time they’ve explained it to me, they could have done it themselves. But it’s a one-off investment.’

‘There are periods when pain keeps me awake at night’

Arie Brouwer, administrator at the Environmental Economy and Natural Resources chair group (about 15 hours per week)

‘I was diagnosed in 2009 with trigeminal neuralgia, or chronic facial pain. A nerve is trapped in my brain and that causes severe pain – in my jaw, for instance. It got gradually worse and I haven’t been able to work since 2011. Three years ago I had brain surgery and it got a bit better after that. The pain hasn’t gone away but I get fewer attacks. I could face the idea of returning to work again. I started at WUR in 2018, and to my surprise I was back in the world I had left 15 years earlier. I worked here as an interdisciplinary researcher until 2004, specializing in local social security. My job involves a wide variety of tasks. I take minutes, I write for the website, I manage the website and I facilitate the data management. Some of this goes quite smoothly, but in other parts of the work I am not up to speed yet. My colleagues know I have a disability; I don’t make a secret of that. They are flexible about it. I have good days and bad days. There are periods when the pain keeps me awake at night. It often gets better in the course of the morning. Just after being diagnosed, I sometimes worked 60 hours a week, but I paid a heavy price for that. It isn’t a question of toughening up, but of knowing your limits and getting rest in time. I have accepted that. The Quota Law, which forces employers to create participation jobs, is a useful stick to threaten them with, but the workforce has to want it too. I think WUR could do better at showing what the potential is, and could more actively identify tasks that would be suitable.’



‘It’s nice for me that the work is flexible’

Anja van Druten, on the staff at the Social Sciences department (16 hours per week)



‘It was hard to find a new job, because nobody was eager to take on a 60-year-old who can only work 16 hours a week. That’s because I’ve had rheumatic disorders of both my muscles and my bones since I was 24. I worked for a life insurance company from the age of 16. During a reorganization I was made redundant, after which I was unemployed for three years and worked as a volunteer in a hospice. I’ve been working for WUR since 2018. I do odd jobs for different departments, such as digitizing dossiers or looking for additional information. At the moment I also work in the office because one of the secretaries is off sick long-term.

It’s nice that the work is flexible. Because of my rheumatic disorders I am in pain all the time and I get tired quickly. I don’t feel under pressure now; in my previous job I had to work by the clock and your output was constantly being measured. That puts a lot of pressure on people who can’t keep up. My husband is working part-time too now. That’s nice because we take it in turns looking after the dog.

The work here is nice and varied and I like being with people. From time to time people who have participation jobs at WUR get together and exchange experiences. Wopke de Kroon is my job coach. She divides the tasks among the different staff members. Wopke also does a lot to draw attention to this group of people. But it’s the same as in any big company: when there’s a new development and people are not sure what to expect, they find it hard to pass on work. I always try to explain that I can do my work just as well, in spite of my disability. It’s just that I work fewer hours.’

NON-SMOKING CAMPUS A STEP TOO FAR?

The government has decided that as of 1 August 2020, all school grounds and campuses will have to be completely non-smoking. The *Resource* journos had visions of bedraggled smokers on the Mansholtlaan verge and asked WUR staff whether they thought this was going too far.

text Roelof Kleis, Tessa Louwerens and Luuk Zegers illustration Henk van Ruitenbeek

Dennis Lammertsma



Animal Ecology researcher at Wageningen Environmental Research, smoker

'If this measure is about stopping air pollution, then they should also ban all diesel cars from the campus. But it's probably more about setting a good example for young people. I can understand why that would be a reason to ban smoking at sports clubs, playgrounds and school yards but I don't think that really applies to a campus. **Sure, smoking is unhealthy, but everyone here is old enough to decide for themselves whether to smoke.** If you start banning smoking because you don't want to set the wrong example, you should also stop serving alcohol on campus.'

'Students are old enough to decide for themselves whether to smoke'

Annemarie Wagemakers



Associate professor, Health and Society, non-smoker

'I don't think this is going too far. **A ban like this sends a message that not smoking is the norm.** That is nice for non-smokers who have a problem with it, for example when they're sitting outside in the sun. It could also help the smokers because we know that a lot of smokers would really rather not smoke, only they find it incredibly difficult to stop. Everyone knows it's bad for your health but education alone doesn't really

help people to stop. Measures such as price increases and smoking bans like this on campus raise the barrier and are a way of saying that we all want to be healthy. I think that in the end, this will do more to help improve people's health.'

Jan Tervoort



Bachelor's student, Soil, Water and Atmosphere, non-smoker

'I don't personally smoke but I think banning smoking for the whole campus is going way too far. **There should be places where smokers can have a cigarette; that wouldn't be a problem for anyone else.** It would be totally ridiculous to ban something entirely that doesn't bother anyone. I can understand making school grounds, sports fields and playgrounds non-smoking. You want to prevent children from getting into smoking at an early age. But I think students are old enough to make such decisions for themselves. Sometimes, I think the Netherlands goes overboard with all its rules.'

Mariëlle Takes



Communication support officer, Rural Sociology and Sociology of Development and Change, smoker

'Yes, this is going too far. WUR already has plenty of rules. Smokers are people too. I decide for myself whether I smoke. **I don't say anything to people who eat loads of chocolate or have some other addiction, do I?** Live and let live. I don't want to stop smoking, so let me be. I'm fine with the special smoking areas we have now. I don't want other people to be bothered by my smoking so I take that into account. Here at the Leeuwenborch, we used to have a smoking



'A ban like this is a way of saying that we all want to be healthy'

room at the back of the canteen. That worked well. You often had good chats about work there. But that room had to go when they extended the canteen. I can understand why but I do miss the social aspect. There's now a smoking place around the corner but no one uses it because you're standing in the wind.'

Matteo Miglioli



Master's student, Management, Economics and Consumer Studies, smoker

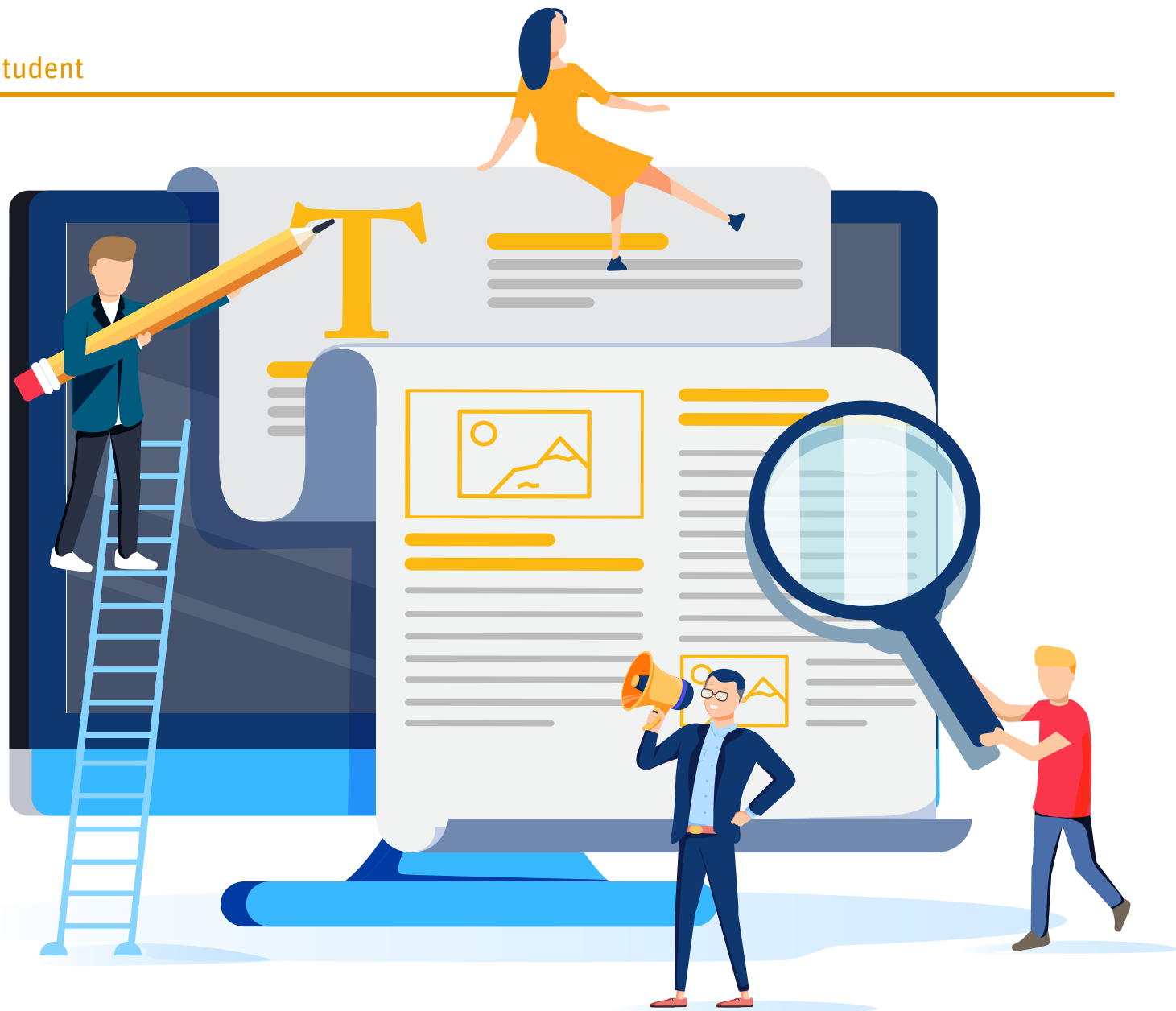
'It's never a good idea to ban things. **A ban has never yet improved matters. It simply doesn't work.** On the other hand, I think it would be good to give people on campus information about smoking and to reduce the number of places where you are allowed to smoke. Now I often see cigarette stubs in the grass. That doesn't fit with Wageningen's green, sustainable image. But a blanket ban on smoking on campus is going too far. It's better to give information than to ban it.'

Beatrijs Haverkamp



Researcher, Philosophy, non-smoker

'Ethically speaking, you can't really argue against a ban: smoking is really bad for your health because there is a one in four chance of you dying from it. What's more, smoking encourages smoking. **So it's actually really strange that cigarettes are still being sold, if you think about it.** But it is possible to think of reasons why a ban on smoking is undesirable. For example, we're obsessed by health and so maybe underestimate the value of experiencing the rebellious high of a cigarette. At the same time, a ban will of course make smoking even more of a rebellious act. Or you could say it is a sign of solidarity if university students and lecturers carry on smoking and thereby help reduce the gap in healthy life expectancy between the well-educated and people with less education. That's quite a nice thought. I'm almost tempted to start smoking...' **Ⓜ**



The winners of the Thesis Award share their tips

How to write a good thesis

Are you daunted by the prospect of writing your thesis? Still no idea what topic to choose, let alone how to get started on writing it? Get some inspiration from these four Master's students, who won the Thesis Awards 2017-2018.

text Konstantina Togka *illustration* Shutterstock

Adrià Fontrodona Bach (26) comes from sunny Barcelona, but loves snow so much he made it the topic of his thesis. The alumnus of the MSc in Earth and Environment researched changes in snow depth using data from more than 6000 monitoring locations across Europe. It was tough, says Bach. 'But the first time you do research on your own, it is normal to lose your way a bit.'

'It is normal to lose your way a bit'

Bach's research revealed that the average snow depth has been decreasing over the years, and that the decrease accelerating after the 1980s. But he also found that there were places where the snow cover has stayed the same or even increased. The study was published in *Geophysical Research Letters* and came in for a lot of attention in the media. After graduating, Bach got a job as a research assistant in Zurich, where he is studying glaciers. In a few months, he will start his PhD in Birmingham on the subject of... yes: snow.

AFRICAN RICE


At first, Margaretha Antonia Veltman (27) wanted to study the evolution of African rice in Suriname for her Master's thesis in Biology. After a few months, however, she decided to change her research question and study the origins of African rice in

West Africa. 'There was more data available on that. If I changed my research question it would be easier to answer it.' It proved to be a good decision: Veltman's thesis was published in *PLOS One* and won her the prize for the best WUR Master's thesis (see inset). Veltman has now embarked on a PhD at the natural history museum in Oslo, Norway, on the conservation genomics of wild orchids.

OUT OF HIS COMFORT ZONE

Coen Frederiks (28), a student of Organic Agriculture, studied the costs of the EU's registration procedure for new biological pesticides, and compared them with the American pesticide regulation systems. This meant stepping outside his comfort zone and delving into macro-economics. Frederiks discovered that the EU spends much more time on screening and registering new biological pesticides than the US does. The result: the EU misses out on both economic and environmental benefits. Frederiks is now working in Brussels on the regulations for the European biotechnology sector.

OIL DROPLETS

Food Technology alumnus Sten ten Klooster (24) chose a challenging topic for his thesis. In consultation with his supervisor, he decided to study an innovative technique for making emulsions – mixtures of tiny oil droplets and water, such as mayonnaise, salad dressing or certain medicines. He focussed on the way individual oil droplets can be created. This is a complex topic for which he had to read a lot of literature and take a course in fluid mechanics. It was hard work, but it bore fruit, because his research led Ten Klooster to discover the conditions necessary for droplet formation. 'It would be very favourable for industries to adopt this method since it requires about 20 times less energy and delivers better quality products,' says Ten Klooster. He is now working on his PhD at WUR, on the oxidation of oil in emulsions. 

THESIS AWARDS

University Fund Wageningen hands out four Thesis Awards every year for excellent Master's theses (with a minimum grade of 9). One prize is awarded in each educational domain. These are the Life Sciences, Social Sciences, Environmental Sciences and Agrotechnology & Food Sciences. The writer of the best overall thesis of the year is selected from the four winners. This time that was Margaretha Antonia Veltman.

SIX TIPS FOR A FIRST-CLASS THESIS

1 BE CURIOUS

All four winners agree on this one: to do top-notch research you have to be genuinely interested in the topic. 'Unless your curiosity is sincere, you won't ask the right questions,' says Adrià Fontrodona Bach.



2 TAKE THE LITERATURE STUDY SERIOUSLY

The literature search might not be the most exciting part of a thesis but it is crucial. 'Being critical of the articles you read can help you decide on the focus of your thesis,' says Sten ten Klooster.



3 NEVER GIVE UP

They ended up producing an outstanding thesis, but that doesn't mean these Master's students didn't struggle or have doubts. Their message: remember that everyone goes through bad patches, and stay positive.

4 MAKE MISTAKES

'The more often you fail, the more you learn from your mistakes,' says Coen Frederiks. 'In fact, if you want to stand out, you need to be brave enough to try new things and accept the risk of failure.'



5 BE ADAPTABLE

Sometimes things happen that are beyond your control, says Margaretha Antonia Veltman. 'Being able to adapt is a necessary trait.' Even if, like her, it means a complete change of topic for your thesis.



6 BE INDEPENDENT

A thesis supervisor is not always an expert in the field you are doing your research, which means you have to work independently. You can ask for help elsewhere, perhaps by reaching out to specialists in the field.



IN OTHER NEWS

UNCHANGING

Your brain cells are as old as you are. They don't get replaced. But scientists at the Salk Institute in the US found that also applies to liver and pancreas cells, to their great surprise. That goes against the prevailing opinion that cells and tissues are constantly dividing and being renewed. So we are a lot more hidebound at the cellular level than we thought.

STRESSED-OUT DOGS

If you get stressed, so does your dog, according to a study from Linköping University. The researchers found that dogs reflect the stress in their (female) owners. They based that conclusion in part on a comparison of concentrations of the stress hormone cortisol in the hair. The scientists used border collies and sheepdogs. Further studies will be required to see whether this association also applies to other breeds and male owners.

STRIPED AIR CON

Zebras have stripes so that they can control their body temperature. This has been suspected for a long time but now British amateur zoologists have proven it. The black stripes get 12 to 15 degrees warmer than the white ones. That temperature difference creates a refreshing flow of air across the skin. It is still a mystery, however, why the striped pattern seems so uneven.

HASH FANS

People have long been fans of cannabis. Researchers at the Max Planck Institute have found evidence of the drug in wooden burners discovered at 2500-year-old burial sites in Central Asia. The stuff was so strong that it was probably cultivated or selected especially for the burial ritual.

WUR students to World Cup for social entrepreneurs

'Beyond your wildest dreams'



PHOTO: ENACTUS

Enactus, a worldwide student platform for social entrepreneurship, runs an annual global competition, and the Dutch competition was won this year by the Wageningen branch. Enactus Wageningen beat teams from 13 other student communities and now goes on to the World Cup in the US.

The Wageningen branch of Enactus was only started two years ago, so the victory on Friday 7 June in the Jaarbeurs in Utrecht came as a big surprise. Board member Valerie Bloem: 'We had set ourselves the goal of reaching the final with a nice presentation. That we should win against teams that have been doing this for 15 years is just bizarre. It's beyond your wildest dreams.'

The student entrepreneurs of Enactus Wageningen are currently working on five projects aiming to contribute to a sustainable society. UniPlastic and Insect Impact are the most fully developed of these projects. 'For UniPlastic,

people who tend to be excluded from the job market collect plastic,' explains Bloem. 'They then shred it and it gets melted into plastic slabs, which can be used for all sorts of products, such as a kind of bar you can hang up on your balcony.'

Enactus Wageningen aims to contribute to a more sustainable society through small-scale enterprises

Insect Impact, meanwhile, is working on an insect-based baking mix. Bloem: 'Insects can be a good alternative source of protein with which we can feed the world in a more sustainable way. The Insect Impact team has developed a mix for making brownies with ground crickets. This gives people an easy and tasty way of learning about eating insects.' Other Wageningen Enactus teams

▲ Members of Enactus Wageningen are overjoyed to hear that they get to go to the World Cup for student social entrepreneurs in the US.

are working on refillable shampoo bottles (WeFil), awareness-raising about bees and biodiversity using gift boxes (BeeGrateful) and linking up lonely elderly people with students who need a room (Locus). Bloem anticipates a spectacular World Cup in Silicon Valley in September. The presentation team, made up of Steven Poos, Nienke Althuis, Laura Grootes, Sophie Tholhuijsen and Romy van Voorst, will have their travel and accommodation costs covered, but in total 15 to 20 students are going along. 'It will be even bigger and more American than our national competition. Three thousand students are going, with teams from 37 countries. It's going to be very special.' **LZ**



‘Wageningen goes one step further for international students’

‘Foreign students don’t feel at home in the Netherlands,’ ran the headlines in several Dutch newspapers last week. The claim was based on a survey done by three national student organizations. It does not apply to Wageningen, though, says Joshua Wambugu, Student Council member representing Sustainability & Internationalization.

‘Many international students do feel very much at home in Wageningen,’ says Wambugu. He thinks that is because Wageningen goes one step further to make newcomers feel at home. ‘By giving them priority for student accommodation, for instance. Housing is one of the biggest worries when you move somewhere new.’

Something else that bothers a lot of international students, according to the survey, is the language barrier and the lack of opportunities for learning Dutch. ‘In Wageningen all interna-

tional students can take free language lessons, thanks to the Student Council. But there is more to integrating than learning a language. Luckily there are a lot of organizations and clubs here that bring different cultures and nationalities together.’

Yet even in Wageningen there are some students who are not happy, says Wambugu. ‘That is why you need a personal approach. And there is no single formula for that because there is no such thing as *‘the international student’*. There are more than 100 nationalities in Wageningen, so there can be people from more than 10 cultures in a class. Some are very direct, and others not at all. Students have to learn to deal with that. The teachers are there to moderate the process, because they are the bridge between the students in the international classroom.’

Wambugu thinks that WUR is generally quite successful in helping international students to



PHOTO: MARTE HOFSTENGE

▲ One World Week, an annual event, is just one of the activities with which WUR welcomes international students.

feel at home. He does have one suggestion: ‘To promote integration, the university could give new students more information about the international Wageningen community worldwide. If you study here you become part of that.’

📍 LZ

Joshua Wambugu ▶



MEANWHILE IN... HONG KONG

‘Discontent amongst the population is growing’

Proposals for a bill that would allow fugitives to be extradited to mainland China prompted large-scale protests in Hong Kong. The police used force to disperse the crowds and injured about 80 protesters. The government has now suspended the controversial bill but the unrest isn’t over, says Gina Ho.

‘Every year on the 4th of June there are massive protests in Hong Kong to commemorate the Tiananmen Massacre of 1989. These demonstrations are banned in mainland China and Hong Kong people see them as a celebration of their political freedom. The timing of the extradition bill is unfortunate as it is the 30th anniversary of Tiananmen and emotions are running high. The bill allows for criminal suspects to be sent back to China for trial, but Hong Kong people fear it also opens up the possibility for the Chinese government to bring political opponents to China, where human rights and fair trials are not guaranteed.

The authorities are responding even more violently than they did to the umbrella protests of 2014; rubber bullets are being used and journalists are being attacked. Over 20



SAMUELVONG / SHUTTERSTOCK.COM

years have passed since Hong Kong was returned to China after British colonial rule, but discontent amongst the population is growing. This is due to mass tourism from mainland China and inflated property prices. These protests are really empowering, people feel a sense of belonging when defending our culture and values.

The protests have paid off, as the government has suspended the extradition bill. Unfortunately, the unrest is not over. A professor who recently ended his life has inspired the crowds to reject anything but the full freedoms we were promised. The people of Hong Kong believe that there is power in mass action. As a popular Cantonese saying goes: if you don’t have a dream, what’s the difference between you and a preserved salted fish?’ 📍 IA



Gina Ho, a Master’s student of Organic Agriculture from Hong Kong, reflects on the recent events in her home country.

YOU

ON CAMPUS

There are more than 12,000 students on the campus in Wageningen. What keeps them busy? For each edition, *Resource* asks a student picked at random.

It's a quiet day in the Leeuwenborch. Napassorn Watcharakomenkul (25) is sitting in the canteen, working with her earbuds in. No, she doesn't mind being interviewed. And her name is quite long, 'so you can call me Jane.'

Jane came to Wageningen for the Master's in Food Technology. 'I don't find it that hard to be away but it's just different in terms of weather and the food. Even when you go to a Thai restaurant here, it doesn't taste like the original Thai food.' Jane likes to make Thai dishes herself. 'I don't have housemates but at the weekend I cook with my friends. Some are from Thailand and some are from other Asian countries so it's a really nice mix.' Jane belongs to the Wageningen table tennis

club. 'Last year, I even joined in a competition. With our team we went to other universities to play against the teams there. I still practice with my team every Wednesday and with my friend on Saturday. I never played table tennis before I came here so it's quite funny how I ended up playing in competitions.'

'After my Master's I wanted to start a business in Thailand'

In her spare time Jane also attends events at StartHub Wageningen. 'I like listening to entrepreneurs talk about their ideas. After fin-



PHOTO: EVA VAN DER GRAAF

ishing my Master's, I would like to start a business myself. I have my idea already but I just need to find the connections and the budget. I would like to work that out in Thailand because there are plenty of resources there, but we don't know how to add value. That is exactly where I can help.' **EvdG**

The annoying chap who pesters you about hygiene

DIARY OF A CARETAKER

Christoph Janzing works for Idealis as a caretaker. He writes about his experiences for *Resource*. Read all his columns on resource-online.nl.



Mouldy food on the kitchen floor and piles of stinking rubbish bags. Idealis caretakers see it all when they inspect the student flats, writes Christoph Janzing.

'Oh, so you are the annoying little man who always pestered us to clean our flat.' That was the response of a friend who used to live at Hoevestein when I told her I'd taken a job as a caretaker with Idealis. It is indeed part of my job to inspect more than 100 student flats to see whether they are more or less clean and habitable. And I sometimes wonder why I bother. Who am I to tell grown adults that they should do some cleaning? I'm not their father, am I? And yet I do think there's a role for this kind of 'annoying little man'.

LEAKING RUBBISH BAGS

You recognize the filthiest flats by the sour smell of piled up, leaking rubbish bags that meets you at the door. Apparently every resident of such flats expects that someone else will take out the rubbish. Shared responsibility can mean that no one takes action – the 'bystander effect'. On a recent inspection tour of Asserpark I found a complete meal for about eight hun-

gry students in the middle of one kitchen floor. When I asked what the pile of food was doing there, I was told it had already been composting there for four days. 'We don't know who threw the food there, so we left it.'

'You recognize the filthiest flats by the sour smell of leaking rubbish bags'

BONDING

So this is where the irritating little man comes in. The one who says this is really not acceptable and that the residents had better get to work. They are then united by their irritation with the little man, which is good for their bonding as a group.

I was subtly thanked by a student recently after I had failed a flat and came back for a second inspection. 'It was really fun to clean the place together, actually. And afterwards we had a meal together in the clean kitchen.'

Phew. At least that makes me a usefully annoying little man. **EvdG**

Wageningen Master's students do internships and thesis research all around the world, getting to know their field and other cultures. Here they talk about their adventures.

Tropical Cairns is full of life

'Cairns is near the equator and has a tropical climate. As a result, nature seems a lot more lively here than in the Netherlands. There is constant rustling and movement, and there's something friendly about that. In the morning the exotic birds wake you up with a lot of noise and on the street there are lizards running all over the place, and you are surrounded by the sweet smell of wild mangoes. And at the end of the day you might just find a baby gecko in your bed.

SNAKE OUT OF THE DRAIN

Not all the wildlife is cute, however. When I was exploring the neighbourhood, a black snake with a fat red belly suddenly slithered out of a drain. I showed a photo of it to an Aussie and he said I should have kept my distance. Apparently it was a very poisonous snake. Oops.

'I once found a spider as big as my hand at my work'

The spiders are not a pretty sight either. I was doing research on a protein at the Australian Institute for Tropical Health and Medicine. In the mouse department, where I was working, I found a gigantic spider one day. He was as big as my hand and looked as though he'd escaped from a horror film. I still have no idea how that spider got in – that department is supposed to be hermetically sealed.

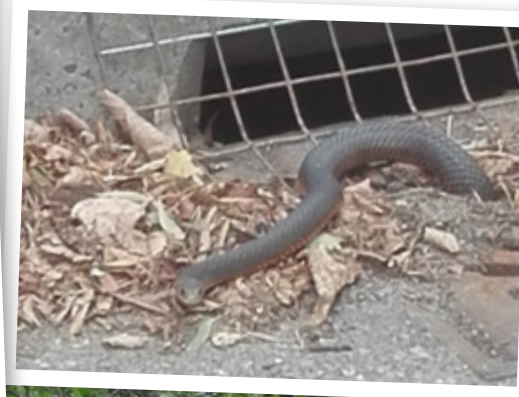
I walked a lot in the mountains around Cairns and did a day's diving and snorkelling at the Great Barrier Reef. A lot of places are so shallow that some of the coral nearly sticks out of the water. And the water is so clear. Countless colourful little fish swam around the white reef and a sea turtle even came past that day. Amazing – I was swimming right next to it! Sadly, the bleaching of the coral was very obvious. The bright col-

ours had disappeared completely as a result of climate change.

DRY SHIRT

My idea was to escape the Dutch winter in Cairns. But that plan turned out to be a lot less perfect when the rainy season started in December. More rain can fall in one week than in a whole year in the Netherlands. By mid-January, the combination of heat and high humidity is almost unbearable. I took an extra shirt to work with me every day. On the short walk from my house to the lab I sweated so much that I arrived soaking wet.'

IC



THE WORKS



Who? Martijn Vlakveld (24), Master's student of Biotechnology
What? Research internship at the Australian Institute for Tropical Health and Medicine, James Cook University
Where? Cairns, Australia

Do you too have a nice story about your internship or thesis research abroad?

Email lieke.dekwant@wur.nl.

Irregular Opening Hours – Summer 2019

Forum

	Date	Monday to Friday	Saturday and Sunday
The Building	8 July to 28 July	8 am - 8 pm	Closed
	29 July to 4 August	8 am - 8 pm	10 am - 6 pm
The Library	8 July to 28 July	8 am - 6 pm	Closed
	29 July to 4 August	8 am - 6 pm	10 am - 6 pm
	5 August to 11 August	8 am - 10 pm	10 am - 6 pm
	12 August to 18 August	8 am - 10 pm	Closed
	19 August to 1 September	8 am - 6 pm	Closed
Student Desk	8 July to 11 August	10 am - 12 pm	Closed
IT Service Point	8 July to 11 August	10 am - 12 pm	Closed
WURshop	15 July to 11 August	Closed	Closed
Restaurant	15 July to 18 August	11.30 am - 1.30 pm	Closed
Grand Café	8 July to 25 August	Closed	Closed
Wageningen in'to Languages	8 July to 23 August	9 am - 5 pm	Closed

During working hours, the building is open to the public. After working hours, entrance is only possible with a WUR card.

Orion

	Date	Monday to Thursday	Saturday	Sunday
The Building	8 July to 4 August	Closed	Closed	Closed
	5 August to 18 August	8 am - 7 pm	8 am - 6 pm	Closed
	19 August to 26 August	8 am - 6 pm	8 am - 6 pm	Closed
Bike basement	8 July to 4 August	Closed	Closed	Closed
	5 August to 18 August	8 am - 9 pm	8 am - 9 pm	Closed
	19 August to 26 August	8 am - 9 pm	8 am - 9 pm	Closed
The Spot	8 July to 4 August	Closed	Closed	Closed
	5 August to 18 August	8 am - 2 pm	8 am - 2 pm	Closed
	19 August to 26 August	8 am - 2 pm	8 am - 2 pm	Closed
Restaurant	8 July to 4 August	Closed	Closed	Closed
	5 August to 18 August	11.30 am - 2 pm	11.30 am - 2 pm	Closed
	19 August to 26 August	11.30 am - 2 pm	11.30 am - 2 pm	Closed

Leeuwenborch

	Date	Monday to Friday	Saturday	Sunday
The Building	8 July to 1 September	7 am - 10.30 pm	8 am - 5.30 pm	Closed
Restaurant/ Coffee Bar	8 July to 14 July	9 am - 3 pm	Closed	Closed
	15 July to 18 August	11 am - 1.30 pm	Closed	Closed
	19 August to 25 August	9 am - 3 pm	Closed	Closed
	26 August to 1 September	8 am - 5 pm	Closed	Closed

	Date	Monday to Thursday	Friday	Saturday and Sunday
Library	8 July to 14 July	9 am - 5 pm	9 am - 5 pm	Closed
	15 July to 25 August	9 am - 5 pm	Closed	Closed
	26 August to 1 September	9 am - 5 pm	9 am - 5 pm	Closed

After 6 pm entrance is only possible after registration at the reception desk.

Announcements

OTHERWISE COORDINATOR VACANCY – CALL REOPENED

Otherwise is looking for a new coordinator. Are you a graduate student or MSc student, passionate about social and environmental justice, a critical and creative thinker and a keen facilitator? In that case this job opportunity might be just the thing for you! OtherWise stimulates critical engagement by questioning the status quo and exploring alternative pathways towards a more environmentally and socially just world. As a coordinator you are flexible to work 16 hours a week / €13 per hour. Send your CV and motivation letter to otherwise@wur.nl before 30 June. WWW.OTHERWISEWAGENINGEN.NL

BECOME A BUDDY MENTOR IN/ AFTER THE SUMMER AID

1xESN Wageningen is looking for Buddy Mentors. A Buddy Family consists of two or three enthusiastic mentors and approximately 10-15 international, newly arrived students. As a Buddy Mentor you'll show international students around in our lovely town and make them feel at home. Together you'll take on lots of activities for at least one semester. These can be icebreakers like a little game of time's up, guess who, various name games, a simple drink or a little trip to the nearest supermarket. If you have an open mindset and are keen to join the Buddy Families, register alone or in a group via ixesn-wageningen.nl/what-buddy-mentor.

AFRICA THESIS AWARD

Are you interested in Africa and is your Master thesis on a related subject? If so, the African Studies Centre Leiden is offering you the chance to win € 500. Moreover your thesis will be published in the ASCL's African Studies Collection. Any thesis thematically related to socio-geographical, economic, political, juridical or anthropological issues or focusing on the humanities, such as history, religion and literature, can be submitted. Submission deadline: 7 July 2019.

WWW.ASCLEIDEN.NL/CONTENT/AFRICA-THESIS-AWARD

Agenda

Thursday 20 June to 4 July SHOWING AT MOVIE W

Dirty God: British portrait of a strong mother and her struggle with external beauty and internal dignity; *Mirai*: powerful magical-realist Japanese animation film about four-year-old Kun who gets a new sister and finds that hard to accept; *Rafiki*: colourful Kenyan film about the budding forbidden love between two Kenyan girls; *Le Semeur*: intriguing true story from 1852 about a group of strong women who do everything to survive after their village loses all its men in a war; *The Fall of the American Empire*: Canadian comedy about a philosophical courier who is faced with the ultimate dilemma. Venue: Wilhelminaweg 3A, Wageningen. €6.50/€5.

MOVIE-W.NL

Thursday 20 June to Friday 21 June CONFERENCE CRISPRCON 2019: CONVERSATIONS ON SCIENCE, SOCIETY AND THE FUTURE OF GENE EDITING

You can join sessions on several aspects of gene editing. CRISPR-Cas is a new technology that makes it possible to change genetic material from viruses, bacteria, cells, plants and animals in a relatively simple, very accurate and efficient way. This technology can make an enormous contribution to the quality of our environment, our health, agriculture and economy. At the same time there are concerns regarding ethical aspects, integrity of life, unfair distribution of property, security and who benefits. The conference is aimed at the largest possible cross-section of society and aims to stimulate an open dialogue. CRISPRcon 2019 is one of Keystone Policy Center's programmes and will be hosted by WUR. More about the programme, speakers and registration on the website.

CRISPRCON.ORG/CRISPRCON-2019

Friday 21 June, 12:00-18:00 WUR LAUNCH GENDER SMART PROJECT

The Gender SMART project is funded by the EC for the next four years within the Horizon 2020 programme 'Science for and with Society'. With six other research organizations from Cyprus, France, Ireland, Italy and Spain, WUR has committed to develop and implement a tailor-made gender equality plan centring on four shared issues: building a gender equality culture, developing equal career support measures, reshaping decision-making and governance and integrating gender in funding, research and education. Join the WUR Launch with a round-table dialogue, discuss ideas within working groups and share stories and lessons from the past. Drinks afterwards. Venue: Forum, room 214/413. Registration requested via gender.smart@wur.nl

Sunday 23 June, 11:30-14:30 ST JOHN'S PROCESSION

A cultural procession from Sint Janskerk (St John's Church) in the market square to the ruin of the old St John's chapel on Westberg. Flag bearers and musicians on traditional Dutch bagpipes will lead the procession. There will be stops on the way for the stations of the Cross, where you will be able to enjoy music, a children's musical group, a performance by the city poet and other acts. The event will finish with a sociable picnic at the top of the hill. Children are welcome! The two-kilometre St John's procession is inspired by the Catholic procession that used to take place on the Feast of St John the Baptist (24 June) from the Middle Ages up to the 16th century. This historic custom was reinstated when Wageningen celebrated its 750th anniversary. Contact: Bert Lotz (lookman-lotz@planet.nl or 0317-422957).

Colophon

Resource is the magazine and news website for students and staff at Wageningen University & Research. Resource magazine comes out every fortnight on Thursday.

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Marc Lamers, Corporate Communications & Marketing Wageningen University & Research



>>TYPICAL DUTCH



ILLUSTRATION: HENK VAN RUITENBEEK

Working in the sun

When I came to Wageningen in the summer of 2012, I was happy that I had managed to escape the scorching sunny weather in Ghana. To my astonishment, my Dutch fellow students soon invited me to go outside with them to have our meeting... in the sun.

In Ghana, some people try to avoid the sun as though it was a disease. Others who can't help it go about with umbrellas to create some shade. This is how I learned to deal with sunny days. You should have seen the surprise on my face in September 2012 when a Dutch colleague from an assignment group suggested that we sit outside in the sun and discuss our group work. I thought to myself, you must be totally crazy to even think that. But before this thought had completely registered in my mind, all the other four members of the group hopped out of their seats and headed for the sun. What was even more surprising was that many other student groups were sitting on the grass outside the Forum building, also basking in the sun!

It didn't take long before winter showed up, and I immediately understood why I was the crazy one in September and not everybody else in my assignment group! Sun is a rare commodity in the Netherlands, and like any rare commodity, the sunny days must be celebrated and enjoyed. This June, there are many sunny days, and as has now become the norm for me, I am usually the first to suggest that my colleagues join me for lunch in the sun. 📍 **Antwi-Boasiako Oteng, PhD candidate in Human Nutrition and Health, from Ghana**

'Sun is a rare commodity in the Netherlands, and sunny days must be enjoyed'

Do you have a nice anecdote about your experience of going Dutch? Send it in! Describe an encounter with Dutch culture in detail and comment on it briefly. 300 words max. Send it to resource@wur.nl and earn 25 euros and Dutch candy.