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No 20

After the curve

Investments and cuts | p.6 |

Responsible conduct?

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RESOURCE

For everyone at Wageningen University & Research

Sneak peek
Resource gets a makeover

The inside story of online education

Eight teachers and students tell all | p.12 and 24

Melissa + ‘Inca’

WUR researchers work with all kinds of equipment. Meet research/education assistant Melissa Bekkenkamp of Human and Animal Physiology.

BREATH OF FRESH INFORMATION

Give me your breath and I’ll tell you how your bowels are working. Is that possible? Yes, with mice it is, and it is the gist of what the Indirect Calorimeter (Inca to the initiated) at TSE Systems does. The apparatus, a little cage linked to a battery of sensors, analyses the breath of mice. The information gained from this includes how the digestion process is working. ‘So we can measure very well whether and when a mouse is living off carbohydrates or breaking down fat,’ says Bekkenkamp. And the nice thing is, it is non-invasive. The mouse doesn’t feel a thing. Ⓡ **RK, photo Sven Menschel**

ILLUSTRATION COVER: Alfred Heikamp

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no 20 – 14th volume

AND MORE...

SNEAK PEEK

Before you read further, have another look at the cover of this issue. Done it? That is what we like to call a sneak peek. For we haven't just been sitting around twiddling our thumbs the past few months. This is the last *Resource* with this layout (see page 16); after more than a decade, it is time for something new. The magazine and our website are getting a complete makeover — got to page 4 for more info. This final issue in the old style pays particular attention to online education from the perspective of both teachers and students. Does online teaching work? Can you get the material across properly as a teacher working remotely (see page 12)? What about the student at the other end — can you stay motivated (see pages 24-25)? All that remains for us is to wish everyone a great holiday. Get some well-earned rest while we work on the metamorphosis of *Resource*. When you see us again, we will be completely transformed, but still as straight, sharp and transparent as ever.

Willem Andrée, editor-in-chief

>> Campus is smoke-free from now on | p.3

STUDENTS BACK IN RUSH HOUR

As of September, students will be allowed to travel in the rush hour again, the cabinet announced last week.

Since 15 June, lessons have had to take place between 11:00 and 15:00 or after 20:00. Students still have a right to travel but the idea is that if classes only start at 11:00, most students will not be getting the train or bus at 8:30.
But the current time slot is far too restrictive for high-quality education, say the rectors of 15 universities. The cabinet is now meeting their demands for an extension of the hours, but it also says academic and applied universities in the same locality must coordinate their timetables so that not all classes start at the same time.
The new chair of the national student union LSVb, Lyle Muns, called this an important step. Students and staff will still need to keep a distance of 1.5 metres. That will lead to a shortage of space in many buildings, and not all students will be able to attend classes at the same time.
Epidemiologist Patricia Bruijning thinks tailored solutions are possible: 'Packed lecture halls are not an option but you could have a practical for a small group without keeping strictly to the 1.5 metre rule.' **HOP**

CAMPUS SMOKE-FREE FROM NOW ON

The Wageningen campus is now smoke-free. From Wednesday 1 July, smoking is banned just about everywhere on the campus.

With this new rule, WUR is implementing the national policy that obliges educational institutions to make their campuses smoke-free by 1 August. For a moment this week, the WUR Council threatened to throw a spanner in the works. The Council wanted a smoking area to be created somewhere after all. But no such facility is going to be created, says Facilities and Services director Peter Booman. 'The Executive Board can't go along with that. There is an executive order and we have got to obey it.' Signs at all the entrances to the campus will alert visitors to the fact that it is smoke-free.

> **'We are going to approach people on a positive note'**

The question is, where are the boundaries of the smoke-free zone? All grounds managed by WUR will be smoke-free. The municipality has agreed that the section of the Bornsesteeg that cuts through the campus is included. The big companies Friesland Campina (if its works council agrees) and Unilever are joining in too. As are Plus Ultra I and II, if their tenants' committee ratifies the decision in September. What is to happen at Campus Plaza has not yet been decided. Property developer Ten Brinke points out that it may be in the interests of catering outlets to allow smoking on Campus Plaza. But Booman points out the adverse consequences of creating a 'smokers' paradise'. 'There are a lot of people who really don't like sitting in a cloud of smoke. That is our starting point in discussions about this.'

ENFORCEMENT

There are very few smokers on campus. According to figures from the Trimbos Institute, 15 per cent of the staff at Dutch universities smoke. That would mean there are 855 smokers at WUR.
Enforcement of the smoking ban will be gentle, says Booman. 'We are going to approach people on a positive note.' The main focus will be on explaining the reasons for the total ban. 'And if people persist in smoking, the next step will be a meeting with their manager. So we will really be enforcing it.' The existing smoking areas on the campus will be repurposed as facilities for group work by students and staff. **RK**

WUR FROM WITHIN: STRAIGHT, SHARP AND TRANSPARENT

Over the past year, the *Resource* editorial staff have been working on the future. We have taken a critical look at our mission, identity and intentions. What is the purpose of *Resource*? The mission has been redefined as *WUR from within: straight, sharp and transparent*. That promise deserves a new design. Recently, a mock-up was made of the magazine in the new style, and we went to the printer's to feel and examine the new climate-neutral, sustainable paper. That's right, a paper *Resource* will still be published: readers tell us they appreciate that, especially now.
Seeing the new design 'live' for the first time was a special moment for the editors. More elements will gradually be presented over the next while. First there will be the revamped website, which is mainly for news and debate on topical issues. The first magazine in the new style will appear for the AID introduction week, but that is a special issue for first-years. The first regular *Resource* in the new design will be published at the start of the academic year, with features, opinion articles and dialogue. Follow *Resource* via the website and social media and stay informed!

PHOTO: WILLEM ANDREE

▲ Editor-in-chief Willem Andrée checks a proof of the new-style *Resource*.

WUR PARTNER IN ZEELAND CENTRE

WUR will be one of the partners in the Delta Knowledge Centre in Zeeland, a new alliance in the field of water, food and energy.

PHOTO: SHUTTERSTOCK

▲ Vlissingen, the home of the new Knowledge Centre.

In collaboration with Utrecht University, and HZ University of Applied Sciences and University College Roosevelt in Zeeland, Wageningen will be investigating themes such as salinization, landscapes that act as flood protection, and circular agriculture. Over the next few months, a coordinator will consult with the partners to determine the specific topics that the centre will tackle.

Tammo Bult, the Wageningen Marine Research director and a member of the Delta Knowledge Centre working group, also envisages collaboration in education with students doing exploratory studies and WUR sending professors and lecturers to the Zeeland partners on secondment. 'I expect we will get extra resources for the supervision of students.'

Bult also hopes to see joint research projects. WUR is already active in Zeeland through the Yerseke regional centre. 'I hope we can build that centre up into a broader WUR hub through which other science groups can carry out research in Zeeland too.' Bult thinks the Knowledge Centre in Vlissingen will only employ a few people, with most of the activities taking place at the Zeeland partners.

The Vlissingen centre is funded by the government, to the tune of 68 million euros for a period of 10 years. Ⓡ **AS**

CORONA SPUDS

The coronavirus lockdown has caused many potato farmers huge headaches as the market collapsed for spuds intended for French fries. Restaurants and cafes were shut, festivals cancelled and borders closed. A billion kilos of potatoes had nowhere to go. That's a pity, thought sustainable food chains programme manager Toine Timmermans of Food & Biobased Research. Of course you can make animal feed from them and there was a plan to convert the potatoes into disinfectant gel but those potatoes were grown to be eaten. Various organizations worked on a rescue plan, and that resulted in piles of potatoes in 12 locations in the Netherlands last Saturday. You could collect what you wanted in return for a donation. What didn't get taken went to foodbanks. Ⓡ **CJ, photo Sven Menschel**

COLUMN | GUIDO

New techniques

WUR seems rather like a polyamorous single on the prowl. In the past few years we have got into a Strategic Alliance with Utrecht University, UMC Utrecht and Eindhoven Technical University, a 4TU union with the University of Twente, Eindhoven University and Delft University of Technology, and a OnePlanet research centre with Radboud University, its medical centre and IMEC.

> **'These techniques are not a goal in their own right; they are tools for doing research in new ways'**

A critic might wonder whether this is really necessary. Aren't we losing our focus on the core business with all these new fields? Shouldn't you build on your strengths? There has been an undeniable shift in focus: the curriculum has changed with data science being introduced in nearly all programmes and the rector recently announced a major investment in artificial intelligence (AI) over the next few years.

I myself am a good example of that shift: after a PhD in nutrition at WUR, I brushed up my Bachelor's in AI and spent my evenings studying for a Master's in data science and information management systems (I got the certificate today!). I did so for the same reasons WUR is doing so: sensors, data and AI are the future. But these techniques are not a goal in their own right; they are tools for doing research in new ways. That is why I think the WUR strategy is so smart: all our partners may be investing in AI but only we can use it to investigate those typical Wageningen topics with new approaches. Ⓡ

Guido Camps (36) is a vet and a postdoc at the Human Nutrition department. He enjoys baking, beekeeping and unusual animals.

HOW WUR CAN RESPOND TO THE CORONAVIRUS CRISIS

WUR should invest in online education and IT, and should expect to cut its budget by 5 to 10 million euros, an internal taskforce has advised in a report for WUR on the impact of the coronavirus.

The expectation expressed in the report, 'WURld after the curve', is that fewer students will actually come to Wageningen, while more will opt for online education. Fortunately, WUR is a frontrunner with its online courses. Online education is here to stay. The Wageningen degree programmes should create blended learning programmes with more online and less face-to-face teaching and learning. The taskforce

> **'Now we need to decide what we are really good at, and concentrate on that'**

thinks this can be done without sacrificing the quality or the small-scale interaction Wageningen is known for. It also foresees an increasing demand for modular education elements, which degree students and short-course participants can take at times that suit them. WUR can respond to this demand with combinations of online education that the university offers 'free', and fee-paying education on the campus. The need for flexible timetabling will increase, so teachers will have to have a more flexible attitude to their working hours.

PHOTO: GUY ACKERMANS

▲ Aurora, the third teaching building, now under construction.

NEW MODULES FOR NEW TIMES

The increase in online education will reduce the need for places on the campus for working and studying, so WUR can save on new buildings. Education will become more sustainable in other ways too: less printed teaching material and less travel will be necessary.

The taskforce also sees new subjects springing up in the WUR domain. The education programme ought to cover themes such as 'emergency management', preventive healthcare and digitalization. In the research programme, increased attention will be paid to local and resilient food supply chains, biodiversity in relation to preventive healthcare, and artificial intelligence. Wageningen Research will also feel the effects of the coronavirus outbreak, says the taskforce. There will probably be a fall in research assignments, with less research and interaction taking place on location, but the institutes could make up for that with new online business in the form of software leasing, exploitation of databases, and online consultancy.

UPBEAT

The big question is: how serious will the economic recession be, how long will it last, and how will it affect WUR? The taskforce outlines three scenarios, but advises the Executive Board to assume the least extreme scenario to start with: one in which WUR's income drops by 5 to 10 million euros, and in which 'focus' and 'less complexity' are key.

'There was extra funding for growth in the last few years,' explains Martin Scholten, chair of the 'WURld after the curve' taskforce. 'Now we need to decide what we are really good at, and concentrate on that. Our proposal is: don't take too drastic action now, but don't just sit back and wait either. You can assume that the government will make cuts if there is a recession. If we respond to tomorrow's demand well, we can partially compensate for that.' The Executive Board broadly espouses the report's recommendations, and wants to discuss them in the various divisions of the organization, and in the WUR Council. The conclusions will form the basis for the budget and annual plans for both the university and Wageningen Research for 2021. Ⓡ AS

On 9 July, there will be a Finding Answers Together meeting on this report, which students and staff can sign up for.

BOARD TO RECONSIDER ACCOMMODATION PLAN

The coronavirus crisis and a critical memo on myWURspace from the WUR Council have prompted the Executive Board to reassess the Strategic Accommodation Plan for 2020-2025.

Wageningen Research's Central Works Council (COR) in particular is not happy with the plan to stop giving staff having their own permanent workstations and introduce hot-desking at WUR instead. According to the COR, the coronavirus crisis has shown staff are willing to work a couple of days a week at home. That means WUR needs fewer workplaces on campus.
The 'activity-based working' approach of myWURspace — where workplaces are adapted to fit employees' activities — looks good on paper, says the COR, but in practice most employees prefer working in one place throughout the day. 'Only a small minority change workplaces regularly whenever they start a different activity. This evidence from actual practice will have to be taken into account in the setup of any myWURspace office,' according to the COR.

NOT DESIRABLE

The works council also sees little support in WUR for hot-desking. Surveys carried out by the works councils of the science groups among over 1000 employees show that 80 per cent of staff are not enthusiastic about myWURspace. 'Staff recognize that the lack of office space is a problem and they want to help find a solution. But an open-plan office in combination with the end of fixed workplaces is not seen as a desirable solution.'

> **Almost 60 per cent of 1000 respondents want to work from home permanently one or two days a week**

According to the Central Works Council, WUR needs to create a setup whereby all staff can concentrate properly on their work and which encourages cooperation between groups. Working from home could help, says the COR. Recent surveys in the Agrotechnology & Food Sciences Group AFSG and School of Social Sciences SSG showed that almost 60 per cent of the 1000 respondents would like to work one or two days a week from home on a permanent basis. Only 17 per cent would not want to do this, says the COR.
Board member Rens Buchwaldt appreciates the input from the WUR Council and will take it into account when reassessing the accommodation plan. The revised plan is expected after the summer holidays. **AS**

WUR AND STUDENT SOCIETIES SIGN RESPONSIBLE CONDUCT AGREEMENT

Ten Wageningen student societies have signed an agreement with the university on responsible conduct.

Rector magnificus Arthur Mol signed the document on Monday 29 June on behalf of the university. 'We hadn't needed such an agreement before because relations have always been positive in Wageningen. When there were a number of controversial incidents in Groningen two years ago, we did discuss the option of an agreement with the societies. We all decided then that it would be a good idea to officially record what we had agreed. That shows the outside world that you take your responsibilities seriously as a student society and as a university.'
The Responsible Conduct document may be new but the content is not. Mol: 'It basically contains the arrangements we already had, but now they are clearly set out in writing. The idea is that the document will be publically available, both via the societies and via the university.'
The document contains agreements on responsible alcohol consumption, for instance. Confidential contact person Amber Laan, chair of KSV Franciscus: 'In my opinion, there is not much risk of incidents in Wageningen anyway. This document reduces that risk even further.' Laan says it took a while to reach a consensus. 'The details had to be properly aligned. But in the end all the parties have the same goal. What the university wants from a student society is the same as what the societies themselves want.'
The agreement documents what is expected of the societies and the university. For example, the societies must have a confidential contact person and the university must offer training for this post for two members from each society. The student societies must submit their introduction programme to a doctor for an assessment of the mental and physical impact and hygiene aspects. WUR will provide the doctor. Discrimination and sexual or otherwise inappropriate behaviour and remarks are forbidden. Laan: 'In other words, a number of agreements have now been officially recorded, providing further guarantees of safety.' **LZ**

For a link to the agreement, see the online version of this article at www.resource.wur.nl

PHOTO: ANNA DEN HARTOG

▲ A relaxed introduction to the student societies for first-years. Summer 2019.

KNOTWEED BREEDS WITH RUSSIAN VINE

Japanese knotweed reproduces vegetatively, but can also do so through pollination, shows research by WUR and Probos. Which is bad news.

Japanese knotweed, which is spreading along verges and the banks of ditches, is female. The plant spreads by means of vegetative reproduction through rhizomes and shoots. So there was great astonishment two summers ago, when several plants with seeds were suddenly found. How could that be?, Researchers at WUR and the Probos foundation set about finding out, at the behest of the Netherlands Food and Consumer Product Safety Authority (NVWA).
Not only did the seed turn out to be capable of germinating, but in the greenhouse, plants grew from all the seeds, says researcher Chris van Dijk (Wageningen Plant Research). 'But the shape of the leaves was different. Longer and redder.' Further research showed that this was a cross between Japanese knotweed and a Chinese hybrid of Russian vine (*Fallopia x conollyana*).
In theory, this is bad news. Reproduction through germination gives this weed another way of continuing its invasion of north-west Europe. But so far the impact is not too big. 'The good news is that we haven't found this happening outside the greenhouse yet. There seems to be something stopping the seed from germinating in the wild. The hybrid is less vigorous and much less competitive than the Japanese knotweed.'

> **'The good news is that we haven't found it outside the greenhouse yet'**

BAN

'But that doesn't make it impossible,' adds Van Dijk. Pollination by another variety of knotweed in the wild or in a garden is not ruled out. 'And that would then produce a true knotweed with the growth capacity of the parent plants. That is why the NVWA recently advised the government to destroy all the male plants and ban trade in knotweeds.'

PHOTO: SHUTTERSTOCK

▲ The 'common' Japanese knotweed

Underpinning that advice is the Wageningen research. 'We've been saying for a long time that trade should be banned and the plant should go on the European list of invasive species,' says Van Dijk. He also argues for better control. 'The approach has been decentralized and is much too fragmented. Landscape managers are all inventing the wheel for themselves. Actually, it's just like the situation with the oak processsionary caterpillar.'
The potential for a new approach is now being explored by the Dutch knowledge network on invasive species set up by Van Dijk and others. The network collates knowledge and expertise on how to tackle invasive species, and lobbies for more research on controlling such species. In the case of the knotweed, Van Dijk has in mind a method which deals with the rhizomes without having to dig up the soil rigorously. 'For example, by making use of soil pathogens or by applying heat treatment on the spot.' **RK**

AFRICAN CASSAVA YIELDS CAN BE IMPROVED

African farmers could increase their cassava yield threefold if they improve their management and growing conditions.

This is the conclusion of a PhD study conducted by Joy Geraldine Adiele in West Africa.
Adiele carried out field studies at six different locations in West Africa over a two-year timespan. She defended her thesis on 30 June. Her supervisor is Ken Giller, professor of Plant-based Production Systems. One of the opponents is WUR President Louise Fresco, who also obtained her PhD in Wageningen on cassava research in Africa many years ago.
The cassava (Manihot esculenta Crantz) is an important food crop, as its roots are full of carbohydrates. It is cultivated in 40 of the 52 sub-Saharan countries in Africa, but the yield is generally low. Better growing conditions and nutrient management could increase the yield to 35 tons per hectare annually, showed field trials by Adiele and her colleagues.

CHIPS

The combination of the fertilizers nitrogen, phosphate and potassium, in particular, led to better harvests. The yield gap between the potential and the actual yield turned out to be bigger than expected. The main reasons for the unsatisfactory harvests were the poor soil quality, mediocre planting material, bad weed management and wrongly applied fertilizer.
In spite of all this, cassava is still a good alternative to arable farming, claims says. This is because cassava utilizes nutrients more effectively, produces more crop per kilo of nitrogen and is more resilient to unfavourable weather conditions. If farmers become more skilled at cultivating and fertilizing the crop, cassava could play an important role in Africa's food supply.
Adiele also recommends strengthening the value chains that process cassava into cakes, porridge and chips. **AS**

MUCOUS MEMBRANE IN GILLS KEEPS FISH HEALTHY

Fish excrete in the same water from which they obtain their oxygen. So how do they stay healthy? Through an ingenious and sensitive system in the gills.

'Gills are possibly even more interesting than brains,' says Geert Wiegertjes, Wageningen professor of Aquaculture and Fisheries. 'Gills function as lungs, kidneys and an immune system. Brains cannot compete for complexity.' In collaboration with international colleagues, he studied which tissues in the gills are crucial to the fish's health and how these tissues have developed through evolution.
Gills are used by fish to extract not just oxygen but also minerals from the water. Fish inhale oxygen and exhale carbon dioxide and ammonia, all through the water. However, that same water also contains infectious microorganisms that threaten the fish's health. How do they keep these at bay?

ZEBRAFISH
Researchers discovered a few years back that lymphoid tissue in the gills plays a crucial role in the defence against microorganisms in the water, in much the same way as the lymph glands around our lungs help protect us against airborne pathogens.
Recently, a new tissue structure was discovered in salmon — interbranchial lymphoid tissue (ILT) — that turns out also to play an important role.
In a new publication in *Biology*, Wiegertjes and his international colleagues show how these ILTs have evolved over time, not just in salmon but in other types of bony fish as well. The study shows that both large carp and small zebrafish have this tissue structure, but evolution has led to major differences in the way these lymphoid structures are organized.

> **'Brains cannot compete with gills for complexity'**

IMMUNITY
Wiegertjes now aims to find out whether fish, like humans, have an immune system comprised of the different mucous membranes throughout the body. In the case of fish, this mucous defence system could be located in both the intestines and the gills. The scientists hope this knowledge will allow the development of food additives that can fortify the fish's natural immunity, making them more resistant to disease. The researchers are focusing not just on intensive salmon farming but also on the less intensive farming of tilapia, for example. **AS**

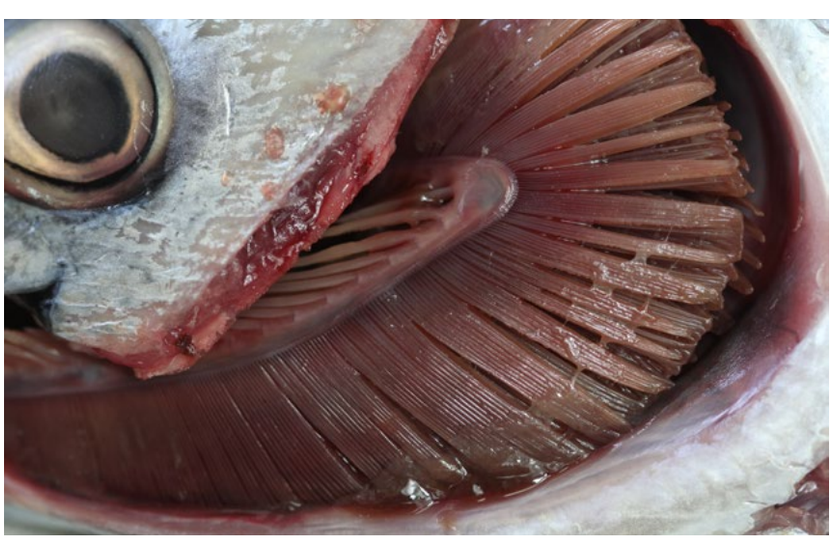
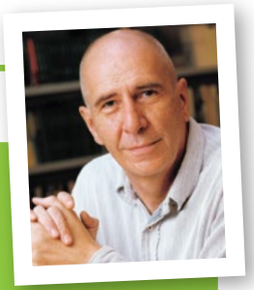


PHOTO: SHUTTERSTOCK



VISION

The hefty price tag on biodiversity loss

Dutch banks, insurance companies and pension funds could see investments worth hundreds of billions go up in smoke due to loss of biodiversity, say the Dutch central bank DNB and the Netherlands Environmental Assessment Agency (PBL). A wake-up call? That remains to be seen, says emeritus professor Matthijs Schouten (Ecology and Nature Management).

According to the PBL and the DNB, the Dutch financial sector is vulnerable to biodiversity loss, partly due to the 500 billion euros they have invested in companies that are highly dependent on ecosystem services. Schouten: 'An understanding of the economic value of biodiversity, or, more broadly, nature, is nothing new. It was scientifically proven a long time ago, for instance, that nature contributes substantially to people's wellbeing, and saves the Netherlands alone at least two billion euros a year in healthcare costs. We have also known for a long time that leisure activities out in nature generate billions of euros per year, possibly more than agriculture if calculated per hectare. And yet we see none of that reflected in the economic models adopted by the Netherlands, in which nature is conspicuous for its absence.'

Will this study by PBL/DNB change that?
'I doubt it. Politicians have underestimated the economic value of nature for many decades. I think it's a good development in itself that the DNB and the PBL are now warning so explicitly about the economic and financial risks of biodiversity loss. But society is so used to taking nature for granted and seeing it as a consumer good that you can use to your heart's content without ever paying a price... I doubt whether the warning from the DNB and the PBL will have enough impact to turn the tide. I reckon the lockdown period we've just had will influence the way we think about nature far more.'

You mean because we've experienced nature without the traffic noise, vapour trails and air pollution?
'Yes. Here in the Netherlands that was quite an experience at times, so just imagine what it was like in places like Delhi: young people there could see the peaks of the Himalaya on the horizon for the first time in their lives. An experience like that can have a life-changing impact. I don't expect a report like this one from the PBL to have much impact, but I am hopeful that the coronavirus crisis will bring about real change. I'm noticing that the younger generations in particular really do want us to change course.' **ME**

CORONA-PROOF AT SEA

Scientists on board the fisheries research ship *De Tridens* try to tie the lines to their measuring equipment while keeping a coronavirus-proof distance of 1.5 metres apart. Every year, Wageningen Marine Research carries out acoustic studies of herring in the North Sea in order to estimate the size of the herring and sprat population. But first the team needs to align the devices for the echolocation using a 'calibration ball'. You need the help of several people to attach this ball to the lines. It is even more of a challenge doing this while keeping to the corona rules. **TL**

PHOTO: BRAM COUPERUS, WMR

TACKLING DROUGHT ON HIGH SANDY GROUND

Drought can be combatted by improving water retention. WUR is going to lead the way with the Klimap project.

This is the third consecutive year that the Netherlands has experienced extremely dry conditions. It is impossible to control rainfall, but once rain has fallen, the water could be put to much better use. WUR and 23 other parties will join forces to achieve this through a project called Klimap (short for 'climate adaptation in practice'). The project leader is Myriam de Graaf of the Soil, Water and Land Use chair group.
De Graaf won't be able to solve the whole drought problem at one go. 'But Klimap does map the route towards more climate-proof land use.' The approach targets the sandy soils on higher ground in the Netherlands, where the drought is worst. In essence, the method is simple. 'We must fend for ourselves,' De Graaf states. 'We must use as much of the water as we can, rather than letting it just flow into the sea.' Various water authorities, provincial governments and research institutes are collaborating in Klimap, designing 'development paths' to get everyone on the same page. 'These are descriptions of the process, meant to ensure everyone is aware of their particular role,' De Graaf clarifies. 'What path does your role require you to take? What should water authorities do and how can you motivate farmers and nature managers?'

WORMS

In addition to these development paths, the project also addresses the measures needed in order to protect the country from drought. The measures and methods will be tested in living labs and trial plots. 'We don't have to start from scratch,' De Graaf stresses. 'Much has already been developed in this area.' She gives the example of the Lumbricus project (*lumbricus* is Latin for worm), which maps and analyses climate adaptation measures in the field.

> **'We must use as much water as we can, rather than letting it flow into the sea'**

'Consider, for example, research on the effect of worms on the soil's infiltration capacity,' De Graaf explains, 'or the use of sub-irrigation.' Sub-irrigation is a type of reversed drainage, where the tubes that normally serve to drain excess water are used to supply water instead. 'This research could be extended to include a study on the effects of sub-irrigation on the quality of groundwater, or other information that has been lacking to date.'
A third branch of the project is calculating the potential effect of local measures on the water system on a larger scale. In other words: how would a measure help combat climate change if it was upscaled? The Klimap project spans four years and will cost six million euros. Its financiers include the Top Sectors, water authorities and provincial governments. Nature organizations and other water users will provide a sounding board for the project. **RK**

PHOTO: SHUTTERSTOCK, JASPER SUIJTEN

WUR INVESTS HEAVILY IN ARTIFICIAL INTELLIGENCE

WUR is set to invest heavily in data sciences and artificial intelligence (AI) over the next five years. Three additional professors, six part-time experts and one research coordinator are to be recruited.

In total, the university will spend an additional 800,000 euros annually on AI research over the next five years. That is on top of the money in the strategic plan for the Digital Twins theme. The investment decision by the Executive Board follows an advisory report by the Wageningen Data Competence Centre. According to the advisory committee, digital technology, new software and algorithms are increasingly affecting the Wageningen research domains of nutrition, nature, agriculture, the climate, health and the economy. That is why WUR should invest in combining data science and domain expertise. Investments in data management and infrastructure are needed to facilitate this. The collaboration with Utrecht and Eindhoven universities helps Wageningen keep up to date with the more fundamental developments in data science and AI.

> **The three professors will work on the Digital Twins investment theme**

The board plans to appoint three full-time professors in a flexible role interacting with different groups and tasked with developing a joint research programme with external partners. A further six part-time professors will bring in expertise from other universities and Wageningen Research through this same research programme. WUR will also recruit a Data Science Alliance Manager responsible for organizing AI programmes with national and international partners. Moreover, grants will become available to further shape the extensive research programme that links the AI groups.

DIGITAL TWINS

The advisory committee concludes that many chair groups currently have expertise in data science but most are not using this knowledge to its full potential. WUR does not have a big external presence in the field of data science. WUR also lacks expertise in the infrastructure required to create these links.

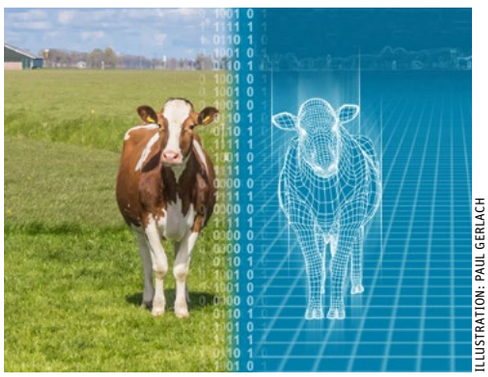


ILLUSTRATION: PAUL GERLACH

The three new professors will work on the Digital Twins investment theme. This theme focuses on the methodology, societal aspects and application of data science and AI. **AS**

PROPOSITION

‘We have not taken biodiversity to heart’

PhD candidates are expected to submit a set of propositions with their thesis. In this feature, they explain their most thought-provoking proposition. This time, Nowella Anyango-Van Zwieten of the Forest and Nature Conservation Policy Group , who obtained her PhD on 12 June for her research on nature conservation funding.

While researching the funding of nature conservation, PhD candidate Nowella Anyango-Van Zwieten realized the real problem was not lack of money. That’s why she proposes: *Capitalism is not the root of the nature problem; indifference is.*

Very often, even in the scientific literature, capitalism is given as the root cause of the deterioration of nature. Capitalism is portrayed as a wild, uncontrollable monster seeking profit everywhere. I agree that capitalism is highly problematic, and is a major driver of the careless way we treat nature. But the beast can be tamed. I don’t think we should point at an external cause of our heedless destruction of nature, because this is mainly an internal problem. It’s a matter of the heart. How we spend our money shows what we value most.

‘The highest estimate of the sum that would be needed to protect global biodiversity is seven trillion US dollars per year. That sounds like a lot. But if you look at it in the context of the global economy, it is only a drop in the ocean. It is nothing in comparison with other funding such as agricultural subsidies or international aid. For example, of all the aid that goes to Africa, only about one per cent goes to the environment. We have not really taken biodiversity to heart yet, and it gets very low priority.

‘Look at what’s happening now with the coronavirus crisis, and how much money has become available to prop up the economy. I’m sure if we really wanted to, we could raise the funds needed to protect all the biodiversity on the planet in a matter of weeks. But that won’t happen as long as we keep thinking the problem is external. We have to own it. Not just as individuals but also at the level of governments and industries. As long as we don’t, species will keep on becoming extinct at a rapid rate.’ **TL**

> **‘We have not really taken biodiversity to heart yet, and it gets very low priority’**

TEACHERS PREFER

CLASSROOMS

Does online teaching work? Can teachers get their material across to students properly? And above all: do they like teaching like this? Spoiler 1: yes, it's doable on the whole. Spoiler 2: but it's not nearly as nice.

text Roelof Kleis *illustrations* Yvonne Kroese

Not the sort of package that comes in the post every day: two weeks ago, students on the Animal Ecology Master's course received a box of 10 snails, temporarily housed in the kind of tub kebabs come in. Vineyard snails of different sizes so the students could conduct some grazing experiments at home. The packages came from Ignas Heitkönig, who teaches Wildlife Ecology & Conservation. He ordered 1700 of them from a supplier in Brabant. Normally, that component of the Master's course takes place at the Nergena experimental farm in the Binnenveld near the campus. And the test subjects are not snails but cows, horses, sheep and rabbits. Students work in groups and apply the theory and modelling methods they have learned about in the previous weeks. 'Students love being out in the field together working with the animals,' says Heitkönig. 'They think fieldwork is great!''

EVERYDAY CHEMISTRY

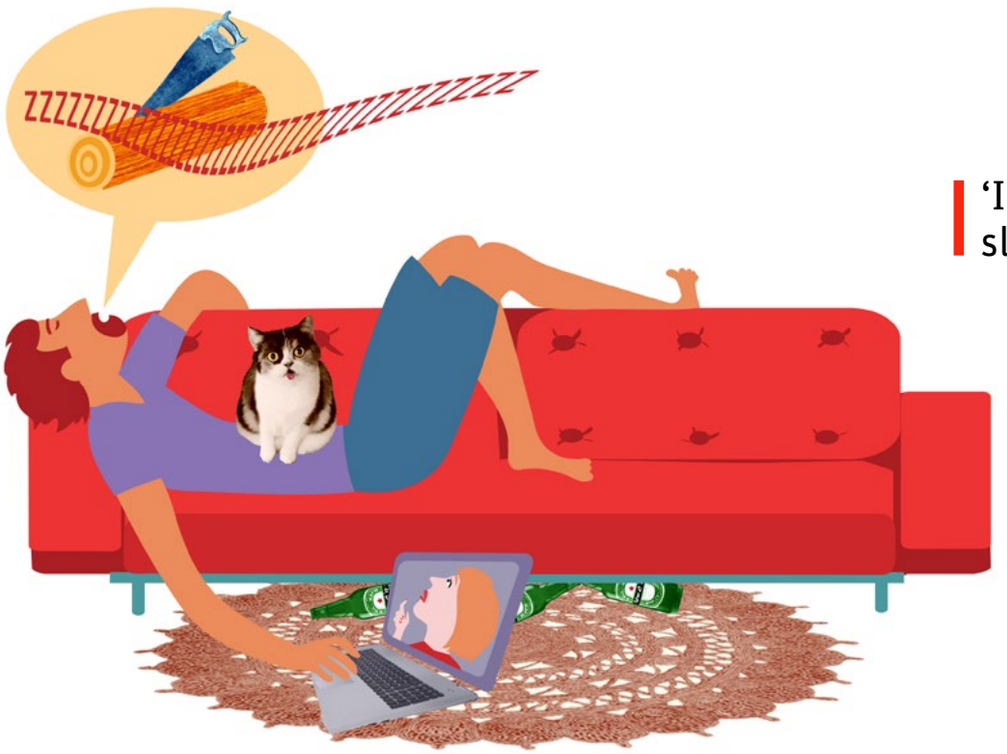
But they can't do it while the coronavirus crisis lasts, so Heitkönig and his team came up with the snail option. 'Students have to build a little stadium of 50 by 50 centimetres with various obstacles dotted around it. We've put knowledge clips online explaining how to look after and feed the snails. The idea is for them to record what they eat, how fast they move, and that sort of thing. You can test all kinds of theory-based questions in a stadium like that.'

Hendra Willemen, who teaches Organic Chemistry, had to put the first-year course Bio-Organic Chemistry for the Life Sciences online from one day to the next at the beginning of period 5. 'You could do the theoretical component online all right,' she says, looking back. 'But you can't do a chemistry practical online.' But then she realized that a kitchen is a kind of lab too. 'A lot of chemistry goes on in the kitchen. When you make coffee you are using extraction and filtration processes. And you can do a lot with common or garden substances such as soda, washing-up liquid or vinegar. It's not high-level chemistry, but there are things you can demonstrate.'

> 'You can do chemistry experiments at home with soda, washing-up liquid and vinegar'

So together with her colleagues, Willemen thought up a large number of little experiments to do at home. Make a whole litre of tea with one teabag, for instance. Do it again, but this time use 250 ml water four times in a row. Combine these four portions of tea and compare the result with that first litre. Which tea is darker, and why? A page was created online for describing the experiments, uploading photos of the homework, and discussing it.

Just like Willemen, Sjoerd Brandsma and his colleagues at Landscape Architecture and Spatial Planning faced the task of teaching a highly practical course like Studio Regional Design online. 'This course is very intensive and important for our chair group,' explains Brandsma. 'The system is that students first analyse a landscape together in groups, and then, after being taught some theory, work individually on an assignment to design a location. The task might be about dealing with drought, for instance, or developing nature. In this case, the area in question was



‘It gave me sleepless nights’

Het Groene Woud, a nature area between Eindhoven, Breda and Tilburg.’
On excursions to the area, the students learn how to analyse it and to read a landscape. But that wasn’t possible this time. Brandsma: ‘To enable them to get to know the area anyway, we asked students from previous years to share photos. We also made videos of the area available, and we explained in more detail what the landscape is like.’
The actual design process took place on online platforms

‘Because of the isolation, students rely more on their own perceptions and skills’

where students could work and consult each other in groups of six. The studio took the form of a digital noticeboard on which students could put whatever they wanted and where they could see each other’s work.

LACK OF CONTACT

Brandsma is quite satisfied with the alternative way of teaching the course that the team came up with. ‘First of all because we kept all the students on board. This is one of the toughest courses in our programme. We managed to have something to offer them without lowering the bar. So the learning goals were reached. But I don’t think this is really a teaching method that works for our subject. The students were very understanding, and they thought it was great that we managed all this in such a short time. But there is a lack of direct contact. Normally, you can see when someone is getting stuck and you can work with them. You brainstorm and you sketch, and you get somewhere. To become a good designer, you need an experienced designer to look over your shoulder. That aspect of design education is missing from this version of it.’
The sense of a lack of contact that Brandsma describes is shared by nearly all the teachers. Research by Tim Stevens (Education and Learning Sciences) on the transition from classroom to online education also highlights the lack of direct, personal contact with students as a major disadvantage of online teaching. Stevens did a survey amongst a large number of teachers after the end of period 5, asking them about their first experience of teaching online. The majority of the teachers think teaching online has a negative effect on the learning process. It compares badly with face-to-face teaching in terms of the students’ motivation and involvement, the interaction between students, and the feedback they get from teachers.
It’s not easy giving feedback online. Stevens thinks teachers do not make much use of the available online options for giving feedback. ‘Only 15 per cent of the teachers use tools like FeedbackFruits, quizzes and rubrics. Sometimes the reason is that they had to make the switch so fast. Giving feedback takes a lot of preparation. I’m interested to see whether those tools will be used more in the coming periods, now that teachers are better prepared.’ But interestingly, in the course evaluations that students fill in at the end of every course, they don’t report missing the feedback at all. Students are satisfied with the interaction with the teachers. Stevens comments: ‘The teachers are comparing online with traditional teaching, whereas the students were responding in a course evaluation. That’s not the same thing. It may be that students have borne in mind the context in which the course was given. In which case, they meant: under the circumstances, I am satisfied. So we are going to conduct another survey amongst students, asking them the same question we asked the teachers: do you feel the learning process goes better online or in the classroom?’

The lack of direct contact also has an impact on the teachers' job satisfaction. About 60 per cent of the teachers say they don't like teaching online, shows Stevens' study. 'No,' says Katja Teerds (Human and Animal Physiology) categorically, when asked whether teaching online is nice. 'I sorely miss the interaction with the students.' She was involved in three courses during period 5, including her 'own' Master's course Brains, Hormones and Metabolism. 'We heard on the Friday that everything had to be online by Monday.' All the lectures had to be recorded. 'We didn't have anything on video, because I was never a great fan of that. I like the direct contact with the students much too much for that.' The tutorials went online on Brightspace, and a virtual classroom was set up on a fairly regular basis to provide extra contact moments. But that is no substitute for real contact. 'When you teach a class the normal way, you can see what's going on in a group. You can gauge the group,' says Teerds. 'That is missing now. On the basis of my experience, I know which part of the material students find difficult, and I pay extra attention to that, but online you hardly get any questions.'

It still works, though. 'Amazingly well, in fact,' says Teerds. 'For the tutorials I have asked the students to upload their answers to the questions a day ahead. Then I make a PowerPoint presentation with the answers, and I go over them online. And guess what? The students' answers were far more extensive than they were in tutorials in the past. The students worked on the material far more intensively.'

Teerds had the same experience with the online histology practical that she is now giving during period 6. The students don't get to peer through a microscope this time. Instead, they study microscope images on a CD-ROM at home. Teerds: 'They used to use those images as a sort of reference point alongside their microscope. Now they work with them in a very different way. Much more intensively.' She can explain that. 'In the classroom there are six of you around a table, and two people to one microscope. So if one student isn't in the mood, it affects the others. Students influence each other's behaviour. Now they are on their own at home without those distractions.'

WORK PRESSURE

Brandsma has had the same experience in his design studio. 'Because students are working more in isolation, they focus better. They are not distracted by each other. The isolation makes students rely much more on their own perceptions and skills. I find that very striking and nice to see. In their own rooms they are not distracted and influenced by what the others are up to. And you get a greater diversity in what they make, which is good to see. We should try to make use of this experience after the coronavirus crisis is over.'

Hendra Willemen looks back on her kitchen experiments with pleasure. 'They gave me some positive energy. But they certainly aren't a good substitute for working in a real lab. You can't acquire the same practical skills as you can in a lab. In that sense, certain learning goals are not being reached. The context is different. An extractor fan is not a fume hood, and a glass jar is not a conical flask.' Giving a lecture online is not nice either. 'You are talking into a bit of a vacuum. You don't know whether your students can follow you, and you don't get any questions. Under the circumstances, it was acceptable, but you can't always teach like that. After the summer vacation we shall teach this course again. Luckily we can then give part of the practical on campus. I'm pleased about that. We really want to go back to the teaching lab.'

'I throw myself into it, and it is challenging,' says Heitkönig. 'I don't want to blow my own trumpet, but in the first few weeks I was working 16 hours a day, at the expense of my sleep. It gave me sleepless nights. What should we do with the foreign students, for instance? We couldn't post snails to them. They had to find their own snails, and that is not easy. Just yesterday evening I got an email from Chile: It is winter here and there are no snails to be found.

> 'The transition to online has made me more creative. But is it nice? No'

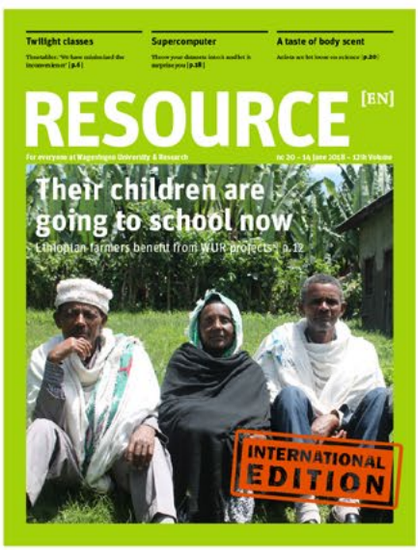
And anyway, there is a lockdown and I'm not allowed outside.'

The extra work pressure for teachers is reflected in Stevens' research findings too. Two out of three teachers are experiencing more stress due to teaching online. And four out of five are working longer hours. 'The transition to online has made me more creative and I get ideas for conveying information in new ways,' says Heitkönig. 'But do I like it? No, a resounding no! I miss the direct contact on all fronts, being able to look each other in the eye. But funnily enough, the learning goals are not in danger. We think we have covered them all by this method. The only question is whether every individual student will actually achieve the goals. It's hard to give a grade for group work if you have no idea what went on in the groups. We have to manage with what we hear about it. That's not at all credible, educationally speaking.' Ⓡ

You can read about students' experiences of online education on pages 24 and 25.

ONE LAST TIME...

Steering a new course is great but looking back can be just as fun. Leafing through the *Resource* archives is like taking a trip through WUR's history. This layout will be history too as of mid-August when the magazine, the website and our social media get a complete makeover. But before that happens, we take one last fascinating look at the past. A tip from the editors: go to our website Resource.wur.nl, click on 'Magazines' and indulge in some nostalgia. Be amazed at how different some things used to be, yet how other things never change. Ⓡ WA

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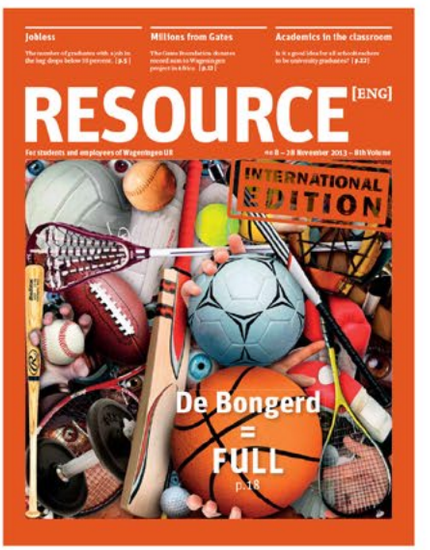
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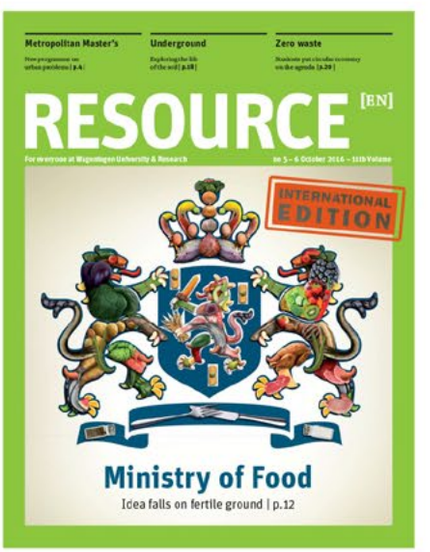
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EEN KOE OP MAAT

An African perspective

The new African Philosophy course given by Birgit Boogaard has won the WUR excellent education prize in the 'specialized courses' category. *Resource* talked to her about this unusual discipline.

text Tessa Louwerens *Illustration* Birgit Boogaard

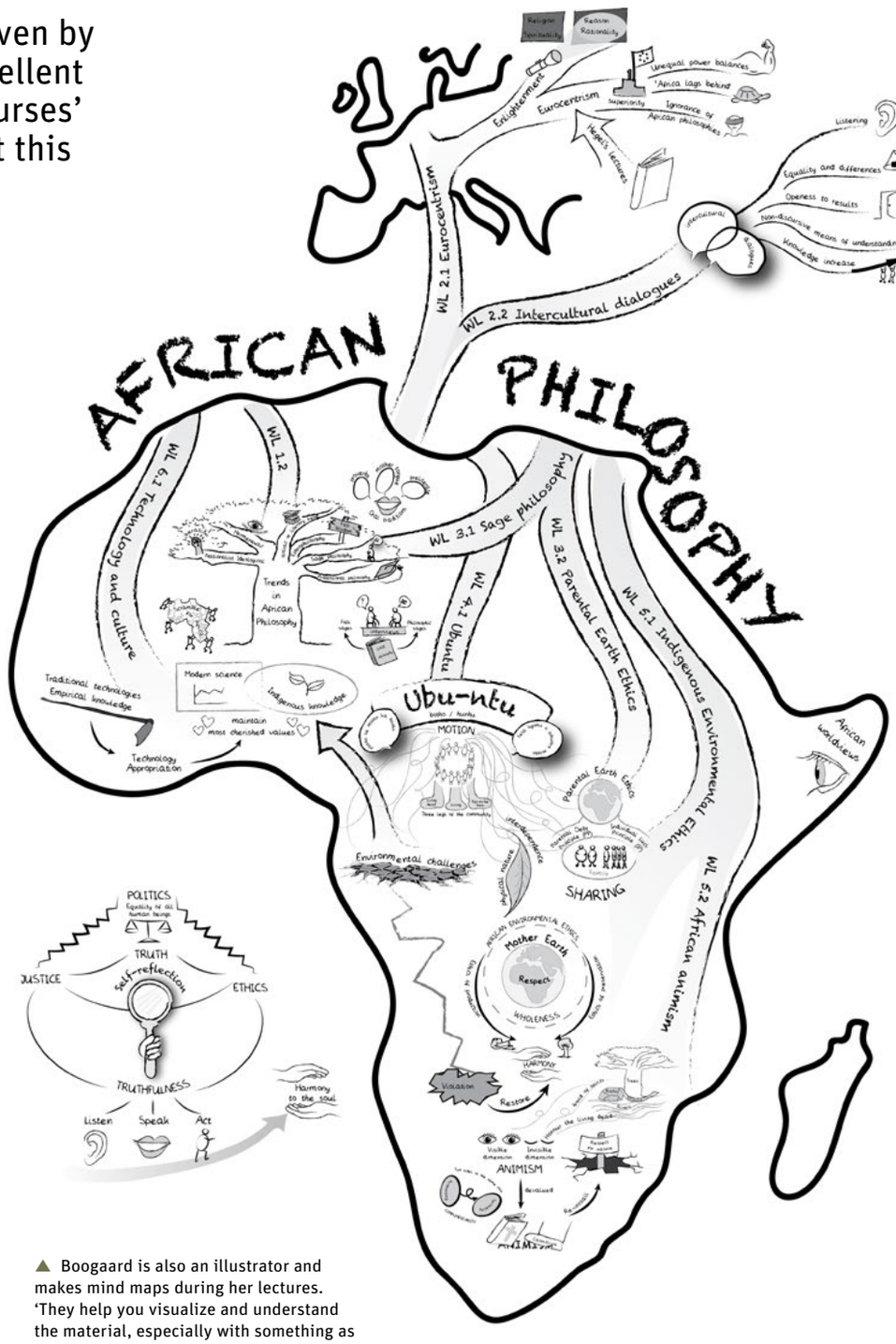
'It is a tremendous gesture of recognition for this relatively new discipline at WUR,' Boogaard tells me on Skype. Behind her hangs a cloth with an African print on it from Mozambique. 'I usually use that in lectures, but now it is handy for keeping stuff in.' Boogaard has spent a lot of time in Africa herself, including two years living in Mozambique, where she did her postdoc. She takes her experience of Africa into the classroom with her. 'It is important to realize that we think and see the world from a European perspective.' For many students, that is an eye-opener. 'I tell my students about our project in Mozambique, and get them thinking about it. In what ways was my thinking there Eurocentric?'

ASSUMPTIONS

In Mozambique, Boogaard worked on a development project for goat farmers. 'We helped them increase their production and generate more income. We got goat farmers involved and asked what their priorities were.' But Boogaards didn't ask the crucial question: what does development mean to these people? Is it only economic development? 'The concept "development" incorporates the assumption that Africa is backward and that people there need help to get to our Western level.' This Eurocentric thinking is problematic, says Boogaards, without judging anyone. 'This is how we have been brought up and educated. We do things with the "best of intentions", often in ignorance. The thing is to become aware of it.'

WORLD VIEW

Boogaard wants her course to open up another world view. 'When I was a student, I would have loved to have had this awareness before I went to Africa. I had very open discussions with goat farmers but I still felt I was missing something. When I got back to the Netherlands I



▲ Boogaard is also an illustrator and makes mind maps during her lectures. 'They help you visualize and understand the material, especially with something as abstract as philosophy.'

on African problems

happened to get talking to intercultural philosopher Heinz Kimmerle (1930-2016), who has written a lot about Eurocentrism in philosophy. It was from him that I first heard about African philosophy. That's when the penny dropped.'

In Mozambique, Boogaard did research on the role of goats in the community. 'People talked about their ancestors, and I understood that they played an important role, but couldn't exactly put my finger on it.' Through African philosophy, she learned that an African community consists not only of the living but also of the living dead – usually called ancestors – and the yet unborn.

'This invisible world is often hard to understand from a Western perspective, and was wrongly seen by colonialists as inferior and primitive. But a better understanding of it gives us deeper insight into things like people's relationship with nature and the sustainable use of natural resources. You thank your ancestors for leaving you the land, and you make sure you leave it in good condition for the generations that come after you. That is something we in the West could learn from, instead of saying these farmers are not commercially minded enough and we will help them increase production.'

This was how Boogaard hit upon the idea of

> 'The concept "development" implies the assumption that Africa is backward'

launching an elective course on African Philosophy at WUR in 2018. 'We need this perspective. Especially in the international context WUR is working in. It teaches you to look through a different lens at the big issues surrounding WUR topics such as the food supply, nature conservation and the environment.'

RELATIONSHIP

Boogaard emphasizes that the course is an introduction to African philosophy. 'Africa is vast and diverse, and that applies to philosophy there as well. We touch on a few subjects, such as Ubuntu, an important philosophy that has spread all over Africa.' One saying in Ubuntu philosophy is *Umuntu ngumuntu ngabantu* in Zulu. Roughly translated, it means: A person is a person thanks to other people, or: I am because we are. Boogaard: 'It assumes that your humanity is confirmed in relationship with other people.' She seeks to create that sense of relationship in her classroom as well. 'We don't just study the philosophy: I want the students to experience it too. The basis for a respectful dialogue is to listen without judgement.' To practise that, the students interviewed each other about their points of view. 'They practise with the aim of not just understanding what the other person is saying rationally, but also really seeing the other with their hearts.' Boogaard is impressed by her students. 'It amazes me how good they are at looking at themselves critically, and how they have the courage to do so. Especially at their young age.'

> 'As a student I would love to have had this awareness before I went to Africa'

The course covers a number of African philosophers, and Boogaard sees herself primarily as a facilitator. 'I grew up in a Western environment myself, with a Western education and culture. What I teach now is based on the input of African philosophers. That way, the students get an African perspective on African problems.' Boogaard hopes the prize will lead to the course becoming a systematic part of the curriculum. 'The fact that students appreciate this course so much shows that it meets a need.'

COVID-19
The nicer sides

Of course, no one wanted a pandemic and no one is happy about it. And yet, the coronavirus crisis hasn't been all gloom and doom. So *Resource* asked students and staff about the positive side effects of this crisis.

text Resource editors *illustration* Henk van Ruitenbeek

Frank Menting

DLO applied sciences researcher

'Unlike many others, I've been doing more practical work during the crisis than I did before it. I stood in for a colleague who lives a long way away, and went to the greenhouses every day. I thoroughly enjoyed that, and I learned a lot from it too. I do the rest of my work at home, and I find I can concentrate better there than at the office, where people often pop in with questions. **Now I'm working alongside my wife, who already worked at home.** That's nice, because I've got to know another side of her, and also we can have a pleasant coffee break in the garden.' **NvhWH**

Lidy de Vreede

Secretary to the Consumption and Healthy Lifestyles chair group

'The coronavirus crisis has made my life calmer and I see the same thing among people around me. Of course, work goes on, but outside it there are fewer obligations and expectations. Until recently, we couldn't go to the pub, the cinema or birthday parties. And at work we don't all have to rush from one location to another now. **Working at home did force me to learn to make more use of technology.** Which was positive too, because it has made me learn new skills. And I've got to know the people I work with in new ways. On Skype and Teams you see other sides to people and discover your colleagues' hidden talents.' **NvhWH**

Allert Smit

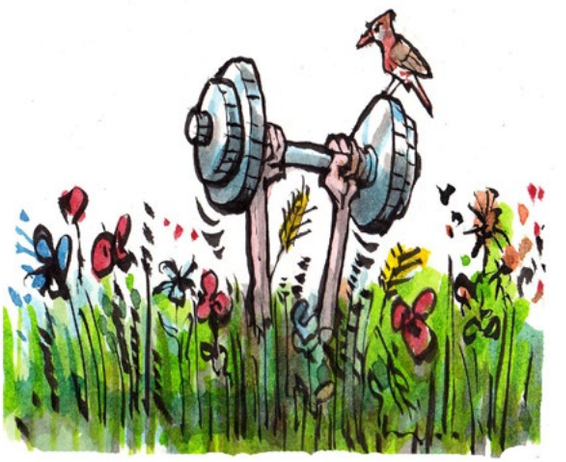
who just graduated with an MSc in Biology

'When Covid-19 was still something that was happening in Asia, I fell in love. I met an amazing girl who has now been my girlfriend for about half a year. At the beginning of my previous relationships, it could be quite tricky to find sufficient time to get to know each other well. You are both busy living your own lives. **But when the lockdown started, and our normal everyday lives collapsed, I could suddenly spend all the time in the world with my new crush.** I regard this as a big advantage. We could be together as much as we wanted, and take a moment for ourselves when we needed it as well. We got to know each other very well in a short time, and I think this way we have created a steady foundation for a healthy relationship.' Ⓡ CJ

Maaike de Jong

Education innovator & lecturer

'Like many others, I have mainly worked at home in recent months. I am not a fan of that, I teach a lot, and there are many disadvantages to online education, but I have managed to get some positive things out of it too. As you can hear in the background, we've got a lot of animals here. **We've got a large shared garden and we keep chickens, turkeys and pigs. I really like being able to divide my time more flexibly.** Normally, I was in a rush in the morning to look after everybody and then get to the uni in time. Now I don't have to rush as much, and I can still take time for them later in the day. The turkeys have got chicks, and I'm seeing a lot more of what goes on now I'm working at home. And when it's very hot, you can start a bit earlier, take it easy in the afternoon and then do a few hours in the evening. You live more in tune with your natural diurnal rhythm.' Ⓡ CJ



Stefanus Mega Prabawa

MSc student of Food Technology

'Before Covid-19, I spent most of my time on campus, studying on one of the PCs. The university buildings were still open until 11 in the evening and during study weeks even until midnight. Now all the buildings close at six, which means I can spend less time studying on campus. **To make use of the extra spare time, I started working out in the park with some Indonesian friends. Currently, there are about 15 of us. First we go jogging for 30 minutes and after that we do fitness exercises.** At the weekends, we sometimes cook together and nowadays people from Mexico, India and the Netherlands join our group too.' Ⓡ LZ

Marthe Wassink

BSc student of Soil, Water, Atmosphere

'For me, the coronacrisis was very stressful on the one hand, but on the other hand it was also a very peaceful time for my housemates and me. I have learned to take more time for myself and to take it easy. **We do yoga every morning together, for instance. And I've bought an electric piano.** It is very nice to practise again every day. What I want to take with me after the crisis: to be in the moment more. The crisis has brought so much uncertainty about the future that it might be better to enjoy the here and now. And to make the best of it together.' Ⓡ LZ

Developing digital technology together

Covid-19 rules permitting, OnePlanet will move into PlusUltra II on the Wageningen campus in September. But the new 'knowledge coalition' of imec, WUR, Radboud University and its medical centre, Radboudumc, has already been launched and is working on projects including an ammonia meter, an ingestible sensor and a health app.

text Albert Sikkema

The nutrition and health app

Guido Camps, a researcher at Human Nutrition and Health at WUR who works at OnePlanet, wants to make use of the collaboration with imec to introduce some innovations into the nutrition and health research. Imagine you are keen to know how coronavirus patients, past and present, are faring – how they are feeling, whether their lungs trouble them, whether they are getting any exercise. Such research has always been time-consuming. Researchers have to track down the coronavirus patients, collect contact details, ask questions through questionnaires or phone calls, and feed the answers into a database. Only then can Camps get going on analysing the data.

So in OnePlanet, Camps wants to develop an app that can be used for large-scale research, on the impact of Covid-19, for instance. Patient groups can download the app themselves and fill in their answers. The data are then automatically processed for the researchers by experts from OnePlanet.

Camps is currently working with imec researchers on the cloud service that will safely store the patients' data, and on an infrastructure that makes the patients' answers available to the data analyst in a usable form. The app is still in its infancy. 'I think it will be ready at the beginning of 2021.'

Camps dreams of an app in which consumers take a photograph of their evening meal every day. 'Then they send their photos to our database, so we can automatically analyse the image to detect links between diet and health. The tricky thing about this kind of research is that you want to combine different data flows. That is complicated, and it is precisely that process that we want to automate.'

The ammonia meter

OnePlanet is currently working on a digital platform and a dense network of sensors for the local measurement of nitrogen emissions (NO_X and NH_3). When the sensors are ready, they will be tested at a number of livestock farms and companies in the province of Gelderland. This will help businesses to identify cost-effective measures with which to halve nitrogen emissions. Efficient ammonia sensors are essential to a network like this. These sensors establish exactly how much ammonia is produced in livestock barns, how much leaves the barn, and how much ends up in nearby nature areas. Unlike the much-criticized ammonia models, an instrument like this can pinpoint which farms are adhering to the nitrogen norms.

There are already meters that measure the ammonia concentrations in pig and chicken sheds (about 20 parts per million NH_3). WUR is now doing research on sensors that can measure lower concentrations (1 to 7 ppm) and can be used in dairy cowsheds. 'Those will be available in a couple of years,' estimates WUR researcher Nico Ogink. 'That kind of sensor needs to be cheap and easy to use, and to measure the ammonia concentration in real time (see photo).'

Ogink's group is now testing a promising sensor produced by the German firm Dräger in about 30 barns. An added advantage of this sensor is that it can withstand long-term exposure to ammonia and dust. But the measurements are not yet precise enough at low concentrations, says Ogink. So the sensor should still be used in

PHOTO: WUR

combination with reference measurements.
But he would also like to see a sensor become available that can measure very low ammonia concentrations (0.005-0.05 ppm) in the air. And that is what OnePlanet wants to develop now. The technique used by Dräger, an electrochemical cell, may be capable of measuring ammonia in the rural environment as well. 'The sensor is no more than a building block,' says WUR's Jan Vonk. 'Imec will build the electronics around it, so the signal from the sensor can be converted into usable data even at low concentrations.' Vonk has no idea when this work will be completed.

The ingestible sensor

'There are already ingestible thermometers and pills containing a camera,' says Annelies Goris, programme manager of Precision Health & Nutrition at imec. 'But no ingestible sensors yet with which you can monitor the gastro-intestinal tract to detect inflammation, for instance.' She and her fellow researchers in Wageningen and Nijmegen are now looking at inflammation markers and how they can be measured by an ingestible sensor.
There are some technical challenges to face first, such as how to take measurements in someone's stomach in real time on a very small sensor surface, how to make sure the sensor gets enough energy, and how to extract the information from the sensor. Here, OnePlanet relies on imec's sensor and chip technology. 'At imec we have already accrued a knowledge of implantable sensors, and we are working on a wireless energy supply and information transfer system.'
The Nijmegen and Wageningen partners are also thinking about what information they want to get from the gastro-intestinal tract. Medics wants to use the sensor to monitor the gut for inflammation. 'If they can detect inflammation earlier and more precisely, they can treat it better,' says Goris. Nutritionists want to know things like how digestion works in the gut, and what effect bacteria have on that.
Goris expects the first version of the ingestible sensor to be ready at the end of this year. 'Then we will have small sensors, in capsules, and we'll be able to track their location in the body.' With all the required safety checks, it will take a few years before there the technology is in use.

ONEPLANET

OnePlanet Research Center was launched in Wageningen and Nijmegen in 2019, and now has about 12 research projects up and running. The innovation platform currently employs about 45 people, and is set to grow to a staff of 120 in the coming years. The knowledge coalition is coordinated by Chris van Hoof (Imec), Thea van Kemenade (Radboud) and Liesbeth Luijendijk (WUR). The main financier is the province of Gelderland. 'The province will provide the funding for the next eight years, and then its contribution will be cut back rapidly from 100 per cent to 20 per cent of the research costs,' says Luijkendijk. 'So we need to find additional funding from external financiers.'

Dreaming of classes on campus

Teachers are coping well online, but they don't really like it, as you can read on page 12. What about students? How has the coronavirus crisis affected their university experience? 'It's hard to stay motivated without the social interaction you get on campus.'

text Luuk Zegers *illustrations* Yvonne Kroese

In the survey among teachers done by Tim Stevens of Education and Learning Sciences (see pp 12-15), teachers say students are less involved and motivated in online education than they are on campus. And yet an enquiry at Education & Student Affairs reveals that students' academic results and pass rates per course are hardly any different to normal. So it seems that not many students will be held up and graduate later than planned.

Stevens' research also looked at course evaluations, in which students give feedback on the course they have taken. In this fifth period, students were on average just as satisfied with their courses as last year in the same period: they gave their course 3.8 on a scale of 1 to 5 this year as opposed to 3.7 last year. It is hard to compare the two years, however, as each student only evaluates the course once, and judges it in the specific context of that year.

CONFUSION AND STRESS

A recent survey focusing on the wellbeing of the Wageningen student population (with 1484 respondents, more than 11 per cent of the students) provides further detail about WUR students' experience of university studies. The figures here are less rosy: 33.8 per cent of the students indicate that the quality of the education went down with the transition to online education; 39 per cent are worried they will not complete the academic year successfully because of the coronavirus crisis; 62.8 per cent mention being less clear about what was expected of them during the courses they took.

The figures are based on period 5, when the transition to fully online education had to be made at extremely short

notice. Health & Society teacher and researcher Sabina Super conducted the survey. 'The results show that a group of students are struggling with the situation,' says Super. Which is hardly surprising. 'There was confusion among teachers about what the implications of the coronavirus measures would be for excursions and practicals. If teachers don't know, of course students don't know either.'
The university's coronavirus measures and the communication about them meet with approval, showed the survey: 79.1 per cent of students are happy with the protective measures. They were positive about the teachers too: 71 per cent of the students felt the teachers had created a safe learning environment for asking questions. But 50 per cent of the students still experienced considerable stress as a result of the change in teaching methods.

MIXED FEELINGS

Respondents to the survey were asked how often they experienced certain emotions. They quantified this on a scale of 1 (hardly ever) to 4 (nearly all the time). 'Happy' was the commonest emotion (2.55), closely followed by 'missing company' (2.53) and 'couldn't get going' (2.46). 'Enjoying life' (2.44) scored highly too, as did 'frustrated'. 'Altogether the impression you get is that Wageningen students sometimes get frustrated by the situation, the

> 'Some students are struggling with the situation'

lack of clarity and the stress,' explains Super. 'On the other hand, students seem to realize how lucky we are in the Netherlands, and they experience many moments of happiness. Those feelings are not necessarily mutually exclusive.'

HOME-BASED PRACTICALS

In a survey on *Resource's* social media too, 'missing company' and 'couldn't get going' came up a lot as negative consequences of online education. 'It is hard to stay motivated without all the interaction on campus,' writes MSc student of Sustainable Food Production Monica van Leeuwen. 'I miss the interaction with teachers and fellow students, and I had been looking forward to the excursions,' says MSc student of Biology Emma Labohm.
Other students also said they missed the fieldwork and practicals. In some cases, with a bit of creativity, practicals and experiments can be done at home too. Student of Plant Sciences Daphne Ruiter replicated a Wadden Sea experiment using her parents' wine cooler and some algae she ordered online (see page 31). But she says she wants to repeat the experiment later 'under better conditions' and that 'all the students were disappointed that the fieldwork was cancelled.'

Some students can name advantages of studying at home, though. BSc student of Animal Sciences Annebelle Jonker: 'You can pause previously recorded lectures to take notes.' MSc Student of Plant Sciences Aarzoo Kohra: 'You learn to collaborate online and use online meeting apps, and I can type a lot faster now.'
But Kohra would still prefer to get back to campus as soon as possible. 'The teachers are doing a great job and online education was the only option. But the best education simply is offline. There are so many things you can do offline that you can't do online. I can't wait to be back

> 'The teachers are doing a great job, but the best education is offline'

on campus.' Super: 'Students are full of praise for the teachers and their approachability. But there is more to student life than reading, attending lectures and sitting exams. A big element is social life: making friends, getting together, social cohesion. So from September, we want as many students as possible on campus, sticking to the guidelines laid down by the National Institute for Public Health and the Environment (RIVM).'
There was good news for all teachers and students who are longing to get back to campus at the government's coronavirus press conference on Wednesday 24 June: from September, students are allowed to take public transport during the rush hour as well as during off-peak hours. That means classes can be scheduled for before 10:00 and after 15:00.

If you want to know more about the student survey, you can read the website version of this article on www.resource.wur.nl.

Researchers abroad

Stay put or go back?

A lot of Wageningen research takes place abroad, so the coronavirus outbreak faced many researchers with a choice: should I stay or should I go? We talked to one PhD student who stayed, one who came back, and one who set off abroad in spite of the outbreak. What is it like to do research during a pandemic?

text Coretta Jongeling

'I just went'

Lan Nguyen, PhD student in Development Economics

'I do research on the health and economic status of an ethnic minority in northern Vietnam. I come from Vietnam myself, but I'm doing a sandwich PhD at Wageningen. At first I wanted to postpone my trip until the situation is normal again, but it's hard to say when that will be. So I just went. I took one of the last flights out of Europe.

'On arrival, everyone had to go into quarantine. There were 40 of us sleeping in bunk beds in a dormitory. Everyone was tested for coronavirus, but we weren't told the results. It turned out that all the test results were published in the newspaper before we had heard them ourselves. The dormitory was boiling hot and there were no chairs or tables. I got very little work done there. Now I'm at home, close to Hanoi, and I'm going into voluntary quarantine for two weeks, which is very similar to the lockdown in the Netherlands. Later I hope to travel on to the north to make a start on my research at last.'

'I couldn't check on my camera traps'

Michelle Kral, PhD student in Wildlife Ecology & Conservation, Botswana

'I work in the Kalahari desert and coordinate the research at Cheetah Conservation Botswana. There are a lot of livestock farmers here, and there are frequent conflicts between humans and predators. We hope to find out more about the behaviour of cheetahs, so that we can facilitate peaceful cohabitation by humans and animals.

'It is a remote and thinly populated area, and was one of the last places on earth to be infected. Botswana did go into lockdown for seven weeks, though. No one was allowed out of the house, so I couldn't check on my camera traps. I occupied myself doing literature research and making research plans for next year. Everything seems reasonably normal again now, although you have to wear a face mask, and your temperature is taken if you want to go into a shop or an office.

'I do a lot of my research on private land, on commercial "game ranches" and large livestock farms. Now the lockdown is over, most people are pleased that I'm back doing research!'

'In Bangladesh everyone laughed it off, too'

Sjoukje de Lange, PhD student in Hydrology & Quantitative Water Management, Bangladesh

'I was in Bangladesh, which is famous for its vast delta, doing research on the shape of river beds. We left in early March. There was awareness of coronavirus but no measures had been taken yet in the Netherlands. Of course we wondered whether it was a smart move to go, but everything was planned and people weren't too stressed at that point. In Bangladesh, too, people laughed it off, saying "There are worse diseases here."

'When we got back to the modern world after a time in a remote area, we were overwhelmed with messages saying, "You must come back now!" It turned out the last flight was that very night, and the airport was a 21-hour journey from where we were. Miraculously, we made it.

'Luckily, we were able to collect some data, so I can work on that now. We hope our Bangladeshi colleagues will be able to take some measurements on location. At some point I really do have to go back, and I hope it will be possible this year.'

Key people

They are indispensable for keeping the campus going and keeping it pleasant, yet they are not always the first people you think of when you think about the campus: the cleaners, caretakers, caterers, gardeners, receptionists – the list is long. In these coronavirus times too, they play a crucial role. *Resource* has been seeking out these key people. This time, meet Harrie Scholten (59), a campus groundsman, whose work includes the indoor courtyard garden at Lumen.

text Milou van der Horst *photo* Guy Ackermans

'I've always been interested in nature. Even when I was in primary school, people said I should do something to do with plants or animals when I grew up. In the end, I chose plants and I haven't regretted that yet. I go off to work cheerfully every morning. The nice thing about this job is that I can influence what grows and flowers on the campus. I recently read in *Resource* that a rare orchid was found in Lumen's wild garden. I think that's lovely. I haven't seen the orchid myself yet, because it's a matter of luck whether you come across it.
I'm responsible for the inner courtyard at Lumen, and I enjoy that, because I'm interested in subtropical and Mediterranean plants. Before I got this job, I worked in the tropical greenhouses of the former department of Tropical Horticulture, working with crops such as cacao, coffee and rubber – which was quite unusual at that time. For me too, because I only knew about ordinary agricultural crops and ornamental plants. I had to learn a lot, and that was nice. But then the tropical collections were digitalized, and the plants were no longer needed. I thought that was a real pity. The digitalization coincided with a reorganization and that was the end for me. I was redeployed and came to work in grounds maintenance. That was a completely different thing and it took a bit of getting used to at first.

> 'I nearly sawed off my fingers'

In the 17 years that I've been working as a groundsman, I once nearly sawed off my fingers when we had to cut down a tree. We had no space at all, and when a branch fell towards me, I automatically put my arm up to fend it off and the chainsaw touched my fingers and destroyed the tendons. It took a year before I could really use my hand again.
Because of the coronavirus, the campus has been extremely quiet recently. But that meant I wasn't bothered by people with different opinions on how the grounds should be maintained. On the other hand, I didn't get as many compliments either. But I was happy that I could carry on working, because I couldn't bear to sit around at home all day.
It can be difficult to stick to the one-and-a-half metre rule in our job. You put posts next to new trees, for instance, so they are firmly anchored in the ground. Then one person holds the posts while the other one hammers it into the ground.
At the moment, I am doing mainly maintenance: weeding and biological pest control. In the autumn and winter, the pruning period starts and we replace trees or shrubs that have died off in the summer. That happens a lot these days because of heat and drought. I'll be retiring in seven years. If things go on like they are at the moment, that's fine by me. I am getting older and with certain jobs, like mowing, I start to feel a few aches and pains by mid-afternoon. But I'll keep going, touch wood, because I'm in good health.' Ⓡ

PHOTO: SHUTTERSTOCK

IN OTHER NEWS

HUMMINGBIRD (1)

What does the world look like through the eyes of a hummingbird? Very colourful. Like all birds, the hummingbird has four kinds of colour-sensitive cells. We only have three, for red, green and blue. With those extra colour cones for UV light, the hummingbird can also see combinations of UV with green, red and yellow, according to experiments by scientists at Princeton University.

HUMMINGBIRD (2)

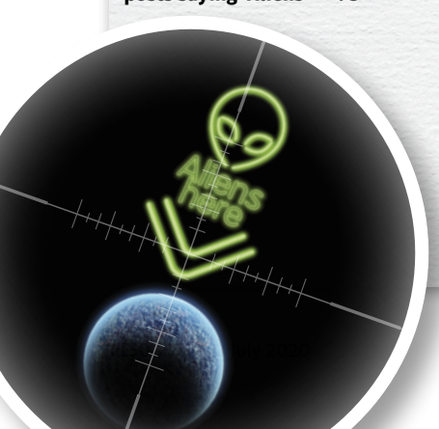
That doesn't answer the question of what those colours look like. Is UV+green a shade of green, or is it a completely new colour that we don't know? We can only speculate about that, say the researchers. We will never be able to know for sure, unless of course we adapt human eyes genetically. That is not allowed. But would you want to see the world the way a hummingbird sees it?

WHO THINKS?

Animals can have an opinion or conviction, say researchers at the Ruhr University. For that to be proven, they have to meet four criteria. The animal should be able to pick up information from its surroundings and form it into a coherent whole that can then be adjusted in the light of new information. Chimpanzees and rats fulfil the criteria, as do certain birds. We're still waiting for the first flying Kant.

ALIENS

An astronomer at the University of Rochester is going to use NASA funding to figure out the kinds of 'signs' that could indicate the presence of extra-terrestrial life. What should we look out for? Light is an obvious clue, says the astronomer. Certain spectral lines that suggest pollution, perhaps, or the use of solar panels. Or of course, signposts saying 'Aliens -->'. Ⓡ RK



SSR-W wants to stay on good terms with neighbours

The student society SSR-W has drawn up a covenant with its neighbours containing agreements on not disturbing the peace. The document was signed at the society's premises on the Generaal Foulkesweg in the presence of the mayor of Wageningen, Geert van Rumund.

With its 700 members, SSR-W is one of Wageningen's biggest student societies. 'Of course, there will always be a certain amount of noise coming from the clubhouse,' says chair Jimmy Wieten. 'But we now have agreements both on communication channels and how to deal with disturbing levels of noise, both to minimize them and to prevent them.'

The covenant is the result of four years of consultations with local residents. Wieten: 'Several boards have worked hard on this. On the advice of the municipal council, the agreements have been recorded in writing. This covenant was drawn up with the help of a mediator.'

ACTIVITY OR PEACE

SSR-W's neighbours sometimes have different priorities to the society's, explains Wieten. 'Whereas the student society wants to offer its members facilities and activities, those living around us want peace and quiet.' The document is intended to provide some continuity in the communication between SSR-W and its neighbours. The society has a new board every year, so permanent protocols have been drawn up for the board.

The covenant was signed – at one and a half metres' distance – at the SSR-W clubhouse. The occasion was celebrated with coffee and cake in the sunshine. The signing was originally planned for April but was postponed due to the coronavirus outbreak. Ⓡ LZ

YOU ON CAMPUS

The summer vacation is just around the corner, and we're all starting to think about all the possibilities that free time can offer. Nouri Malek (23) from Egypt wants to start a YouTube channel. 'On my channel I want to combine my experiences in the Netherlands with everything I experienced on my journey towards this point in my life.'

> **'My dream is to open an Egyptian restaurant'**

His journey is one with many stories; after finishing high school in Turkey and a year of higher education in Cyprus, Nouri came to the Netherlands as an asylum seeker. 'I have to admit, I didn't expect the asylum process to take so long, but I'm still working on it now, two years later. It started in the Asylum Seekers' Centre at Ter Apel after which I was offered a place in Wageningen by the Central Agency for the Reception of Asylum Seekers (COA). As I wanted to stay in touch with education, I followed some courses here at the university. That was quite an experience as the education system here is more focused on technology than I am used to.'

Still, Nouri is looking forward to his upcoming study. 'After the selection procedures in the last week of May, I got the news two weeks ago that I have been accepted at the Hotel School in Amsterdam. Originally, I applied to start in September, but I first have to acquire an IELTS certificate demonstrating English proficiency. But I am happy with the extra time as it gives me a chance to improve my English and Dutch, and take some more courses. And of course, to work on my cooking skills.'

Noura is seizing every opportunity he can get to realize his dream. 'I would like to finish my Bachelor's degree at the Hotel School within five years. After that, my dream is to open my own restaurant that offers not only warm hospitality but also a taste of Egyptian culture with its traditional dishes. One example of such a traditional dish is kushari, which consists of rice, pasta, lentils, chickpeas, tomato sauce and vinegar. That sounds like a lot of carbohydrates, but actually every day you eat kushari is a good day.' Ⓡ HB

Discrimination dialogue starts

On Monday 22 June, representatives of the university discussed exclusion and discrimination with students and staff.

This was prompted by a petition on racism that called on WUR to investigate discrimination within the university and in the curriculum. The Executive Board was represented by rector magnificus Arthur Mol and Rens Buchwaldt. Dean of education Arnold Bregt was there too. They listened and talked to the students, PhD candidates and employees.

'We talked about the curriculum, for example, and how that could be made more inclusive in certain areas such as the environment and sustainability,' says WUR student Jerry Gumbs, the man who started the petition. He thought the discussion went well. 'Some examples were given too of inappropriate remarks by lecturers.'

People shared their personal experiences at the end of the meeting. 'That was an eye opener for some,' says Gumbs. 'Our petition explicitly called for an investigation. Lots of people who come to Wageningen to study or work see it as a fantastic opportunity. They may experience discrimination as well, but they prefer to focus on the positive things. Just because they don't report those negative experiences does not mean they don't happen.'

PHOTO: ANNE WALTHER

▲ Student Jerry Gumbs and rector magnificus Arthur Mol.

> **'Just because people don't report negative experiences does not mean they don't happen'**

CONTINUING THE STRUGGLE

Gumbs compares tackling racism to sustainability. 'It's not a case of installing solar panels on your roof and then you are done. Sustainability is not the destination, it is the journey. That is how you should look at dealing with racism. You can't resolve the problem in a day or a few months.'

The students behind the petition are looking at how they can turn their 'collection of individuals' into a structured organization. 'We want an organization that can continue the struggle against racism. The name will be ARA WUR, which stands for Anti-Racist Association WUR.'

University spokesperson Simon Vink was also at the meeting. 'It was a good discussion in which people shared their experiences and stories. The Executive Board reiterated that the exclusion of people for whatever reason is unacceptable. It is not what we want, it is not what we permit and it doesn't fit with Wageningen's international culture. The board also explained what WUR is already doing in this regard. For example, there are employees dedicated entirely to inclusivity among both students and staff. We are currently looking at what more could be done.'

INVESTIGATION

The petition calls on the university to investigate discrimination within the organization. Vink: 'The Executive Board says that if you do that, it will take a year if not more. What matters is that it is not acceptable for someone to be excluded. That calls for action and that is why we need examples and stories. In short, a dialogue is required. That is what we are doing now.'

The Executive Board has asked the diversity employees to come up with a vision. Vink: 'This is explicitly about diversity in all its facets, from religion to culture, sexual orientation, gender and disabilities. We want an inclusive atmosphere at the university and in the research institutes. If there is anywhere where that is not the case, action will need to be taken to create that atmosphere.' Ⓡ LZ

PHOTO: SVEN MENSCHEL

▲ #BLM demo in Wageningen on Saturday 13 June.

Wageningen students go all around the world for their studies and internships, getting to know their field and other cultures. Here they talk about their adventures.

‘Frozen eyelashes are unavoidable’

THE WORKS

Who? Anne Bruls (24), MSc Biology
What? Internship at BioCEED, The Centre of Excellence in Biology Education
Where? University of Svalbard in Longyearbyen, Spitsbergen

‘The word ‘exotic’ tends to conjure up images of tropical islands, but Spitsbergen is exotic too, what with its climatic extremes. It fascinates me to see how plants and animals have adapted to that. For my internship I am looking especially at vascular plants, for which I am making a taxonomic key. This key will eventually be used in ArtsApp, a BioCEED project.

‘My internship at BioCEED includes helping create online course material. That is particularly relevant now that, following the university’s advice, many students have gone home because of the coronavirus. There are very few tourists on the island too, so it is pretty empty here. But it’s nice because there are no Covid-19 infections so we don’t actually have to keep our distance. But people don’t gather on café terraces in large numbers as it’s only 5 °C here in the summer.

EYELASHES

‘It is even colder in the winter months, when it is nearly always dark, and temperatures go down to -32 °C. You must wrap up well and keep moving here. But you do have to watch out for frostbite, and frozen eyelashes are unavoidable. The tricky thing about frostbite is that you don’t always feel it happening. Last spring, when my fingertip froze, I only realized it when I went indoors and found it had gone white. Frostbite doesn’t heal fast because a blister forms, the way it does with a burn.

‘You get a health and safety course at the start of every course to prepare you for such situations. It includes everything you hope you’ll never need, like what to do if someone falls down a crack in a glacier, and how to shoot a polar bear if it attacks you.

SKIING

‘Being able to ski is useful when you do your fieldwork, too. Skiing here is not the same as in the Alps. You are always off-piste and there are no ski lifts. All in all, this is a special place for me, where I feel at home. I came here for my minor on my BSc and for my MSc internship, and if possible, I would like to do a PhD here. If that doesn’t work out, I would most like to live in Norway or Sweden. I don’t see myself living in the Netherlands again in a hurry.’ **HB**

Experiment with parents' wine cooler

What do you do when your field research on Texel is cancelled due to corona? Simply order some invasive algae, make some seawater and confiscate your parents' wine cooler.

PHOTO: DAPHNE RUITER

▲ The materials for the test.

Students taking the Introduction to Marine and Estuarine Ecology course in period 5 were scheduled to do fieldwork and experiments on Texel. But it was not to be: all teaching moved online.
Plant Sciences student Daphne Ruiter (21) and her group wrote a research proposal for an experiment that could have been conducted on Texel, plus an experiment that you could do at home. 'We wanted to know whether the alga Caulerpa taxifolia, an invasive species that causes major problems in the Mediterranean, might also become an issue in the Wadden Sea if water temperatures rise due to climate change. To investigate this, we used the wine cooler my parents keep in their attic.'

This wine cooler has several different temperature zones, Ruiter explains. 'The top section is at 20 degrees, the bottom at six degrees, and there are different temperature zones in between. We initially wanted to use several fridges set to different temperatures, but the disadvantage with a fridge is that it doesn't allow any light to enter. The wine cooler has a glass door, which does let light enter.' The algae could be ordered online. 'Quite useful for an invasive species.' The seawater was homemade. 'Surprisingly, the algae kept at lower temperatures did a lot better than those kept at higher temperatures,' says Ruiter. 'This suggests that the algae could already survive in the Wadden Sea with mild winters. But to investigate this properly, we need to repeat this experiment under more favourable conditions.' LZ

In memoriam

Quinten Voorhorst

We received the shocking news on 15 June that the life of our friend and BSc student Quinten came to an abrupt end as a result of an epileptic fit last week. A life full of hugs, family, friends, enthusiasm, hobbies, travel – and Feyenoord Football Club.
Quinten frequented the grounds of Feyenoord from the age of six, surrounded by his mates, whose ribcages would be crushed by Quinten's characteristic hugs after every goal. And he expressed his emotions just as strongly when the other side scored a goal. This side of the otherwise always friendly Quinten sometimes came out when he lost at a game of cards. Whatever the card game, Quinten was always in for it. After dinner, his chances of winning were sometimes smaller, so he could often be found reluctantly doing the dishes.
Quinten loved cooking, which brought out his caring and gentle side. He often started making his pizza dough at least a day ahead, so we could all enjoy his cooking skills. He was a keen photographer too, and liked making time for this hobby, which combined well with his other great passion: travel. Witness the many beautiful photos he took. Wherever he went, there was always a bottle of Coca Cola within reach. Although he occasionally branched out and had a cherry cola. When you went to dinner with Quinten you had to give him plenty of warning of your arrival time so he could tidy his room. When you came in, you still always took him by surprise: 'You are very early; I'm still doing yesterday's washing-up.' This disorganized side of Quinten came out in his studies too: he took his time finishing his courses but was always optimistic about finishing his Bachelor's.
Our thoughts and sympathies are with Quinten's family, friends and fellow students at this time, we wish them strength to bear their loss, and we hope they will go on enjoying their precious memories of all the good times they had with Quinten.

On behalf of Quinten's friends and the Food Technology programme team, Maarten Berenstein and Joost Geerlings; Melanie van Berkum, Bianca van Dam and Ralf Hartemink

Colophon

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Address
Droevendaalsesteeg 4,
6708 PB Wageningen
(Atlas, Building 104, bode 31)
PO Box 9101, 6700 HB Wageningen
Secretariat: Thea Kuijpers,
resource@wur.nl, 0317 484020
Website: www.resource-online.nl
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Editorial staff
- Willem Andrée (editor-in-chief)
  willem.andree@wur.nl, 0317 483774
- Helene Seevinck (editor)
  Helene.seevinck@wur.nl, 0642220084
- Roelof Kleis (ecology, social sciences, campus developments)
  roelof.kleis@wur.nl, 0317 481721
- Tessa Louwerens (animal sciences, nutrition)
  tessa.louwerens@wur.nl, 0317 481709
- Albert Sikkema (plant and animal sciences, organization)
  albert.sikkema@wur.nl, 0317 481724
- Luuk Zegers (students and education)
  luuklfl.zegers@wur.nl, 0317-486002
- Coretta Jongeling (social media)
  coretta.jongeling@wur.nl, 06-422220078

Others who work on Resource
Guy Ackermans, Hannah Begemann, Bregje van der Bolt, Guido Camps, Evelien Castrop, Cathy Chen, Inge Corino, Rijk Dersjant, Tim den Duijf, Marieke Enter, Donatella Gasparro, Anna den Hartog, Gina Ho, Hoger Onderwijs Persbureau (HOP), Femke Janssen, Clare McGregor, Sven Menschel, Emma Mouthaan, Henk van Ruitenbeek, Julia Schäfer, Monique van Schie, Konstantina Togka, Inge van der Wal, Clare Wilkinson, Nicole van 't Wout Hofland, Geert van Zandbrink

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>>TYPICAL DUTCH

ILLUSTRATION: HENK VAN RUITENBEEK

The three components of a Dutch meal

Food is an important element in understanding the culture of a country. What we eat reflects the importance of food in our life, our tastes and our history. I was looking forward to enjoying Dutch food with people from all over the world when I came to Wageningen.

One day, I decided to dive into Dutch cuisine. Usually, I cook Japanese dishes such as sushi and enjoy sharing them with my friends at potluck parties. However, since I have found that cooking another culture's food is the best way to get a real feel for the culture, I organized a group dinner with my corridor mates, who are mostly Dutch. I suggested *stamppot*, the most popular meal in the Netherlands.

I also prepared green leaf salad because I couldn't believe that *stamppot* alone could be the whole meal – neither in terms of quantity nor as a menu. This is not to criticize the Dutch-style supper, on the contrary! But in my country, Japan, nutrition experts and TV shows say that eating 30 different ingredients a day is ideal for health. I believed it because I never got to know a different food culture until I came to Wageningen.

My corridor mates from the Netherlands, however, think of a meal as consisting of three components: vegetables, carbohydrate and meat. *Stampppot* meets the criteria - vegetable: kale; carbohydrate: potato; meat: sausage. I had never imagined that three-ingredient meals existed! My dinner guests told me they had never ever eaten *stamppot* with salad before, but they thought it was healthy and good! I was surprised by the difference between the food cultures of the Netherlands and Japan, but I really appreciated their kind words and how they enjoyed the delicious *stamppot*. The *stamppot* and green leaf salad together on a plate seemed an expression of Dutch flexibility. Ⓡ **Konomu Fujita, a Social Sciences exchange student from Japan**

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