

Ensnared by light

Rob van Tol's innovative insect trap | p.18 |

Should WUR say sorry?

'Intensive farming had good effects too' | p.22 |

Turbo beans and silkworm

Students think up solutions to world food problem | p.24 |

RESOURCE [EN]

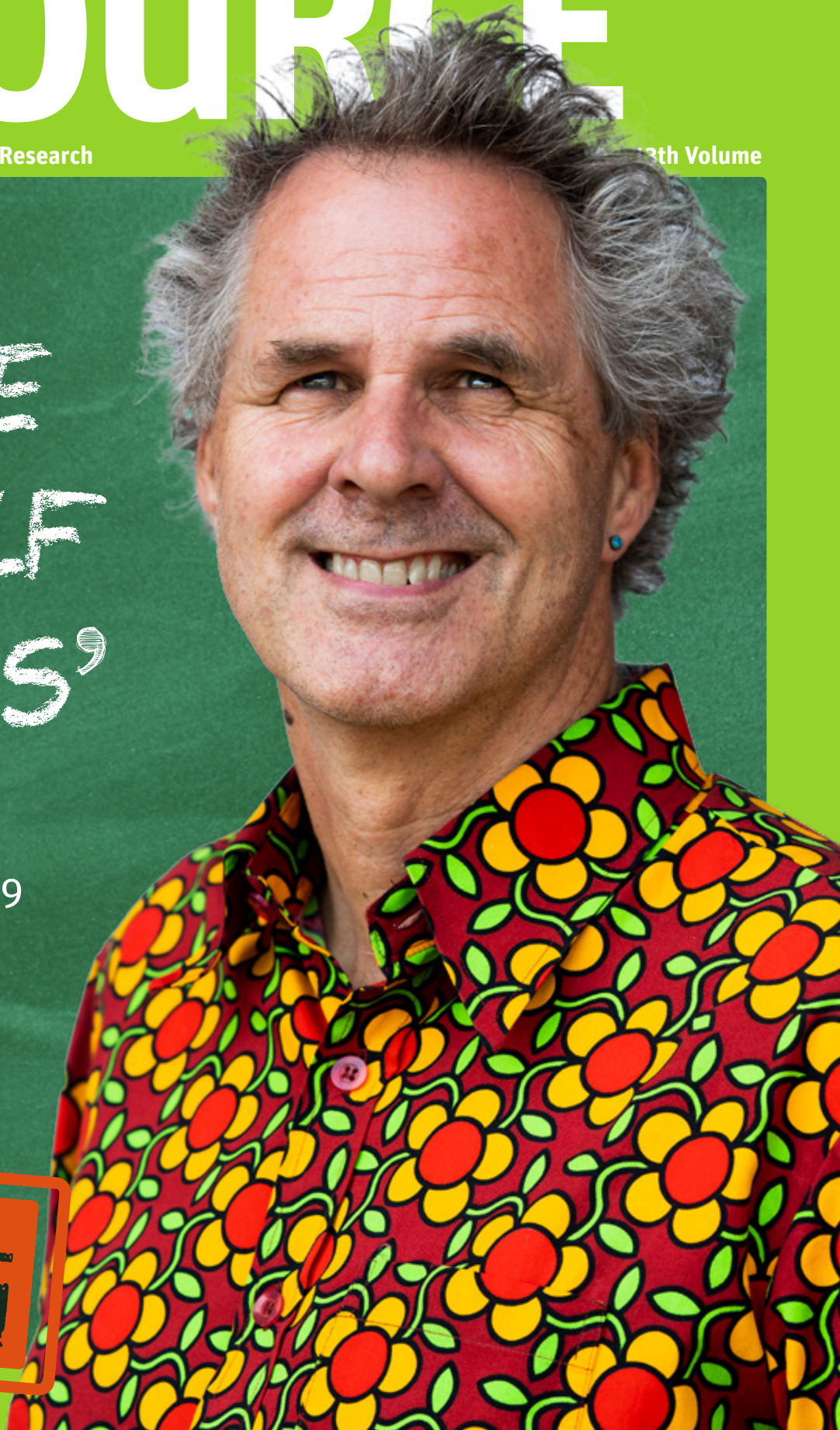
For everyone at Wageningen University & Research

13th Volume

'JUST BE
YOURSELF
IN CLASS'

Fred de Boer is
Teacher of the Year 2019
| p.12

INTERNATIONAL
EDITION



Johan + bell jar for measuring air purification

WUR staff work with all kinds of apparatus. This time we meet Johan Steenhuizen, an applied researcher in greenhouse horticulture at Wageningen Plant Research.



A VERY BUSY LIZZIE

House and border plants are not only beautiful, they also do useful jobs like purifying the air and cooling down the environment. And you can measure these things, as Johan Steenhuizen is doing in the PSG workshop Tupola. The plant under the bell jar is a busy lizzie. Gases are introduced into the bell jar at set times. Sensors then measure the change in the concentration of the gas and the temperature. A new plant for every test, because plants can get 'full'.

📷 RK, photo Sven Menschel

>> CONTENTS

no 21 – 13th volume



>> **12**

NO BLA BLA

Fred de Boer became TOTY by 'just being myself'



>> **20**

'TRANSITION TO CIRCULAR AGRICULTURE AFFECTS WUR AS WELL'

Ministry sees new role for WUR



>> **22**

SORRY NOT SORRY

Are apologies in order for WUR's past focus on intensive agriculture?

AND MORE...

- 4 New town council policy on student housing**
- 6 Universities to collaborate on the bioeconomy**
- 11 The proposition: Zambian sex education is *much* more inspiring**
- 18 Ensnared by light**
- 24 Turbo beans and silkworm pupae: solutions for world food problem**
- 26 Off to the Indoor Lacrosse World Cup**
- 29 Drinking caipirinha in Cape Verde**

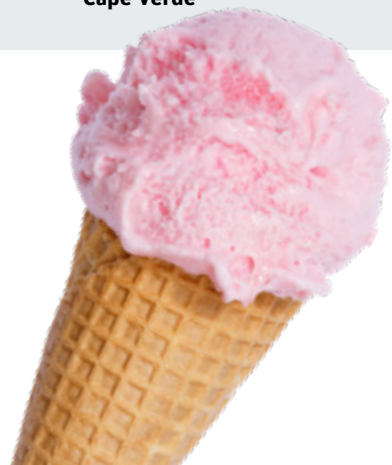
ON THE DEFENSIVE

24 reactions on our website, endless tweets and heated discussions at the coffee machine. The interview with Professor Esther Turnhout in *Resource 20* certainly stirred things up a bit. In it she talked about her contribution to the alarming IPBES report on the loss of biodiversity. She says WUR contributed to that decline in the past and is now in the middle of a transition process. 'That means explicitly being open about the past. One of the comments I got was that Wageningen should really say "sorry". I can understand that.'

Turnhout repeated her assertion a week later in the daily paper *Trouw*. WUR was defensive in its response. There would be no apologies, because why say sorry when WUR has always 'consistently worked to improve the agricultural system and combat undesirable side effects'? I was asked about this response by a press officer from another large scientific institute. 'Instead of going on the defensive, you could use this sort of thing to open doors and start a dialogue.' I can understand that.

Willem Andrée, editor-in-chief

Read too some reactions from WUR researchers on p.22: 'Good for the Wageningen community to be held accountable'.



>> Are you a biter, a lick, a sucker or a melter? PhD candidate Monica Aguayo-Medozza discovered that 'oral processing' affects how you experience the flavour of ice cream. | p.8

SOME STUDENT HOUSES MAY HAVE TO GO

Private student houses in ordinary houses or flats will have to get their permits in order fast, or else the occupants risk being forced out of their home. This is clear from Wageningen's new policy on student accommodation.

According to the new rules on room renting, only 5 per cent of the homes in a street (1 in 20) can be a student house (see inset). Student houses also need an environmental and planning permit. And it's 'first come, first served' for those.

The idea is that the new accommodation policy will curb the unrestrained growth in possibly illegal lets and any resulting nuisance for neighbours. The policy was the subject of a debate on Monday 1 July during a municipal council political evening. In the debate, student party Connect Wageningen sounded a critical note. Connect is against the strict 5 per cent rule. Spokesperson Koen Jansen: 'Students make up a quarter of Wageningen's population. So 5 per cent per street is very meagre.' But Connect is

'Students make up a quarter of Wageningen's population. So 5 per cent per street is very meagre'

alone in this. All the other parties think 1 in 20 houses is a good balance.

It is not certain how the new rules will be enforced. The new policy means that all student houses in ordinary residential accommodation will have to re-apply for a permit. The municipality will not check this on its own initiative, but only do so in response to requests from local residents. Students will not be forced to leave immediately either. If it turns out a house is not in order, the occupants will be given up to 12 months to find new accommodation. **Ⓜ RK**



Photo: Guy Ackermans

THE NEW POLICY

Student houses above a shop, cafe, restaurant, office or other business are allowed throughout the municipality except on industrial estates. No environmental and planning permit is needed then. Lodging with a landlady is also always allowed. Two rooms with one lodger each are permitted per house. Parents who buy a house or flat for their child at university are allowed to rent out the other rooms to two other people at most. The son or daughter must live in the house and a permit is required. Student houses in ordinary houses or flats must also have a permit. No more than 5 per cent of the houses in any given street can be student houses.

'FORGET CRISPR TECHNOLOGY; TALK ABOUT YOUR GOAL'

When researchers want to convey the benefits of CRISPR-Cas, they should avoid focusing on the technique itself. Instead, they should talk about the improvements they want to achieve in the social context. This advice comes from speakers at the CRISPR-con 2019 conference.

An explanation of how CRISPR-Cas is safer than genetic modification and faster than classic breeding makes no impression in the public debate because people are not bothered about it. What they are bothered about are issues of health, climate and inequality, said the speakers at the conference. So tell them what you want to produce to solve problems in these areas, and why you need CRISPR-Cas to do so.

Johan van Arendonk of livestock breeding

company Hendrix Genetics provided a nice example of this approach. Hendrix worked with a biotechnology company to breed male piglets whose development stays at the pre-puberty stage. As a result, they don't start

An explanation of how CRISPR-Cas is safer makes no impression

smelling of boar taint, and surgical castration can be avoided. So Hendrix wants to use gene editing to solve an animal welfare problem in the pig sector. 'We published this plan and now we want to launch a discussion on whether it is acceptable to society,' Van Arendonk ex-

plained at the conference.

Dutch ornamental plant breeding companies are considering a similar approach, said Niels Louwaars, director of the branch organization Plantum. The growers are required to reduce their use of chemical pesticides at a fast rate, so they need plants that are more resistant to diseases and pests. For that they need techniques such as CRISPR-Cas, as well as swift acceptance of the environmentally friendly varieties developed using these techniques. **Ⓜ AS**



WAGENINGEN HOLDS ITS OWN IN RANKING

China is climbing up the influential Shanghai Ranking, while the US is sliding downwards. Wageningen is holding its own as the best agricultural university and number two for the food sciences.

WUR is once again the best agricultural university, according to the Shanghai rankings, but two Chinese universities are following hard on its heels. Wageningen scored 302 points this year, which is eight more

than last year. China Agricultural University got 267 points (up by 14) and Nanjing Agricultural University came third with 264 points (up by 20). The American universities that usually top the list with Wageningen are sliding down the ranking. UC Davis came fourth, Cornell came eighth.

Last year, Wageningen was at the top of the ranking for Food Science & Technology. This year, WUR came second, behind Jiangnan

University from China. Number three in the ranking is a Chinese university too.

For ecological research, Wageningen went from fifth place to fourth. European universities dominate this category, and Chinese institutions are missing from it. In the veterinary sciences, Wageningen is holding its own in the top 10 after its meteoric rise last year from place 27 to 8. This year, WUR is in ninth place. **AS**

IN BRIEF

>> TOURING PROJECT

Artists in dome

The touring art project MIR will arrive on the campus this autumn. A large domed tent and a transparent 'greenhouse' will be set up right in front of the Forum, and two artists will work there from early October till the end of January on installation art on the theme of Time(less). Lenneke van der Goot from Amsterdam will kick off with a work in which she will process algae in coloured chalk. In December and January it will be the turn of Utrecht artist Johan Rijpma, who is investigating the role of chance in gravity and falling objects. The tent will be open to the public during the artists' working hours.

AS

>> WUR GETS PRIZE

For project in Ethiopia

Together with Addis Ababa University, WUR is making a big contribution to the redesign of sustainable agriculture in Ethiopia, says Sunny Verghese, head of the food company Olam. His company awarded a prize to the Wageningen project 'Innovation Mapping for Food Security'. Olam is a trading company from Singapore that buys up a lot of cocoa, coffee, palm oil, cotton and rice from farmers in developing countries and sells the produce on to companies such as Unilever, Nestle and Mars. **AS**



Photo: WUR

▲ An impression of the dome that will be put up outside the Forum from October.

>> ALUMNUS BECOMES HEAD OF FAO

'Good news for WUR'

Qu Dongyu, from China, has been appointed director-general of the world food organization FAO. He will take over in August from the Brazilian José Graziano da Silva. The appointment is good news for WUR, thinks board president Louise Fresco. The FAO is in transition, says Fresco, who worked for the organization in Rome for almost 10 years. It used to be a centralized organization with a lot of agricultural specialists in numerous countries, and a sizeable budget. Now there are many other global food organizations and the FAO needs to work with local experts and global institutions such as WUR, says Fresco. She thinks Qu Dongyu is aware of this. **AS**

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Women first

This proud father of two lovely daughters will always seek to give them opportunities in life. But no doubt the same goes for the parents of little boys. So I am shocked by the news from the University of Eindhoven: 'Women researchers get priority at TU/e from now on'. Newly appointed women academics get 100,000 euros for their own research, plus a special mentoring programme. What a fabulous offer! If my daughters were not one and four years old, I would be taking them to Eindhoven today so they could apply.

There are only two possible explanations for the shortage of women academics in Eindhoven: either there are too few women in the sciences, or women applicants are being systematically kept out by appointments committees. Rector Frank Baaijens assumes the latter: 'We are progressing too slowly. We are aware that we are dealing with an implicit gender bias.'

What the rector is really saying is: our professors and deans are so discriminatory in their appointments policy that the only solution is to let them interview women candidates only, so they don't get any chance to appoint a man. Dear Executive Board at TU/e, if your problem lies in a gender bias among your staff, sack all staff with a gender bias¹ and appoint a more diverse group of staff instead. After all, you have said yourselves that they are the problem, and not all the young male academics who are to be kept out of Eindhoven for the foreseeable future. **B**

Guido Camps (34) is a vet and a postdoc at the Human Nutrition department. He enjoys baking, beekeeping and unusual animals.



¹ But surely you are not allowed to sack someone just like that in the Netherlands? True, but a university that is not afraid of Article One of the Universal Declaration of Human Rights and the Dutch constitution won't lose sleep about labour laws either.

COLLABORATING ON THE BIOECONOMY

Six European universities, WUR among them, are joining forces on research, education and innovation related to the bio-economy. The collaboration was launched at the beginning of July under the banner 'European Bioeconomy University'.

WUR's partners in the consortium are AgroParisTech (France), the University of Bologna (Italy), the University of East Finland (Finland), the University of Hohenheim (Germany) and the University of Natural Resources and Life Sciences in Vienna (Austria). 'Each of these universities is a trailblazer in its own country in work on the bioeconomy,' says Luisa Trindade, professor at the Laboratory for Plant Breeding. She and Jeroen Ouburg of Corporate Strategy & Accounts represent WUR in the consortium.

Last year, the European Commission presented an action plan for a sustainable, circular bioeconomy in Europe. The university consortium wants to collaborate on shaping this bioeconomy and educating the professionals of the future on it, explains Trindade. **TL**

RESEARCH REWARD SYSTEM AT ODDS WITH WUR MISSION

Difficult problems require a multidisciplinary approach, but WUR's reward system is hindering this. That is the conclusion of a study by the Knowledge, Technology and Innovation chair group.

The group's research report is part of a European study on Responsible Research and Innovation (RRI), a way of doing research that is designed to solve knotty, complex problems. WUR wants its research to have a global impact, says Auke Pols, one of the study's authors. 'That requires a multidisciplinary, inclusive approach to research.'

But that is at odds with the current reward system, says Pols. 'The system has a narrow focus on publications and securing project funding.' The researchers therefore recommend additional measures for the tenure track that take account of the value of research to society, alongside citation scores and the scientific impact.

'More weight should be given to the value of research to society'

The researchers, who based their study on interviews with a large number of WUR employees, make various recommendations for improving the research process. One is a compulsory course in 'responsible research' for PhD candidates. WUR should also develop guidelines to help researchers determine which partners and countries they can work with and which not.

The report will be presented at a lunch meeting on Tuesday 9 July in Impulse. Pols and Professor Philip Macnaghten (Technology and International Development) will give more information about the study and Dean of Research Wouter Hendriks will discuss the findings. **RK**



Photo: Guy Ackermans

Rapid demolition

Now you see a building, now you don't. Just one month after demolition started on Triton, there is hardly a trace of it left. The building on the western border of the campus housed the StartHub for a long time, but must make way for a new education building. StartHub is now temporarily located in Atlas and will eventually move to Plus Ultra II. Construction will start on the new education building in September. It will be six storeys high and more than one and a half times the size of Atlas. **LdK**

WUR SHOULD DESIGN NEW FOOD SYSTEMS

The ministry of Agriculture, Nature and Food Quality (LNV) has invited WUR to design new food systems that are climate-, environment- and nature-friendly. Not in isolation but together with partners in living labs and experimental gardens.

Minister of LNV Carola Schouten is cautiously looking for ways of reorienting Dutch farming towards circular agriculture. That caution is not reflected in the Knowledge and Innovation Agenda, though: 'The agriculture and food sys-

'The agricultural and food system of today is not sustainable'

tem of today is not sustainable and we must change course.' The transition to circular agriculture calls for system innovations, writes the ministry, which wants to work towards a food system approach, including lower meat consumption, less food waste and less processed food. The food system must also be climate- and nature-friendly, and use resources responsibly. WUR should develop such integrated food systems and contribute the building blocks for them. This is not just a matter of technical know-how, but also of business

models and social innovations.

The Knowledge and Innovation Agenda mentions a lot of research projects that can serve as the building blocks for circular agriculture. The ministry wants WUR to develop resilient animal breeds and plant varieties, new protein-rich food sources (insects, algae and seaweeds) and low-emission barns, to promote sustainable soil management and on-farm biodiversity, and to minimize the public health risks caused by livestock farming.

But LNV also wants to see methods for measuring 'functional agrobiodiversity' (clean water, improved soils and pollinators), so that policymakers or supermarkets can assess the effectiveness of measures and comply accordingly. They want smart technology for avoiding food waste, such as techniques that break down abattoir waste and crop residues for reuse as livestock feed. And they want WUR to develop new agricultural systems that contribute to the landscape, complete with business models. All these innovations must find their way into the practice in the sector via regional experimental gardens and living labs.

Researchers should work in a multidisciplinary fashion, and no longer think in linear terms – 'I develop knowledge and you apply it' – but collaborate with users in knowledge networks. **AS**



NEW LIVING LAB: EYTEMAHEERT NATURE FARM

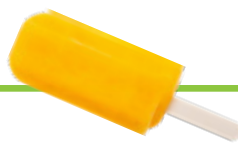
In the same week that the minister unfolded her plans, WUR announced a new collaboration with Eytemaheert circular 'nature farm' in the north of the province of Drenthe. Owners Maurits and Jessica Tepper run the farm in a unique way based on an integrated combination of soil management, circular agriculture, nature conservation, animal welfare and health, and the development of viable business models. Eytemaheert has 150 'old-fashioned' *blaarkoppen*, a robust cattle breed that is highly suited as a 'dual purpose cow'. At the same time, the Teppers use the latest agrotechnology to monitor every aspect of their operations.

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BITERS AND LICKERS TASTE DIFFERENT THINGS

Are you an ice cream biter, sucker or licker? That matters because how you eat your ice cream determines the taste, as PhD student Monica Aguayo-Mendoza and her colleagues at Unilever have discovered.

'We knew that consumers eat their ice creams in different ways, but the effect this has on taste had not yet been investigated,' says Aguayo-Mendoza, a PhD candidate in the Physics and Physical Chemistry of Foods group.

The researchers invited 103 test subjects, mostly Wageningen students, to eat ice cream in the lab. First they had to fill in a questionnaire on how they would describe their ice cream eating technique. Did they bite, lick, suck, let it melt on the tongue or use some combination of these methods? The candidates were also filmed eating ice cream. Both the survey and the video footage showed that three quarters of the subjects used a combination of the techniques. But Aguayo-Mendoza saw quite a few differences between the video footage and the survey answers. 'The video re-

cordings offer a more reliable way to study eating behaviour.'

Then 22 subjects were selected for a series of training sessions in which they learned to evaluate taste and texture, followed by a second round of ice

People who chewed mainly tasted fruit flavours

cream eating. This time, they were given specific instructions to bite on the ice cream, let it melt on the tongue or simply eat it as usual. People who chewed on the ice cream mainly tasted fruit flavours, while those who let it melt tasted more sweetness.

'It is interesting to see how this oral processing influences the taste experience,' says Aguayo-Mendoza. 'Ice cream manufacturers can use this knowledge to control people's taste experience, for example by adjusting the texture of an ice cream so that you have to chew on it more.' **TL**



'SLIMMING BACTERIUM' LIVES UP TO PROMISE SO FAR

Nutritional supplements with the 'slimming bacterium' *Akkermansia muciniphila* are safe for humans and appear to reduce the risk of cardiovascular disease, based on the first test on humans.

The *Akkermansia* intestinal bacterium was discovered in 2004 by Willem de Vos, a professor in the Microbiology chair group. In tests with

'The tests confirm what we had already observed in mice'

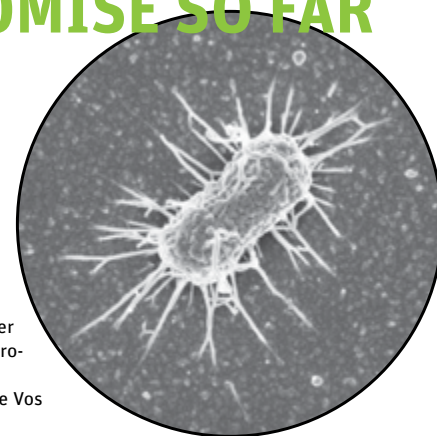
mice, the bacterium was shown to combat obesity and diseases such as fatty liver. In 2016, De Vos and Professor Patrice Cani of Louvain University in Belgium set up the company A-mansia Biotech with the aim of launching the bacterium as a nutritional supplement for humans.

De Vos recently carried out the first test on humans in partnership with researchers at the Louvain Drug Research Institute. They published their results this week in *Nature Medicine*. 'The tests confirm what we had already observed in mice,' says Willem de Vos enthusiastically.

The researchers recruited 32 volunteers with an increased risk of cardiovascular disease and type 2 diabetes, for example because of obesity or insulin resistance. The volunteers were divided randomly into three groups. Over a period of three months, they were given a placebo, the live *Akkermansia* bacterium or the pasteurized (dead) bacterium in the form of a nutritional supplement.

'The main aim of the study was to demonstrate that it was safe and feasible to give people the bacterium on a daily basis,' explains De Vos. That was indeed the case. The researchers also discovered that certain risk factors for developing cardiovascular disease, such as overweight, insulin resistance and

► *Akkermansia muciniphila* under the electron microscope.
Photo: Willem de Vos



high cholesterol levels, had been curbed or even reduced in people who had been given the bacterium (live or pasteurized). The condition of the placebo group had worsened, on the other hand. De Vos: 'That does not mean the bacterium cures cardiovascular diseases but it may reduce the risk of those diseases developing.' **TL**

NO INTEREST IN USES OF ON-FARM NATURE

If you want to involve the public in on-farm nature, you needn't emphasize its usefulness. It is the beauty and the intrinsic value of nature that strikes a chord with people, shows WUR research.

The biodiversity of the Dutch countryside has declined severely in recent decades due to the intensification of agriculture. To turn the tide requires action now, and support for that action. Hence the urgency of asking how the average citizen views nature.

A broad team of WUR researchers led by Professor Hens Runhaar (Management of Biodiversity in Agricultural Landscapes) put this to the test. The team showed students, nature-lovers and environment professionals short films of field edges sown with wildflowers. The films had different messages, stressing either the usefulness of the nature, or its beauty, or its intrinsic value. The effect of the films was measured using questionnaires filled in before and after watching them.


The result was surprising. The usefulness of nature turned out to be less important to people than has generally been assumed. Runhaar: 'In public debate, ecologists often emphasize the usefulness of nature to humans as a motive for nature conservation. That is the basis of

the whole idea of ecosystem services. But our study suggested that the public are not very interested in it.'

'The concept of ecosystem services might work politically when addressing the business world,' adds Runhaar, 'but not for the general public. The average citizen doesn't see the biodiversity of a landscape. But they do see the aesthetic value of a landscape and the intrinsic value of

'The average citizen doesn't see the biodiversity of a landscape'

nature. The latter is the value of nature independent of beauty or usefulness, seeing nature as a part of our environment that we have a duty to look after.'

Runhaar points out that the three groups studied are not typical of the general public. Nevertheless, he thinks the study contains an important message for organizations that want to promote on-farm nature, or producers aiming to market nature-friendly products: steer clear of the usefulness of nature and stress its beauty and its value 'for its own sake'.  RK



▲ The researchers showed their test subjects films of field edges sown with wildflowers.

VISION

'No evidence of mass seal deaths'



It was big news last week: Stichting ReddingsTeam Zeedieren (RTZ), a sea mammal conservation organization, sounded the alarm on seal deaths in the Netherlands. Half the young seals in the Wadden Sea had died in recent weeks, they claimed. 'We have no evidence of that,' responds researcher Sophie Brasseur of Wageningen Marine Research.

I've read that lots of seals are dying in the Wadden region.

'It is the breeding season now and at this time you always see more seals getting beached. But we didn't find more baby seals on the beaches this year than in other years.'


Oh. But WUR is being cited in the reports.

'There is definitely something going on, but it is something else. We have been counting seals in the Wadden region for decades. Until five years ago you saw an increase in the number of seals being born, and a growth in the population. In recent years, however, the growing number of births – about 2000 per year in the Dutch Wadden Sea – has not led to a growth in the overall population. That is odd: what is happening to those baby seals? We don't find them, they are not getting beached. Are they migrating to other areas? But there is no population growth anywhere else. So are they dying in the open sea? We don't know.'

So how does a story about beached, dead seals get out?

'There are a lot of groups that pick up dead and sick seals, like RTZ or First Aid for Seals. Animal ambulances pick them up too and municipalities have the seals removed without registering them. There is no central registration system for seals picked up from beaches, whether dead or alive. We do an annual count with international colleagues, but all we can say is that something is clearly changing. I would love to do more research to find out where these animals are.'

Can you guess?

'Maybe something is changing in the behaviour of seals. When we count them, we assume that a fixed percentage of them is visible on land, but maybe only a smaller number of them are ashore. We could find that out by tagging them with transmitters. But there could well be a higher death rate too.'  AS

MAKE ROOM FOR FIRE SOMETIMES

The Netherlands should learn to live with fire, just as it has learned to live with water. In the near future, WUR will be taking on four PhD students who will work out how we can do that.

The four will work under the auspices of PyroLife, a large European training programme that will be training a total of 15 wildfire experts. The project will be led by WUR researcher Cathelijne Stoof of the Soil Geography and Landscape chair group, who is an expert on wildfires. Part of the Marie Curie Innovative Training Networks, the project will have a budget of four million euros.

Why are you going to train wildfire experts?

'Wildfires are increasingly common as a result of climate change. Last year about 1000 fires were reported in the Netherlands. The old approach was to fight fire. But trying to extinguish it can be a losing battle. We need to go one step further, towards living with fire and making room for fire.'

Should we really make room for fire?

'Fire is a natural process. Fire cleans up. If you let fire run its course, it can lead to a lot of small fires. If you suppress fire, you get a few massive fires occasionally. The trick is to manage that well, comparable with what we do with water to prevent flooding in places where we don't want it. Our landscapes and our rivers are examples of how we reckon with water. We can do the same with fire. Just as we've made 'room for the river' (the name of a major flood prevention project, ed.), we can make room for fire. The risks are greatest in places where vegetation and people come together. In such places you must think carefully about where you let fire spread and where you should take steps to prevent it. Ultimately, this should lead to fires having less impact and staying smaller.'

What are the four Wageningen PhD students going to do?

'The students are going to work on adapting landscape design to the risk of fire, the effects of



'Last year, about 1000 wildfires were reported in the Netherlands'

fire and ash on soil and water, applying lessons learned from flood prevention to dealing with wildfires, and bridging the gap between scientists and practitioners. At the heart of PyroLife

is an exchange of knowledge across Europe: southern European knowledge about wildfires and northern European knowledge about water management.'

📍 RK

FISH FEED SUPPLEMENTS GET IMMUNE CELLS FIT

Nutritional supplements in fish feed, β -glucans, strengthen the immune system cells of fish, as PhD candidate Jules Petit discovered. That may reduce the need to give fish antibiotics and vaccinations.

Petit investigated the effect of β -glucans on the immune system of carp, one of the most important farmed fish species. He discovered that these nutritional supplements have a lasting effect on macrophages, a type of immune cell that devours pathogens like a Pacman. Macrophages that were exposed to β -glucans *in vitro* were better at ingesting pathogens, even quite a while after the exposure. They also produced more oxygen radicals, which act as a weapon against pathogens. It was as if the

macrophages had become super-fit body-builders.

Petit also discovered that gut bacteria in the carp were able to digest β -glucans. 'We saw that the bacteria produced a particular fatty acid that we know has a positive effect on the immune system in mice and that can, for example, reduce asthma symptoms.' Further research is needed to see whether the fatty acids have a similar beneficial effect on fish.

'At present, vaccinations and antibiotics are often used to prevent and treat infections in farmed fish,' says Petit. 'Vaccinations are expensive and time-consuming to develop and

antibiotics lead to problems such as pollution of the environment and the development of resistance.' β -glucans are safe and relatively cheap because they are a waste product of the bio-ethanol industry. If fish farms can use them as a targeted nutritional supplement, it could mean less need to use antibiotics or vaccinations in the future, suggests

Petit. 📍 TL



PROPOSITION

Sex education in a mud hut



PhD candidates are required to append a few propositions to their thesis. In this feature they explain their most provocative proposition. This time, Anneloes Groenenboom, who graduated on 21 June with her study on bacteria in fermented milk.

Anneloes Groenenboom spent a month in Zambia for her research. Not only did she learn about local fermentation processes, but she also got some sex education the Zambian way. Her proposition, based on this unique experience, is: ‘Sexual education in Zambia is more inspiring than in the Netherlands.’

‘I stayed in a remote village with a local woman farmer. It was a fantastic experience; I was welcomed like a daughter of the family. Everyone was very interested in my study and took notes all the time. Maybe that’s why they were eager to share some knowledge in return. There was a farewell party

on my last day. A couple of my friends had flown in because we were going to travel together afterwards. The morning after the party we were invited to join all the other women in a little hut. We had no idea what was going to happen. It turned out to be sex education, to prepare young women for marriage.

It was a bit different to what I was taught at school. That was mainly about avoiding diseases and unwanted pregnancies. Important topics of course, which they could certainly do with in Zambia. But this was all about the positive side: how do you give each other a good time in bed? It was explained pretty explicitly, and the older,

experienced women demonstrated things. It was informative, loving and realistic: sometimes things can be a bit awkward. My friends and I found it hard not to laugh at

‘It was all about the positive side: how do you give each other a good time in bed?’

times, but I found it inspiring. I think we in the Netherlands should pay more attention to those aspects of sex. Except I wouldn’t fancy seeing my mother and aunt acting out those kinds of things.’ **TL**

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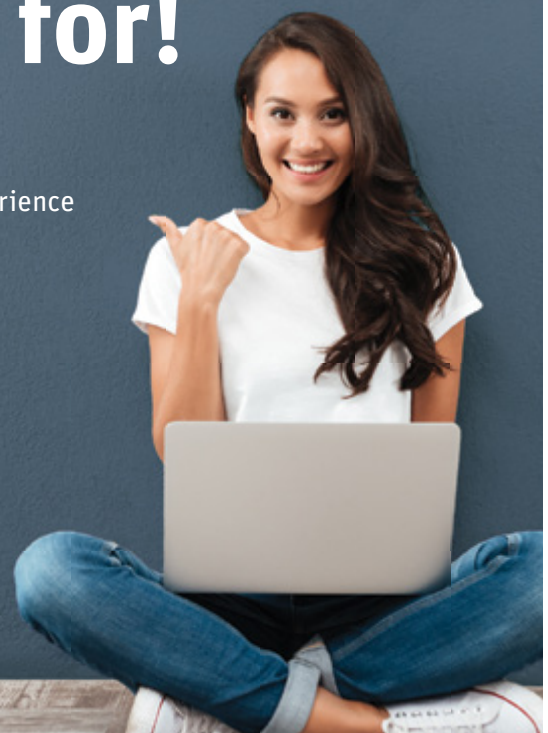
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'Cut the crap, you only live once'

He is known for his boundless enthusiasm, feeble jokes and *joie de vivre*. But don't imagine that the Teacher of the Year Award 2019 was handed to Fred de Boer on a plate.

text Luuk Zegers photos Marco Hofsté



An emotional De Boer was declared Teacher of the Year 2019 on 17 June. ‘My wife Pat always told me I would win that prize one day. She died three and a half years ago, and soon after that my daughters left home. Then you suddenly find yourself all on your own. I’ll be honest with you: I went through a few tough years. It was a hard time both in my private life and at work. In the end I managed to pick up the threads again, but the grief doesn’t go away. It all came together at the award ceremony: the recognition for my teaching, *and* the beautiful memories of my wife, *and* my new partner, who was there as well. The fact that after all those difficult years you can be happy, in spite of the grief. That’s what made it such a moving moment.’

In your word of thanks, you said this prize was not just for you but also for Ignas Heitkönig and Frank van Langevelde.

‘The Teacher of the Year Award is like comparing apples and oranges. One teacher is a good listener while another can explain things well. One knows everything about the material while the other is more involved with the students. No one is the best on all fronts. I won the prize mainly for Ecological Methods 1, a statistics course for ecologists that I teach with Ignas and Frank. We really teach the course together. Ignas is so involved with the students, he sets a really good example in that area.

Frank has a better grasp of the mathematical and statistical background. It is a terrific combination.’

What is your contribution?

‘My enthusiasm, I think. And my feeble jokes. I’ve been thinking a lot recently about what makes someone a good teacher. I think the most important thing of all is to be yourself. The person I am in the classroom is who I really am. So I just crack silly jokes. A course like statistics needs that, otherwise it gets really boring. We are a bit dismissive of the background information. We just teach the students: this is how we do it, and then it’s actually not that complicated at all. Nine out of ten pass with flying colours.’

According to the Teacher of the Year student jury, your lectures are a bit theatrical.

‘Frank, Ignas and I are always joshing each other. We make the most of that. Each of us has a day when our component of the course is in the limelight. On my big day I come in a formal suit – waistcoat, tie, the works. Frank and Ignas do it on their days too. If you did that on your own, it wouldn’t work, but because all three of us do it, it’s funny. And we all claim that our component of the course is much more important than the other two. Of course we can explain the material well, too. So the students get good teaching and they get entertained by the three of us. That works.’



▲ Fred de Boer: 'I have a passion for my work and that is the same passion that I have for music, theatre, art, cooking and life itself.'

You also use a wide range of examples to explain things.
 'You need to grip students with a certain passion. It's a passion for life too, the passion for doing nice things, going out at the weekend or going to the theatre. I have a passion for my work and that is the same passion I have for music, theatre, art, cooking and life itself. So I refer to these things when I'm teaching. That means Vivaldi might come up. Or, do you know Theo Jansen's beach creatures, those enormous skeletons made of plastic tubes that move in the wind? He says: I make living things out of dead material. That is a transformation and I use it when I explain the log transformation of data. I think it's a nice example because it also touches on the big question for biologists: what is the origin of life?'

As the winner, you get the Tutor statuette. Who was your own mentor?

'Diederik van der Waals, an archaeologist. He is in his nineties now but he's a friend of mine and I still see him regularly. We look at life in the same way and share a passion for art, music, good food and science. I've known him since my university days in Groningen. For years I wanted to be an archaeologist, and he taught the subject. I was about 20, I was taking one of his courses and I knew he was involved in several projects in Africa. I was very keen to go there, but I never thought I would actually manage it. After hesitating for a week, I just went to see him and said, 'You don't know me but I'm one of your students and I would very much like to go to Africa.' And he said,

'Sit down.' We had a nice conversation and then one thing led to another and I was allowed to join a trip to Mali. My first trip to Africa turned my world upside down so totally that I started gearing my entire biology degree to the tropics. Afterwards my wife and I lived and worked in several African countries for over 11 years. The wildlife, life in primitive conditions, working in nature – it really is great. Our daughters grew up in Africa.'

How formative was Africa for you – as a scientist and as a teacher?

'The Sahel problem took us to West Africa. There was drought and overgrazing there. We did research on how to use the scarce resources you have. That took us to Chad and Burkina Faso. Then we spent eight years in Mozambique, after the civil war, to breathe new life into the biology department at the university. That taught me that I really do love research and teaching. The students' enthusiasm, thinking things through together, and solving problems. I had taken a course on didactics in Groningen, but I dropped out as soon as we had to do an internship at a secondary school. I'd had enough of that after two days. When I teach, I want to do it my way. In Mozambique I discovered that I could do that at a university.'

How did you end up in Wageningen?

'After Mozambique we were in the Netherlands for a while to look for a new project overseas and go off again. But the Netherlands proved to suit us, very much in fact. Your

‘When I teach, I want to do it my way’

friends being nearby, your parents being able to visit more often, the beautiful skies and landscapes. So we started looking for jobs in the Netherlands. In Groningen at first, but then I got a job in Wageningen, and could start in August 2001.’

Don't you miss life overseas?

‘I can combine it now, so I don't have to miss it. I get the Dutch skies, the friends and family nearby and I get to work overseas with PhD students. I usually supervise about five PhD students at a time. In China, Kenya, South Africa, Mexico, Thailand, Indonesia, and so on and so forth. It is fantastic that you get to go to these places now and then.’

Teaching or research?

Both: what I like is the combination. I love teaching and stimulating students. The combination of teaching in a beautiful place and working on research projects overseas... That's what makes my profession so nice. And I think you need to really be involved in research if you want to teach well. You have to be able to give up-to-date examples, and to know what the scientific questions of the day are. Or if students want to go to South Africa, you should know what's going on there and what they might be able to do there.’

How much has the university changed?


‘Yes, it is different to when I started. We used to teach this course to 40 students, now there are 200. It's much harder to really have contact with the students. I used to know everyone by name, but that is impossible nowadays – although I still try. I know some of their names, and I recognize the rest by their faces. Contact with students is so important. Wageningen has a reputation for good student-teacher contact, doesn't it? Another real issue is work pressure. Everyone in Wageningen works extremely hard, but the people at the top seem to think, the more students the more money. Well, hello! The number of students has grown so big that a new timetable had to be made. Well, the quality of the education does not benefit from such ‘solutions’. And then I read an interview in *Resource* with the timetabler, who says it's not that bad really... On the

other hand, Fred Jonker (the timetabler, ed.) does his best to facilitate our work. I appreciate that. But we need to pay far more attention to the work pressure.’

How do you keep it up, putting so much effort into your teaching?

‘Working here is top sport. If you want to keep fit, you can't sit at your computer all day. So I play tennis, which is nice, but far more important: I swim twice a week in the lunch hour. When you're swimming lengths, you put your head under water and there is no one. It's quiet then and I think things over: How am I doing, how's it going with my work, a manuscript or a student? A bit of reflection. It's almost like yoga for me. Lovely.’

How do you get to be Teacher of the Year?

‘I could give you some bla bla about how I find education innovations so exciting, but that's not what I'm like at all. I got here just by being myself. Cut the crap, you know? You only live once. I do my best in everything I do. Even if it doesn't go well. You can't do more than that. Whatever will be will be.’ 

FRED DE BOER (1961, HARLINGEN)

1974-1980	High School in Drachten
1981-1988	University of Groningen, Biology BSc and MSc
1989-1991	Research on livestock systems for development projects in Chad and Burkina Faso
1991-2000	Improving education, research and facilities for Ecology at the Universidade Eduardo Mondlane in Mozambique (in collaboration with the University of Groningen)
2001-2011	Started at WUR as an assistant professor
2011-to date	Became an associate professor at the Resource Ecology Group

Fred de Boer lives in Wageningen and has two daughters, Sara (a drama teacher) and Roos (training to be a master tailor).

WOETSTOK

On Saturday 29 June, the Torckpark in Wageningen was the scene of the sixth edition of Woetstock, a cheerful, free pop festival with covers of famous artists by local bands. There was everything from Lionel Richie (photo) to Green Day, from Abba to Editors, from AC/DC to Doe Maar. Even Chinese music was represented: SweetPotato, a band with Master's and PhD students in it, played music by Crystal Band.

📷 LdK, photo Cees Beumer





Rob van Tol makes smart traps using LED light

Ensnared by light

Pest insects can be controlled using chemicals or by setting their natural enemies on them. Those are really the only options at present. But there is an alternative, says Rob van Tol. He is trailblazing with LED traps.

text Roelof Kleis photo Marco Hofste

It is a bit of a festive moment, this Friday afternoon in the giant greenhouse at the chrysanthemum nursery G&C Flowers in Gameren. For entomologist Rob van Tol, at least. The still somewhat crude-looking cube he is going to test here is the prototype for a new generation of insect traps. Away with the flat coloured sticky boards with which many growers still monitor and/or control their pests. The new way of trapping insects entails using carefully composed light.

Insect traps in horticulture are essentially hopelessly old-fashioned and inefficient, explains Van Tol (Biointeractions & Plant Health). 'Of the thrips that are attracted to a coloured board, only between five and 15 per cent actually land on it. The rest escape. Why is that? Apparently there is something visually wrong with the trap. The insects come towards it, but once they get close they lose their way and get disoriented. The few that do land actually just crash into it.'

LED TRAP AS LIFE'S WORK

The sticky boards are useful for monitoring insects but not for capturing them in large numbers. And yet that must be possible, thinks Van Tol. 'Actually, so far all the research on insect traps has mainly been empirical. The whole spectrum of colours has been studied for attractiveness to insects. Comparisons have been made between different coloured boards, but no one has gone into it more deeply. What do insects actually see? How do they orientate themselves, and which aspects play a role in that? I want to use that basic knowledge to create better traps, on which insects do decide to land.' With funding and support from the horticulture organization LTO-Glaskracht, Kopert Biological Systems and the Horticulture Top Sector, Van Tol has been working for over two years on what he has begun to see as his life's work: the LED trap. And the prototype is the white cube made at the PSG workshop Tupola, which is about to be put through its paces in Gameren. The cube consists of eight sections, each of

which can be lit up separately. The sections are covered in foil on the outside. This apparently simple design has been thoroughly tested in advance. In a four-metre-long wind tunnel in Radix, Van Tol is testing the behaviour of thrips and tarnished plant bugs when exposed to LED light of different colours. Two infrared cameras make it possible to record the route of each insect in 3D. This setup has already produced some remarkable results. One example: thrips always approach a trap from downwind. Van Tol: 'They always land against the wind. They can fly with the wind in their backs, but they can't land. So they fly past the trap and turn to fly into the wind.' This may seem a trivial point, but it is not, says Van Tol. 'This is important for designing a good insect trap. The trap must not be too flat, but three-dimensional so that it is possible to land on it from all sides. That makes the trap more efficient.'

VARYING PREFERENCES

Another result: thrips prefer yellow light to blue. Which is interesting, given that blue



‘The trap must be three-dimensional so the insects can land from all sides’


boards are often used to lure the insects in greenhouses. So have the growers been doing it all wrong? No, showed further research. The reality, as so often, is more complex than we thought. Van Tol and his colleagues realized this when they heard about German research on thrips and their light preferences. ‘They found the exact opposite: their thrips had a preference for blue light over yellow.’ The German thrips still had that preference when they were tested in Wageningen. ‘The insects reacted in the same way as in Germany. So it was not question of a difference in the experiment. We are now researching whether learning behaviour is involved, perhaps with the host plant on which the thrips are bred playing a role. Another explanation might be genetic differences between the two families of thrips.’

HUNGER FACTOR

UV light may play a role too. The Germans were working in a greenhouse with real sunlight instead of in a wind tunnel with sunlight simulated using LED lights. But the difference in UV

light between the two locations did not explain the differences either. A new series of tests is planned to find the explanation by investigating all the possible combinations of yellow, blue, UV and green light. And to make it all even more complex: the hunger factor might play a role too, according to Van Tol. ‘Thrips fly towards yellow because they are hungry and they think it is a flower they are seeing. But a thrips that isn’t hungry might be orientated towards blue. We can figure all that out with the new LED trap.’

SEDUCER

Besides colour and contrast, patterns play a role in the orientation. Van Tol shows us his latest toys: LED lights that produce a pattern of concentric circles or radial (starting from a central point) stripes or dots. The researchers are pulling out all the stops to seduce the insects into landing. They are also looking at how the insect’s eye works (see inset). The insect trap of the future will be a perfect seducer. 

THRIPS EYE

What does a thrips actually see? PhD student Karla Lopez Reyes is trying to answer that question. She is doing research at Bristol University on how a thrips eye works, for the Wageningen thrips project. One of the things she is investigating is how each of the 60 facets of the eye helps the insect to see colours and patterns. She creates 3D images of the eye using CT scans. The idea is that this work will generate a model that shows us what thrips see. And that knowledge can then be applied to design a better trap.



‘The transition to circular agriculture affects WUR as well’

The Ministry of Agriculture, Nature and Food Quality’s new Knowledge and Innovation agenda requires a U-turn in Wageningen, says Michel Berkelmans, director of Agricultural and Nature Knowledge at the ministry. ‘We are in a process of transition to new food systems. For WUR that means rethinking your own organization.’

text Albert Sikkema *photo* ERF bv

The vision on circular agriculture which Minister of Agriculture, Nature and Food Quality (LNV) Carola Schouten announced last year is gradually taking shape. The minister recently presented an implementation plan for circular agriculture and her ministry published a Knowledge and Innovation Agenda to go with it.

As director of 'Agro and Nature Knowledge' for the last few years, Michel Berkelmans has been responsible for the ministry's research and innovation policy. On his last working day in this job, he explains the broad lines of the Knowledge Agenda. This month he takes up a new position as manager of Circular Agriculture Experiments, leading five 'living labs' for the ministry, where the principles of circular agriculture will be put into practice.

What is new about this Knowledge and Innovation Agenda?

'This is the first knowledge agenda in which we take an integrated look at our food system, with the aim of plugging into the forces at work in society and the practical expertise on farms. It is a strategic document, based on the view that competing on cost price is no longer viable, and that we must cut down our use of resources. Transitions are needed, so we are investing in 'living labs' to make the shift together towards circular agriculture.

This is really different to the way it was six years ago, when I started at the ministry in my present role. Then we were working on legislation and instruments for optimizing parts of the whole. Now we set overall goals: we say what we aim to achieve and look for legislation that will support us in finding new solutions. It is a quest: you win some and you lose some, and learn as you go along. That is why in our knowledge policy we deliberately link up with practitioners in the various regions and on farms.'

Are you going to shape the knowledge policy in the regions?

'I'm going to get to work in the five 'living labs' for circular agriculture in the north of the country, the Achterhoek in the east, Flevoland, De Peel and the 'Green Heart'. I want to find out what problems the promising initiatives in the sector are encountering. Sometimes regulations and policy pose a problem, and in that case I will get back to the policymakers. Perhaps we can solve those stumbling blocks.'

Haven't those stumbling blocks in circular agriculture been addressed by innovative farmers in recent years?

'A lot of the stumbling blocks have been addressed, but it is difficult to resolve them. Often there is no single solution because the

'We must take new steps, and not keep on doing what we've always done.'

Michel Berkelmans, ministry of LNV



right approach depends on the farm and the region. I want to start by really listening and getting clear where the rules and regulations are a hindrance. For example, farmers want to improve soil fertility but have to comply with a manure policy that sometimes obstructs precision fertilization. A lot of thought has gone into that manure policy and it serves environmental objectives, but it could then stand in the way of circular agriculture practices.'

The Knowledge Agenda includes a small map of a patchwork of circular initiatives: living labs, test locations and local cooperatives. How linked are all these initiatives?

'There is a lot of dynamism and energy in the living labs; that is a great development. Farmers, water boards and nature organizations are joining forces, often with the provincial and municipal councils too. The farmers make their own choices, depending on their farm and environment, so you get region-specific approaches. Ultimately, we want to make the experiences in the regions more broadly accessible to other initiatives, so there is an exchange of knowledge between the test locations and the living labs. We still need to make some progress on that.'

What do you expect of WUR?

'What I expect of WUR is that it contributes expertise to support the transition to circular agriculture, in terms of both practice and process. I also expect the living labs to generate knowledge and innovations that WUR can make use of in its education and its research. We must strengthen the interaction between farmers and researchers, and the initiative for that needs to come from both sides.'

The role of WUR is under discussion. Some think it is a monopolist, while others say WUR is not visible enough in the agriculture sector.


What's your take on WUR?

'To start with: in all the rankings, WUR is in the top three at least. WUR is a top institu-

tion, and one we sorely need. But it is not our only knowledge partner. The idea that it is a monopolist might have something to do with Wageningen Research finally getting extra funding from this cabinet to strengthen its knowledge base, after years of budget cuts. I'm pleased about that, because the foundations of our knowledge system were collapsing. And there are always parties that don't get funding and are disappointed, but Wageningen Research does not have a monopoly. We contract assignments out to other organizations as well.

We are in a process of transition and that means rethinking your own organization. A quest for a new food system is not the same as introducing innovation in the existing system. This kind of change takes years and a process plan. WUR has to make this change just like the ministry of LNV, so that Wageningen can help us during the food transition. So we must take new steps, and not keep on doing what we've always done. I can see that reflected in WUR's new strategic plan, so this is not a criticism. But it is important to realize that the transition to circular agriculture affects WUR as well. The time has come to put this into practice.'

Should WUR be offering farmers new business models?

'The demand for new business models comes mainly from the unequal position of farmers in the food supply chain, as a result of which they get low prices. And from the quest for remuneration for added value. I am seeing all kinds of initiatives with specific business models across the sector, and I think it would be interesting to study those: what makes these farmers successful? And can it be upscaled? I think WUR – just like the ministry – can learn a lot from practitioners.' 

SHOULD WAGENINGEN APOLOGIZE?

With its focus on intensive agriculture, WUR has in the past contributed to the loss of biodiversity in the world, said Professor Esther Turnhout in an interview in *Resource* 20. She sympathizes with people who think Wageningen should be held to account for that. Does she have a point?

text Roelof Kleis and Tessa Louwerens illustration Henk van Ruitenbeek

Esther Turnhout



Professor of the Politics of Environmental Knowledge

'After the IPBES report on biodiversity was published, I was asked about Wageningen's role, and one of the reactions I got was that Wageningen should apologize. These reactions made an impression on me. They show that, in some circles at least, WUR has a reputation as an institution that is driven by the interests of industrial agriculture. We should take this seriously, whether it is true or not. Wageningen seeks to provide knowledge that has an influence on policy and on society, and that influence comes with responsibility. **We need to be reflecting continuously on the effects our knowledge has and on the interests we may or may not be serving with it.** That is all part of a democratic and legitimate role of the university.'

Krijn Poppe



Chief Policy Analyst, Wageningen Economic Research

'I think we can be proud of the results of the Green Revolution in the Netherlands and the world. **In De Peel, an area in the south-east of the country, there was severe poverty in the 1950s. Intensive livestock farming brought prosperity and regeneration.** Now it has gone too far and we have environmental problems, but you don't ask the Ford family

to apologize for marketing cars. New technology often turns out to have unexpected disadvantages. I agree that WUR should not rest on its laurels and could take a much clearer stand on the new challenges and the spirit of the times. WUR has an image as a production-minded university that responds slowly to change. To stick with cars for a moment: WUR is optimizing the diesel engine but is not doing much with electric vehicles. There is an element of truth there.'

Chris de Visser



Business Developer in Field Crops, Wageningen Plant Research

'For several decades now, WUR has been doing a significant amount of work on the impact of agricultural production systems on the environment. **When I started here in 1984, the emphasis lay on quality and no longer on increasing yields. And quite soon the focus shifted again, to the environment.** The industrialization of agriculture is largely driven by the cost price strategy farmers have to apply so as to make more and more efficient use of their resources, labour and capital. Only relatively recently did it become apparent that the decline in biodiversity is a major consequence of the agricultural practices of today. It is WUR that is taking the initiative to develop a nature-inclusive production system which does take this into account.'

David Kleijn



Professor of Plant Ecology and Nature Conservation

'In the past, the research in Wageningen was mainly geared to producing food. Especially after World War II, the motto was: no more hunger. People were not at all concerned with biodiversity and nature: they were still abundant then. **I don't see the need to be held accountable with retro-active effect. What good does that do?** It is much more useful to concentrate on solutions now: can we keep agriculture productive and create more nature and biodiversity at the same time? I can see a lot of change on that front at



'You don't ask the Ford family to apologize for marketing cars'

WUR. It used to be only the Environmental Sciences Group that thought nature and the environment were important. In the departments dealing with agriculture, efficiency came first. That is changing.'

Auke Pols



Researcher in the Knowledge, Technology and Innovation chair group


'Ethically, I think you could say that we share the responsibility for the biodiversity problems. Damage has been done and we contributed to the causes, and it could perhaps have been done differently. What is more, it was not that no one saw it coming: The disturbing book *Silent Spring* was published way back in 1961. So saying sorry could be a first step. **But there is a difference between apologizing for intensive farming in itself and apologizing for the way it was developed and implemented.** Intensive farming had good effects too. WUR takes responsibility for tackling global challenges. It is part and parcel of that to take responsibility for the impact of the way you tackle them. A second step is to look at the research process. If we had researched and implemented intensive agriculture differently, pay-

ing more attention to system effects and winners and losers, would we have had fewer problems? And do we bear that in mind more nowadays at WUR?'

Bram Bos



In charge of process support for innovation projects at Wageningen Livestock Research

'I think it's a good idea for the Wageningen community to be held accountable for its role in the development of agriculture worldwide, and the effects of that. **If we parade our obvious successes – and we do – we should also expose the obvious shadow sides of earlier choices.** And Turnhout is right that Wageningen, and particularly DLO/Wageningen Research, has always been part of the dominant agricultural model, even if it was only because of our research funding. And that is still going on: the calls for the Top Sector Agri & Food have to be funded by industry, which has a more limited timeframe. That means there is a big chance of knowledge being developed for application in the existing situation rather than for transformation to a better model.' 

Students think up solutions to world food supply problem

Turbo beans and silk caterpillar protein

How are we going to feed a world population of nine billion people in 2050? Students tackled this important question during the WUR Student Challenge ReThink Protein, which was run this year for the first time. *Resource* talked to three of the finalists about their solutions.

text Tessa Louwerens

'RESCUE MORAMA BEANS FROM OBSCURITY'

'Our idea is to use a local solution to tackle a global issue,' says Mathilde Annequin, a student of Nutrition and Health Engineering at Unilasalle Beauvais, France. She and her team looked into the potential of morama beans, which are indigenous to most parts of southern Africa. 'These beans are amazing: they thrive in semi-arid regions like the Kalahari desert and require little water. They are also high in protein, comparable to soy beans, and contain healthy oils.'

Despite these benefits, the beans have not been domesticated and are an underutilized food source, limited to rural southern Africa. 'We want to rescue morama beans from obscurity by developing nutritious and protein-rich products, using simple and cost-effective processing techniques that can be replicated even in remote African regions.' The team made a flour from

the beans and used this to make cookies and porridge. 'When you roast the beans they have a nice nutty flavour.'

The team is now in touch with people in Botswana who are working on a pilot project for domesticating the beans. The students are already thinking about



their marketing strategy. 'I'm from West Africa and another teammate is from Botswana, so we know a bit how the market works.'

'MAKE USE OF THE EXPERIENCE IN THE SILK INDUSTRY'

'Insects are often mentioned as a novel sustainable protein source,' says Anjani Nayak, an Erasmus exchange MSc student at WUR and a member of the SWAP (SilkWorm As Protein) team. 'To rear them requires new techniques to be developed. But there is an industry that already has thousands of years of experience: the silk industry. After the silk is harvested, the pupae, about 250 million kilos of them per year, are used as fish food or fertilizer. We have found a method to process the pupae into a protein- and iron-rich powder that contains around 70 per cent protein and keeps for a long time.'


The team's initial idea was to use the powder for human consumption, perhaps for malnourished children in India. 'But we realized that to do that the production method would have to be very cheap. Also, the legal regulations are unclear and we discovered that consumer acceptance in India is very low.' So they decided to focus on the pet food industry first. 'In Europe there are 360 million pets and the number of pets is still increasing. The same goes for India, due to increasing wealth. Insect-based pet foods are a good option for animals with allergies and also for owners that want to feed their pet a sustainable diet. We have found a silk grower who is willing to support us by providing pupae and a place to process them. If we are able to establish a market in the pet food industry, then in a few years, if acceptance grows, we might be able to take the step towards products for human consumption.'

'INVOLVE THE MEAT INDUSTRY IN THE PROTEIN TRANSITION'

'We sometimes jokingly compare ourselves with Tinder,' says Yentl te Riele, Master's student of Communication, Health and Life Sciences at WUR and a member of the Protein Forward team. 'We are convinced that the food of the future is plant-based. We can see that transition taking place, but we think it could go a lot faster if all the parties in the food industry, from the innovative startups to the big companies, worked together more. At present their interests tend to clash. Take the occupation of the pig farm in Boxtel by vegans, in response to which farmers lit the barbecue.'

With their startup Protein Forward, the team hopes to break down the divide by bringing the different parties together, in round table discussions, for instance. 'For the protein transition, we need all the parties. It requires a holistic approach. We think you shouldn't turn your back on the meat industry, but get them on board in the developments.' Te Riele admits that this is no easy task. 'Not everyone is ready for a transition, but

'Morama beans grow well in dry regions such as the Kalahari'

the meat industry is seeing profits falling and at the same time a gap in the market that it doesn't quite know how to respond to. On the other hand, there are lots of young, innovative small companies that might have plenty of knowledge and ideas, but don't have the capital to grow. Protein Forward works like a kind of Tinder for those parties. With the big difference that you don't have to swipe 100 times in the hope of a match, because we look for the right match in our network.' 

RETHINKING PROTEIN

The WUR Student Challenge: ReThink Protein is an international competition for individual students, student teams and student startups. Students are challenged to come up with a business plan (the 'ideation' category) or a prototype with which we could provide the growing world population with protein in a sustainable, healthy and affordable manner. The teams submitted their draft ideas in January this year, and then developed them further with the support of coaches from the industry. The finale was held on 27 June. Team SWAP (SilkWorm As Protein) won in the Ideation category, and team GrainGain won in the Prototype category. GrainGain used a residue from beer brewing to make protein powder which can go into products such as healthy snacks.



▲ All the winners of ReThink Protein take the stage. The first prizes went to teams GrainGain and SWAP: SilkWorm As Protein.

SPOTTED

ACID

The gut flora of marathon runners is different to that of couch potatoes. Trained athletes have more *Veillonella* bacteria on board, researchers at the Joslin Diabetes Center in Boston have discovered. These organisms convert the lactate produced by anaerobic metabolism in muscles into propionate. A substance which the muscle then uses as fuel. So trained athletes suffer less from muscle acidification. The question is of course how you get hold of such a helpful gut flora.

ADDICTION

Eating triggers a reward system in the brain. Money does the same, when you get it at least. Information puts the same neuronal system to work as food and money, discovered scientists at the University of California. And it doesn't matter whether the information is of any use. The researchers think this explains smartphone addiction.

BALD

Researchers at Columbia University have successfully grown human hair in a culture medium. They did this using a scalp from a 3D printer as a mould. According to the scientists, the technique will make 'hair farms' feasible, which can theoretically produce unlimited hair cells for transplantation. Exit baldness.

HOT

Eaten a pepper that's too hot? Don't panic, drink a glass of milk. Milk is the best antidote to hot food, shows a study by Pennsylvania State University. Milk helps more than cola, water or alcohol-free beer. Oh, and definitely don't use normal beer: alcohol only makes the burning sensation worse.



RESOURCE —

Iepe Bouw to go to indoor lacrosse World Cup 'A match every day; incredibly tough'

Four Wageningen student lacrosse players are going to the indoor lacrosse World Cup, which will take place in Canada in September. Student of Business and Consumer Sciences Iepe Bouw (24) will devote the next three months to preparing for it.

Why lacrosse?

'It started with a clinic at my secondary school. I thought it was a cool sport from the start. The great thing about lacrosse is that it's a kind of combination of rugby, basketball and hockey, but with a stick with a net. It is a contact sport and you are allowed to push and hit the stick, so you wear a helmet, a jockstrap, gloves, and elbow and shoulder guards. I love the speed of it



'They call lacrosse the fastest ball game on two legs'


too: they call lacrosse the fastest ball game on two legs. I've been playing it for five years now and I'm in the selection for the Dutch team.'

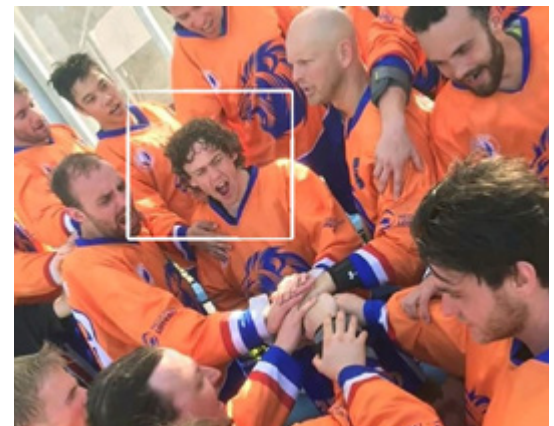
What are the differences between indoor and outdoor lacrosse?

'The biggest differences are the smaller pitch and the shot clock. You have 30 seconds to shoot at the opponents' goal. It is like an ice hockey pitch, actually, but without the ice. Because it is smaller, you play in teams of six instead of 10. I prefer indoor lacrosse because there is more technique involved. It really is about finding the little gaps.'

What is the World Cup like and how do you prepare for it?

'It is the first time that the Netherlands is taking part in an indoor lacrosse World Cup. Twenty national teams are taking part. We have three coaches, two of whom come from America. One of them is a native American, and that is where the sport originates from. During the tournament, you play

a match every day for a week. That is incredibly tough. At the moment we are training twice a month with the Dutch team in Utrecht. We also play regular matches. The next three months are all about preparing for the World Cup. I have three training schedules: one for the sports school, another one for wall ball – in which you hit the ball against the wall to practice throwing – and one for running. You need that, because it is non-stop action in indoor lacrosse; the ball is never still.' 



▲ Iepe Bouw with his teammates.



Superheroes

What started as protest against evening classes has become an annual event: the Sports Night. The theme this year was Superheroes. More than 200 students divided into 26 teams played fun games such as Bungeerun (see photo). Supermen, Spidermen, Zorros and Incredible Hulks did battle until 1:30 in the morning. The latter won the prize for the best outfit, while the overall winner was team 'FC Hopeloos'. [WA](#), photos [Sven Menschel](#)

MEANWHILE IN... CHINA

'Citizens will pay the price of the trade war'

President Trump has recently imposed import tariffs on many Chinese goods and China hit back with an increase in tariffs on US products. At the G20 summit on 29 June, both countries agreed to resume their trade negotiations in an attempt to end this trade war. MSc student Xi Wang hopes the talks will be successful. 'I am highly concerned.'

'As a Chinese student studying abroad, the trade war is rather far away from my life. The case I felt more closely related to was when the US government accused Huawei of espionage. They imposed restrictions, after which some of my friends were not able to access websites like Google and Gmail with their Huawei phone. This greatly influenced their daily lives.

To me, it seems like the US believes that China has become a considerable competitor on the global market, causing the biggest part of the US trade deficit. At the same time, China holds the 5G technology which might monopolize the future wireless technology

field and can pose a threat to their national security. In order to minimize the trade deficit, rais-



ing tariffs can be the most direct and effective solution.

I am highly concerned, because in the end the citizens of both countries will pay the price. My parents tell me that the prices are continuously rising in China. I assume this also happens in the US. In China, the prices of food products and housing have increased the most dramatically. These are people's basic needs! Besides this, the value of the Chinese currency is also fluctuating, which influences everyone who is living or studying abroad. I believe that the danger of a long-lasting trade war with the United States is enormous. I really hope both countries can have a proper talk to end this drama soon and stop harming people.' [WA](#) [CC](#)



Xi Wang, an MSc student of Urban Environmental Management from China, reflects on recent events in his home country.

YOU ON CAMPUS

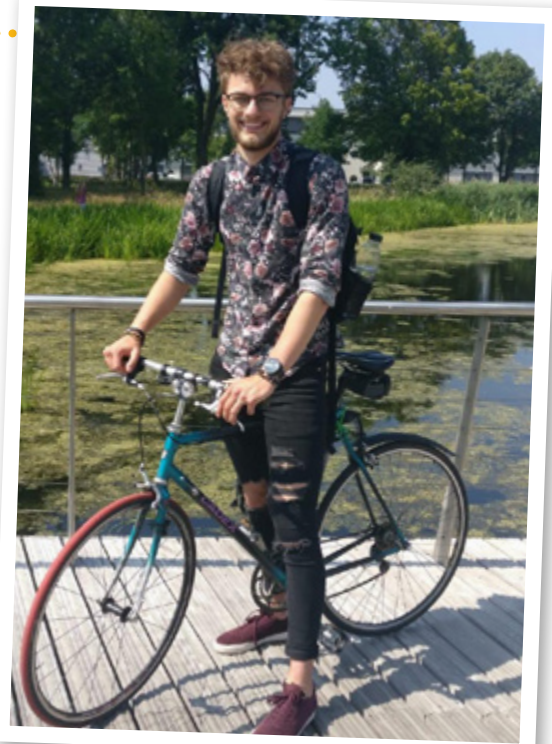
If you see someone racing through Wageningen on a red motorbike anytime soon, there's a good chance it's Gaël Kobessen. The first-year BSc student of Soil, Water, Atmosphere hopes to get his motorbike licence in the next couple of weeks. 'I'm counting down. As soon as I can, I'll be off to the Alps.'

Gaël loves to tinker with engines and he bought his first moped when he was 10. 'And since I bought my motorbike I've taken it apart and put it together again twice.' He's been riding (secretly) since he was eight years old. 'On a cross motorbike in the village I come from. I just love the feeling of freedom, which is unlike anything else. The wind in your hair, the roar of the machine, just the whole experience makes me very happy. Rain not so much, though.'

'I have lots of other hobbies too,' says Gaël, 'but I'd say the biggest ones are working out, kickboxing and Thai boxing. I did krav maga for a while too, but I couldn't work on my stamina enough with that.' Gaël was able to improve his sporting skills on holiday in Thailand, where

'Secretly, I've been riding a motorbike since I was eight'

he went on a two-week Thai boxing training camp. 'In a word, it was tough.' But that's exactly what Gaël liked about it. 'It was a special time because you started out with lots of people you didn't know and you bonded quickly because you were



doing something so intense together.' Thai boxing is on the back burner now. 'Fitness in general is still important to me, not just boxing. That means I eat healthily and I keep up my cardio and strength training. I do that on a daily basis.' AvdH

Book tip: a layperson's guide to the climate problem

For blogger Geert van Zandbrink, summer is the perfect time for reading. He's already finished one book: *Hoe gaan we dit uitleggen* (*How are we going to explain this*). Read this book and at the next party, says Geert, you'll be able to explain the finer points of why 'the climate' is a problem.

'One month ago I wrote about how sustainability thinking is the Wageningen religion. About how every lecture seems to be aimed at spreading the faith, and that it is constantly being stressed how important the climate problem is. It can be difficult to "zoom out" and see these things in perspective. So why is the climate a problem, actu-

ally? And what will happen if we don't do anything about it? What would really happen if we just go on the way we are doing now? As a "Lebo" type I know what the climate problem is, but exactly how it works? No idea. Yet sustainability is an important aspect of my Wageningen degree course. To get an idea of the scale and relevance of the climate problem, I recently read Jelmer Mommers' book *Hoe gaan we dit uitleggen*. As a journalist with *De Correspondent*, Mommers has been following the climate problem for years. He explains clearly and simply where we stand now, what the future looks like, and what we can do. As I read about different ele-

'As I read, the various Wageningen degree programmes came to mind'

ments of the climate problem, the various Wageningen degree programmes came to mind. The warming of cities calls for land use planners, and sustainable agriculture needs animal and environmental sciences. My own programme, Economics and Policy, produces thinkers who ponder environmental and CO₂ taxes. We can all do our bit.

BLOG



Geert van Zandbrink studies Economics and Policy. Read all his blogs at resource-online.nl/blog.

TIME FOR JUST ONE BOOK?

If you can only find the time for one book this summer, make it this one by Jelmer Mommers. After the summer you'll be able to argue the finer points of why "the climate" is a problem and why you and Wageningen must do something about it.'

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

Drinking caipirinha in Cape Verde

'On Sal, one of the Cape Verde islands, I spent four and a half months helping on a sea turtle conservation project. Poachers are the biggest threat to the Cape Verde loggerhead turtles, especially to the females that come up the beaches to lay their eggs. As a field assistant, it was my task to protect the turtles against the poachers, to move threatened nests, to train volunteers, to talk to tourists and to collect as much scientific information as I could about the population.

'The little sleep I got was sometimes disturbed by a turtle crawling over me'

DISTURBED BY TURTLES


To prevent poaching, we patrolled the main beaches all night in two shifts of about eight hours. During the day we were usually busy moving nests, processing data, maintaining the camp, spreading information and doing loads of other jobs. I didn't get much sleep either. And the little sleep I got was sometimes disturbed by a turtle crawling over me.

CHRONIC LACK OF SLEEP

Our team was made up of both local and international staff. We were also supported by international volunteers. We all slept in tents next to a kite-surfing school. We only had one day off a week, so there wasn't much time for having fun outside the project. To start with, we often went out in Santa Maria on our *folga* (Creole for day off), but after a while you are so short of sleep you are just too tired for that. The best thing about the *folgas* was the delicious caipirinha on the beach, where we could always enjoy ourselves however tired we were. I did snorkel as much as possible and I helped with a project on monitoring the bird population. To

reach one of the brooding places we had to snorkel for three quarters of an hour and scale a steep cliff face.

MILITARY ESCORT

Although confrontations with poachers were rare, that had not always been the case. So we patrolled a few of the beaches with a military escort. On one occasion I nearly ran into a poacher myself. While we were on patrol, we saw a light that came closer and closer, and then suddenly went out. When we went towards it, we found a turtle on her back. There was no one to be seen. The poacher probably ran away as soon as we saw him. If we hadn't noticed the light, he would probably have dragged the turtle off the beach and chopped her up to sell the meat. Many of the poachers are fishers who want to earn a bit extra. The meat of a turtle can fetch 50 to 100 euros, but for them it is a significant income source. So only patrolling is pointless: education and an equal distribution of tourism revenues are just as important.'  EvdG



THE WORKS

Who? Ward Koehler (24)
MSc student of Biology
What? Internship at Project Biodiversity
Where? Sal, Cape Verde

Do you too have a nice story about your internship or thesis research abroad?
Email lieke.dekwant@wur.nl.



In memoriam

Marc Loman



Our colleague Marc Loman, who had cancer of the bile duct, passed away on 20 June. What initially seemed like back trouble turned out to be a terminal disease. Marc personally broke the news of his situation to us at the end of March: an emotional gathering that we shall never forget. Marc was 61 years old. After working on research at the then department of Economics, he came to work as an application developer at the WUR Library in 1997. In this post he worked on various aspects of the development of library applications. From 2002, Marc worked as an Information specialist, at first in Social Sciences in the Leeuwenborch, and later in the Forum in the department of Research & Education Support. The computerization of the library was the common theme running through his career. From 2015, Marc worked on improving the library system. He was also a valued member of the library's Development Team. Marc was very good at analysing project proposals and he made sure the objectives and results were clearly formulated. He never failed to spot your grammatical errors either. Marc was not just the library's con-

science, he was also our memory. If someone raised an issue on which we had already made a decision at some point in the past, he produced it immediately. From 2018, Marc was a member of MDT Library, a collaboration between IT and library staff using the Agile system for management and development. This was quite a puzzle to start with, but luckily we had Marc to keep us on the straight and narrow.

It was not just the Library that Marc worked hard for; he also showed great dedication to WUR as a member of the executive committee of the WUR Council and a representative on the university's consultative body for staff, OPWU. In Marc we have lost a loyal, conscientious and committed colleague. On behalf of all the staff at the Library and Facilities and Services, I extend condolences to Sudha and Jay, wishing them the strength to bear this great loss.

Hubert Krekels, Librarian

Announcements

NOMINATIONS FOR THE HEINEKEN PRIZES 2020

The Royal Netherlands Academy of Arts and Sciences KNAW and the Alfred Heineken Foundation hand out the international Heineken Prizes every two years in the fields of biochemistry and biophysics, cognitive sciences, history and environmental sciences. Academics eligible for nomination are excellent, internationally recognized scientists, active researchers whose work holds promise and who work at a university or research institute in the Netherlands or elsewhere. The deadline for nominations is 15 October.

KNAW.NL/NL/PRIJZEN/HEINEKENPRIJZEN

AFRICA THESIS AWARD

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

Wanted!

Students or recent graduates for support and implementation of the new learning environment

The Education Support Centre is looking for students to work for at least 16 hours a week as soon as possible. The job is to support lecturers and course coordinators in building their courses in the new learning environment – Brightspace - that will replace BlackBoard in the course of 2019.



Your responsibilities

- Acquire the competencies to work in the new learning environment
- Build courses following the lecturer's instructions and/or based on the original setup in Blackboard
- Test the courses in the new learning environment
- Assist in developing training materials, manuals, Frequently Asked Questions (FAQ), instructional video clips etc.
- Participate in the helpdesk and solve the problems that are reported
- Help develop and operationalize tools in and outside the learning environment
- You will be assigned specific tasks and will be expected to work in one of the project rooms of the Training, Support and Course Implementation Team.

Your qualities

You are pro-active and able to acquire new competences. You are a team player. You have good communication skills and can be a sparring partner for the lecturer and designers. You are able to come up with alternative options using other digital tools (FeedbackFruits, video server P2Go, Labuddy, Turnitin etc). You can cope with stress and meet deadlines.

You will be offered a six-month contract with a possibility of extending it by another six months. You will receive a gross salary of € 980,- per month, on the basis of a working week of 16 (paid) hours.

Interested?

Apply by sending an Email before July 14th 2019 with your motivation and CV to: sara.panis@wur.nl



and literature. Submission deadline: 7 July 2019.

ASCLEIDEN.NL/CONTENT/AFRICA-THESIS-AWARD

GET A GRIP ON YOUR DIP

Depression is very common, and affects students as well. You can have a lovely life as a student but with all the changes you face (new studies, new town, new friends), there is nothing unusual about feeling down or anxious for a while, and perhaps for a long time. Can I cope with it all? Do other people like me? Why am I feeling down when everyone else around me seems so happy? You are not the only student who has such thoughts! If you don't wait too long before seeking help and advice, there is less risk of a full-blown depression. To lower the threshold for getting help and advice, two (Dutch-language) websites have been developed: gripopjedip.nl and kopstoring.nl. Here you can find free, anonymous help via email or the online group course led by expert mental health professionals. A new course starts every month.

GRIPOJEDIP.NL and KOPSTORING.NL

CYCLE THE WAGENINGEN 'GEO PATH'

Geopad Wageningen is a cycling tour of seven kilometres on which you can learn about the history of the Wageningen landscape. Nowhere else could you find such a variety of soils and landscapes within such a small area. The cycling route was designed by the Casteelse Poort Museum together with the World Soil Museum on the WUR campus. You can cycle it with an expert guide (apply through educatie@casteelsepoort.nl) or individually using your smartphone. You can download the route on the website

CASTEELSEPOORT.NL/FIETS-WAGENINGSE-GEOPAD

WUR ARTISTS WANTED

Are you an artist as well as a student or employee at WUR? The WUR library is offering exhibition space in the display cases on the third floor of the Forum. A unique opportunity to exhibit your work to a

broad audience: 300-500 students visit the library every day. We have a preference for three-dimensional work, but other art forms are also welcome. Interested? Email monique.braakhuis@wur.nl

Agenda

Thursday 4 to 10 July FILMHUIS MOVIE W

Le Semeur: an intriguing, true story from 1852 about a group of strong women who stayed on in their village without men after Napoleon's army had suppressed an uprising there. From then on they had to fend for themselves. *The Fall of the American Empire*: A Canadian comedy about a philosophical courier who faces the ultimate dilemma when he sees two bags of money left behind after a failed burglary. Location: Wilhelminaweg 3A, Wageningen. €6.50/€5.

MOVIE-W.NL

Sunday 7 July, 10:00-11:30 A CLEAN-UP WALK WITH WAGENINGEN SCHOON

Wageningen Schoon holds a monthly 'clean-up walk' every first Sunday of the month. We meet up at 10:00 and spend about one and a half hours collecting litter. Wageningen Schoon provides equipment and coffee or tea. Meet at De Bongerd swimming pool, Bornsesteeg 4.

Monday 8 July - Friday 26 July, 10:00-17:00

SUMMER WRITING WEEKS (WAGENINGEN WRITING LAB)

Not yet finished your writing when the summer holiday starts? Consider joining Wageningen Writing Lab's Summer Writing Weeks in the period July 8-26, each day between 10 am and 5 pm. You can subscribe for one or more weeks. Periods of writing will be broken up by short breaks and walks. Coffee and tea will be provided, lunch you'll have to bring yourself. You can discuss your writing with a writing tutor or with another participant. Interested? Send an email before 5 July to: info.wageningenwritinglab@wur.nl

Saturday 13 July, 10:00-16:00 NATIONAL OPEN APIARY DAY

Beekeepers across the Netherlands will open up their apiaries to the public. You can visit Martin Verstege's hives in the beautiful old orchard dating from the 1930s at the Haarweg 18. Come and experience the wonderful world of the honeybee, with piping and croaking queens, wiggly dancing bees and murderous drones. There is a demonstration hive where a small bee population, possibly including the queen, can be admired behind glass. Honey can be tasted too and Wageningen honey is for sale. Location: Bijenstal de Boomgaard, Haarweg 18 Wageningen.

Friday 16 August, 11:00-16:00 OPEN DAY AT PROEFTUIN RANDWIJK

The experimental garden at Randwijk offers fruit growers a mixture of fundamental and applied research. Come and see research and demonstrations on sustainable fruit farming, modern fruit varieties and sub-varieties, efficient production systems and automation. The running of the place was taken over by Fruitconsult in 2014. The central advisory service for fruit farmers (CAF), the Dutch fruit growers' association (NFO) and WUR make up the steering committee for the experimental garden. The ambition is to ensure that Dutch fruit farmers stay ahead of the game in terms of sustainability, efficiency and viable production systems.

Location: Lingewal 1, Randwijk.
PROEFTUINRANDWIJK.NL/

Colophon

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>>TYPICAL DUTCH

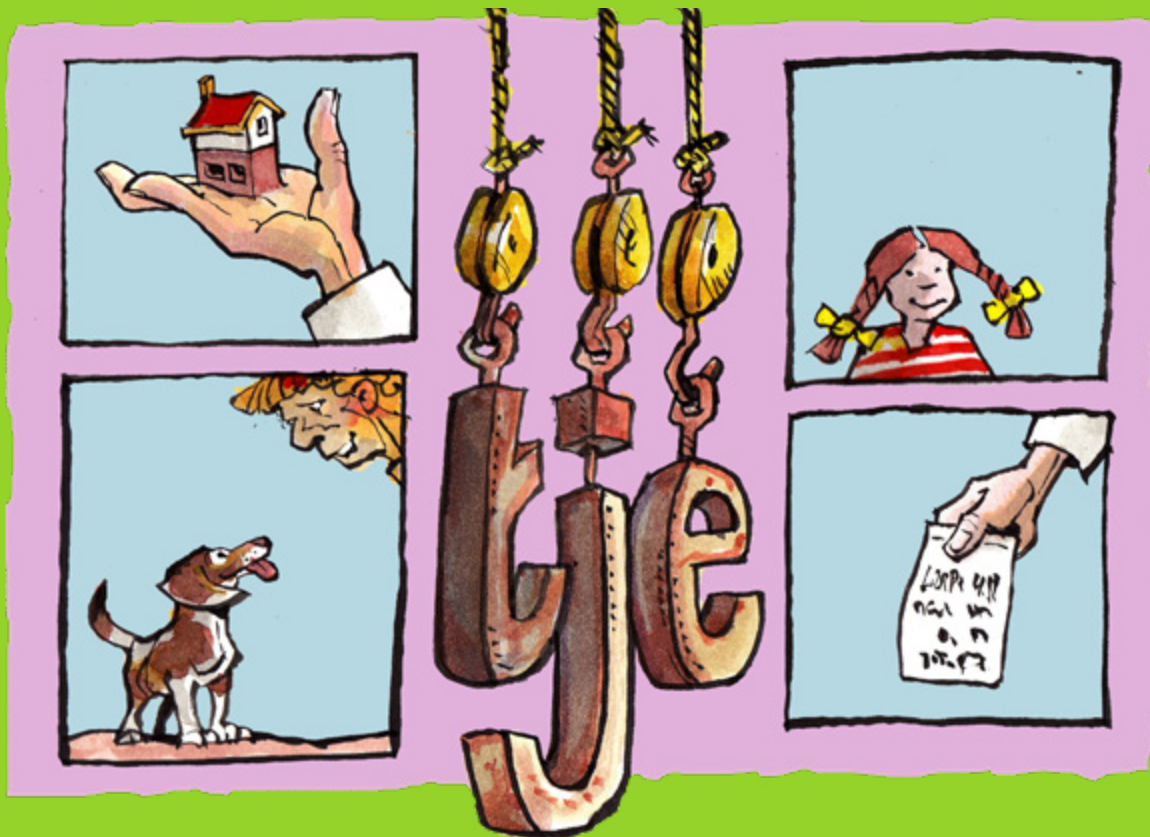


ILLUSTRATION: HENK VAN RUITENBEEK

Diminutive madness

When I started learning Dutch, I quickly became acquainted with the Dutch diminutive. Unlike speakers of other languages, the Dutch do not use them only to indicate that something is small or cute. And this can be quite confusing at times.

Diminutives are extensions added to common words, to add a sense of smallness or cuteness to the meaning. While uncommon in English, these exist in many languages such as the Russian '-chk' and '-ik' or the Italian '-ino', as in the word Cappuccino, which literally means 'little hood'. The Dutch diminutive '-tje', however, can get pretty confusing. In my foreign mind, I instinctively translate the '-tje' as something cute, a form of baby talk. In some contexts, this works fine: 'huisje' – a small or cute house, a 'housey'. 'Hondje' – a small or cute dog, a 'doggy'. But hearing students ask their professor 'Mag ik een vraagje stellen?', it sounds to me like 'Can I ask a cute little, teeny tiny question?' Hardly an appropriate way to address a teacher.

I eventually learned that the Dutch diminutive is not always used for baby talk. It can be used to emphasize that a certain object is singular, or to give a new meaning to a word. 'Ijsje', for instance, does not mean 'little ice', but rather an individual ice cream. 'Meisje' is not a cute maiden, simply a girl. Nevertheless, I can't help being slightly amused whenever I am at the supermarket checkout and I'm offered a teeny tiny, cute little 'bonnetje'. **David Katzin, PhD candidate in the Farm Technology group, from Israel**

'I can't help being amused at the supermarket checkout when I'm offered a *bonnetje*'

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