# Resource

MAY 2021 VOLUME 15

Students back on campus

Photo NASA/JPL-Caltech/MSS

Ecological check for biomass use

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# FOREWORD

# Light

After over a year of caution, lockdowns, curfews, face masks and online education, we are all desperate for light at the end of the Covid tunnel. And that light is in sight: hospital admissions are falling, cafes have opened their outdoor seating, more sporting activities are allowed and other restrictions are being eased. As of September, campus education will finally be the norm again (page 5). If all goes well, of course. The students behind the Globus festival have even gone so far as to organize a two-day festival on campus in early July (page 4). Admittedly on a small scale with outdoor seating only and loads of safety precautions, but still — it's a festival. The profits will be used to save tropical forest. It is not certain as yet whether the festival will go ahead; that will depend on the Covid measures in force at that point. I hope it will, so I can raise a glass with my colleagues to a slightly more normal new academic year.

As I write this, I get an alert from the Covid app on my smartphone. It seems last Thursday I was near someone who tested positive. Stay at home, make an appointment for a test — all that tension again. But the light continues to shine at the end of the tunnel.

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Luuk Zegers Resource editor



# TOP GUYS

Every day, 103 people die of heart problems in the Netherlands. That's too many, so student society KSV Franciscus decided to raise funds to help the AED Wageningen foundation purchase new defibrillators. Society members Dirk Wijnen and Marijn Deur (both 22) raised money with a 'great physical challenge': cycling up the Grebbeberg hill 103 times. They completed their mission on Friday 14 May after some seven hours on their racing bikes. They and other Franciscans raised about 3000 euros, enough for a new defibrillator. Mission accomplished!

Van Or

# Globus - corona style

It was cancelled last year but this year the Globus festival is due to take place on campus on 3 and 4 July. Well, festival... Of course it has to be Covid-proof and that means max two visitors per table sitting and enjoying a bite to eat, a drink and live music. The question is whether it can go ahead. University spokesperson Annet Blanken says they will only give the go-ahead if the Covid guidelines allow it and the municipality gives its permission. To be continued.  $\Box$ 

Read more at www.resource-online.nl



Who wouldn't want a photo of these young cygnets and their parents? This one was taken by Guy Ackermans. If you'd rather take your own snap, you need to get down to the Forum pond.

O resource\_wur

# Spurt in first-year registrations

After making up lost ground, WUR is no longer heading for a drop in the number of first-year Bachelor's students next academic year. Registrations have picked up in the past few weeks and WUR now stands to welcome 1880 first-year Bachelor's students.

That is a projected growth of seven per cent compared with last year, but the actual growth will probably be less. Firstly, last year Dutch school leavers were given until 1 June to register because of Covid, whereas this year registration closed on 1 May. The number of school leavers has fallen compared with the figures on 1 June 2020. Secondly, the number of international students who have registered has gone up, but not all international students who register come in the end. Knowing that, WUR will likely end up with a small drop in the number of first-year students.

The degree programmes in Communication, Business & Consumer Sciences and Tourism are still facing falling numbers, while the programmes in Environmental Sciences, Landscape Architecture and Molecular Life Sciences are the biggest growth areas. Registrations at other universities are up by an average of five per cent, reports the Association of Universities (VSNU). It is not yet certain how many Master's students WUR will be welcoming next year, because European students in particular tend to register late. As



There is no excuse for not exercising anymore. On Wednesday, Sports Centre De Bongerd opened its doors, including to people over 27, for fitness training and indoor sports like badminton that you can do in pairs. But you can't yet jump on your bike on a whim and peddle over to do some fitness training. You can book a slot on the app. Slots are in blocks of an hour and a half. You still have to change and shower at home, but you can relax on the terrace of the Sports Pub afterwards, smelly as you may be. CJ

# Back to campus as the basis for education

Campus classes should become the basis for WUR education from September. Teachers are enthusiastic, but they do have some questions

he ministry of Education, Culture and Science assumes that nearly everyone in the Netherlands will have been vaccinated by the start of the 2021/2022 academic year and has asked the universities to organize on-campus education with maximum group sizes of 75 people per classroom. The ministry assumes that social distancing will no longer be required.

WUR is basing its preparations for next academic year on this scenario. So students will have to be in Wageningen to take classes. Teachers will no longer have to offer online alternatives to campus education. Students will not have to show a negative self-test or proof of vaccination to attend classes, except for fieldwork excursions that take several days. The limit of 75 people per room will apply at all times, except during exams. WUR is exercising caution in case the coronavirus situation turns out to be less positive than is currently anticipated. So the timetablers have been asked to prepare two timetables: one for the baseline scenario and one for a fallback scenario.

In the fallback scenario, social distancing is still necessary, which affects the capacity of the classrooms. Since timetabling of period 1 is already in full swing, and timetabling for period 2 starts on 15 June, course coordinators are being asked what they need in terms of time and space, both in the baseline scenario and in the fallback scenario. When preparing their courses, teachers can assume that the baseline scenario will apply, so they don't have to prepare their courses for both scenarios.

#### Many questions

Dean of education Arnold Bregt and rector magnificus Arthur Mol recently presented WUR's education guidelines for period 1 of next academic year to teachers who will be teaching in that period. At the meeting, many teachers expressed their enthusiasm for teaching on campus again in period 1: in a poll, 86 teachers said they are looking forward to teaching on campus, while 10 teachers were not so keen to do so. But as well as enthusiasm, there were a lot of questions. For example: how logical is it not to offer alternative online education if you do ask students to stay away from class if they are feeling unwell? And what if one of the students tests positive after

## Teachers will no longer have to offer online alternatives to on-campus education

a class? And what about teachers whose groups are usually larger than

75 students? Dividing them over several classrooms means you need more teaching staff. So, stay online after all? The meeting ended on a positive note: 'Anything is better than yet another semester with limited practicals. We'll come up with a solution eventually.' LZ





# **Students live separate lives**

Students have little or no contact with their nonstudent neighbours. They live separate lives, more or less in harmony.

This finding comes from a study by the Verwey-Jonker Institute on the social benefits of students in a residential neighbourhood. The study was commissioned jointly by the student housing providers. In Wageningen, researchers interviewed residents and neighbours of De Mouterij residential complex, which was built three years ago. De Mouterij is home to 176 students, 75 of whom took part in the study. Only four of those 75 have contact with one or more non-student neighbours and just one quarter of the respondents feel part of the community where they live. Yet despite the lack of contact, both the students and

their neighbours say relations are good.

A lot of students do some kind of voluntary work, but mostly for other students and through student associations. Students do express a need and willingness for more contact; a quarter of the students in De Mouterij said they would like to do volunteer work locally. Covid-19 even led to a local helpline being set up, but there were few requests for help with odd jobs.

The Verwey-Jonker Institute advises the housing providers to stimulate contact between students and their neighbours, for example by organizing an annual neighbourhood activity. RK

# 'PhD students should decide for themselves how they want to work' Janneke Remmers

She is one of the four candidates for the PhD elections. Read more about her views and those of Mariken de Wit, Lotte Yanore and Harro Jongen on resource-online.nl

# A ban on meat?

The canteen in the Architecture faculty at Delft University of Technology now only sells vegetarian food. Will WUR follow suit?

The University of Delft's Faculty of Architecture is banning meat from its canteen in the interests of making the campus sustainable. Delft aims to be completely CO<sub>2</sub> neutral by 2030. That includes food, of course, which is currently still the third biggest source of emissions on the Delft campus. Whether WUR is going to follow Delft's example is not clear. Head of Location Facilities Annet de Haas is keeping her cards close to her chest. WUR has been working on a new Food & Beverage vision for some time. The first draft is now ready, says De Haas. 'But I can't give anything away about the content, except to say that the protein transition is a very important element. But whether we'll go as far as Delft is the question.' Every day, the caterers on the campus offer the choice of a hot meal with or without meat. Since May 2016, Monday has been the one day when only vegetarian food was on offer. The introduction of 'meatless Monday' led to heated discussions and even protest. The opponents of a meatless Monday thought it was being imposed on them. The Delft initiative has caused a stir now too. Supporters and opponents are at each other's throats on the Wageningen Student Plaza Facebook page. 'We go for veggie food here in Wageningen too,' says Luc VB. 'But luckily, we have freedom of choice here. 5 May is about not letting anyone else decide what you are or are not allowed.' De Haas expects that the new Food & Beverage plan can be submitted to the Executive Board before the summer vacation. It will be clearer then what form the protein transition is going to take in WUR catering outlets. RK



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SCIENCE

# WUR SETTING UP NEW DATA SCIENCE DEGREE PROGRAMME

The university is launching three new tracks for students of Nutrition, Economics and Communication.

WUR aims to start a new Master's programme in 2022: Data Science for Food and Health. The programme has now been submitted to the national committee that evaluates proposed degree programmes at all the Dutch universities. But the university wants to launch three components of the new programme in the coming academic year. These are specialist tracks in the degree programmes Nutrition & Health, Management, Economics & Consumer Studies, and Communication, Health &

'We see data science as a means of strengthening nutrition and health research.' The new degree programme is part of an investment plan by WUR to strengthen the discipline of data science. This includes

Life Sciences.

the appointment of three new professors. Education director Arnold Bregt: 'We see data science as a means of strengthening nutrition and health research.'

#### Job market

Data science is hot, and all the universities are investing in it, so WUR will have to propose a 'unique' programme to get it selected. The programme must also be relevant to a specific labour market. WUR is targeting food companies, health institutions and organizations such as the National Institute for Public Health and the Environment (RIVM). At present, the university expects to recruit 20 to 30 students a year to the new degree programme, says Bregt. Wageningen Academy and the WUR graduate schools are also going to offer their employees short refresher courses on data science. AS



Photo Shutterstock

# Less ammonia on organic dairy farms

Switching to organic farming reduces the nitrogen problem, claims Wageningen Livestock Research.

Ammonia emissions from large organic dairy farms are 22 per cent lower than those from large conventional dairy farms, shows a quick scan by Wageningen Livestock Research carried out for Biohuis. WUR bases the claim on data from dairy farms in the Bedrijveninformatienet (BIN), a panel which keeps track of the emission figures of 34 organic dairy farmers, as well as many other farmers. Their lower score comes from a combination of measures the farms have

#### In intensive livestock farming, switching to organic methods does not reduce ammonia emissions

adopted: no artificial fertilizer, more outdoor grazing, less animal slurry, and less proteinrich feed. Together, these measures halve ammonia emissions from fertilization and grazing.

Researcher Gerard Migchels thinks switching to organic dairy farming could be one of the ways to meet Natura2000's nitrogen criteria

for farms near nature areas. He sees good prospects for conventional dairy farms near Natura2000 areas that switch to extensive and organic farming, because although their productivity may drop, they will get a higher price for their milk. Migchels does mention one proviso, though: this switch is only possible if demand for organic products rises.

## Pigs

For intensive livestock farming, however, switching to organic methods does not lead to a reduction in ammonia emissions. In fact, ammonia emissions per animal are slightly higher on organic pig and poultry farms than on conventional farms, according to the WUR quick scan. This is mainly because there are fewer pigs in an organic pig shed than in a conventional one. That improves animal welfare but also the environmental costs per kilo of meat.



# Why are some glaciers growing despite climate change?

hile glaciers around the world are shrinking due to global warming, there are also a few that have started a growth spurt. How can that happen?

'Glaciers are formed by snow that falls high up in the mountains,' explains climate researcher Remco de Kok. 'That snow piles up and becomes so heavy that it slowly slides downhill. That happens very gradually, at the rate of a few metres a year.' It is warmer lower down, and the snow melts again. De Kok: 'Glaciers are changing all the time. The annual cycle of shrinkage and growth is a natural process.' Normally, there is an equilibrium: part of the glacier melts in the summer, and that is compensated for by fresh snowfall all year round. Climate change disturbs those natural dynamics. Higher temperatures make the glacier melt faster, and snowfall doesn't compensate for that. So the glaciers shrink.

This story is familiar. But there are exceptions to this worldwide trend. These glaciers are found in, for example, the Karakoram and Kunlun mountain ranges, both of which border the Tibetan plateau. 'This phenomenon is known as the Karakoram anomaly,' says De Kok, 'because it was first discovered there.' Satellite measurements show that despite global warming, these glaciers have grown slightly in recent years: about 10 to 20 centimetres per year. 'We think that is because of extra snowfall caused by irrigation. These glaciers border a dry desert-like area where agriculture has increased a lot in recent years. Irrigation brings in more water, which then evaporates and forms clouds. The clouds drop more precipitation and snow in the mountains.'

Isn't it a good thing that those glaciers are not shrinking? 'It's a good thing in principle. But we don't think it will last long. Climate change and global warming will cause these glaciers to melt too, which will make more water available initially. But because it's getting hotter, more water evaporates too, and you will need extra water for irrigation. In the long run, irrigation cannot keep up with the rate of melting and these glaciers will shrink too, which will eventually lead to a reduction in the meltwater. That's a disaster for the millions of people in this region who are largely dependent on the meltwater for their drinking water, agriculture and hydro-electric power.' TL



Remco de Kok, climate researcher.

Every day we are bombarded with masses of sometimes contradictory information on pressing issues. In this feature, a WUR scientist gives you something to hold on to. What are the facts of the matter?

Every question makes you a little wiser. Do you dare to ask yours? Email us at redactie@resource.nl

Illustration Marly Hendricks



# Farmers must join forces to cut insecticides

#### Farmers must join forces to reduce pesticide use. Good information about the alternatives is also crucial.

Researcher Lieneke Bakker makes this case in her PhD thesis on the use of insecticides on Dutch farms. Farmers *are* willing, says Bakker. 'They do want to cut their use of chemicals but they can't, or at least not on their own.' Bakker reached these conclusions after a large survey among conventional

'Farmers want to cut their use of chemicals but they can't, or at least not on their own.' arable farmers in which she investigated what was preventing farmers from cutting their

use of insecticides. 'Farmers say they don't know enough about the possible alternatives. So there is a knowledge gap. They are also influenced a lot by what the neighbouring farmer does; they watch one another.'

## Group

So collaboration is important. That is also clear from a large field study on the use of insecticides and the number of insects along the borders of arable fields. Spraying a lot reduces the number of insects by a quarter. It doesn't matter whether the border is next to an organically farmed field or a conventionally farmed one. Why is that? 'The use of insecticides influences the whole area,' explains Bakker. So an 'organic' field border is also affected by the use of insecticides in the adjacent field. Bakker: 'The choices made by individual farmers influence others too. For real change, you need to find solutions as a group.' RK

# Chemistry determines plant-butterfly links

The chemical defences of plants determine which butterflies they are host to. This 'tolerance' cuts across plant families.

Butterflies lay their eggs on specific plants: their larvae are resistant to the chemical defences of that particular host plant. Many plants are therefore linked as host plants to a group of butterflies (and/or other insects).

Biologists are looking for explanations for how those special relationships between plants and butterflies develop. Are closely related plants hosts to closely related butterflies? Or does the kind of chemical defence play a decisive role? Master's student Corné van der Linden gives the answer in an article in Ecology and Evolution, of which he is the lead author (while still a student!) Van der Linden studied 145 species of Northern European butterflies belonging to six different families. There was already a database of the host plants of these butterflies. For

every plant, he identified the composition of the defence compounds, obtaining the chemical profile of the plant's defences. He then used statistical tools to find links between that chemical composition and the relationships between plants and butterflies.

## Van der Linden studied 145 species of butterfly and their associated host plants

The result was clear: the chemical defence system in use determines which butterflies visit a plant. 'So the defences of the host plant largely explain which group of butterflies visit it,' explains Van der Linden. 'That means that you need a lot of chemical diversity in the host plants' defence systems in order to get ecological communities with a diverse range of butterflies.'

The various defence systems often cut right across plant families, as the same defences evolved independently of each other at different times during evolution. Sometimes nature repeats itself. RK

# Plea for ecological check on use of biomass

Monitor the ecological effects of cosmetics, feed and biofuels made from biomass, says Abigail Muscat in her PhD thesis.

Biomass plays an important role in the biobased economy, together with wind and solar energy, but it is itself a scarce resource. How can we make the best use of biomass - wood, crops and plant waste? At the moment, European countries use oil crops to produce biodiesel, because the EU stimulates the production of biodiesel with subsidies. In general, the nonfood use of biomass is governed by the market - in other words, by economic considerations. We therefore give priority to using biomass for highvalue products like food, cosmetics and inputs for the chemical industry. Only after that do low-value products such as animal feed and biofuels come into play.Intense discussions are ongoing about the climate effects of biomass used for energy. Proponents state that biomass is the sustainable alternative for fossil fuels, while opponents claim that burning wood in power plants is as bad for our climate as fossil sources. Muscat wants to broaden this discussion so there is an ecological check of all biomass use. She thinks we first should use biomass for food and inputs for the chemical industry, given that there are no alternatives in the biobased economy for these products. She would rank the



Should we use rapeseed for food, feed or biofuels? Photo Shutterstock

use for cosmetics much lower – 'we can do without it'. The use of biomass for feed calls for a broader analysis. As the world population continues to grow, we will need to eat mainly plant-based food and limit our meat consumption. That will reduce the use of biomass for feed.

## Soils

The proponents of bioenergy also claim that there is a lot of marginal land available on Earth to grow energy crops – take the vast steppes of the Ukraine, for instance. We need an ecological check here too, says Muscat. 'You can use crops and plant residues from degraded lands to produce energy, but you can also use them to improve the soils or for feed. My advice is that we check the  $CO_2$ effects of possible biomass use in different locations.' She wants to draw up guidelines for raising the societal value of biomass.

'We know that the bio-economy has to grow, to replace the fossil fuel economy. Let's make the right choices in this process so that we do not use biomass to heat our houses; we have better options for that. Moreover, it would help if we utilized recycling

#### 'Let's not use biomass to heat our houses; we have better options for that'

schemes, ecological frameworks and ecological engineering to build a bioeconomy with nature.' Abigail Muscat received her PhD degree on 21 April. As

# COLUMN

# Canteen 2.0

Delft University has announced that the restaurants at its Architecture faculty are going fully vegetarian. Should WUR follow suit? If you ask me, we can come up with something better than just banning meat, and this is the moment to talk about that, with WUR working on a new 'Food & Beverage' vision and the existing catering pretty much at a standstill thanks to Covid.

#### 'A canteen where the WUR community could continuously put forward ideas'

So let's imagine what a canteen 2.0 might look like when everything opens up again.

To start with: we can certainly

learn something from Delft for our canteen 2.0. We should look seriously at ways of taking sustainability further and not be afraid of radical change, even where the meat options are concerned. But we mustn't reduce sustainability to meat and the climate. What about other animal products, and plant-based products with a big environmental impact? Consequences for biodiversity? Labour conditions in the supply chain? The health aspects of all these products? Waste? Sustainability is a constant search for answers, which are rarely simple - as we in Wageningen know only too well. We have fervent proponents of organic farming and fierce critics of it.



# **Vincent Oostvogels**

People who are all for in vitro meat, and people who are working on the revival of forgotten legumes. And so on and so forth.

How nice it would be if we got a canteen 2.0 that put this search for answers in the forefront. A canteen where the WUR community could continuously put forward ideas so that the food on offer reflected the broad, slowly evolving palette of sustainability strategies. So that you find futuristic in vitro meat, those neglected legumes, and meat from robust circularfarmed cows side by side. So that you are repeatedly forced to think things through on various fronts: not just climate, not just biodiversity, not just labour conditions. And to talk these things over with other people time and again, always putting your own convictions up for discussion. And to choose the lunch that best fits your own priorities. Maybe the fast-growing broiler chickens will then disappear from the canteen in time, and maybe there won't be much demand for that circular beef. But I think we'll benefit more from this approach than from focusing so much on meat that we think that one big step - banning meat is all we need to do.

Vincent Oostvogels (25) is in the first year of his PhD research project on biodiversity restoration in the dairy farming sector. He dreams of having a few cows of his own one day.

# Large-scale study on reusing water

# CUSTOMIZED WATER

How can we make better use of scarce water during dry periods in the Netherlands? For the next six years, WUR will be working with its partners in the AquaConnect programme to find solutions for sectors including horticulture, industry and nature.

he Netherlands faces increasingly frequent water shortages due to severe droughts. At such times, farmers are asked to use less surface water to irrigate their crops, and industry to use less water for production processes and cooling. The AquaConnect research programme - led by Huub Rijnaarts, professor of Environmental Technology at WUR — is going to look for ways of solving this water shortage. Researchers are looking into whether treated wastewater and brackish groundwater could be reused to reduce the pressure on sensitive ecosystems and on finite sources of fresh water.

The Netherlands has two distribution systems for fresh water. The first one is a fine-meshed network that provides all houses with drinking water, and the second is the system of rivers, lakes, canals and ditches in which the surface water is stored and transported. The Dutch water boards work continuously on storing, depositing and transporting water. Increasingly, the question is whether we are storing enough water to be able to meet the demand for water in the summer. So AquaConnect is developing a third water system for the Netherlands: a series of decentralized networks that link up demand and supply.

#### Salt

The situation in Zeeuws-Vlaanderen is an interesting case. The Wageningen PhD student Joeri Willet is studying the water consumption of the Dow chemical company in Terneuzen. His study is part of the Water Nexus research programme, which AquaConnect follows on from. Dow uses a lot of fresh water (10 million cubic metres per year) for cooling purposes. At present, the company gets its water from several different sources, such as a Belgian polder, a wastewater purification plant in Terneuzen, and the



Text Albert Sikkema

Biesbosch delta. But the water from the Biesbosch may in future be needed to supply drinking water for the Rotterdam area.

So Willet is looking for alternative sources of water for Dow. He is working on a water grid, a network of local water sources that are always available for meeting Dow's needs. He is evaluating a total of 25 water sources, both surface water from the polders of Zeeland and groundwater. For the groundwater, salt concentration is an issue - if you extract too much groundwater in a coastal area, it causes seawater to penetrate the area, increasing the salinization of the groundwater. Willet's question is always firstly: what combination of water sources meets the needs of a company such as Dow sustainably? And secondly: how does the water get from the source to the factory? His model includes 400 possible pipeline routes for transporting the water. 'First I look at which sources that meet Dow's quality requirements could supply the water,' explains Willet. 'And

**WATER PURIFICATION IS AN OPTION FOR MAKING MORE FRESH WATER AVAILABLE** 



A flower greenhouse in Maasdijk. Fresh water is in short supply in the Westland area. AquaConnect is researching whether brackish groundwater can be purified to make it usable for market gardeners. Photo Shutterstock

secondly I look at whether I can make use of water that is of poorer quality but more conveniently located close to the factory. That water, which might be brackish, for example, could be mixed with clean water, producing water of a quality good enough for Dow. And thirdly, I look at the possibilities for purifying water from a source like this.' He always has to weigh up the pros and cons. Willet: 'Do we source water from far away, laying a pipeline for it? Or do we purify water that is locally available? And what are the costs and the CO<sub>2</sub> emissions of both options?' AquaConnect is going to do the calculations on this example for companies in other regions of the Netherlands.

#### Purification

So water purification is one of the options for increasing the supply of fresh water in dry periods. And this is where Jouke Dykstra, who teaches in the Environmental Technology group, goes into action. 'Sometimes we need water purification so the water fulfils the requirements. I'm looking at what techniques we need to do that, working with colleagues from the University of Twente.

Basically, there are two techniques available: biological purification and physical-chemical purification. 'The advantages of biological purification are that it is effective and reasonably cheap,' says Dykstra. 'But the disadvantage of a biological process like that is that it takes some time to get it started and you need stable quantities of water to purify. If we need to be able to meet a demand for water fast or flexibly, perhaps we should use a different purification technique.' At AquaConnect, two physicalchemical processes are the main focus: nanofiltration and electrodialysis. In nanofiltration, the wastewater is passed through membranes that extract organic compounds. Electrodialysis is a combination of an electric field and a

membrane. Dykstra: 'With nanofiltration, you can easily remove polyvalent ions (such as Ca<sup>2+</sup> en Mg<sup>2+</sup>) and larger organic compounds. What is left in the water after that is mainly small monovalent ions such as sodium (Na<sup>+</sup>) en chloride (C<sup>1-</sup>). You can remove them with electrodialysis. You desalinate the water with this technique and you get fairly clean water, though it's not drinking water quality.'

#### **Market gardeners**

These techniques are being used in a second AquaConnect case in which researchers are looking into the reuse of water for the market gardeners in the Westland area, where fresh water is in short supply. 'If we start pumping up



brackish groundwater in Westland,' says Dykstra, 'we must first apply nanofiltration to remove the larger organic compounds. Then we must lower the salt concentration using electrodialysis, but retaining the valuable ions such as calcium. You could build that kind of purification installation in the area to supply the market gardeners with the purified water.' AquaConnect is going to research whether this is the best option. One alternative would be to use more purified wastewater from houses and companies in the Rotterdam region for horticulture.

While salinization of ground- and surface water are key issues for fresh water supplies along the Dutch coast, on the dry sandy soils of the eastern Netherlands, different issues are at stake. Thanks to the dry spring months of recent years, streams have run dry and woodland is drying up too. The question here is: how can we provide farms and nature with sufficient water in dry periods?

#### Stream

AquaConnect's third case builds on an existing project: the 'Wilp Water Factory' in Gelderland, where a water purification plant is under construction to feed a stream called the Twellose Beek with wastewater. The Water Factory is going to capture rainwater and wastewater separately and purify it so that as many valuable substances as possible can be extracted for reuse. The remaining clean water is then emptied into the Twellose Beek to protect nature and maintain



Water purification is one of the options for increasing the supply of fresh water in dry periods. Photo Shutterstock

underground drinking water supplies. The idea is that AquaConnect will do further research and development on this in other parts of the eastern Netherlands. This is an interesting challenge for water purification companies, because the water from the average purification plant is not clean enough for a nature area. The bacteria in the installations break down many substances, but not all the drug residues and pesticides. 'There are hundreds of chemicals in our water system in extremely small but measurable quantities,' says research coordinator Huub Rijnaarts. 'Nineteen of them are problematic and we target those with our water purification technology.' One example is carbamazepine, a drug that is extremely hard to break down with biological purification techniques. This is one of the substances the Water Factory has to be able to deal with. Rijnaarts: 'There is no point in completely

purifying all water to the level of drinking water quality using membranes. You'll be left with concentrated wastewater, and where is that then supposed to go? And anyway, it's much too expensive. It is a better idea to reuse water and then the question is always: what water quality is called for? You don't want water with drug residues in it in your food system, but for a petrochemical company, rinsing water

Wageningen researcher Huub Rijnaarts' AquaConnect programme focuses on the reuse of wastewater and brackish groundwater to have bigger reserves of water during periods of drought in the Netherlands. The project will receive over four million euros from the Science Research Council's Perspectief programme and a further two million euros from industry and civil society organizations. WUR will be collaborating in AquaConnect with the Technical University of Eindhoven, Utrecht University, the Technical University of Delft, the University of Amsterdam, VU University Amsterdam and the University of Twente. The research is due to start this autumn and to be spread over six years.

with small quantities of drug residues in it is no problem. So we are creating a network that connects suppliers with clients so we can use varying levels of purification to deliver customized water quality.

# THE KEY MOMENT

# The click

'Just like a lot of people, there was a fortunate moment in my life when I met the partner with whom I went on to have children. The funny thing is that I experienced something similar in my scientific career. On 1 June it will be 30 years ago. Ever since then I've been working with the same person: Egbert van Nes.

We were both working at the RIZA Institute for Inland Water Management and Wastewater Treatment. I had been recruited to make models of lakes. Then I hit upon the idea of making agentbased models: modelling each individual organism separately and getting them to interact to see what happens. I had been to America and learned some things there. Everyone was enthusiastic and in the end, I was even allowed to recruit a new team member. And that was Egbert. Egbert was working elsewhere in RIZA, but we had already shared a canoe on a staff outing. He didn't know anything about modelling yet, but he thought he



Turning points: sometimes you spot them immediately, sometimes only in hindsight. In this series, members of the WUR community describe a decisive moment they will never forget. This time Professor Marten Scheffer on the moment he first started working with Egbert van Nes — the professional partner of his life.

could do it. Then he built a model in a weekend in which big fish ate little fish that they came across. Everyone was impressed. And the rest is history. We collaborated from that moment on, and we have never stopped. We complement each other both in personality and in expertise, and it works very nicely. At some point I was offered a professorship at Wageningen. I said, okay, but only if Egbert comes too. We've been working together so long that it feels a bit like a marriage. We celebrated our silver work-partnership anniversary

five years ago. Eventually you know

## 'We celebrated our silver work-partnership anniversary five years ago'

exactly what you can expect from each other, without having to say anything. I am always full of ideas, half of which turn out on second thoughts not to be that great. Egbert

calmly helps me separate the wheat from the chaff, and he is very strong on the technical side, being good at both maths and modelling. He is the engine in our machine, he helps me keep my feet on the ground and he makes sure we get something substantial done. We complement each other perfectly: Lz

Marten Scheffer (left) with Egbert van Nes. Own photo

# THE VALUE OF WUR

WUR keeps Wageningen town afloat. The scale of the economic impact of the university and related enterprises is clear from a report by Neo Observatory. The study was commissioned by student housing provider Idealis and others. Nowhere is a student worth more to the local economy than in Wageningen.

Infographic Pixels&inkt



# **Top 5** employers among universities

# Wageningen 37%

Leiden 25%

Delft 20%

Nijmegen 18%

Maastricht 16%

2018

cents

# Employment

of Wageningen jobs

are provided by the knowledge complex.

37%

WUR and related companies with their own R&D (FrieslandCampina, the companies in Plus Ultra, etc.) employ 7600 staff between them. That is 37 per cent of all the jobs in Wageningen. No other Dutch university comes close to that. Last year, WUR appointed more than 1000 people. Unilever moved onto the campus, so the proportion of Wageningen jobs on the campus is now set to go up to 40 per cent. The knowledge cluster also generates job opportunities indirectly.

JOBS: WAGENINGEN TOTAL: 21,000						
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				<b>F</b>		
	WUR	4800		<b>R&amp;D</b> 2	2800	



# Income

For every euro earned in Wageningen, 77 cents is earned by a WUR-related employee (56 cents) or a student (21 cents). In no other university city is that proportion of the total wage bill so high. If you divide the total by the number of students, every Wageningen student is worth 37,903 euros. The average for the Dutch university cities is 28,203. The calculation assumes that students are the knowledge complex's raison d'être and the drivers of the economy.

# **Top 3** universities for share of income in the city

#### Wageningen 77%

Leiden 47% Delft 41% The second secon



## Added value in production terms

Added value is an economics concept that expresses how much the production (of goods or services) is worth. These figures are based on calculations by Statistics Netherlands (CBS) per job and sector. Income is part of this. The added value of the total Wageningen economy is 1500 million euros, 440 million of which is generated by the knowledge sector. That is 30 per cent. Once again, Wageningen scores the highest.

# **Top 5** for added value

#### Wageningen 30%

Leiden 19%

Delft 15%

Nijmegen 15%

Maastricht 12%

# **Demographics**

# Level of education

The proportion of the Wageningen population (aged 15-75) to have been through higher education was 48 per cent in 2019, up from 41 per cent in 2005. So half the population of Wageningen has benefitted from higher education, giving Wageningen the most highly educated population after Utrecht, Amsterdam and Leiden. The Dutch average is 33 per cent.

# Age

Wageningen has the youngest population of all the university cities: 33 per cent of residents are between 15 and 30 years of age, up from 28 per cent in 2005. The growth is the biggest after Delft and Maastricht. The Dutch average is 18 per cent.

# 33%

of residents are between 15 and 30 years old.

2018

# Taking science to the wider world

# ACTION STATIONS!

Here, have 10,000 euros – and keep up the good work! Four Wageningen projects recently received a contribution from the KNAW fund for science communication, to use to involve the general public in their research. Recognition at last for something that has long been seen as a labour of love. Text Marieke Enter

ewaardeed! (Appreciated!) is a new and for the time being one-off pilot fund for science communication established by the ministry of Education, Culture and Science, to be implemented by the Royal Netherlands Academy of Arts and Sciences (KNAW). It is part of a move to make science communication a fully recognized aspect of a scientific career. To liberate science communication from its hobby stigma means putting your money where your mouth is. Which is happening through initiatives like this fund, even if the Gewaardeerd! grant is relatively modest: a maximum of 10,000 euros per application.

**Communicating with passion** It's no goldmine, acknowledges Reindert Nijland. Nevertheless, the assistant professor of Marine Animal Ecology is very pleased with the grant, as the leader of one of the four Wageningen projects to be awarded it (see inset). His project is about sharing fascinating and new findings about marine ecosystems -'with passion', as the application stresses. 'The grant is a nice recognition of our approach to science communication,' he says. 'To some extent, it happens spontaneously, out of enthusiasm for our subject and our personal fascination with marine ecosystems. But there is an underlying message too. We want to expand people's

understanding of how beautiful and clever marine ecosystems are, and also to point out their vulnerability and the threats to their survival. And with that message we also reach policymakers, politicians and the captains of industry, in the hope that our scientific findings will be a consideration in their decisions.' In short, this is science communication aimed at making the world a better place.

#### **Unexpected reactions**

That motive is familiar to Arnold van Vliet (Environmental Sciences), who received 10,000 euros from KNAW too, in his case for sharing findings about recent developments in nature. 'Scientists could have a much bigger impact on society if they didn't limit themselves to academic publications so much,' he thinks. 'Just because something has featured in an academic journal, it doesn't mean the rest of the world knows about it. In fact, you don't even reach all the relevant scientists that way, let alone a wider audience and the people who make those important (and political) decisions.'

There are many more reasons to take science communication seriously. The more people know about your work, the bigger the chances of getting valuable feedback or input, is the experience of both Van Vliet and Nijland. Science communication reaches more than just the usual suspects in your academic field, and it brings you reactions from some unexpected directions as well. It is not just the academic ego that benefits from a tweet about sequencing by bike getting 1500 likes (Nijland), or from more than

The KNAW fund Gewaardeerd! has allocated a total of one million euros to ongoing projects for science communication in which at least three researchers are collaborating. Of the total of 96 applications submitted, the KNAW evaluation committee has accepted 91. Four of them come from Wageningen. Alongside Nijland's and Van Vliet's initiatives, the others are 'Wageningen Young Academy: an inclusive future for scientists and scientific research', submitted by Diana Machado de Sousa (Agrotechnology and Nutrition Sciences); and 'Sustainability science communication without jargon', submitted by Hanna Schebesta (Social Sciences). Successful applicants may spend the money on science communication as they see fit - the money is not earmarked more specifically than that.

a million viewers seeing a TV news item about tick bites (Van Vliet). The quality of science benefits as well. And that is not all. Nijland: 'With science communication, you don't directly score points in a tenure track. But if you are good at it, it does help in the narrative of how you grow as a scientist.'

#### Media-savvy

What about the 'there he goes again' effect - the occasionally smirking reactions of colleagues to scientists who are often in the media? Van Vliet pauses for a moment when he's asked about that. 'Well, they never say that to my face,' he responds. 'I do often get told that someone's mother or partner has seen me on TV again. Well, that's all to the good, isn't it? I am in the media a lot because I want to put something important in the spotlight. And you simply do need a lot of repetition to get the message across effectively - it doesn't stick if you just talk about it once. So I am fairly indefatigable in this. If people see that as "there he goes again" - well, that doesn't bother me. Better to be too visible than not visible enough.

It does annoy me that some colleagues still haven't even filled in their own WUR profile page. As though it's not important to make it easy for the outside world to see what exactly we do.'

But these are the exceptions, agrees Van Vliet. Overall, WUR and those who work there are actually doing pretty well at communicating what they do to the outside world. 'The university offers good support in that too,' says Nijland, referring both to training

# 'BETTER TO BE TOO VISIBLE THAN NOT VISIBLE ENOUGH'

courses for scientists on topics like making nice vlogs, and to practical support from the Communication department. Van Vliet agrees. 'WUR does more on communication than many other universities. It is quite a luxury, for instance, to have communication advisors, spokespersons and web editors here who can help you.'

Early on Sunday morning Even with that support, science communication is not something you can casually produce on the side. It is time-consuming. Nijland and Van Vliet make time for it because they see science communication as an inextricable part of their task - even if that means being the guest on a popular radio programme early on Sunday morning. Nijland: 'Of course I'd rather roll over and go back to sleep at that moment. But in general, science communication is a significant part of the pleasure I get from my job. People telling me I've made them think, reactions from a surprising direction that's what I do it for.' He hardly ever gets negative reactions, he says. 'In subject areas such as livestock or human health (Covid!) things can get very heated on social media. But I have very little to do with that. Nearly everyone likes marine biology, so you can't so easily put a foot wrong.'



Behind the scenes: The nature TV programme *Vroege Vogels* (Early Birds) films how Nijland places fish hotels in the Haringvliet inlet. Journalists and media are willing to make space for good science stories', is his experience. Photo Private archive, Nijland



Teachers, staff, students: we all have to give a presentation now and then. During the preparations for the annual preliminary round of Famelab Wageningen, the candidates had some help this time from WUR alumnus Ward van Beek of ItsaRepen. Here he shares his tips and tricks for stepping onto the podium (real or virtual) with confidence.



#### Content

'Ask yourself: 'What is the key message I want to give the audience?' Try to formulate the key message briefly and clearly. Only when you've got that clear, can you get on with the rest of the content. It is fine to write out your text in full first. Make sure you're in command of your story. Use colloquial language. It's easier to make the whole thing your own when you are really on top of your content. Then you will speak more fluently and there will be space for spontaneous additions that come to you, which helps you reach your audience better.'

To PowerPoint or not to PowerPoint

'The best presentations don't need slides at all, as every stand-up comedian knows. And if slides are needed, keep them to a minimum, and with only pictures or key words. Any presentation where you can circulate the slides afterwards for information purposes is not a good presentation. Because if your slides can be read and understood without explanation, you needn't have bothered with your presentation.'

'Take your audience seriously. Underestimating them is as bad as overestimating them'



#### Prepare, prepare prepare

'Presenting starts with asking questions. What kind of presentation is it? Who for? What is the context? How much time do you have? Are there audiovisual aids? You need to answer all these questions before you decide to give the presentation. There is no such thing as a standard context, aim or audience. So there is no standard presentation either. If you are sure that you are the right person to give the presentation, you can start your preparations. Always make sure your audience can relate to your story. The better the fit and the more topical and relevant the talk, the better. Take your audience seriously. Underestimating them is as bad as overestimating them.'



#### Charisma

'People enjoy listening to someone with a calm, relaxed aura. But don't let your presentation be dull and dry. There is nothing more persuasive than genuine enthusiasm. Play with your voice - speed up and slow down. Vary your volume and pitch - sometimes high, sometimes low. Build in pauses. Silences help with emphasis and underlining a point. Words need time to come home to an audience. Silences give you a break too, and a chance to catch your breath. A sip of water can help with that in a very natural way. Eye contact and an open manner are important during a presentation, but can make an inexperienced speaker feel uncomfortable, making it harder. That is why it is so important to practise. The more confidence you have in yourself and the quality of your presentation, the easier it will be to look people in the eye.'



#### Clarity

'Make sure the structure of the presentation is logical and easy to follow, and preferably start with something attention-grabbing. Your audience should be sitting on the edge of their seats from the start. Spending five minutes introducing yourself at the start is not a good idea. Instead, start with a brief anecdote, a video clip, a quote, or something topical. A good start helps ensure that your audience will remember your message. Speak clearly and avoid jargon as far as possible. Speak a bit more slowly at the start, to give everyone time to get used to your voice and style.'



#### Practise, practise, practise

'Self-confidence comes with practice. The best speakers come across as though they were talking off the top of their heads. But that doesn't mean they haven't spent hours preparing their presentation: they often know them so well that they can tell their story in a very relaxed way without having to keep looking at their notes. It's normal to feel a bit nervous. Even top speakers feel tense and alert before giving a presentation. But that tension dissolves as soon as you are on familiar territory, such as a presentation you know well because you have practised giving it so often. Take the time to practise in front of a camera. And then in front of friends. You'll find it keeps getting better and more enjoyable.'

# Mars rover holds out promise for Wageningen

# **OVER THE HORIZON**

After a journey of nearly 500 million kilometres, NASA's space rover Perseverance landed successfully on Mars in February. *Resource* asked WUR scientists Wieger Wamelink and Lammert Kooistra what this means for them, given that their research focuses not just on Earth but also on outer space. Text Laura Bergshoef

pace agriculturalist Wamelink is doing research in the greenhouses of the Nergena building on how we could grow vegetables on the moon and on Mars. Wamelink, who can be recognized by his Mars mugs and t-shirts: 'We help life on Earth this way too. Because we are facing an enormous future challenge here: a shortage of food. The soil on Mars is very similar to our desert soil. One of the things I study is how you can grow vegetables even on poor soils and under harsh conditions.' According to remote sensing specialist Lammert Kooistra (who analyses satellite and drone images), the technologies that come out of space research are what makes it promising for his field. 'Take satellites, for example. We use them to monitor all kinds of things here on Earth – climate change, biodiversity, plant health. Space research plays an important role in developing the technology.'

#### Learning from the rover

The implications of the Mars rover Perseverance for his research are hugely promising, thinks Kooistra. 'Here in Wageningen we are working on robots that are quite like Perseverance. We want to use those robots to analyse plants on Earth, even in inaccessible places. A robot like that has got to be robust and able to function autonomously to some extent. The journey to Mars is extremely tough, with shocks on take-off, extreme cold, and harmful radiation. And after that journey, the rover must do research independently over a long period on Mars, where it is extremely cold and there is no protective atmosphere. In that regard we can learn a lot from the Mars rover.'

'Also, Perseverance has innovative

sensors on board that we would like to have too,' adds Kooistra. 'Like the spectrometer. The Mars researchers use it to identify the mineral composition of the soil there with great precision. We could use that kind of sensor for things like analysing plant health on Earth.' The technological progress booked by the Mars research is important to Wamelink's research too. 'The measuring techniques get better with each new rover. I work with artificial soils that are based on analyses done on location by Mars rovers such as Curiosity, Perseverance's predecessor. Thanks to new technology, my artificial versions are coming closer and closer to real Mars soil - or to be more precise, Mars regolith. Soil is terrestrial and consists of sand, the dead remains of plants and soil fauna. All you get on Mars is minerals.'

## Sample

Perseverance is not just going to analyse the mineral composition on location; for the first time – if all goes to plan – regolith samples will be sent back to Earth from Mars. 'If I can get hold of one, I can get started,' says Wamelink. 'Then I can find out whether I really can grow plants on Martian soil. I can't wait!' The researcher's patience will be tested,

#### Perseverance

NASA's Perseverance took off for the red planet on 30 July 2020 and arrived in one piece over six months later. The rover was designed to study the geology of Mars and track down signs of old life. Perseverance also collects soil samples to send back to Earth and is used for testing innovative technology.



Ecologist and exobiologist Wieger Wamelink (left) with remote sensing specialist Lammert Kooistra at one of his Mars greenhouses, where he researches how we could grow vegetables on the moon and on Mars. Photo Eric Scholten

though: it is expected to take 10 years for the samples to arrive on our planet. 'For the first time, there is now a drone flying around Mars as well, which I hope will give us more idea of the geology of the planet,' Wamelink goes on. 'The mineral composition varies there just as it does on Earth. It would be nice if it turned out that some parts of Mars consist of claylike soils. We can grow crops more easily on clay. 'It's a nice bonus that "extraterrestrial" studies have forced us at WUR to leave the beaten track - and that is desperately needed,' says Wamelink. 'Humanity is not treating the Earth right. We are stuck in a certain agriculture system: we are exhausting the soils and drought is becoming an ever bigger problem. The system needs an overhaul. As a space agriculturalist, you start with nothing and everything must be circular. Together with other disciplines, we are looking for creative ways of developing a whole new agriculture system for Mars. That

provides us with new insights, relevant to agriculturalists on Earth as well. If you ask me, that's what good science is all about: breaking down old patterns and forging links between different disciplines.'

## **Planet science**

Wamelink and Kooistra foresee that WUR students and researchers too will increasingly look for answers to their questions in outer space. Kooistra: 'With a mission like Perseverance, we are in unknown territory, which makes us dependent on model studies,' he says. 'People have managed to successfully land the rover on Mars and make it drive around there before we have ever

set foot on the planet. This shows that we are already quite good at simulating and understanding unfamiliar environments. So I see this kind of study as an exercise in getting the measure of new conditions. What will our climate be like in 1000 years, and what will Earth look like then?' According to Wamelink, a course on Planet Science wouldn't be a bad idea. 'Or enquire with the ESA - they are looking for new astronauts now,' he suggests. 'I wouldn't go to Mars myself. Six months locked up in a capsule... You'd feel like you were in an episode of Big Brother.' 'Maybe it's our age, but I wouldn't fancy such a long journey either,' Kooistra responds with a laugh. 'Although I do think that overview effect would be fascinating. But just give me a picture of it via a satellite.'

# **'IF I CAN GET HOLD OF A SOIL SAMPLE FROM MARS, I CAN GET STARTED'**

# Curator Liesbeth Missel says goodbye

# A lite sper reasures

The guardian of WUR's treasure trove is retiring. Liesbeth Missel, curator of the Special Collections at the library, leaves a valuable collection of heritage items behind.

he Special Collections department has existed for 41 years, and Liesbeth Missel has been working there for 40 of them. This was her first and only job. And a dream job it was too, for someone who loves books, culture and history. Special Collections is bursting with old botanical books, maps and atlases, garden and landscape designs, botanical and zoological illustrations, prints and photos, some of them aerial. After studying at the Library Academy in Deventer and then qualifying as an archivist in Amsterdam, Missel came to Wageningen in 1981 on the advice of her former teachers. From a temporary job as a librarian at what was then IMAG (agricultural mechanization, RK) she moved on to the Central Library, as it was called then, to work as an assistant at Special Collections. 'They appointed me on the day the library moved from the building behind the Aula to the Jan Kopshuis (on the Generaal Foulkeweg, now

'People often have no idea whether something is worth keeping'

'Digitization has done away with the need for adding to collections'



demolished, RK). That move was a unique opportunity to get to know the collection. You handle everything while you are unpacking it all.'

And since then, you and the team have been allowed to collect prize items for WUR's treasure trove?

'Yes, you could put it like that. Build it up and make it accessible. Special Collections had been established the year before I came. In 1983, the decision followed to make all the outlying collections part of the Central Library. At one point there were nearly 100 little libraries in Wageningen, some of them run by department secretaries. Collections including maps, and definitely not all part of a library. I started documenting the old editions and maps.'

#### How did the library obtain the rest of the collections?

'Donations are the main source of the collections, with additional purchases by professors and librarians. Ever since the foundation of the agricultural college in Wageningen at the end of the 19th century, there have been distinguished people who wanted to donate their collections. It started with Staring, one of the founders of



Photo Guy Ackermans

that college, who donated part of his library. Later it was mainly collections on garden and landscape architecture that were donated by the descendants of ex-students and teachers.'

#### Is there an active acquisition policy?

'There is a policy but not a budget of our own. But if there is something that we ought to have in the collection, it can always be discussed. The point is that, where books are concerned, we are reluctant to buy very much. Digitization has done away with the need to add to collections. You can find a lot online nowadays. Since 2005, the focus has been on collecting Wageningen academic heritage, which means material from our own organization that came out of, or has been used in, education and research. That is material that we are unique in: drawings, wall displays, nursery and crop catalogues, brochures, photos. We also manage WUR's art collections.'

# Do you have all your material in digital form yourselves?

'No. For the same reason: some of it is already available digitally elsewhere. Thanks to the Biodiversity Heritage Library, an initiative by botanical libraries around the world, millions of books are available digitally in other collections. And then there is Delpher, Internet Archive,



Google Books, and others. It's a different matter when it come to old maps. They are regularly revised, so it can be difficult to see whether it's the same. That can make it interesting to digitize them. And we've got a lot of collections of old maps.'

Missel has a nice story about how she discovered several old maps in the Surveying building up the hill near the Arboretum. She had gone there to pick up a few books for the collection. 'In that beautiful room with a view over the water meadows, there were old provincial maps on the wall – with the sun shining on them. I said: those might well be originals. I would love to have them because our Special Collections would be a better place for them. Okay, was the response, but we want to have something on the wall. Right, I said, I'll come back tomorrow. I had a few facsimiles lying around, things we had duplicates of. When we took the maps out of their frames, my hunch turned out to be right: they dated from 1560-1570. So they were really old maps.'

The old maps were saved, but other things have been lost over the years. In the move from the town to the campus, attics and cellars were sometimes cleared by people without the relevant knowledge or any sense of history. 'People often have no idea whether something is worth keeping. It went in the bin, to another institution or to someone's house. We once got drawings of Indonesian plant pests from someone who had fished them out of the bin at a department. There was once a zoological museum at Duivendaal. There is a list from 1894 of models of animals, plants, body parts and organs from that museum. The Auzoux horse, now at the entrance to the library, comes from that collection. Recently the model of a sheep's stomach came to light. We have no idea what happened to the rest.'

#### Is WUR proud enough?

'There is room for improvement, though it varies per institution. Academics from Delft, for example, are much prouder of who they are and the instruments they have developed. Of course, architecture is very tangible. In Wageningen, the knowledge goes more into a production method or a system, which is less tangible. That is reflected in the way we celebrated our centenary too. The focus was not on what we have achieved, on our history, but on what we are now and what we can do. To some extent that's a pity because it means knowledge gets lost. The Edelman auger for soil sampling is still famous, for example, but hardly anyone has heard of the Dieperink beacon, a land-surveying instrument. We've even got a patent on it.'

# The Special Collections are not exactly highly visible. Will that change?

'Yes, that is a pity. The latest idea is to create smaller exhibitions in various buildings, with material relevant to the building. That was before Covid broke out.' And the portraits of rectors now hanging up in the Aula are going to be put up in the new Dialogue Centre. As will a number of plaques relating to the history of the university. We have also thought about installing a kind of touchscreen tabletop with which you can exhibit the collection digitally. But I don't know if that will happen. My successor Anneke Groen will work on the visibility of the collections. We are keen for the history of science to play a bigger role. For us to make WUR stories more visible. As an example: part of the Krelage library was once given to us as a donation. The rest was auctioned. I recently bought a catalogue of that auction. Krelage was one of the big traders in flower bulbs, who put the Netherlands on the map as the land of bulbs. He got an honorary doctorate from Wageningen. I would like to write a story about that collection. And of course, it would also be nice if we had a kind of university museum that links our history with the present and the future. It wouldn't have to be a classical museum; it could be digital.'



#### Missel's personal Top 3 from the collection

• 'An art book by Simon Schijnvoet, a landscape architect and print artist who lived in the 17<sup>th</sup> and 18<sup>th</sup> centuries. It is an album in which he kept his own work as well as drawings by other people, such as Alida Withoos. I studied history as a mature student and wrote my thesis about her.'

2 'A first edition of Darwin's book *The Different Forms of Flowers on Plants of the Same Species*, from 1877. It was a publisher's copy sent to the Swiss professor Nägel. The address, in Darwin's handwriting, is stuck into the back of the book.' <sup>3</sup> 'The Tulips book by the florist P. Cos, from 1637. Indisputably the crowning glory of our collection. A book of international stature, and a frequent loan request for exhibitions. The book was purchased from the Krelage collection.'

# Resource debate

# DON'T OBSESS ABOUT 25 PER CENT ORGANIC

The Netherlands shouldn't get obsessed with the target of 25 per cent organic agriculture by 2030. This was one of the conclusions of the *Resource* debate on organic agriculture on 29 April.

There is more than one way to achieve sustainable agriculture that meets environmental and climate targets and restores biodiversity. The organic farming sector holds out inviting prospects with its production conditions and reward system for more sustainable farming practices. The debate was inspired by a discussion that arose from a Resource article. Agroecological researcher Wijnand Sukkel called target of 25 per cent organic agriculture unrealistic in present circumstances. Rogier Schulte, professor of Farming Systems Ecology, retorted that it is the duty of scientists to find ways of reaching sustainability targets. Schulte and Sukkel were the speakers at the debate, and Ilse Geijzendorffer, director of the Louis Bolk Institute, was also invited to contribute. More than 50 people attended this fifth Resource debate.

#### Change

Even organic agriculture still has a way to go before it is fully sustainable, asserted agro-ecologist Wijnand Sukkel. He proposed what he calls Organic 3.0 as a means of achieving all the climate and biodiversity targets. Rogier Schulte, professor of Farming Systems Ecology, added that WUR should come up with realistic proposals for how farmers can make that transition. We in the Netherlands must stop piling on the requirements for farmers, and at WUR we must design ways for them to become sustainable. In the transition to climateIs 25 percent organic farming by 2030 realistic in the Netherlands? *Resource* ran a debate on this on 29 April. Photo Shutterstock

neutral agriculture, organic farming has a pioneering role to play because it already has a network of climate- and environmentallyconscious producers and consumers, argues Schulte. Ilse Geijzendorffer, director of the Louis Bolk Institute, shares the view that organic agriculture is one of the options for making agriculture sustainable.

#### **Price differences**

To speed up the transition to organic food among Dutch consumers, the price differences between organic and regular food products need to go down, said Geijzendorffer and WUR economist Katja Logatcheva. That could be achieved through VAT adjustments. It also helps if public sector organizations such as schools drive up demand by routinely serving organic food, said Schulte. A

# 'DON'T FOCUS TOO MUCH ON THE PRICE. PEOPLE WILL BUY A MERCEDES TOO. FOOD IS EMOTION'

thorny issue in the Netherlands is the high land prices that impede the transition to organic farming, because it has lower yields than conventional farming. By way of comparison: in Austria, many farmers have switched to organic farming on marginal land where the yields were already low. But that only partially explains the big market share of organic food in Austria, said the Austrian farmer Alfred Grand, who attended the debate too. 'Supermarkets invest in selling organic food. Don't focus too much on the price. People will buy a Mercedes too. Food is emotion.'

# **Key people: Theo Hooft**

They are indispensable on campus: the cleaners, caretakers, caterers, gardeners, receptionists – the list is long. *Resource* looks up these key people. This time, meet Theo Hooft (60), operator for Maas (coffee machines) in Gaia, Lumen and Atlas. Text Milou van der Horst Photo Guy Ackermans

'I'm the problem-solver at Maas. I maintain 19 coffee machines here, and I help other people too since I know the ropes after working here for 20 years. I really like the technical side of the machines, the maintenance and the data extraction. And the social side: my clients are important to me and I am to them. Just having a laugh, a chat, explaining how a machine works, providing a service. I'm never grumpy, always positive when I'm dead I'll still be laughing. But sometimes I don't want anyone around me, and then I go and have my lunch in the car. That's when it gets too much for me, but I don't show it. Like everyone else, I wear a mask, because everyone's got secrets deep down.

Because of the coronavirus business, I've lost my routine — it's dreadful. But half of the machines are switched off. Having hardly anything to do makes me tired. The advantage is that I calm down a bit at last; the disadvantage is that the unpleasant memories of my marriages come back. I've done all sorts of jobs: roofing, selling bikes, cars and scrap metal, painting jobs and motorcycle maintenance. Before this I even worked in a bank for 12 and a half years, until there was a merger and I lost my job. I asked a guy from Maas who was standing by the coffee machine in our bank: are you looking for new people? Yes, I've got the gift of the gab. I was taken on at once.

Because I was born with too small hip sockets, I get pain in the hips when I've done too much walking. I've already got

# 'I've got the gift of the gab. I was taken on at once'

one new hip, but the other one has started playing up now. But I just keep going, I'm a typical man.

I'm going to make macaroni now for three other people in my block of flats who can't go out. If you were in that situation, you'd appreciate some help, wouldn't you? I don't know whether my help is appreciated. They often don't take me very seriously, but if I'm treated kindly, I'm happy. Before you know it, you're not here anymore – like a lot of my mates.'





## Foodcase

Foodcase, based in Plus Ultra, develops food concepts for airlines. 'It's about meals that are fresh but have a longer shelf life, so airlines can reduce their food waste by 30 to 40 per cent,' says the founder, Wilbert de Louw. He launched Foodcase in 2012, and now supplies 45 airlines around the world. Foodcase has a staff of 10 on the campus, plus two people in India who package the food. The production is outsourced to eight factories around the world. 'We are a small company with a big impact,' says De Louw.

Just for a change, Foodcase is not a spinoff. De Louw went to the Hotel School, developed a recruitment agency and sold it, and then started Foodcase together with a chef. The two founders combined their culinary knowledge with knowledge about sterilizing food at Wageningen Food and Biobased

#### 'Luckily we also supply army units; that just carried on'

and Biobased Research (WFBR) at WUR. They collaborate closely with WFBR's research lab in Axis and want to expand

the collaboration. They also regularly host ACT (Academic Consultancy and Training) groups and WUR interns.

De Louw declines to say what Foodcase's turnover is. He does say that it has dropped by 90 per cent due to the pandemic, because there are very few flights. 'Luckily, we also supply army units, and that just carried on.' He is now working on a new catering concept, 'genius in a box', that would enable companies and WUR departments to order lunches online. 'The lunches are fresh, sustainable, free of plastic packaging, and locally produced,' says De Louw. As

There are about 100 companies on campus. We introduce them to you in *Resource*. This time: Foodcase in Plus Ultra. All the flavours of the world can be found in our WUR community. Biosystems Engineering Master's student David Cristobal Muñoz takes us to Mexico.



Flavours of WUR

# Aguachile

'Aguachile is a typical dish from the west coast of Mexico. Originally from Mazatlán, it's the perfect breakfast when you're completely hungover. As a Mexican it is impossible not to love something so spicy and fresh that goes perfectly with a very cold lager. Whenever I taste this dish, it reminds me of being on the beach listening to banda music during carnival.

And if your palate can't stand the heat, you can always use less of the hot ingredients and enjoy a fresh and delicious dish.'

- 1 Peel and clean the shrimps, cut them lengthwise.
- **2** Peel the cucumber, cut in half, remove the seeds and cut into half-moons. Chop the onions.
- **3** Blend the lime juice, chilli pepper, coriander, salt and pepper.
- 4 Place the shrimps in a bowl, cover with the lime and chilli mixture and marinate for 30 minutes in the refrigerator.
- **5** Then mix with the cucumber and the onions.
- 6 Serve with corn tostadas.

# Ingredients (for 4 people):

- 400g large red shrimps
- 2 cucumbers
- 2 red onions
- 4 habanero or serrano chilli peppers (depending on how spicy you want it)
- Juice from 4 big limes
- Coriander, salt and pepper



David Cristobal Muñoz Master's student, Biosystems Engineering

Which dish makes you think of home? Share it with us via resource@wur.nl

# In other news science with a wink

#### 🔶 WEEPIES

Watching films like *The Shawshank Redemption* or *Schindler's* List helps people cope better with the day-to-day difficulties they face in life. This conclusion was drawn by researchers at Ohio State University from a study on the impact of films. Films full of joys and sorrows have the most impact. So Netflix is a blessing for humanity. Unless you spend all evening watching the likes of Rambo, of course.

## 🔶 PETROL

In about five years' time, the price of electric cars will be the same as that of their fossil counterparts, according to calculations by the European Transport and Environment institute. Sales of the two types of vehicle are expected to be equal in 2030. And in another five years from then, new fossil cars will not be available. Cheaper batteries and dedicated production lines for electric cars will facilitate this progress. Just imagine: petrol will be old-fashioned.

#### 🔶 BEAUTY

Scientists pay more attention to beautiful, colourful plants, shows a study by the Australian Curtin University. Of the 113 species that have been researched in the Alps, the most-studied are the beauties. And this has ecological consequences, as more attention leads to greater conservation efforts. Bad news for the averagelooking plant. But what can we say? Scientists are only human.

#### 🔶 CHANCE

Only one in three fertilizations leads to a viable embryo. Things often go wrong at the moment when the chromosomes of the two parents come together, shows research by the Max Planck Society. Chromosomes get lost or miss the boat. Quite an inefficient process, conclude the scientists, which sometimes works out well. We are all winners – by chance. RK



# Diary of a caretaker

# Washing line

A technician who is doing some maintenance at one of our complexes stopped me to say: 'Eugene, we found a washing line in the attic of a house this morning, which didn't have laundry hanging on it but something quite different: weed! And in no small quantity, either!'

Ten minutes later I was at the door of the house in question, ringing the bell. A friendly young man opened the door. 'Good morning,' I said. 'Could I perhaps have a little look in your attic? A colleague of mine saw something on the washing line that is not allowed.' They young man looked at me in amazement and said he had no idea what I meant. So I told him a technician had seen a washing line full of cannabis leaves hanging out to dry.

Without batting an eyelid, he answered: 'Oh no, that is not true at all, we definitely don't have any weed in this house. That really is nonsense. I think you've come to the wrong address. Maybe you should try the neighbours.'

Confused, I found myself outside again. Did I really make a

mistake with the address? I looked at the house number. No, this really was where I was supposed to be. I rang the bell again and the same young man came to the door. 'Sorry to bother you again, but I really would like to have a look in the

## 'When I got to the attic, I could smell it immediately'

attic.' The young man fidgeted uneasily. 'We don't have any weed here, but if you insist on having a look upstairs, I'd say: be my guest!'

When I reached the attic, I could smell it immediately and I saw that there was enough weed hanging up there

for a pleasant few weeks with several friends. I went back downstairs and saw the lad standing there with a big smile on his face. I returned the big smile and said: 'I'll come by again soon, and I would be much obliged if you could clean up the attic before then.' When I came back a few days later, all the evidence had gone up in smoke.

Eugene van Meteren works for student housing provider Idealis as a caretaker. He writes about his experiences for *Resource*. Read all his columns on **resource-online.nl** 

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# Resource WUR from within : straight, sharp, transparent

# IN MEMORIAM

We are sad to announce that our former colleague and friend **Tarek Elmitwalli** has passed away due to a Covid-19 infection. Tarek did his PhD research from 1995 to 2000 in the former 'Experimental Hall' of our department, located in Bennekom. Tarek investigated anaerobic treatment of low-temperature domestic wastewater, with an emphasis on the removal of small particles.

Tarek was a very hard-working, systematic, inventive and passionate scientist. After his PhD, he returned to Egypt and Benha University, where he later became a professor. He continued publishing about anaerobic treatment and resource-oriented sanitation technologies. Tarek was a modest, very smart person who never put himself first, but when it came to defending a particular point of view, he showed his strong personality and high morality. We feel happy he was a member of our group, and we'll never forget him. Family and work were the pillars of his life. We wish his wife and children much strength to bear this enormous loss.

Gatze Lettinga, Grietje Zeeman, Katarzyna Kujawa, Nidal Mahmoud, Wendy Sanders, Maha Halalsheh, Hardy Temmink, Harry Bruning and Huub Rijnaarts on behalf of Environmental Technology at Wageningen University and its former 'Experimental Hall' team in Bennekom.

# Colophon

*Resource* is the independent medium for students and staff at Wageningen University & Research. *Resource* reports and interprets the news and gives the context. New articles are posted daily on resource-online.nl. The magazine is published every fortnight on Thursday.

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# [no]WURries

'I am a student from China. I was cycling past a group of kids recently – all around 10 years old – when one of them called out "China virus", and they all laughed. Although I know such things can happen, I found it disagreeable and hurtful. I'm sure I'm not the first person to experience this in Wageningen and I could use some help with coping with it. What's the best way to react and how should I deal with it?'

> Wageningen Master's student, (name known to the editors)

#### Talk to them

'What an upsetting thing to happen. Children of that age don't realize what kind of impact words like that can have. They probably wouldn't want to hurt you, but they find that sort of thing funny when they are in a group. The best reaction in my view is to make clear to the children in reasonable tones that such comments are hurtful. That way you bring the problem out into the open and hopefully the children will realize how much effect their words have'

Manon Zegveld, financial secretary at Cell Biology and Immunology

#### Join the Anti-Racism Association

'Thank you for your courage in sharing this experience! Unfortunately, you are not the only one to experience this. There has been a sharp increase in racist abuse against our Asian students and residents this last year. We, the Anti-Racism Association, continuously work with the university and municipality to push back against racism and ignorance. In April, for example, we helped organize a Stop Asian Hate dialogue. We are here to create a community where everyone can feel safe and welcome. You can contact us via our social media or arawageningen@gmail.com and join us in a safe space to share, process and, if you want to, fight back!'

Sophia Weituschat and Percy Cicilia Jr., Anti-Racism Association Wageningen

## Make a lot of noise

'Great that you are drawing attention to this! I would advise you to make a lot more noise about it. Mobilize your Chinese friends and acquaintances and sound the alarm wherever you can. Get in touch with the Student Council, for example, the Executive Board of WUR, the municipal council and a local paper like *De Gelderlander*. And ask *Resource* to interview you and other Chinese students about how it feels to be harassed because of your appearance. Discrimination against Chinese students is not a new problem in Wageningen, it is just not often discussed. Maybe you can change that by protesting loudly'. Lieke de Kwant, study advisor at Development Studies

#### Prepare a response

"You've already taken the first step by speaking up about the unkind impact of what the kids shouted. For guidelines and a listening ear with personal issues or unacceptable behaviour, you can contact the confidential advisors or the student psychologists at WUR. If you call me, we will look together at what hurts and what you need, and together we will look for a response that is right for you so you know how you want to react if something like that ever happens to you again." Anke van Oostveen, confidential advisor

## Make friends

'It is a pity to see this happening in an international city like Wageningen. I would advise you to see them as they are: children. It is the hate propaganda in the West against China that is to blame, not those kids. I would be gentle with them and explain the situation. That way you might even make friends with these kids.'

Dr Xiaoyong Zhang, WUR China Coordinator

I will soon be starting work as a student assistant supervising practicals. Some of the students taking the course used to be my fellow students and we have enjoyed a beer or two together on occasion. In the classroom I will suddenly be supervising them and having to grade them. How should I deal with this new role?

> Samantha Kristensen, Environmental Sciences Master's student

Do you have advice for this Wurrier? Or could you use some good advice yourself? Email your tips or your question (100 words max) by 27 May to resource@wur.nl subject noWURries.