Hesource

NOVEMBER 2021 VOLUME 16

Big drop in Dutch BSc students More say in accommodation plans Flexitarians lack food knowledge PhD research as theatre

A BENINGE

Students critical of climate summit

THE XX

Climate conference Lobbying, meeting and people-watching | p.12

Contents

NO 6 VOLUME 16



8

A Little Wiser 'Most fungi are harmless'



Fresco writes historical science novel



26

Cannabis labels not very reliable

FOREWORD

Failure?

'Only an optimist can see progress,' wrote Dutch newspaper NRC after the Glasgow Climate Summit ended. The newspaper quoted Gert-Jan Nabuurs, professor of European Forest Resources at Wageningen and a lead author of climate reports. He calls the COP26 climate deal 'an incredibly vague text with no tangible objectives' that 'show the failure of negotiations between 200 countries'. That's brutal. Resource also has an article about the Climate Summit (page 12), which centres on student Thomas Westhoff. He networked and lobbied at the summit to get the viewpoints of an international student organization into the final deal. He also got to meet various international celebrities in Glasgow. I don't know whether his lobbying worked as I have not read the final text.

I wonder anyway whether such deals will change the world. I read that the participants in Glasgow have agreed to ban deforestation by 2030 and reduce methane emissions by 30 per cent and that Western countries will be phasing out investments in coal and oil. Those are pretty tangible objectives. Now let's hope the countries make good on their promises.

Albert Sikkema

Science editor

4 WUR is top again

- 7 Sharks lead separate lives
- 9 How do you predict soup thickness?
- 16 Key people: Boss blown away by Johan Bucher
- 26 UNIque student house: H15 (and B5)

Read the latest news and background stories at resource-online.nl







FILM FESTIVAL

The film festival InScience on Tour will be coming to Wageningen this weekend with four films screening on Saturday and Sunday. The illustration on this page refers to the documentary *Birds of America*. The film follows in the footsteps of the famous naturalist and artist John James Audubon (1785-1851) and records what is left of the America of his day. The planned accompanying talks by WUR scientists will probably be cancelled due to the Covid measures. RK

For the programme and Covid updates, see the QR code.



Photo shutterstock

Staff get more say on accommodation plan

The decentral Works Councils are to have advisory rights on the development of the Strategic Accommodation Plan, the Executive Board has told the central WUR Council.

In the Strategic Accommodation Plan, the Executive Board outlines how WUR wil ensure sufficient work stations on the campus for growing numbers of staff. The WUR Council emphasizes that working at home and sharing desks should be options but not compulsory. The Council does not want staff to be required to work at home on certain days. The WUR Council has advisory and voting rights with regard to the Strategic Accommodation Plan, in which the principles guiding the future design of the workplace are to be formulated. This plan has to be based on decentralized accommodation plans, on which staff have a say. The WUR Council demands that the decentral Works Councils get the opportunity to assess these plans made by the Science Groups. Hitherto, they only gave 'implementation advice' but now their advisory rights mean they can propose

'We want to make sure that staff who feel pressured into working at home will also be heard' changes to the plans. 'The Works Councils of the decentral groups will get advisory rights with regard to the outline Accommodation

Plan insofar as it is about their future working environment, Executive Board member Rens Buchwaldt has written to the WUR Council.

Buchwaldt agrees to an evaluation of

the plan within a few years because, he says, 'the Strategic Accommodation Plan makes a lot of assumptions on issues on which it is difficult to predict now what will happen in reality.' The Executive Board is also establishing a Monitoring Group, Working@WUR, which will keep an eye on progress with and adoption of hybrid working at WUR.

The Executive Board met with the WUR Council on 10 November but the two bodies did not reach an agreement, says WUR Council chair Jelle Behagel. 'We want more concessions on monitoring and evaluation. We want to make sure that staff who feel pressured into working at home will also still be heard.' The sharing of desks needs thoughtful implementation too, says Behagel. 'In theory, staff will share their desks but exceptions are possible.' As



It is not hard to find Dutch courses but they can be hard to afford. That needs to change, decided WUR student Anne Walther. She started language classes that students can pay for by doing volunteer work. Abdul Manaf (photo) from Indonesia enrolled on one such course. 'My Dutch mainly revolves around eating. I love cooking and I want to learn the Dutch words for ingredients.' Manaf volunteers with the self-harvest market garden Sayuran in Wageningen. Over 500 people have now done a course. cJ Abdul Manaf own photo.

WUR top again

Once again, Wageningen University offers the best education in the Netherlands, according to the higher education guide, Keuzegids Hoger Onderwijs. Wageningen students' rating of the degree programmes has fallen somewhat, however.

Last year, WUR's education scored 73 points in the Keuzegids; this year's average score for the 19 Wageningen programmes that were assessed is 70. Still a great score, particularly in the light of the Covid crisis, which took much of the fun out of studying. The Open University scores 66.5 points, Utrecht University (the best of the comprehensive universities) scores 64.5. Nine Wageningen programmes are declared top quality. The highest scores were awarded to Plant Sciences (91 points), Soil, Water and Atmosphere (89 points) and Forest and Nature Management (86 points). Biology (80), Biotechnology (80), Environmental Sciences (77), Food Technology (77), International Land and Water Management (77) and Molecular Life Sciences (83) also did well. Wageningen's Landscape Architecture and Spatial Planning programme showed the biggest increase in points, moving up from 62 points last year to 71 this year. This also makes it the highest-scoring spatial planning programme in the Netherlands. Agrotechnology, by contrast, dropped from 80 to 69 points. The Keuzegids is based on the National Student Survey, in which students are asked to assess their programme on content, exams, teachers, atmosphere and preparation for their future career. The percentage of students who graduate within five years is taken into account as well. After much wrangling, the survey was revamped this year, resulting in some changes to the rankings. But the differences between the universities' scores are small. HOP | AS



That is the percentage of students who wished sometimes last spring that they would go to sleep and never wake up again. Over two-thirds of students felt emotionally drained around that time. These results are from a survey among 28,000 students carried out during the lockdown in the spring. 'Very worrying,' according to the cabinet.

Teaching still in person

Researchers and lecturers are allowed to come to the university for research and teaching that has to take place there. As of 13 November, a maximum applies of 75 students (excluding staff) in any room, except for exams. Classes scheduled in the evening can still go ahead. 'Education will remain in-person,' says the WUR spokesperson, 'because it is important to do as much as possible face to face. Social distancing is not mandatory in education but we try to keep 1.5 metres distance where possible. We are also closely following discussions between the Association of Universities and the Ministry of Education on the possible introduction of a Covid pass in education. The advice on working from home is now to do so unless this is impossible. wa

WUR starts engineering doctorate

WUR is introducing a new kind of degree programme — for Wageningen at any rate: a two-year postgraduate qualification in technological design. The programme is called *Designs for Agrifood & Ecological Systems* and will be accepting candidates from 1 January. WUR has funding for six positions.

Wageningen is the last of the four technical universities (4TU) to introduce such an engineering doctorate, as it is termed. The universities of Eindhoven, Delft and Twente already had the option of a two-year research traineeship. However, this option was not on offer in the WUR domain whereas there is clearly a demand for this, according to Pieter Munster, a policy officer at Corporate Strategy & Accounts. 'The idea for this programme has been around for a while and it is mentioned in the strategic plan. Of course we checked it really did add value before going ahead. We discovered there was nothing of its kind or even vaguely similar in the Netherlands.'

This postgraduate programme is not

only shorter than a PhD — two instead of four years — but it also has a different focus. 'PhD projects are intended to push the boundaries of science whereas engineering doctorates are much more practical: they are all

'This programme is about a specific design assignment'

about a specific design assignment for a specific organization,' explains Munster. Organizations that have such an assignment in mind and a suitable candidate are, incidentally, welcome to contact WUR as there is room for externally funded candi-



dates in addition to the six positions financed by WUR itself. Candidates will of course still be subject to a selection process. ME

Lessons from Glasgow

At the climate summit in Glasgow, COP26, world leaders agreed, among other things, to halt deforestation and reduce methane emissions by 30 per cent by 2030. What does COP26 mean for the Wageningen research agenda?

'At COP26 more attention than ever was paid to nature and nature-based solutions,' says Tim van Hattum, Climate programme leader in the Environmental Sciences Group. 'I see the importance of nature restoration getting onto the agenda, but it is not clear yet how we shall tackle things like reafforestation and wetlands restoration.' He expects that more funding will be allocated to research on nature restoration, with climate and biodiversity issues as part of that. Never before have the participants in a climate summit been so diverse, says Ivo Demmers, Food Security & Valuing Water programme leader at WUR. 'That was because a lot of meetings were online and you could easily get participants from

'It became much more "think & do", which was a big improvement' all around the world to drop in on them.' This made it possible to showcase a lot more good examples of things like

climate adaptation: the practical application of knowledge and plans. 'It became much more "think & do", which was a big improvement.'

For WUR in the coming years, Demmers

expects this to mean there will be more climate-smart agriculture projects. Demmers: 'One example: during the COP, Bangladesh's minister of Agriculture made a visit to Wageningen to discuss the implementation of the delta plan for Bangladesh. 'What form of agriculture do you adopt in the future? How much food can Bangladeshi farmers and companies produce, and which crops can be grown at which locations? He wants our help with working that out.' Demmers expects more of these kinds of multi-annual implementation programmes on food and climate, with WUR as a partner providing expertise from a distance. As

Read more about the Glasgow Climate Summit on pages 12-15

Food transition in performance

Lara Sibbing translated her PhD research into a fairy tale about food policy, which she performed last week in the Loburg café.

Lara Sibbing was a food policy officer for Ede municipality and a parttime PhD student in the Public Administration and Policy chair group until early 2021. She decided to write a play based on her research. In the play, *Sita and the hamburger war*, Sita goes on a quest to find out how to save her town, which is in danger of slowly being wiped out by a broken food system. Along the way, she meets 'cowardly politicians, brave officials and everything in between.'

Apolitical

More and more Dutch municipalities are addressing food policy. In the course of her doctoral research, Sibbing examined whether local governments succeed in implementing a food policy. She concluded that the municipalities often set abstract goals without taking solid measures. As a result, the transition to a healthy and sustainable food system doesn't get off the ground.

One of the reasons for this, explains Sibbing, is the 'food system approach', which is popular in Wageningen. 'A nice concept, because it covers all the elements making up a sustainable food policy. But the risk with this systems-thinking is that municipalities identify abstract aims and activities, linking up issues like food waste, animal welfare and the environment, but that they fail to identify the specific problems. This renders food policy apolitical and means that no difficult policy decisions are taken.' For effective policy you need to have the courage of your convictions, she concludes. She graduated with a PhD on 5 November; her supervisor was professor of Public Administration and Policy Katrien Termeer.

Fairy tale

Writing a play saved her PhD, says Sibbing. 'During the Covid crisis, all I did was to work on papers at home on my computer, and I was on the verge of giving up my PhD research. Then I drew



Lara Sibbing: 'We ought to treat PhD researchers more like heroes.' Photo Guy Ackermans

on my creativity to find some pleasure in it again. I wrote a fairy tale in the form of a hero's journey in which the main character has to overcome all sorts of problems. That's how I see PhD research too: we ought to treat PhD researchers more like heroes.' As



Flexitarians lack nutritional knowledge and inspiration

How do you support flexitarians in eating less meat and more plant-based substitutes? By providing more information about nutritional value and cooking methods, on the packaging for instance. This was the finding of a behavioural study by Siet Sijtsema and colleagues at Wageningen Economic Research.

57 per cent of Dutch people are now flexitarians. A lot of research has been done on consumers' motives for eating less meat. When people make decisions on whether or not to eat meat, key factors are capabilities (covering knowledge and skills) and opportunities. Group discussions Sijtsema held with flexitarians revealed that they often don't know whether a vegetarian alternative has the same nutritional value as meat. Others

'Support in the family plays a role too'

find it difficult to cook a tasty vegetarian dish, for example in families where one child wants to eat vegetarian and the other doesn't.

'That social aspect, support in the family, plays a role as well.'

Meat substitutes

The availability of meat substitutes is one aspect of the daily choice between meat and vegetarian options. The supermarkets offer a wide range of meat substitutes, but they are sometimes stored in a separate corner of the shop. And in restaurants, the vegetarian menu is often limited.

Flexitarians suggested that producers of meat substitutes could show on the packaging how the nutritional value of their products compares with that of meat. They also thought the Netherlands Nutrition Centre could provide better information about which plant-based dishes are good for your health. The development of meat substitutes that resemble meat in flavour and cooking method helps some flexitarians switch to vegetarian options. 'Flexitarians who are just starting feel the need for this the most.' AS



Shark researcher Niels Brevé

Sharks live apart

Many starry smooth-hound sharks (*Mustelus asterias*) swim off the coast of Zeeland in the summer, but they disappear in winter. Where do they go and why?

The angling association Sportvisserij Nederland and 25 fishers have joined forces with Wageningen Marine Research to solve the mystery. 'The starry smooth-hound shark is on the IUCN Red List of endangered species,' says Niels Brevé, the project manager and a PhD candidate at Marine Animal Ecology and Aqua-

'To protect the species, we want to know what they do in the winter'

culture & Fisheries. 'To be able to protect the species in the North Sea, we want to know what they do in the

winter,' explains Brevé. The researchers know that the sharks come to Zeeland in the summer to give birth to their pups. 'But we don't know whether they also mate here,' says Brevé.

Brevé and his colleagues attached labels to the fins of around 4000 starry smooth-hound sharks with a phone number and website. Fishers or researchers who caught the

sharks could report this. That happened in 230 cases. The researchers published their findings in the Journal of Fish Biology.

Speed dating

After the summer in Zeeland, females and smaller males swim to the warmer waters south of Brittany, where the females remain for the rest of the pregnancy. Some of the larger males swim to Scotland or Norway. The sharks only meet up again in the spring. It is not entirely clear why the females and males split up for long periods. The warmer waters may be better for the development of the unborn pups. The pregnancy costs a lot of energy and there is more food available in the southern waters. This knowledge will help in the protection of the starry smooth-hound shark. Brevé: 'The species is particularly at risk of overfishing because the females take about seven years to reach sexual maturity and they give birth to just a few young after a pregnancy of a year.' TL



Why can you eat some fungi and not others?

 γ ome fungi, such as truffles, mushrooms and those in blue cheese, are edible. Others can be used when making products such as wine and tempeh. But there are also fungi that can make you very ill. 'That's because those fungi produce toxic substances, known as mycotoxins, which edible fungi don't produce,' says Marcel Zwietering, professor of Food Microbiology. Those toxins cause abdominal pain and sometimes nausea and vomiting. They don't disappear when you heat up food. Aflatoxin is a particularly noxious mycotoxin found in things like mouldy nuts and grains. It attacks the liver and can even be carcinogenic, like many other mycotoxins. 'But most fungi are harmless,' says Zwietering. 'I distinguish between three groups: the good, the bad and the ugly. The good are edible, like the ones on blue cheeses. The bad are the pathogenic ones. And the ugly are the ones that don't make you ill, but that taste stale and nasty, like moulds on bread.

The problem is that when something goes mouldy, you don't know which fungi are good and which are bad. So you should throw out mouldy food, says Zwietering. 'Fungal threads and toxins can penetrate deep into food and you can't see them with the naked eye.' He recommends playing it safe and discarding the product. 'Fungal threads don't penetrate as far in hard products such as cheese, and you can cut out mould if you like, with a wide margin of one centimetre. But if there's a lot of mould on it, I wouldn't eat it even then.' He also advises against picking and eating fungi unless you know exactly what you're doing.

Zwietering emphasizes, though, that most products will go off due to bacteria before they are affected by fungi, as bacteria grow faster. 'That certainly applies to meat and to moist, non-acid products. If there is fungus on them, there are sure to be bacteria as well. But they are not necessarily pathogenic. Food that has gone off certainly doesn't always make you ill. Sometimes you can even eat meat that's green and slimy because the rot is caused by nonpathogenic bacteria. But it doesn't taste good. And you don't want to take the risk.' TL

'Most fungi are harmless'

Marcel Zwietering, professor of Food Microbiology

Every day we are bombarded with sometimes contradictory information. So what are the facts of the matter?

In this feature, a scientist answers your burning questions. Asking questions makes you wiser. Do you dare ask yours? Email us at redactie@ resource.nl

Illustration Marly Hendricks

How thick is that soup?

Using physics, you can easily measure how thick or viscous soup is. But that still doesn't tell you anything about the mouthfeel of the soup. A group of researchers from Wageningen, the University of Amsterdam and Unilever have solved that problem.

We gauge the thickness of liquid food like soup by moving our tongues to and fro over the roof of our mouths. Mechanical receptors on the tongue and the palate convert that mechanical pressure into electrical signals that are sent to the brain, where a perception of mouthfeel and thickness arises. A new model correlates measurable physical characteristics of liquid food with the subjective perception of it. It is crucial to this model that the movements in the mouth are described more fully, explains Markus Stieger (Food Quality & Design). 'The tongue does not just move to and fro, pressing the soup against the palate, but also up and down, squeezing the soup and reducing its viscosity. Our model incorporates that complex bit of physics.'

Prediction

The new model translates all the mechanical processes in the mouth

'With this model we can predict the perception of liquid food'

into something known as shear stress on the surface of the tongue. Stieger:

'We can measure that stress and relate it to a tasting panel's perceptions of the thickness of the soup.' The result makes it clear that mechanical receptors in the mouth work logarithmically. That means that a liquid that is 10 times more viscous only doubles the degree of thickness experienced. Receptors for light (in the eye) and sound (in the ear) work in the same way. But what Stieger finds really 'exciting' is the model that's been developed, and the physics used in it. 'With this model we can now predict the perception of liquid food.' This paves the way for practical applications. Food technologists can now develop products that will create a perfect mouthfeel. RK



Wanted: dead shrews

WUR needs shrews for a study of exposure to rodenticides.

Rodenticides are chemical products used to control rodents. In the Netherlands, the products are used outdoors to tackle the brown rat and black rat, explains toxicologist Nico van den Brink. 'As a last resort if other measures, such as removing food and shelter or catching them with traps, don't work.' But shrews can also unintentionally be exposed to the rodenticides. To find out how often that happens, Van den Brink is calling on the aid of the general public. Anyone who finds a dead shrew is asked to send it in to one of the dozens of collection points around the country

'If these chemicals are found in the shrew, that is a sign of local use'

(see www.zoogdiervereniging.nl). Rodenticides can only be applied by certified users and are subject to strict procedures aimed at reducing their use. The researcher hopes his study will show how effective this is. 'In particular, I want to see whether there are differences in the use between farming areas and cities.'

The shrew – an insectivore, not a rodent – is being used as an indicator for that use. Shrews live outdoors and have a relatively small habitat. Van den Brink: 'So if chemicals are found in the shrew, that is a sign of local use.' Dozens of shrews have already been sent in to Wageningen. RK

New tone in advice on eels

The latest advice issued by the International Council for the Exploration of the Seas (ICES) is for Europe to stop all eel fishing, including catches of glass eels. But it is far from certain that Europe will follow that advice.

That the advice from ICES is now so severe is mainly a question of formulation, says Tessa van der Hammen, a researcher at Wageningen

'It is unclear whether transferred glass eels have offspring' Marine Research and member of the ICES eel working group (WGEEL). 'ICES has recommended completely

eliminating eel mortality due to humans, including through fishing, for some time now. The latest report just says this more explicitly than previous editions.'

So it does not mean there been a sudden, dramatic deterioration in eel stocks. 'The ICES advice is based on



the principle of precaution. Numbers of glass eels (baby eels) arriving at the coast are still very low and are unlikely to improve much in the near future. Given tougher rules on how to word the advice, ICES has no choice but to recommend a stop to eel catches.'

Tightened up

The advice also covers glass eel catches. They are now caught in one part of Europe and released elsewhere to mature there. Van der Hammen: 'That works — most glass eels can Photo Shutterstock

successfully grow into silver eels. But it is not clear whether the adult eels are then able to reach the breeding grounds in the Sargasso Sea and produce offspring.' As long as the effect of this intended restocking remains unclear, the message is to let the glass eels swim where they are. Van der Hammen does not think there is much chance of the latest ICES report persuading the European Commission to ban eel fishing. 'The substance of this advice and supporting evidence is in line with what ICES recommended in the past. I suspect Brussels will be more interested in tightening up the Eel Regulation than in a blanket ban on catches.' ME

In other news science with a wink

SUN BIRD

A new bird has been discovered in Peru: the Inti Tanager. Researchers from San Diego State University had the honour of presenting *Heliothraupis oneilli*. This is even a new genus. Inti means sun in Quechua. The medium-sized bird has bright yellow feathers and sings in the afternoon. The tanager is an extensive family, with about 300 previously identified species. But the more biodiversity the merrier.

🕨 DINO

Another new discovery in a different vein is that of a new iguanodon on the Isle of Wight in the UK. Researchers at the University of Portsmouth identified the *Brighstoneus simmondsi*. This herbivore was about eight metres long and weighed 900 kilos. And hasn't been seen around for quite a time, of course. The remains were actually first dug up in 1978, but only now was it realized this was an unknown dino. Also welcome.

🔶 TEA

Why do teapots always drip? Scientists from Vienna University of Technology have figured out this 'teapot effect', something no one has managed since the effect was first described in 1956. It's all about the interplay of inertia, viscosity and capillary forces. Nice to know, but can anything be done about a leaky teapot? Nope. You can't mess with the laws of physics.

🔶 TINKERING

If you are good at tinkering with machines, you'll be good at processing language, says a study by the French institute Inserm. And they know why too: these skills are lodged in the same region of our brains. A form of co-evolution, the researchers think. The use of tools evolved in sync with the development of language. Is your car mechanic highly articulate too? BK

Contrast

Well, who'd have thought it? Here I am in the Massif Central in France to do fieldwork for my research after all. I couldn't come in the spring because of the Covid measures. Then some of my French colleagues interviewed farmers for me. Now we are working in a different part of the Massif Central and I can be involved myself.

At weekends I'm exploring the region where the earlier interviews were done. I had already analysed those interviews with a Master's student, so it is extra special to go there now. Everything I have read about and imagined is now springing to life before my eyes: the landscape, the livestock and the flora and fauna the farmers talked about.

And yet, it is often precisely the things that you weren't prepared for that make the biggest impression on you. On this trip it's been the homeless people. Call me inexperienced, but I have never lived anywhere where homeless people are very much much part of the scene. And I have



Vincent Oostvogels

hardly been in a big city for at least two years. So it was a bit of a shock on my way here to see my first tented camp in the rain beside the Paris ring road. And there are people living on the streets in Clermont-Ferrand, where I'm living now, as well. I see the same man begging every evening on my way to the supermarket where I get my groceries. I saw him yesterday. I'm one of the many pedestrians who walk past him and pretend he doesn't exist. I know

'I'm one of the many pedestrians who walk past him'

nothing about him. How did he end up in this situation? Does he sleep out of doors? Even in Clermont-Ferrand, the nights are getting frosty and during our fieldwork

I've seen snow-covered mountain tops. How can he survive like this? How long would I survive?

No interviews today, I'm working at the office. During the lunch hour we grumble about all the administrative graft. We get stressed about the quality of our research data, our time management and our deadlines. You might almost think it was a really tough life.

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

Climate conference Glasgow 2021

LOBBYING, CONSULTATIONS AND PEOPLE-WATCHING

It was his first climate conference and it wasn't all he hoped for. Wageningen student Thomas Westhoff attended COP26 in Glasgow to give young people a voice. It was a roller coaster of networking and lobbying. *Resource* also spoke to WUR staff who gave presentations in seminars at the summit. Photos Thomas Westhoff



Text Albert Sikkema

esthoff was one of 200 representatives of youth organizations, and travelled to Glasgow to make sure young people would be involved in making climate policy. 'It is overwhelming, you've got to be well-organized to have an impact. I was networking all the time with companies and other organizations to put forward our points, but world leaders and negotiators spent a lot of time behind closed doors. Sometimes only two of the 200 youth representatives were allowed into those meetings. So we didn't have as much influence as I had hoped beforehand.'

Climate adaptation

Westhoff was at the Climate Conference in Glasgow for over a week. He is doing two Master's degrees in Wageningen: Climate Studies and International Land & Water Management. But he was in Glasgow as the External Relations vice president of the International Association of Students in Agriculture and Related Sciences (IAAS), which has members at about 100 agricultural universities in more than 50 countries, including Afghanistan, Indonesia, Ecuador and the Netherlands. Westhoff was among the 200 representatives of youth organizations. Speaking from the conference, he said: 'We have drawn up a joint declaration saying that policymakers and politicians should involve young people more in climate policy because we have good ideas that do not get considered at present. Young farmers, for example, have interesting ideas about climate adaptation, but they often lack access to investors or to land. That restricts the scope for implementing new, smart climate measures. We are now busy lobbying with other associations to get our youth paragraph into the final declaration.'

Zoo

The conference was a bit of a zoo, Westhoff thought. 'I came across Bill Gates, for example, and Greta Thunberg and Mark Rutte – you see all the world pass by and that is fun. The conference was also a kind of fair. Lots of countries had nicely decorated pavilions, where they gave presentations, many of which were nice and informative. At one of

'World leaders and negotiators spend too much time behind closed doors' them, I saw Ursula von der Leyen, the President of the European Commission, announcing a development fund. The pavilions were mainly for PR purposes, and the decisions were taken at the negotiating tables. I had my photo taken with Prince Charles as well. It happened like this: we were walking in a park with other delegation members when we saw a museum that we could get into with our passes. In the central hall, we saw Prince Charles in conversation with Jonathan Ive, the designer of the iPhone. We had accidentally walked into a high-level meeting. We were allowed to take a selfie with them.'

Margins

Westhoff is enthusiastic about some of the decisions take at the COP26, such as the decision by major countries to end deforestation and stop investing

'I came across Bill Gates, Greta Thunberg and Mark Rutte, for example'

in fossil energy. 'And for the first time, India has set specific climate targets. That agreement by India has an impact: it brought calculations of global heating down to just under 2 degrees Celsius – on paper, at least.'

In the margins of the conference, Westhoff also talked to people from Bayer, which Monsanto (a controversial company that produced both pesticides and genetically modified seed) is now part of, about collaboration and how to campaign effectively at a climate conference of this sort. 'Bayer is the sponsor of IAAS. Bayer is a sensitive subject in Wageningen, but I see a lot of scope for learning from each other. One inspiring figure I met was an ex-MP for the Greens in Germany, who now leads Bayer's sustainability agenda and gave me an interesting peek behind the scenes.' Westhoff also talked to the Canadian prime minister Justin Trudeau at a meeting of the Global Centre on Adaptation in Rotterdam,



Thomas Westhoff at the negotiating table with Canadian prime minister Justin Trudeau, among others.

just before the COP26 in Glasgow started. 'There I expressed IAAS's position on climate adaptation and I hope that I was able to influence his standpoint at the climate conference in Glasgow.'

Negotiation table

So, what is IAAS's position? 'First of all, we argue that it's important to involve young people more in climate adaptation. Access to investors, good education and a seat at the negotiating table are important factors in this. Secondly, we try to get the agroecological approach on the agenda, and we think that this approach should also have a place in the action plan. And thirdly, we argue for reducing meat consumption in western countries. IAAS is a global organization so it can be difficult to arrive at common action plans, because food is part of cultures: our members from developing countries don't always agree with a statement such as that "we" should eat less meat. In that sense, our association is a microcosm of the conference. It is always important to genuinely exchange views and to be understanding towards each other.'

Fortunately, there was time for other things in the evenings. 'The great thing was that we had free accommodation, staying with Scottish students. The

'The agreement by India has impact'

'Bayer is a sensitive subject in Wageningen'

Scots are very friendly and every evening we ended up in the pub. I tasted a lot of different whiskies, and I had some great discussions about peat. Just like a number of Scottish students, I'm doing research on peatland areas.'

WUR active in seminars

How do you monitor whether illegal deforestation doesn't just continue, how do digital climate recommendations work, what might the Netherlands look like in 2120, and what can you do about the increasing amount of salt water on agricultural land? *Resource* produced a series featuring WUR experts who presented key topics during COP26.

Monitoring forests Many countries, including the Netherlands, Brazil, Indonesia and Russia, agreed at the Climate Conference in Glasgow to stop deforestation by 2030. But how do you monitor that agreement and make sure that the often illegal deforestation and greenhouse gas emissions don't just continue? Transparent monitoring of land use should give us a clear picture of the situation.

Martin Herold and Niki De Sy of the Geoinformation Science and Remote Sensing chair group led a seminar on transparent monitoring at COP26. The term covers methods of combining diverse datasets (including measurements and satellite images) with portals that show global land use and track it in real time. Transparent monitoring can help countries, NGOs and indigenous communities with detecting and solving potential conflicts about land, or discrepancies between datasets. It can also support governments in getting a fuller picture of the CO₂ emissions caused by land use, and in evaluating possible mitigation measures better, says De Sy.

Digital climate advisory services

WUR and some of its partners organized an event about digital climate advisory services (DCAS) for smallscale farmers in developing countries. DCAS observe and forecast the weather for the coming week, month or year. They add information about crop and livestock farming, and advise farmers on things like the best time to sow, spray pesticides, and harvest. Digital advisory services also offer predictions on climate change and what it means for things like choice of crops and water use. DCAS are used in another project WUR is involved in, Digital Agri Hub. 'A lot of organizations work on climate data and services,' says WUR researcher Tomaso Ceccarelli, who is involved in Digital Agri Hub. 'The Hub links up all these organizations and provides a good overview of what is available. That is



Thomas with the IAAS team members. Top right: Thomas (in the background) bumped into British royalty – Prince Charles. Bottom right: Thomas with Justin Trudeau.

valuable information for investors, governments and, ultimately, farmers.' The Hub evaluates and categorizes not just climate recommendations, but also recommendations on things like supply chain management and microfinancing.

The green Netherlands of 2120

At the end of 2019, WUR made a map of the Netherlands in 2120: a future scenario of what the country could look like in 100 years, with nature, climate adaptation and the sustainable use of natural resources in pride of place. Tim van Hattum, who leads the Climate programme at WUR, presented this map and the starting points and ideas behind it at the COP.

In this picture of the Dutch landscape of the future, the amount of forest has doubled, the most fertile land is used for – mainly plant-based – food production, and agriculture is almost completely circular. The coast has been adapted to the rising sea levels and the rivers have been given more room. There are large wind and solar farms in the North Sea. The memorandum 'A natural future for the Netherlands in 2120' is therefore a visualization of one possible future scenario in which the Netherlands adapts to climate change and stops building in parts of the country that are below sea level.

Saline agriculture Climate change is causing an increase in the amount of salt water on agricultural land, reducing food security as the supply of fresh water goes down. Judith Snethlage, a researcher at Wageningen Environmental Research, works on the topic of salinization. She prepared a session on saline agriculture at the COP26, in collaboration with the Dutch government, world food organization FAO, and VU University Amsterdam. The focus was on Bangladesh, where salinization is increasing, not just because of rising sea levels, but also because global warming is causing more water to evaporate, leaving more salt in the soils. WUR is doing research in Bangladesh on how the country can deal with that. The researchers are looking at which measures work, so that evidence-based solutions can be offered to policymakers.

Snethlage: 'We use the Food Systems Approach for this. With that method we can weigh up the factors and considerations that affect the entire food system. For instance, you can find out what the impact of salinization is on livestock. Livestock animals don't drink salt water, but if you could grow saltresistant grasses that the cows could eat, that's solutions-oriented thinking.' ■





LIGHT IN THE AUTUMN

About 200 students and staff from more than 25 countries celebrated Diwali in De Bongerd Sports Centre on 6 November. Diwali, also known as the Festival of Lights, lasts five days in India and is all about the triumph of light over darkness and of good over evil. So the event in the gym was a micro-version of the festival. 'A lot of Indian students feel homesick around this time. It's lovely to get together here and enjoy performances and delicious food,' says Vinay Singh of the Indian Student Association (ISA). CJ

Photo Guy Ackermans

SAVOURING SOIL

In the World Soil Museum in Gaia an unusual collection of soils is on temporary display. Edible soils by the artist masharu.

dible soils? You've gone mad! Impossible. This may well be a typical reaction to this introduction. But that is precisely what the Museum of Edible Earth is offering. The artist masharu (name all lowercase), who is originally from Russia, is travelling around the world with this exhibition. Which is now on display in Wageningen for more than a month. In the World Soil Museum are racks of hundreds of plastic boxes of soil. Dried soil in various tints of grey, red, yellow, blue and brown. Clay soils are predominant: more than half of the collection consists of clay samples. The samples come from 35 different countries. And they represent only a fraction of the range of edible soils in the world, according to masharu's estimate. But a complete collection is not the goal.

Taste

The common factor among all the soil samples is that they are edible. To be precise: that they are eaten in cultures around the world. 'And I have tasted them all myself,' laughs masharu. Not because the artist comes from a tradition of soil-eating, but because of a taste for it acquired in early childhood in Moscow. 'I first ate soil when I was nearly two. My grandmother has told me that. I ate sand and clay. That wasn't allowed of course; it wasn't accepted.'

masharu took up eating soil again when working on a maths PhD at Eindhoven University of Technology. It started with sticks of chalk that were lying around the campus buildings. 'The chalk attracted me as if it was calling out to me. Then I thought: if I crave it so much, I should just try it. Secretly, I broke off a little piece, took it back to my room and put it in my mouth. It felt pleasant. So delicious. The structure, and the way it broke up and changed in my mouth. It gave me pleasure. The aftertaste was nasty, though. So I did an online search to see whether it was healthy.' Through the internet, masharu came into contact with other chalk-eaters. It turned out there is a whole subculture of chalk-eaters. 'On the forums, they talked about how much they ate per day, and which brands etc.'

Disorder vs. tradition

The scientific name for eating soil is geophagia. Officially, it is a disorder known as pica: eating material that is not intended to be food. Soil is one example;



others are blood, glass, metal, paper, and so on. Pica is not seen as a disorder when eating the substance is part of a tradition or culture. People eat soil in many traditional cultures, although not the culture masharu comes from. So is the artist suffering from a disorder? 'The concept of a disorder is interesting, and is culturally determined. Does the fact that I enjoy eating edible soil mean I have a disorder? And would that change if I had been born into a different culture?' It didn't stop at chalk for masharu. After chalk, clay came into the picture, via a ceramicist friend. By then it was 2011 and masharu had graduated with a PhD in maths and completed the Fotoacademie

'DOES THE FACT THAT I ENJOY EATING EDIBLE SOIL MEAN I HAVE A DISORDER?'

Amsterdam. 'At that point, I switched professions, really: from scientist to professional artist.' With a focus on geophagia. A number of mixed media projects at home and abroad followed. The collection of soil samples expanded rapidly.

And then came the idea of a museum. masharu: 'I wanted to create more of a system in the collection. What exactly have I got? Where does it come from? What is the background of the practice? And not least, how much have I got left, because it was constantly getting eaten. I didn't have an overview anymore and I had to do something.' And so the Museum of Edible Earth was born in 2017. The only museum in the world where you are allowed to eat the exhibits. At your own risk, of course. masharu is an artist and the museum is art. 'Call it an installation or a performance, whatever you like. The museum brings people together, builds bridges and

creates a space for encounters. Encounters between people and between people and soils. With this museum and the opportunity to taste soils, I am bringing a kind of taboo into the open. Outside the Western world, this is a tradition in many cultures; here it is a disorder and a weird thing to do.'

New areas

'Art and design are ways of opening up new areas,' says masharu. 'Of seeking interaction with other disciplines. The way I see the world, everything is connected with everything else. My museum makes that interdisciplinarity possible. To me, the exhibitions are important as a way of meeting people who want to eat soil with me. It used to be something I had to do secretly. I enjoy sharing the pleasure of it. Just as other people drink wine together.' Another of these new areas is thinking

Superfood

The exhibition in the World Soil Museum is part of the Earth as Superfood project. There are some samples in Impulse too, along with a photo exhibition and some videos about geophagia in Impulse. Both exhibitions run until mid-December. On 16 December, Impulse is running a symposium about geophagia. Among the speakers is Ron Hoogenboom (Wageningen Food Safety Research), who will talk about the safety aspects of eating soil.

about gender. 'What is the gender of soil?' masharu wonders out loud. 'In many cultures the Earth is a mother. Why is that? Why isn't the Earth masculine? Where does that binary division of life come from? And is there a link with the way we treat femininity? Those sorts of questions are important for me at the moment.'



masharu: 'I have tasted all the soil samples myself' • Photo Jester van Schuylenbursch

Louise Fresco writes historical novel

Monument to a plant hunter

For her first historical novel, WUR president Louise O. Fresco imagined what went on in the mind of the Russian botanist Nikolai Vavilov (1887-1993). *Resource* talked with her about it.



Text Roelof Kleis

he book is called *De Plantenjager uit Leningrad* (The Plant Hunter of Leningrad). The plant hunter is Nikolai Vavilov, a Russian scientist little known outside the world of the plant sciences. And that had to change, in Fresco's view. Her book is a kind of monument to the man who – according to the blurb – was on a par with Darwin and Mendel in many ways. In the first half of the 20th century, Vavilov sought to improve agricultural crops by crossing them with wild varieties. He collected those wild plants, their seeds, roots and fruit, from all over the world. His collection, the largest of his time, contained about 400,000 specimens at the end of the 1930s. Most of these he had collected himself on his 115 expeditions in 65 countries.

Why was this a book that had to be written?

'I've been interested in Vavilov for a very long time. I studied tropical agriculture , and then you are bound to come across the agrobiodiversity hotspots that he identified. Later, during my years at the FAO (the UN's Food and Agriculture Organization, ed.), I was responsible for the UN negotiations on the conservation of plant genetic resources. I had read more about Vavilov and his competitor Trofim Lysenko by then. That story is both wonderful and tragic. What fascinates me about it is the courage and loyalty of this scientist, who remained faithful to his ideas in spite of all the setbacks and opposition. And then there was also the difficult relationship between independent science and the regime. I wanted to show a wider audience how complex and unpredictable the scientific path can be. And what it means to have an almost blind devotion to science. I could only do that by getting inside his head. Vavilov is not wellknown in the Netherlands. I felt it had fallen to me to kind of restore this man's reputation.'

What puts Vavilov on a par with Darwin and Mendel?

'I don't put him entirely on a par with Darwin, because Darwin's work is about much more than plants. But in the field of plant ecology and genetics, Vavilov's work was of global significance. The fundamental idea behind improving plants or animals is to strive for diversity. Vavilov understood that the best places to find diversity are marginal regions, where all kinds of stress (too cold, too wet, too steep, too dry) have caused a selection of species with unusual traits. A century ago, it was revolutionary to say that to improve crops in Russia, you needed genetic material from China or – totally unthinkable – the US.'



'What fascinates me about it is the courage and loyalty of this scientist' • Photo Janita Sassen

Vavilov became a nationally and internationally celebrated scientist with his groundbreaking ideas. He was the first scholar to receive the Lenin Prize for his services to the Soviet Union. Vavilov led the Institute for Applied Botany in Leningrad for 20 years (1921-1940). But the tide turned under Stalin, in a manner instigated by the Ukrainian pseudo-scientist Trofim Lysenko, who had little time for Vavilov's ideas about genetics. According to Lysenko, science and experiments were superfluous. It was perfectly possible to make plants resistant to cold weather just by burying their seeds in snow for a while. According to Lysenko, the cold shock ('vernalization') permanently changes the genetic traits 'Writing within the boundaries of what is historically correct provides provides a positive kind of straitjacket'

of the plant. With Stalin on his side, Lysenko gradually gained ground. Eventually with fatal consequences for Vavilov and his approach.'

Vavilov wanted to improve Russian agriculture and protect the population from famine. He failed on both counts. Why?

'The weather played an important role in the low yields. Stalin wanted to see fast results. Vavilov said, "It will take 10 years and I need to do 10,000 experiments". That wasn't acceptable to Stalin. Lysenko said, "I'll do



'The eagerness with which Vavilov lived his life was spectacular'

'Nowadays, nearly everything has to be of practical use'

the experiments using three pots in my back garden". Lysenko kept stringing Stalin along by promising things for the next day. And if he didn't manage, he switched to another topic. Numerous other factors were involved as well. It is not enough just to have a new variety. The sowing seed needs to be multiplied and distributed on a large scale. The land must be prepared properly, and the market has to be functioning properly. There were no incentives, either. The farmers wanted to minimize the effort they expended on the party's collective land. They preferred to till their own back gardens, where they obtained bigger yields.

But Vavilov's efforts were not in vain: the basis for improving harvests in Russia really was created in his day. Russia has not known famine since the 1950s. On 80 per cent of the agricultural land there, varieties are grown that go back to Vavilov's collection. It just took time.'

One of the themes in the book is the necessity of freedom to pursue science without pressure from a state ideology. How free are the sciences here and now?

'That worries me. It is not that you are not allowed to think what you want in Wageningen and the Netherlands. Let alone that you can go to jail for your ideas. But scope for unpredictability, for "crazy" ideas, and for fundamental research has come under pressure. Both the government and society at large see science as a kind of machine: you put in one euro, and two euros' worth of usefulness to society will roll out. And as quickly as possible, preferably. Nowadays, nearly everything has to be of practical use. A scientist has to make an awful lot of promises when submitting a proposal. And of course, that has to include usefulness to society, because public funding is involved. But you can't plan for developments like CRISPR-Cas. You can't say: research how bacteria that are two billion years old defend themselves against viruses and extract

something useful from that for plant breeding. You couldn't have dreamt of that beforehand. We need to preserve the space for this kind of discovery.'

Does Vavilov have other things to teach us?

'It's not so much a question of lessons as of inspiration. I am inspired by the loyalty of Vavilov's colleagues to his ideas and collection. Even during the siege of Leningrad in the early 1940s, when there was nothing left to eat and they didn't know if Vavilov was still alive, his close colleagues protected the seeds and didn't eat them. And Vavilov's tremendous curiosity and energy is inspiring. He was always open to new ideas. He had an incredible international network. He was good to young researchers. On his travels, he learned local languages because he often didn't think the interpreters were good enough. It's spectacular, that open-mindedness and the eagerness with which he lived his life in spite of everything, right up to the end.'

This is your first historical novel. You stayed as close as possible to historical sources. Is that more enjoyable than writing pure fiction?

'Well, it's certainly a lot more work. I wanted to write this story, so that was the main driving force behind it. I've been working on it for 10 years. There is an endless series of books about Stalin and Russia on the shelves in my study. I wanted to understand how life was in those days, and to capture the atmosphere. Of course, I had to use my imagination but within the boundaries of what is historically correct. That provides a positive kind of straitjacket.'

The book cover shows Malevich's painting *Bust of Woman*. Why a woman?

'It is not explicitly a woman. The face is anonymous, which to me stands for the anonymity of that time, and for the human being as a victim of circumstances. In the background are what look like fields and agriculture. To me, this is an evocative and oppressive image. And that matches the atmosphere in the book.'■



Plantenjager uit Leningrad Author Louise O. Fresco Publisher Prometheus

BIG DROP IN DUTCH BSC STUDENT NUMBERS AT WUR

The number of Dutch first-year Bachelor's students at Wageningen this academic year is much lower than the number in 2020/2021. The total number of students shows a slight increase, however. Dean Arnold Bregt explains the figures.

The latest WUR figures on this academic year show that the number of Dutch Bachelor's students is 211 lower than last year's number (1529 students in 2020/2021, 1318 this academic year). The number of Dutch Master's students has dropped by 51. There has been little change to the influx of non-Dutch Bachelor's and transition programme students (those with an applied science Bachelor's who take a six-month programme to prepare them for a Master's). The fall in numbers concerns students enrolling for a Bachelor's or a Master's for the first time. The total number of students enrolled at WUR has shown a slight increase of one per cent on last academic year, with the current count now standing at around 13,000.

Trend

Dean of Education Arnold Bregt describes a trend: 'A decline in Dutch recruitment from secondary schools has been going on a while. In 2017 there were 1600 enrolments and now we're at 1318. We are not compensating for that with non-Dutch enrolment as some universities are doing, which have taken more



Photo Guy Ackermans

international students. Here, that is limited. For the Bachelor's degrees, we are still very much a Dutch university.

Positioning

Bregt says he is satisfied with the total recruitment of international students and with the overall number of students at WUR. The number of Master's students is steady. There are concerns about the recruitment of Dutch students at the Bachelor's level, however. The downward trend is partly due to a nationwide drop in numbers of secondary school pupils. Bregt also notes the competition from other universities in Wageningen subject areas. 'The sustainable development goals that WUR is good at, a theme we had a monopoly on

'THE THEME WHERE WE HAVE LONG HAD A MONOPOLY HAS BECOME POPULAR'

for a long time, are getting priority now and other universities are working on them too now. You can't blame them. If you look at the big challenges we face, such as climate change, it's a good thing to set more smart brains to work on them. But the competition needs to spur us on to position ourselves better as a key player on those themes.'

Research

WUR is working on improving its positioning, says Dean Bregt: 'The research consultancy Motivaction have run a survey on WUR's image among our current students, and with Marketing & Recruitment we are studying how the outside world and the students of the future see WUR. In my view, we need to profile the university more as a "student university". If you look at our website now, for instance, you see a lot of information about research. There's nothing wrong with that, but you don't get the impression that we are also a student-oriented university with fascinating education, a student life and good facilities. We need to put all that in the spotlight more.' WA

COP26 will (or won't) Save the planet

World leaders met in Glasgow at the beginning of November for the 26th climate summit. Is this one going to save the world? *Resource* asked some students.

Text Marloes Klaasse, Julia van der Westhuyzen, Yvette Langenberg, Susan van Weperen and Katerina Mouka• Illustration Shutterstock



Sarah Kunze Master's student of Communication, Health and Life Science, from Germany

'Saving the planet might not be the right wording. The planet will continue to exist, the question is in what form. The decisions made at the climate summit in Glasgow can have an influence on this. The climate crisis is already affecting people, especially those who are the least responsible for it. Looking at the rising emissions, we have very little time left to stay below 1.5 degrees of global warming. I feel frustrated about that. It takes courage to address climate inequality in our political decisions. We don't need hope but courage! Currently, the necessary action is not being taken. If it stays this way, it will just be another conference of empty words and promises.' MK



Flavia Gardavsky Master's student of International Development from Austria

'Summits such as this largely represent the interests of big corporations. The focus is on what powerful entities want, and not what ordinary people actually need. Additionally, lobbying and representation of large firms leads to a lack of transparency and accountability. Powerful participants in the climate summit need to rethink their own position and acknowledge the roles they play in perpetuating inequality. It is essential to hear the voices of people directly affected by climate change and involve them in decision-making processes. I advocate for direct action and protest to bring about change. Change cannot happen within boundaries stipulated by the very organizations that need changing.' JW



Fernando Gabriel Master's student of Biosystems Engineering from Mexico

'It is useful for countries to meet and discuss what they want to do to combat climate change, but it is not essential: we already know what the problem is and what we've got to do. It would be more useful to have meetings every six months to discuss what's been done, instead of a huge event at which questions are discussed that we all know the answers to. That time could be better used to actually take action. At the moment I see COP26 as more of a show than a forum for discussion.' sw





Maria Ferentinou Master's student of Environmental Sciences from Greece

'I think the main weaknesses of this conference are the overrepresentation of corporate lobbies and the private nature of the sessions. Moreover, observers are not welcome in the plenary area but attend online or from other rooms, adding to a feeling of being excluded. However, there are still some positive outcomes, like the agreements to halt deforestation and curb methane emissions, as well as the discussions about climate finance. The conference is not perfect and political will is lacking, but it is not useless either.' KM



Tijl van Hattum Master's student of Forest and Nature Conservation

'We needn't expect much of the agreements made at the conference. Look at the Paris Agreement – hardly anything has been done with it. The climate conference does keep attention on the topic and keep dialogue going, and that's important too. But in the end, it's a lot of empty words and all the promises at the international level won't get us anywhere. Within the EU we are legally bound to the agreement that we will reduce emissions by 55 per cent. That's of more use to us. Without that legal enforcement they are just empty promises, I'm afraid.' YL



Zoltán Csengő Master's student of Organic Agriculture from Hungary

'While it is really important that leaders show awareness, and it is great that awareness is formalized in this summit, it is also problematic that some of the biggest polluters in the world did not play equal roles in the discussions. I am concerned about the risk that any climate-friendly actions taken by participating countries could be hampered by the lack of action taken by counties like China and Russia. I also think more real numbers and results should be presented at these summits. Participants should show exactly what gains they have made since the last summit, in order to increase accountability and motivation.' JW



Ruben de Vries Bachelor's student of Food Technology

'In my view, the climate conference is definitely useful. It can inspire ordinary citizens and give them new ideas. It is an opportunity for top politicians to get together and make plans. Countries stand face to face and can make agreements on an international scale. I do have my doubts as to whether they will keep those agreements, though.' YL

What do you think?



Daniël Rikkers Bachelor's student of Biology

'Every time there's a climate conference, everyone sounds very optimistic but I've become a bit cynical about that by now. They so often say they are going to do things differently, but then they come out with half-baked agreements again. I don't get the feeling we're making progress. The agreements are not radical enough: the things that we really need to do to stay below 1.5 degrees of global warming – if there's even a chance of that – are not being done. Seeing will be believing.' YL

Cannabis labels not very reliable

THE DOPE ON CANNABIS

Unreliable variety labelling is par for the course in the cannabis world, discovered plant researcher Robin van Velzen. He and his Canadian colleagues figured out the genetic composition of hundreds of cannabis samples and concluded that the labels can seldom be trusted. Photo Shutterstock

> urple Haze, Northern Light, White Widow, Amnesia: in any Dutch coffeeshop (cafés that sell cannabis), customers can choose from roughly 10 to 15 kinds of cannabis. Users are often guided in their choice on the basis of two 'original types' of cannabis, sativa and indica. These come from different regions and are said to have clearly different characteristics. Sativa-dominant varieties are said to produce a lively high, while indica-dominant ones are known for their relaxing effect. But among the hundreds of cannabis samples that Robin van Velzen studied, it was impossible to trace their claimed sativa or indica origins. No difference could be seen in their genes.

Bin the Latin

Van Velzen teaches Biosystematics in Plant Sciences. He and fellow researchers from Dalhousie University in Canada looked at the genetic composition of hundreds of cannabis samples, most of them sourced from Dutch coffeeshops. The results of their study, published in

The basics of cannabis

The form of cannabis known as sativa originates from South Asia, grows relatively tall (two to three metres) and has small, pointy leaves. The indica strain comes from colder, drier regions of Central Asia, doesn't usually grow taller than 1 to 1.5 metres, and has broader leaves. Botanically, both are variants of *Cannabis sativa indica*, not to be confused with *Cannabis sativa sativa*, which grows in Europe too and which contains hardly any psychoactive substance. THC and CBD are the best-known cannabinoids. THC has a psychotropic effect and is therefore on List 1 of the Opium Law, while CBD has no such effect and is not on the list. In the Netherlands, it has been possible since 2003 to obtain medicinal cannabis on a doctor's prescription. The producer is Bedrocan, a company Van Velzen does research for as well.



Text Marieke Enter

Nature Plants, mean that a lot of the Latin names used about cannabis can be binned. 'When cannabis growers claim to have a new cultivar with 60 per cent indica and 40 per cent sativa, you should certainly take that with more than a pinch of salt,' confirms Van Velzen. 'Genetically speaking, that simply cannot be established.' This was not the only cannabis myth that Van Velzen has busted. He also noticed big genetic differences between cannabis species that are sold under the same name. One sample of, say, Lemon Haze turned out to be nothing like another sample, in genetic terms: in fact they resembled each other no more and no less than they resembled a sample of a totally different cannabis type. Earlier research done in collaboration with the Trimbos Institute had already demonstrated that the chemical composition of cannabis type varied widely. 'So it turns out that the same goes for the genetic composition,' says Van Velzen.

As a kite

The results of the research mean that cannabis users actually have very little idea what they are smoking, vaping or dabbing. Every batch that is sold – the Dutch tolerance policy allows possession of maximum five grams – can have a different composition. So is it possible, apart from by trial and error, to prevent medicinal users from absorbing too little? Or indeed, too much, getting them as high as a kite – not very funny if it's a case of a terminal cancer patient or a child with epilepsy. The plant researcher confirms that this is a genuine risk. 'That imprecise labelling is highly undesirable, especially for people who use cannabis for medicinal purposes and therefore benefit from good, consistent quality,' says Van Velzen.

Out of the box

Wernard Bruining, the founder of the first coffeeshop in the Netherlands (in 1973) and known today as the driving force behind the Mediwiet Foundation for medical cannabis use, confirms that coffeeshop cannabis is variable. 'In the old days, the coffeeshop owner used to know exactly what he was selling you, because he grew it himself. But cannabis farming has been criminalized, with all sorts of strange consequences. And haziness about the origin is one of them.'

But unlike Van Velzen, Bruining is not bothered by the vague labelling. 'Cannabis teaches you to think out of



'Better labelling also makes it easier to separate the facts from the wild west stories'

the box. In my opinion, it doesn't make much difference to the therapeutic effect whether you use cannabis strain A, B or C. Scientists try fanatically to decipher the composition, but what difference does it make exactly what's in it? As long as the consumer gets something out of it. You can't tell how you will like a wine, or what quality it is, from a precise analysis of its ingredients either, can you? And then there's the fact that people react differently to THC. There are big blokes who get

> stoned on a single drop of weed oil, and little old ladies who take four or five and then just go shopping. Dosing is an outdated idea coming from the medical industry. With cannabis, people decide their intake for themselves.'

Terpene profile

Van Velzen and his fellow researchers are nevertheless convinced that the cannabis industry needs to examine the information it provides about its products more critically. 'Let go of the unreliable sativa and indica labels and show the terpene profile instead,' says Van Velzen. These are the aromatic molecules whose composition tells you much more about which plant your product comes from, he explains. 'Some companies do that, fortunately, but there is no standardized measuring and labelling convention yet. In comparison with other valuable plant species, there is a lot of room for improvement in cannabis labelling. And that makes it easier to separate the facts from the wild west stories, too.' 🗖

Key person: Johan Bucher

They are indispensable on the campus: the cleaners, caretakers, caterers, gardeners, receptionists – the list is long. *Resource* seeks out these key people. This time, meet Johan Bucher (38), molecular analyst at Plant Breeding. Text Stijn Schreven

'As a child, I used to help my father with odd jobs. He teaches mechanical engineering at a vocational training college. If my father didn't know how to solve something, he would say, 'Come, we'll go and see so-and-so because they are good at this and they'll teach us.' I've never forgotten that tip. I see my mother as an artist. She likes painting and sculpting – anything you do with your hands. If you combine those two people, there's a chance you'll get offspring with both qualities.

'I've been working in Guusje Bonnema's group for 15 years now. It started with a project for which we designed a camera setup. Three years later that PhD student was done, and the camera was going unused. Then I thought, "Hey, I've got an idea. I like Discovery Channel and timelapse film sequences. I've got a camera and two light boxes. I'll throw a few seeds onto some seed-starting soil and see what happens." When I showed my boss, she was blown away.

'What I realized is that plants don't listen to us. They turn away from the lens. In my father's classroom, which I often visited, there were welding robots. So I got the idea of making a welding robot with cameras on it and making it circle around the plant. I was given a budget and I worked on it at home, for a whole year. I managed it in the end, with help from many other people.

'BABETTE, VERA, MOLI and LINDA. Those are the names of *The Golden Girls*: cameras with which we observe the growth process of plants for phenotyping. *The Golden Girls* was a TV series with a moral: you get further if you collaborate. I named LINDA after my mother. And there isn't a piece of equipment like BABETTE anywhere else. With that one we can observe specific genes in the plant in 4D. 'At the first presentation I gave for the department, my parents were in the front row. My father was sitting next to Professor Richard Visser and told him, "That's my son". And Richard said proudly, "That's my colleague."

'At my first presentation my parents were in the front row'



Johan shows off L.I.N.D.A. • Photo Guy Ackermans



ReShore

Take two large cylinders, assemble them ten metres apart and hang a steel cage on them. This gives you a floating breakwater in which you can grow mussels, oysters and seaweed. Simple but effective, say Mitchell Williams and Frej Gustavsson of the Wageningen startup

Due to climate change, there is a lot of interest in breakwaters

ReShore. Due to climate change - rising sea levels and frequent extreme weather - there is a lot of interest in breakwaters to protect

harbours and coasts, says Gustavsson.

Gustavsson and Williams' aquaculture breakwaters only exist as scale models (1:15) at present, but will soon be created with a diameter of 2 by 4 metres and will float 10 by 20 metres apart. The scale model has been tested in recent months at the Netherlands Maritime Research Institute (Marin) in Wageningen. Conclusion: their model breaks the waves effectively. Williams and Gustavsson both did a Master's degree in Aquaculture & Marine Resource Management at WUR and had already made a first sketch of the breakwater during their degree course. They are now further developing their concept and exploring the market for it at Starthub in Plus Ultra II. They want to work with offshore and dredging companies that have been awarded contracts to strengthen coastal defences.

The next step will be the construction of a full-scale aquaculture breakwater and a test on the high seas. With the guidance of StartLife, they will tackle fund-raising in 2022 for a large-scale demonstration project. You can find out more information about ReShore on www.ReShore.blue. As

There are about 100 companies on campus. We introduce them to you in *Resource*. This time, ReShore. All the flavours of the world can be found in the WUR community. MSc student of Food Technology Matej Žucha (23) shares one of his favourite potato dishes from Slovakia.



Flavours of WUR

Zemiaková rýchlovka

Quick potatoes

'Slovakia is a potato-eating country. We prepare potatoes in many different ways. In former times, food was expensive and people in the countryside used to try to make meals from home-grown ingredients like potatoes. This dish was my favourite meal when I was a kid. My mum would make it whenever my brother and I asked for it. It does not really have a name, but as it can be prepared quite fast, let's call it "Zemiaková rýchlovka". Which means "quick potatoes".'

- Peel and cube the potatoes. Boil them until they are soft. Drain the water and add butter.
- **2** While the butter is melting, fry the bacon.
- **3** In another pan, boil water and cook the noodles.
- 4 While the bacon and noodles are cooking, make a potato sauce: warm up the milk and add it bit by bit (not all at once) to the potatoes and butter. Then mash the potatoes until you get a smooth and semiliquid sauce. Add a pinch of salt—not too much as the bacon will make it salty too.
- **5** When everything is ready, mix the potato sauce, the noodles and the bacon. Garnish with chives and/or spring onions. Enjoy!

Ingredients (for 5 people):

- 700g potatoes
- 300g bacon
- 400g thick noodles or pasta
- 600ml milk
- chives and/or spring onions
- 50g of butter
- salt



Matej Žucha (23) MSc student of Food Technology

Which dish reminds you of home? Share it with *Resource* so we can all enjoy it! resource@wur.nl



UNIque houses

There are student houses and there are unique student houses. In the feature UNIque houses, we visit the latter.

Judith: 'The house was built in 1905 as a girls' school. It stood empty for years, was a squat for a while and was then bought for a symbolic sum by a foundation. We are under the same roof as Emmaus (a charity shop, ed.), Shout (LHBTQ+ association, ed.), a theatre, a screen-printing workshop and a bicycle repair shop.

H15 and B5 are really two houses with adjacent living rooms. H15 used to be women only, and B5 was men only. The idea was that men who live in a mixed house never learn to cook and clean. But the residents of the two houses popped next door a lot via the balcony. In the end they just had a door made between the living rooms. Now we do so much together that for practical purposes we are one big house.'

Julian: 'If someone who wants to live here comes for a visit, there are two interviews: one in our living room, and one in B5. If you mess up at our place, you get a second

chance next door.

It is dangerous to be so close to Emmaus. Our house is brim full of Emmaus stuff. We don't just buy things, we often get them out of their bin too. It's a pity to throw them out. Some people call us the Emmaus museum. Because the house is so full, we easily lose things. There's not much point in looking for them; you're better off waiting for them to reappear. The house gives, and the house takes away, is what we always say.'

Judith: 'Not long ago, a pair of jeans suddenly appeared here. No idea whose it was, so we handed it in at Emmaus. The opposite sometimes happens too. We baked a banana cake once, a really big one. Not something one person could polish off on their own. The next day it had vanished, and we never found out House: H15 (and B

Residents:

Brent Achterstraat, Vincent Bongers, Rens van Dijke, Max de Jong, Irene Katsaros, Veras Nielsen, Judith Rommens, Julian Thibaudier, Eva Timmermans.

Unique because:

the house is two houses in one, and it`s in a historic building.



who took it. We even interrogated former housemates.'

Julian: 'Can we put out an appeal here? Who stole our banana cake? We would really like to know!' CJ

> If you too want your UNIque house in *Resource*, send an email to resource@wur.nl



From left to right: Eva, Judith, Julian and Fufu the cat • Photo Guy Ackermans

LIKES, SHARES AND COMMENTS?

Follow us on Facebook, Instragram, LinkedIn, Twitter and TikTok for the latest news, photos, videos and more.





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.

Contact Questions and comments for the editors: resource@wur.nl | www.resource-online.nl

Editorial staff Willem Andrée (editor-in-chief), Helene Seevinck (managing editor), Roelof Kleis (editor), Tessa Louwerens (editor), Albert Sikkema (editor), Luuk Zegers (editor), Nicole van 't Wout Hofland (freelance editor), Marieke Enter (freelance editor), Stijn Schreven (freelance editor), Coretta Jongeling (online coordinator), Thea Kuijpers (secretariat). Translations Clare McGregor, Meira van der Spa, Clare Wilkinson

Design Alfred Heikamp, Larissa Mulder

Overall design Marinka Reuten **Printing** Tuijtel, Hardinxveld-Giessendam

Subscription A subscription to the magazine for one academic year costs 59 euros (135 euros if abroad). Cancellations before 1 August.

ISSN 1389-7756

Publisher Corporate Communications & Marketing, Wageningen University & Research





[no]WURries

Winter blues

'I'm a student from India and I'm suffering from the winter blues, especially now the clocks have gone back. I'm permanently sleepy and ready for bed by 7 pm. I find it difficult to motivate myself to do things, even fun stuff like a meal with friends. How can I keep my spirits up?'

> A.S., Master's student (name known to the editors)

Face the enemy

'Step 1. Buy warm clothes at a secondhand store. Step 2. Get the ingredients for your favourite hot drink. Step 3. Go into the woods, the river area or the fields around Wageningen at least twice a day, whatever the weather, alone or with a friend, and walk for at least half an hour. Step 4. Look, listen and feel as you walk. Step 5. Go home, have your hot drink and a snack. Step 6. Repeat this until you find that Dutch winter is not as hostile as it may seem at first.'

Lieke de Kwant, Study advisor

Get outside

'In the winter I do indoor activities in the evenings. During the day I get outside as much as possible, by taking a walk during breaks, for instance. In the evening I enjoy doing sport because it gives me energy. I think it's important for you to make yourself go on doing things, especially out of doors when the sun is shining.' Yvette Langenberg, Master's student of Forest & Nature Conservation

Happy hormone

'Getting exercise helps. It gives you a sense of satisfaction and increases your self-confidence. During exercise your body makes endorphins. They are not called the happy hormone for nothing. Physical exercise is relaxing too: you'll feel your stress level go down. So exercise seems to be the best medicine for a winter depression. If you do it out of doors in daytime, you'll get a bit of light therapy while you're at it.' Ingi Alofs, Sports Coordinator at the Bongerd Sports Centre

Walking

'Don't just stay by the fire. Put on a warm jacket and go outside. Go for a 20-minute walk during daytime, at least once and preferably twice a day. Get out, and into nature, and keep up the pace. Walking warms you up and energizes you. Tip: Ever tried hot chocolate with whipped cream after a walk?' Wies Leer, Head of HRM at AFSG

Doctor

'I know from personal experience that there's a thin line between a winter dip like this and depression. To be on the safe side, go and see your doctor – that is nothing to be ashamed of. You can discuss the problem and its possible causes with the doctor. In my case, blood tests were done to see if I had any nutrient deficiencies. The doctor can also give you some lifestyle guidance or refer you to a psychotherapist if that is necessary'. Margret Franssen, PhD student of Consumption and Healthy Lifestyles

Covid quarrels Discussions about QR codes in education and a "2G" system are more heated than ever now we are heading for another lockdown winter. Not all of my friends have been vaccinated and opinions are sharply divided. The arguments are getting so irate that I'm afraid our group of friends will break up. How can I stop the situation getting out of hand? What to do?'

> M, student (name known to the editors)

Do you have advice for this Wurrier? Or could you use some good advice yourself? **Email your tips** or question (100 words max) by 23 November to resource@wur.nl, subject noWURries.