WUR from within: straight, sharp, transparent

No 08

Resource

DECEMBER 2021 VOLUME 16

The resilience of tropical forests

New start-ups make the world greener

Slight increase in women professors

New bike route to campus

Do the end-of-year quiz!

Special issue: extra dose of hope

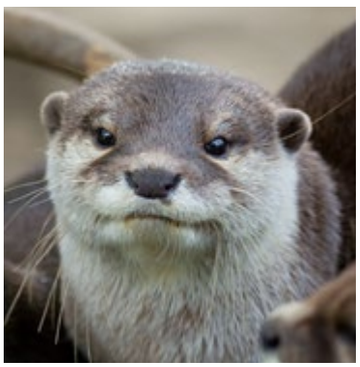
Staff and students look on the bright side

‘I don’t believe in doom scenarios’ | p.20

EN

Contents

NO 8 VOLUME 16



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

FOREWORD

Glimmers of hope

The *Resource* editors were all doom and gloom. There were new measures to halt the spread of the coronavirus, which meant back to working from home, plus criticisms after the climate summit in Glasgow that the tighter objectives might not be enough after all to meet the target of 1.5 degrees. A deep silence fell. Until one editor piped up and said, ‘Why don’t we make a *Resource* that is all about hope?’ If hope is to be found anywhere then it is at WUR, with its promising research and encouraging figures. So with that as the theme, the editorial team got to work.

They found that tropical forests are more resilient than was thought (p. 9), they discovered a Dutch fairy tale with a happy ending (p. 14) and they found beautiful coral breeding on campus (p. 20). Read where students and staff see glimmers of hope (p. 20) and how artists can turn a research failure into creative success (p. 26). Hopefully this means we can send one another into the new year with a healthy dose of optimism.

For now, we wish everyone happy holidays with family and friends, whether face-to-face or online. Follow us on our website and social media. Finally, something else to look forward to: on 13 January a new issue of *Resource* will be available on campus and online.

Willem Andrée
Editor-in-chief

PURPLE FRIDAY

On Purple Friday, people wear a purple item of clothing to demonstrate their support for LGBTQ+ students and staff. *Resource* found a number of people in purple on campus, including student Janine Bekebrede. She thinks it is important that everyone can be open about their sexuality. 'It gives me hope to see this sign that you can be accepted for who you are. Purple Friday is valuable in particular for people who are less likely to meet with acceptance in their family or religious community. I think it must be really nice then to see people at the university who do accept you.'

Photo Coretta Jongeling

New prize for educational innovation

All staff and students at WUR are welcome to nominate an educational innovation for the new Education Innovation Award, the brainchild of Education & Student Affairs. A jury led by professor of Education and Learning Sciences Perry den Brok will then choose the winning innovation from all the nominations. The prize will be awarded for the first time during Dies Natalis (Founders' Day) on 9 March. The winners will receive a small sculpture and 1000 euros in prize money.

'The aim of the prize is to reward educational innovators who have the courage to explore new avenues in their teaching, who think out of the box when it comes to education, and who inspire us with new ideas,' says jury chair Den Brok.

Nominations can be made using an online form. The deadline is 16 January 2022. You are not allowed to nominate yourself. LZ

For more information on the nomination process, see www.resource-online.nl.

No more salary for WUR teaching programme in Kabul

WUR has not paid the staff of the National Agriculture Education College (NAEC) in Afghanistan for some months now. This means the 75 employees can no longer pay the rent or buy food and medicines.

Normal financial transactions with Afghanistan have not been possible since the Taliban took over and sanctions imposed by the US Treasury Department barred payments to the country. Now banks do not dare transfer funds to Afghanistan. But as a result, WUR is failing to meet its obligation to pay salaries to its staff in Kabul, says Hans van Otterloo, the project manager of the teacher training programme in Kabul. The backlog of salaries for teachers, guards and farm workers amounts to 72,000 dollars.

Van Otterloo thinks WUR should transfer the money without delay using an alternative banking system. Nearly all Western NGOs in Afghanistan use this method, but WUR doesn't want to do so until it gets permission from the ministry. 'The legality of alternative transfer methods has not been verified and we must avoid inadvertently sending public funds to terrorist organizations such as the Taliban,' says the Executive Board. WUR has asked the Ministry of Finance for advice.

Van Otterloo has sent his Afghan colleagues an advance of a few thousand dollars so that they can at least buy food. 'I hope nobody ends up dead because we were more concerned about the accounting risks than human lives.' AS

Read the full story at resource-online.nl

New cycling route to campus

Cyclists coming from Bennekom will soon have a direct route to the campus from Grintweg. The new bicycle path will cross the planned Born-Oost business park from the Bijenhuis on Grintweg to the campus. That route is shown in the draft zoning plan for Born-Oost that has been made available for inspection.

The cycle path will cross land belonging to the owner of Grintweg 277. In return for this, they will be allowed to start a B&B business, rent two rooms to students and build a home elsewhere on the property. The new route will connect up the campus with the planned fast Ede-Wageningen cycle lane along Grintweg.

Photo Florine Zegers

21.7

WUR has 21.7 women full professors this year, compared with 20.9 last year. The university now has 17 women professors in charge of chair groups, and another 17 women personal professors. The proportion of female full professors is expected to keep on growing in the coming years, because 32 per cent of associate professors are women. WUR is aiming for 30 per cent women full professors by 2025. AS

Resource Cover Prize 2021

You can have your say on the Resource Cover Prize from next Tuesday online. The 10 thesis covers selected by the editors will be on display on Resource-online.nl from that day, launching the Cover Prize's 13th season. For the past three years, the prize has gone to international women. The last winner was the Mexican researcher Monica Aguayo with her thesis, *Chew on it*. Our readers and a jury formed by the editors decide between them who came up with the best book cover. Their verdicts are given equal weight. Online voting is open until 10:00 (CET) on 10 January. The results will be announced online and in this magazine as soon as possible after that. RK

XR demonstrators sentenced for Upfield protest

Six activists belonging to the Extinction Rebellion (XR) climate campaign group — all of them students — stood trial on Monday 6 December for occupying the Upfield building site. They were charged with unlawful entry.
Five activists were convicted while the case against the sixth was dropped due to a procedural error by the judicial authorities.
During the protests last May against the 'prominent presence' of multinationals on campus, various demonstrators climbed up a crane on the Upfield building site. When the police ordered the demonstrators to end their protect around midday, some of them remained in the top of the crane. A special police unit had to be brought in to abseil down with the protesters. When they reached the ground, they were arrested.

The public prosecutor demanded a suspended prison sentence of two weeks and a fine of 225 euros. The protesters' defence lawyer called for them to be acquitted. 'This was a peaceful demonstration, and there was no vandalism.' The police court did not accept this argument and convicted the five activists.

Silenced

The demonstrator whose case was dropped (name known to the editors) is shocked. 'We didn't expect this. In principle we have a right to demonstrate. We were not really a nuisance to anyone apart from when we occupied the crane. So a two-week prison sentence is an unbelievably tough punishment.'
The suspended sentence applies for two years. 'That basically means we are being silenced and won't be able to demonstrate for the next two years,' says the student. Even so, he still believes the XR protests are necessary. 'I think the climate crisis is far too urgent. Necessity knows no law.' LZ

Activists during the protest last May

‘Well, if that’s not hopeful...’

Although he has lost sleep over signals from the WUR community about things like work pressure and student wellbeing, Executive Board member Arthur Mol does see hopeful developments. ‘I’ve got a list here of universities in Europe that want to learn from us.’

In the past year and a half, he has often thought about how teachers and students must feel. They repeatedly had to adjust to new measures and be flexible. ‘They kept on recharging. Luckily, our personal approach to education was not at risk. Teachers kept in contact with students, whenever possible on campus. There is a tremendous built-in drive. The Executive Board doesn’t respond to every new government measure instantly. We try to take a long-term view – that creates more peace of mind. And we set a limited number of rules. We didn’t make campus-based teaching compulsory, for instance – that decision is up to the teachers, and we can do that here in Wageningen. It makes us sad when we hear about students who are at the end of their tether. This is their time: we want to keep normal student life going for them as much as possible.’

‘We want more young researchers who can be deployed flexibly’

When Covid-19 hit and working and studying from home became the norm, some teachers were also faced with IT projects, says Mol. ‘We decided to go easy on them for the time being and not introduce any more major change projects. And we have increased the teaching capacity by a lot, while student numbers have not increased. Hopefully that will give staff some breathing space, too.’

Research

Mol hopes that researchers will gain some breathing space too. ‘I do expect an increase in research questions on climate, spatial planning and nitrogen, which are our areas of expertise. But there is a better balance now between the number of staff and the number of research questions. And we are working on expertise pools – like a nitrogen group, for example. We also want more young researchers who can be flexibly deployed in the organization, with a traineeship in several institutes at the same time.’

University

Mol: ‘We are joining forces with others including the employers’ federation VNO-NCW and the universities to get the government to invest more. We haven’t gathered much information from the coalition formation process, but I do think both employers and the government have realized the need to invest in research and development if the Netherlands wants to stay at the top. Because the problem lies with research: academics have to spend too much time on education, and research gets squeezed out. That needs to be more balanced.’

Proud

‘If you look at education,’ Mol goes on, ‘the various research rankings, sustainability and the SDGs, entrepreneurship, and transparency, WUR is doing well on all these fronts. We are at the forefront with open science. And these are no mean achievements. I hope people are proud of them and think: this is a difficult time, and it’s hard to stay motivated, but just look at how people see and talk about Wageningen. I have a list here on my desk of universities in Europe that are eager to learn from us. Well, if that’s not hopeful...’ WA

Arthur Mol
Executive Board member

Feelings trump facts

This finding comes from a thorough analysis of the language used in millions of books. The study, led by WUR professor Marten Scheffer, was published this week in the prominent American journal *Proceedings of the National Academy of Sciences*. Scheffer applied the statistical technique of principal component analysis to the 5000 commonest words in millions of books published in English and Spanish between 1850 and 2019. The pattern that emerges is of a gradual increase in rational words up until about 1980. After that, the incidence of such words falls drastically.

1980

The reverse is true for emotional words, the use of which has increased a lot since 1980. It is well known that rational arguments and science lose out to emotional arguments and feelings with increasing frequency these days, says Scheffer. 'What is new is that we show that that reversal had already started around 1980.'

Opinions are divided as to the reason for this change. Scheffer thinks it has to do with rampant neo-liberalism and increasing dissatisfaction with the distribution of wealth in the world. A feeling which was then fuelled by the rise of the social media. RK

There will be an extensive interview with Scheffer about this study in the next Resource on 13 January.

The hopeful technology of young start-ups

Nine budding science businesses gave a presentation on 9 December on the final day of Startlife's Accelerate course. They all have big ambitions to make the world more sustainable.

The Accelerate programme helps WUR start-ups work out a business plan, look for clients and find funding. New technology that can reduce the environmental impact of food production played a prominent role in this seventh edition of the course.

The InPhocal company from Eindhoven uses laser technology for the labelling on food and packaging, which eliminates the need for polluting ink printers. The international start-up Infitiv is developing sensors that can check the quality of apple and berries in storage, which could reduce food waste considerably. The German business Crocus Labs uses sensors and algorithms to deploy LED lighting more efficiently in vegetable growing, with potential energy savings of up to 10 per cent.

The start-ups focus on technology that reduces the environmental impact of food production

Network

Some results are even more impressive. The British start-up Glaia can increase the efficiency of photosynthesis in plants, causing plants to convert more CO_2 into energy. This leads to increases in yields of as much as 50 per cent in some cases. And Solasta Bio, which is also British, is developing peptides that can be used as insecticides. The peptides eradicate pests and let other insects live. This sustainable alternative to chemicals will only be viable if the start-up can find a large partner that is able to finance the complex approval process and has a solid sales network. The Accelerate course helps the start-ups with such issues and objectives. They get assistance in drawing up a business plan, finding investors, and contacting partners with whom they can test and scale up their technology. This makes them part of Wageningen's ecosystem of entrepreneurs. AS

For more examples of Wageningen start-ups, see the regular Campus Residents *feature on resource-online.nl*

Can a coronavirus mutation be less harmful?

Each new variant of the coronavirus is just that bit worse than the previous one. Either it is more infectious or it makes you sicker. But is that a hard and fast rule?

Can't we humans have a *nice* surprise for once? A virus that is perhaps more infectious than the old variant but makes you less ill? After all, the aim of the virus is to reproduce, not kill off the host.

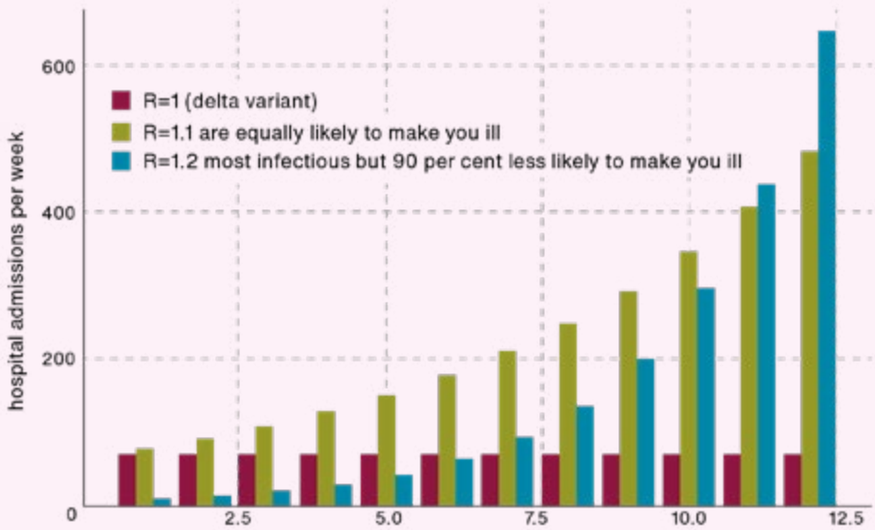
Of course these favourable scenarios are conceivable, says WUR epidemiologist Marino van Zelst. But he immediately adds a warning that he thinks such a development is highly unlikely. Mathematically speaking, it is possible to come up with positive combinations of infectiousness and virulence (how sick the virus makes you). But that would require far-reaching changes to the virus's characteristics.

The problem with infectiousness is the speed with which infections take place. The famous R value is an exponential factor, meaning that each generation increases by the same factor (the R value). If R=2, the number of infections doubles roughly every four days. A certain proportion of those infections results in an admission to hospital.

'It could work out well, but I'm not optimistic'

In theory

According to Van Zelst, you would need a variant that is more infectious than previous variants (or is able to get round people's immunity) but makes people far less ill — to such an extent that there is enough time to vaccinate everyone and prevent a new wave. 'That means the linear decline in the number of hospital admissions due to the new variant needs to be steep enough to offset (at least temporarily) the faster exponential growth in infections.'



Covid hospital admissions for different R numbers. Blue only overtakes green after 11 weeks.

That is mathematically possible. Van Zelst: 'Let's say you have a variant that is 20 per cent more infectious and 90 per cent less virulent. The R is 1.2 but the chance that you end up in hospital after an infection is 90 per cent less. The new variant then only leads to more hospital admissions compared with the old variant after 11 weeks. And it takes 14 weeks before the total number of admissions over the whole period is bigger.'

'In theory such a scenario gives you more time to intervene with medicines, booster jabs and other measures,' continues Van Zelst. But if you don't do enough, you will eventually be hit anyway — exponential growth is merciless. 'So there are situations imaginable that could work out well, but I'm not optimistic. There is no guarantee that the virus will mutate in a way that suits us. And if it does, it's pure chance.' RK

Resilience of tropical forest offers hope

Large tracts of tropical forest are being sacrificed to agriculture. But when farming is abandoned again, the forest grows back within decades, shows an international study led by WUR forest ecologist Lourens Poorter. The study was published in *Science*.

Poorter and his team documented the growth of a large number of tracts of secondary forest in parts of Africa and Central and South America. Secondary forests are those that grow back after primary forest has been felled and the land used for farming. Within 20 years, many of the characteristics of the original forests are restored to 80 per cent of what they were. This only happens, however, if the land has not been used for agriculture for too long, so the soil is still sufficiently intact.

The biodiversity recovers in 20 to 60 years

Some of the forest's characteristics return sooner than others. The soil recovers almost entirely within a decade, while the wood and foliage characteristics recover within 25 years. It is not always the same species that grow, however. A full recovery to the forest's original state can take at least 120 years.

According to Poorter, the study underscores the importance of secondary forests for the recovery of biodiversity and achieving the climate targets. He therefore argues for a more proactive approach. 'Use natural forest restoration where possible, and plant where necessary. And agroforestry may be an excellent option when you do plant. We hope that a mix of approaches will help create more natural, biodiverse, healthy and resilient tropical landscapes.' RK

Manage own energy

'Smart grids' will let households play a role in the energy grid of the future. Robin Smale recently obtained a PhD for research on the application of this sophisticated technology.

The transition to sustainable energy brings new challenges. Fluctuations in the amount of sun and wind affect the supply of power to the grid. With smart grids, individual households can help keep the supply and demand of energy in equilibrium, thereby making the electricity grid more stable and sustainable.

These smart energy systems allow households not just to produce and consume energy but also to manage their energy. The smart grids give households information on the consumption, generation and supply of energy. As a result, people can choose to use energy at a favourable time or to store it in batteries at home.

Residents' evenings

But Smale stresses that the human dimension needs to be taken into account when designing smart grid projects. He interviewed households who took part in grid operators' pilot projects with smart grids. The participants thought the technology was useful but they wanted to retain control of what the technology was doing in their own home. 'Residents often have no idea what that battery does or whether it has benefits that are important to them, such as being self-sufficient or saving on costs.' Grid operators could organize residents' evenings to make sure their smart grid project ties in with local residents' priorities and habits, says Smale.

'Residents often have no idea what that battery does'

From 2023, people will get less money for supplying solar energy to the national grid. Smale thinks smart grids will become more appealing to households then, as people will want to store or use up the energy they generate. 'For example, you can turn the washing machine on when it's sunny,' explains Smale. 'Even that is an example of energy management.' SS

Photo Shutterstock

Smart grids let households manage their energy production and consumption.

In other news science with a wink

SEA SQUIRT

Researchers from the University of South Florida have isolated a bacterium from the sea squirt *Synoicum adareanum* that produces the cancer drug Palmerolide A. This paves the way for biotechnological production of the stuff. The sea squirt, an organism shaped like a bagpipe bag, lives on the ocean floor in Antarctica.

COFFEE

Coffee makes you more alert, as every coffee drinker knows. But it also significantly speeds up your reactions to moving objects, shows a study by the University of Waterloo (Canada). Eye movements and the speed at which we notice contrasts both get faster. So have a cup of coffee before you hit the road.

ICE CUBES

Researchers at the University of California have developed ice cubes that don't melt. The material, a hydrogel, is made up of 90 per cent water, and the rest is gelatine. The gel-like cubes are reusable and can be produced in all sorts of shapes, just like ice cubes. The researchers hope their invention will reduce the use of crushed ice in the food industry. Cool!

Q

Whizzkids at Princeton University have made a nano camera the size of a grain of salt. The 'lens' consists of 1.6 million tiny cylinders of all different shapes, which capture the light like antennae. Massive computing power turns the data into an image. The main applications will be medical, although you don't have to be a Q to think up some Bond-like uses for the camera. RK

Study of floating solar park

What is the impact on water quality and aquatic life of a floating solar panel system that lets through sufficient light and air? How stable and storm-proof is such a system? What about the cost-effectiveness? And does it fit in with the surroundings?

Photo EasyFix Solar

A test setup on Marke Lake should help answer these questions. The lake adjoins WUR's experimental farm De Marke in Hengelo, Gelderland. Over 100 floating solar panels were recently installed there. De Marke has let the lake be used for the DRIVER project, in which the impact of various setups for floating solar arrays will be studied over three years.

Three small-scale solar arrays, with varying degrees of air and light permeability, are currently floating in the former sandpit. The unusual feature of this system is that the angle and the distance from the panels to the water surface are adjustable.

Floating solar farms are a relatively new phenomenon, developed in response to the lack of suitable roofs and land and the search for alternatives. Solar panels on water may also be more efficient thanks to the reflection from the water and its cooling effect: when solar panels heat up, that increases resistance and reduces the power.

Economics and ecology

As with solar farms on land, there is a great need for further knowledge about the economic and ecological effects of floating solar farms. That is what DRIVER will be looking into. This project is funded through the government's DEI+ scheme (for energy innovation demonstration projects). In addition to the impact on water quality and ecology (measured by the Netherlands Institute of Ecology's Aquatic Knowledge Centre AKWA), the project also aims to learn more about public acceptance, permits and how to blend in the solar arrays with the surroundings. These insights will be shared through the national Sun on Water consortium. ME

The unexpected

Lisa Becking

A whale shark can swim by without my noticing it. During a research dive, my mask is glued to the seabed while I study the reef. Total tunnel vision. That's why I take some time off during the last minutes of dives. Just to swim around, admire the surroundings, and take photos of beautiful shapes, regardless of their scientific value. 'I discovered in nature the nonutilitarian delights that I sought in art.' Nabokov phrased it perfectly.

Above water, in the academic world, we don't allow enough time for this kind of intellectual wandering. Mostly, I see everyone running in an effort to achieve excellence in all required tasks – research, writing, acquisition, supervision, teaching, committee work. By now it is well known that new ideas flow not just from rational thought but also from associative and intuitive thinking.

'Scientific breakthroughs come from a mix of rationality and adventurous association'

Yet we still consistently overrate the role of rationality in our decision-making. Of course, hard scientific skills, knowledge and facts are the basis of what we do, but scientific breakthroughs generally come from a balanced mix of rationality and adventurous association.

The creative process of indirect associations depends strongly on your state of mind. It requires some empty space. Darwin, for example, had a 'thinking path' that he walked along twice a day. Creativity is rarely discussed in our education, which is entirely geared to rationality. Our violin-playing professor at WUR, Marten Scheffer, even calls the creative process in science the forgotten half of scientific thinking. His advice: embrace the unexpected, create the conditions for creativity, resist dogma. And have a look at how artists do things.

My first collaboration with artists forced me to reflect on questions I would otherwise never have posed. A writer asks me how we could find out whether aliens have evolved into human form. An artist wants to know what form biodiversity will take in 100,000 years. Art brings anarchy, anything is possible. Louise Fresco also emphasizes that art can provide a surprising new perspective on a subject you thought you knew well.

My hope for 2022: more footpaths, more chance encounters, looking up more often. Who knows, a whale shark might swim by.

Edited version of a column that previously appeared in *De Volkskrant* newspaper

Lisa Becking is an associate professor at the Aquaculture and Fisheries group, a researcher at Wageningen Marine Research and a member of the national Young Academy (Royal Netherlands Academy of Arts & Sciences). She has an eye for art above and below sea level.

‘You can learn to be hopeful’

There is more to hope than an optimistic faith in a happy ending. Hope is a virtue, says WUR philosopher Jan van der Stoep. A virtue you can acquire.

Text Roelof Kleis

Jan van der Stoep was appointed special professor of Christian Philosophy six months ago. Amongst other courses, he teaches on the elective course on Food & Agricultural Ethics: Habits, Moral Choices and Worldviews. Two years ago, as a lector at the Christian University of Applied Sciences in Ede, he published a book about hope, *Met Verwachting Handelen* (Acting with expectations).

What do you understand by the word ‘hope’?

‘Hope means an attractive prospect that prompts action. Hope and action belong together. Having prospects spurs you into action, to roll up your sleeves. Hope is a very everyday concept, which you can talk about in all sorts of different ways. But it gets really interesting when you are in a difficult situation and can’t see your way through it. Then it acquires an existential dimension.’

Do the prospects have to be realistic?

‘Yes, otherwise they won’t spur you into action. You can hope to win the state lottery but that isn’t genuine hope, it’s more like optimism. It is not realistic, and it doesn’t get you going. Hope has to do with trust as well. If you make a choice, you hope it will lead to good things, but there is no absolute certainty. Hoping for something is risky; there’s a risk of failure. What you are hoping for might not work out. But in trust, you take the first step towards finding out what that hope is worth. By taking that step, you discover new things and start seeing opportunities you hadn’t seen before.’

Isn’t optimism a good quality?

‘Oh yes. I’m an optimistic person myself. My problem with optimism is that it is not very activating. Optimism in the sense of “it will be all right in the end” is too easy for me. Optimism and pessimism are both attitudes in which you don’t link your expectations to action. It’s too laissez faire. In everyday usage, hope often means optimism. You hope that the weather will be good, for example, but there’s nothing you can do to make that happen. It’s a bit of a definitions issue, but as a philosopher that matters to me.’

These are hard times. The climate crisis is hanging over our future like a black cloud. Is there any hope?

‘I hope we can make a difference by thinking about how we can change our lifestyles and our society. Economic growth is the measure of all things at the moment. Maybe we should shift towards a different kind of economy, one which doesn’t revolve around humans as much. Humanity needs to take up less space. My hope is that we will find new ways of treating plants, animals and the planet. In my local area I’m involved in a regional food supply chain. And when I change the way I manage my little garden, it has more biodiversity. These are little things, but they give me hope. I believe that can lead to change. Leonard Cohen sings:

‘Hope and action belong together’

'We've got to learn to deal with people whose views are radically different to our own. My hope is that this situation will inspire us to be tolerant.' ◆ Photo Guy Ackermans

"There's a crack in everything, that's how the light gets in." It is precisely in difficult times that hope becomes meaningful. Hope often focuses on something small and insignificant, something in which you can see a new beginning.'

And what hope do you have regarding COVID?

'We probably won't be rid of COVID for a while. Up to now we've been responding in ad hoc ways. We thought a vaccine would be the solution. Now we think it will be all right once we've had booster shots. But new variants emerge and spread fast. It's time to zoom out and take a look at the long term. Not just the scientific and medical side of things, but also the social side. We've got to think about how we are going to live with COVID. What does it mean for our behaviour? We've got to learn to deal with fierce conflicts and with people whose views are radically different to our own. My hope is that this situation will inspire us to be tolerant and to really listen to each other.'

'It is precisely in difficult moments that hope acquires meaning'

But how do you change your perspective?

'You need to activate your imagination. A good way of working on hope and perspectives is to read novels and watch films. Look at life through different eyes. Then something happens. That different gaze is the essence of hope. Now more than ever, we need a change of perspective. Hope can sometimes come from an unexpected direction. But you do have to be open to it.'

Can you learn to be hopeful?

'Hope is a virtue, which you can work on. You can indeed learn to be hopeful. Aristotle thought of virtues as the search for the happy medium. So courage, one of the four cardinal virtues, is the happy medium between cowardice and overconfidence, between too little and too much courage. Hope is the happy medium between despair and over-optimism. The latter is false hope, against your better judgement. It's all about finding the right balance. You can learn to be hopeful by practising, practising, practising. Keeping going, determined to find the crack in the darkness.' ■

The otter

A DUTCH FAIRY TALE WITH A HAPPY ENDING

What with the nitrogen surplus, deforestation and biodiversity loss, it sometimes seems as though there is little hope for our nature. But there are success stories as well. The otter, extinct in the Netherlands over 30 years ago, can now be spotted in many areas. This year was pronounced the Year of the Otter, in celebration of the animal's return to the Netherlands.

Text Coretta Jongeling

The last remaining Dutch otter was probably run over on a road near Joure one night in 1988. Or perhaps there was another solitary otter that swam into a trap intended for other creatures later that year. 'We shall never know exactly which one was the last,' says ecologist Loek Kuiters (Wageningen Environmental Research), who has been involved in the otter project since 2001. 'You can hardly ever pinpoint the precise moment of extinction. The fewer animals there are, the smaller the chance of coming across one.'

What can be said with certainty is that the number of otters decreased from the mid-20th century, and that the last sighting of an otter was in 1988.

Otters are mobile animals. They are mainly active by night and can cover large distances. As long as they don't come to a road, that is. The road network in the Netherlands expanded rapidly over the previous century, which cost a lot of lives.

On top of that, the otter suffered from poor water quality. Pollutants, particularly PCBs, from the fish the otter likes to eat accumulated in its body fat. Until 1954, hunters were allowed to shoot otters and were even subsidized to do so. And trap-fishing, which led to a lot of otters becoming 'bycatch', didn't help either.

Restoration plan

By the time it was realized that the otter population in the Netherlands was in decline, it was actually too late. The last otter was gone before the Restoration Plan for the Otter's Habitat was printed. But the plan was still put into action. Fauna crossings were created for roads and railway tracks. Poor water quality and dwindling fish stocks were tackled. And tentative thought was given to the reintroduction of the otter, since waiting for it to move into the country from Germany required an awful lot of patience. The first little group of otters captured abroad was released into the Weerribben-Wieden nature reserve in Overijssel in 2002.

'WUR started monitoring from the moment the animals were released. At that time, the otters were still tagged. The transmitters they were fitted with worked for between a couple of months and a year. That gave us an idea of where they hung out for the first few months, at least. And we could also see that some individuals settled into the area where they were released, while others ran away immediately.' If an animals tries to return to its original habitat, this is known as homing behaviour. An unfortunate

'The otter looks cuddly. That helps with recruiting volunteers'

The Dutch population is now at 450 otters and is viable: there are enough animals to maintain the population and ensure that there is only limited inbreeding ◆ Photo Shutterstock

strategy in this case, given that the otters came from Lithuania and Belarus.
So the reintroduction did not go entirely smoothly, but after some teething troubles, things looked up for the otter. The population grew steadily and last year the Dutch population of more than 450 individuals was officially declared viable. That means that there are enough animals to maintain the population and ensure that there is only limited inbreeding.

Effect on other species

The good news is that restoring the otter's habitat has a positive impact on many other species too. 'The otter is seen as the ambassador of clean water. If there are otters in an area, then a lot of animals will feel at home there. Fish stocks have increased, as have numbers of many other aquatic species and of animals dependent on them such as grey herons and storks. A project like this has far-reaching effects.'
What accounts for its success? 'Firstly, I think, the fact that the otter is not a very picky species. As long as there is enough good quality fish and enough vegetation in an area where there isn't much disturbance, otters will be quite content. Another important factor was the good collaboration with a varied group of people from different domains, from water boards to provincial government to ministries, and from nature management, policy, government and research. That creates a support base for a long-running project like this one. And then there are the volunteers, of course. We can rely on a large network of enthusiastic volunteers who spend a lot of time in the field. They keep an eye on how the animals are faring, where they are and where their young go. The otter is an appealing species; it looks cuddly. That helps with recruiting volunteers.'
So all's well that ends well. Or is the otter still in danger in the Netherlands? 'The traffic remains a major risk factor. We estimate that roughly one quarter of the entire population gets run over by cars. Every year. So you need quite a big growth rate to compensate for that. And we must keep on creating fauna crossings. Tragically enough, the number of road deaths is the best way of monitoring how many otters there are, at the moment.' ■

Returning and new residents

The otter is not the only animal that has returned to the Netherlands in recent years. The beaver was reintroduced in 1988 and there are now nearly 5000 beavers in the country. Nowadays, we are more cautious about reintroducing species and we prefer to wait and see whether the animal returns of its own accord. Examples of that are the wolf, the European wild cat and the golden jackal. The latter has only been spotted here a couple of times, and sadly one was run over near Zeist very recently.

Source: Zoogdiervereniging

HOPE IN NUMBERS

Numbers can convince people, they can prove things, and they can provoke discussion. Whatever the case, an academic environment like WUR is teeming with numbers. *Resource* looked for the numbers that give hope.

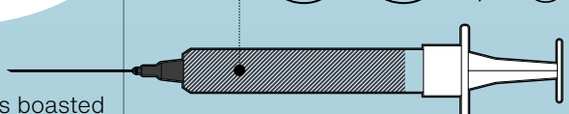
Infographic Pixels&inkt

9

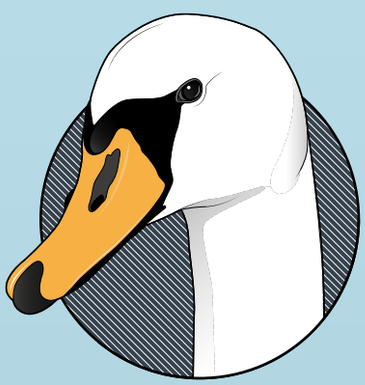
GAS-FREE
Since last year, the campus has boasted a total of 9 hot and 9 cold wells. This heat and cold storage will enable WUR to become almost totally gas-free.

TOP FOR CITATIONS
Of 26 WUR researchers at the top of the global citation rankings, 5 are women.

95%



VACCINATIONS
Almost 95 per cent of Wageningen students are vaccinated.



SWANS
An annual source of excitement: how many baby swans will survive on campus? 2021 was a good year: there are still two cygnets swimming around the Forum pond with their parents. There were at least three more on the Aurora/Zodiac pond, but they left a while ago.

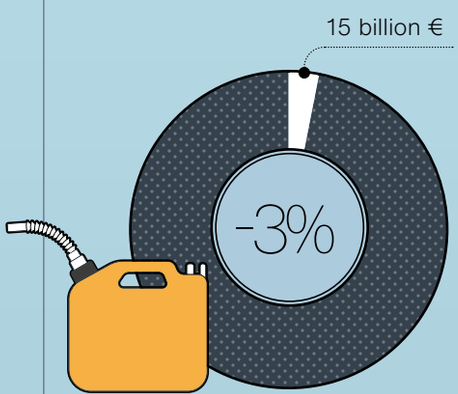
WALKING
Early in 2021, *Resource* organized Wageningen Walks Together, an initiative for linking up students who could use

some company due to Covid, so they can go for walks. A total of 14 students and two staff members took part.

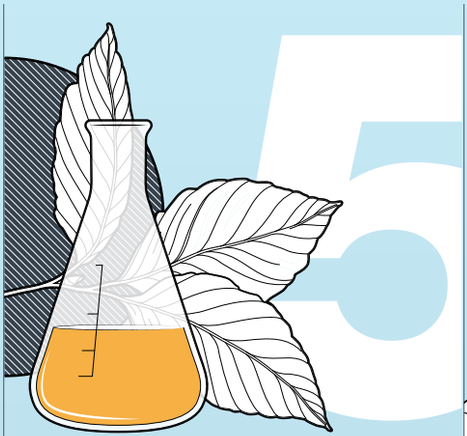
BETTER WORLD
For 4 out of 10 first-year students, wanting to help make the world a better place is a reason to come to Wageningen University.

120,000 EUROS

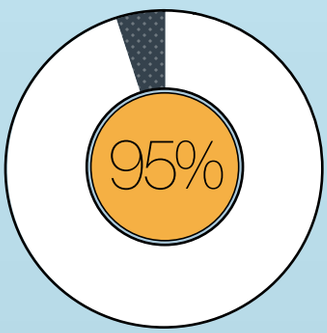
SUCCESSFUL FUND
The emergency fund for students was a success in 2021. Since the outbreak of Covid-19, nearly 120,000 euros has been raised for students who needed support because of the pandemic, and 33 students received funds.



FOSSIL FUELS
The pension fund ABP will stop investing in fossil fuels. Three per cent of its portfolio was in fossil fuels, valued at over 15 billion euros.



COMBATTING HUNGER
WUR has made 5 CRISPR-Cas patents available for combatting hunger and improving food.

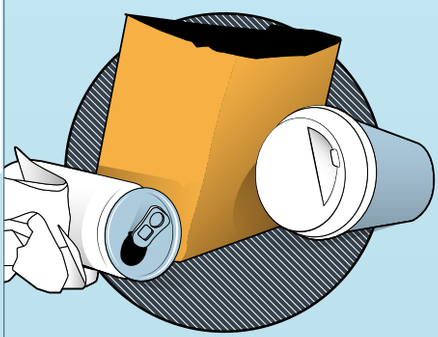


RETINANET
The computer programme RetinaNet sees 95% of the animals in aerial photos within 1-2 seconds, no matter how many animals there are. The computer can survey 10 times more territory than the human eye for the same costs.

QUALITY AGREEMENTS
So far, WUR has carried out 90 per cent of the quality agreements made in connection with the student loan system, by appointing more teachers and setting up the Student Training & Support Centre, for instance.

OPEN ACCESS
Nearly three quarters of peer-reviewed articles in 2020 were open access. The proportion has doubled in the past five years.

US NEWS RANKING
WUR is number 1 for environmental and ecological research, and for agricultural sciences, according to the US News ranking.



LITTER-PICKING
Student Robin Aanstoot is cycling 10,000 kilometres (from Norway to Portugal). He wants to learn more about plastic waste as he travels and pick up one rubbish sack of litter every day.

GOLD
The weekly magazine *Elsevier* awarded a golden medal to 71 higher education programmes, with WUR receiving seven.

TIMES HIGHER EDUCATION WORLD UNIVERSITIES RANKING
WUR has risen 9 places in the Times Higher Education World Universities Ranking.

NEW HOPE FOR CORAL

Something hopeful is happening in the aquariums at Marine Animal Ecology. The coral there is having babies in captivity. And mother and babies are doing great.

Text Roelof Kleis

It's hot in the small climate chamber in Radix. Along the wall of the narrow room is an aquarium. The most eye-catching inhabitant is a bright little fish called the yellow tang, but that is not the hero of this story. It is the coral on the aquarium floor that is centre stage here. In the middle at the front is F11, the first generation of homegrown *Favia fragum*, a golf ball coral from the waters around Curacao. 'F11 is the first coral to be born and bred here, and to have had its own babies now too,' says marine biologist Robbert-Jan Geertsma proudly. He personally chipped the parent coral off the reef and brought it to Wageningen. 'Just in a couple of coolers in my hand luggage,' he says. Perfectly legally, by the way, although that was quite a process in itself. 'Going through all the paperwork cost me about five hours' delay.'

Godsend

That was the procedure until recently. To study corals, you had to get them from faraway. Geertsma: 'Normally it takes months of diving for coral eggs in order to then fertilize and incubate them in the lab. Now we don't have to do that anymore. During the Covid crisis, we were able to complete the entire life cycle in the lab. It's a godsend that we managed, especially at this time, since we could no longer travel because of Covid.'

Marine Animal Ecology's breeding line is the only one in the country, according to Geertsma, and one of only a few in Europe. Next to F11 lie a few dozen other little 'golf balls': parent colonies that can release 0-500 larvae per day. 'We now have a constant production line, which means we can experiment all year round and are no longer dependent on spawning times in nature.'

Stress

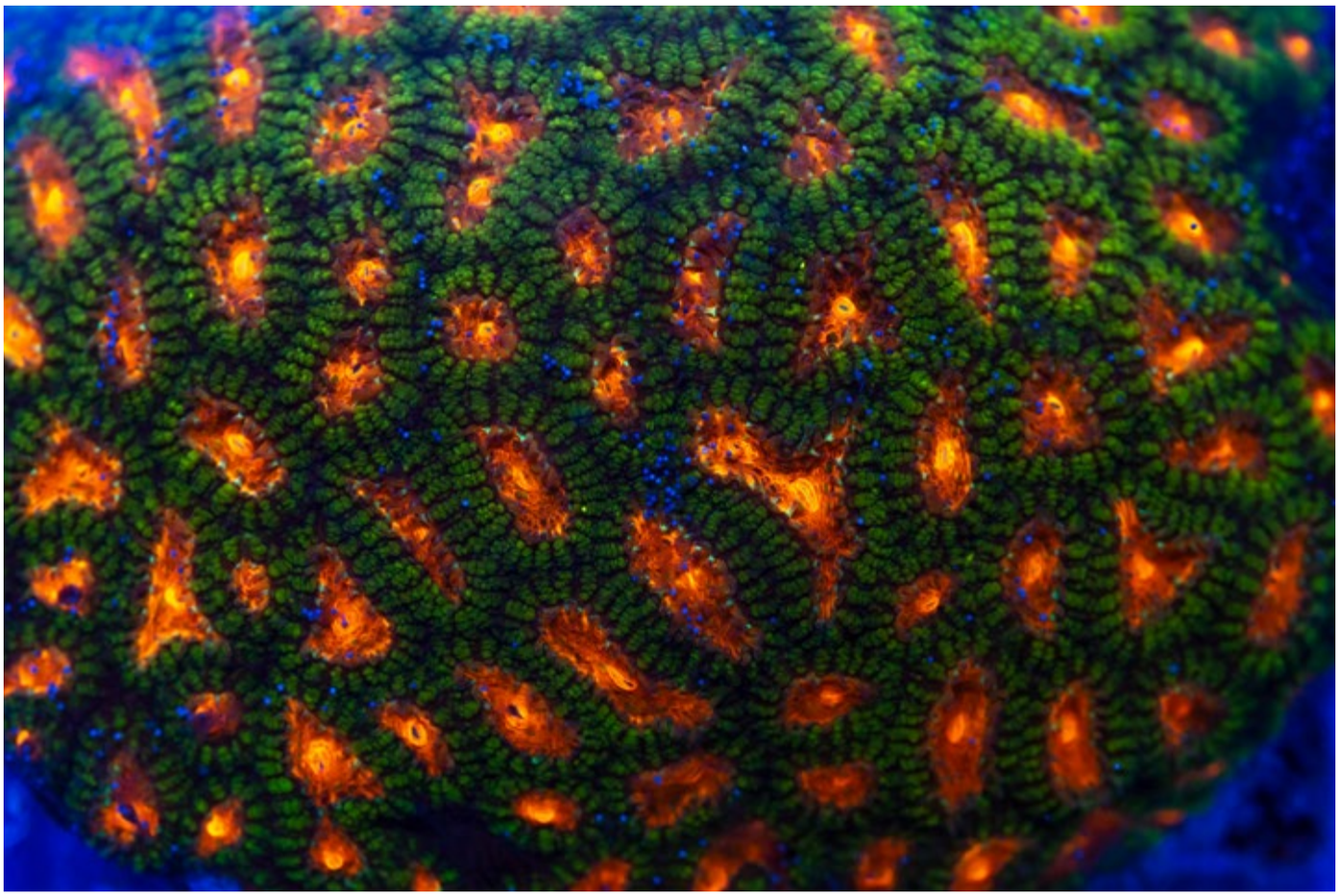
'On top of that,' adds Geertsma, 'our corals are a lot healthier than the wild ones. When you pick them off the reefs, they are very pale and sometimes there are big holes in them. Once you get them to the lab, they get their colour back and the wounds heal. In their natural environment they are super-stressed. You won't find beautiful specimens like these there anymore.'

The breeding line is doing so well that it takes less than a year to create a new generation of coral. That is two months faster than it used to take.

But it is not just the breeding line that is giving coral research in Wageningen

Lighting up

Baby corals are about one millimetre in size and swim their body length per second. So they are difficult to spot with the naked eye. The *Favia fragum* makes it a bit easier because it has a natural green fluorescent protein on board. If you shine a light on them, and look through a special filter, the creatures light up brightly. No one knows what the function of the protein is. Biologists suspect that the protein prevents bright light from doing damage.



Tinka Murk: 'By doing this, you give the rehabilitation of the reef a kind of kickstart'. Macro photo of *Favia fragum* under blue light and a yellow filter. ◆ Photo Robbert-Jan Geertsma | Tim Wijgerde

such a boost. The development of Favia Vision is equally interesting. This is an optical system that can be used to track individual coral larvae for hours or even days on end. Larvae choose where to live quite carefully. They see colours, smell odours and feel the ground. Geertsma: 'With Favia Vision, we can document that selection process. In a short period, we can test a lot of substances to see whether they attract or repel larvae.'

That knowledge is useful for coral restoration. 'In the lab, we can now test what larvae get excited about, and use that knowledge to lure them to artificial reefs,' says Professor Tinka Murk, explaining the developments within her chair group. 'By doing this, you give the rehabilitation of the reef a kind of kickstart.' Murk herself is involved in REEFolution, a restoration project in Kenya in which coral is being bred and placed on the reef.

'WE ARE A KIND OF NOAH'S ARK, REALLY'

'CORAL JUST IN A COUPLE OF COOLERS IN MY HAND LUGGAGE'

Coral bleaching

Another topic being targeted by researchers is the mechanism behind coral bleaching. In some parts of the world, warming seawater is causing coral bleaching and eventually death. But in the warm Gulf of Persia, for instance, that is not happening. Murk suspects that some symbiotic combinations of corals and algae are more robust than others under stressful conditions such as higher temperatures. 'Breeding in the lab enables us to figure out why that is the case. That is hopeful, because it potentially opens doors to boosting the original corals by giving them the right algae.'

'We are a kind of Noah's Ark, really,' says Geertsma. 'Apart from a few places, corals are faring badly all around the world. But here they are doing fine, and they look healthier than they do in the wild. They thrive here. It is very frustrating to swim above a coral reef and to see that corals are missing that were there the last time you came. But if you can then breed the first larvae in the lab, and you see them do well and produce a second generation, it makes you very hopeful.' ■

WHERE THERE'S WUR, THERE'S HOPE

However hopeless everything sometimes seems, students and staff at WUR are keeping their spirits up. With music, science, art, love – or just a smile. Read about it here and be inspired.

Text student editors • Illustration Marly Hendricks

'Humans are an incredible force. We can use that force to either destroy our planet or heal it. The amazing thing is that the choice is ours.'
Sterrin Smalbrugge, PhD student of Wildlife Ecology and Conservation

'I hope that all the academic ceremonies can go ahead again in 2022! I'm very pleased that we are still holding PhD graduations in the Aula. The happy faces of the young doctors, and their proud families and supervisors inspire us beadles to keep going. And I look forward hopefully to next year, when we will move to Omnia. That is the icing on the cake in our great job as beadles!'
Renata Michel, beadle

'I draw hope from the thought that this situation will not go on forever. This temporary "pause" in our lives offers us a unique opportunity to reevaluate our priorities and to reflect. And the lack of social obligations frees up time to develop other skills. Drawing and learning to play the guitar, in my case.'
Meira van der Spa, translator

'Hope is a child of research and a parent of education.'
Koen Arts, teacher Forest and Nature Conservation

'My biggest hope is for tolerance. I cannot bear the fact that there are still people who are not accepted in society due to their beliefs or their identities. I firmly believe that everyone should be able to live peacefully, regardless of who they are.'
Juan Jover Morán, student of Plant Biotechnology

'I'm not one for doom scenarios. I think the world will get through this Covid crisis, and will know how to deal with climate change too. I also think that with our forest research we can make a small contribution to more beautiful European forests and a better forestry and timber sector. But above all, I am very pleased about our many new young colleagues; I am very proud of them!'
Gert-Jan Nabuurs, Wageningen Environmental Research and co-author of an IPCC report

'I'm currently in Zambia collecting end-line data for my research project. Collecting, analysing data, and writing have been difficult during the pandemic, but not impossible. I remain hopeful. My "silver lining" is that next year I am aiming for the finish line as I enter the final year of my PhD'.
Brian Chisanga, PhD student of Development Economics

'I grew up during the Cold War. I demonstrated against the nuclear arms race. That seemed hopeless and the world seemed very dark. But it changed and better times came along! That taught me not to lose hope and above all, faith.'
Ingrid Hijman, head of the Student Service Centre

'I hope to read a more balanced view on China in the Dutch media, I hope Chinese students will not be shouted at in Wageningen's streets in discriminatory language, and I hope that I can travel to China soon.'
Xiaoyong Zhang, WUR's China coordinator

'I hope people will get moving. Sit less, feel better!'
Igni Alofs, sports instructor, team leader and Fit & Vital coordinator

'I hope everyone will realize that our shared loathing of the pandemic comes from our love of life, with all its possibilities, and our wonderful need for connection. And I hope this realization will lead to many good things of all kinds, when it's possible again.' Maarten Jacobs, cultural anthropologist

'Next year, we hope we'll be able to dance, sing and hug each other like never before.'
Anne van der Molen, chair of SSR-W student society

'I hope there is plainer sailing ahead for us in the coming year, and that we can apply the lessons of the Covid period creatively in the interests of a richer learning environment for both students and staff.'
Arnold Bregt, Education Dean

'Let's just be satisfied with "real things" that we "see with our own eyes". Because reality is there for us all the time. The only moments that matter are the simple little things. They are the source of hope as I marvel at them every day. What we see is beautiful, what we know is more beautiful, but the most beautiful of all is what we can still discover.'
Achilles Cools, artist, sculptor, graphic designer, poet, and writer of the book *Mijn Mieren Hoop*

'"The crisis consists precisely in the fact that the old is dying and the new cannot be born" (Antonio Gramsci). And the new can only be born if we think in new ways, because "you can't solve a problem with the same mindset that caused it" (Albert Einstein). The students I meet are all looking for that new mindset. That gives me hope.'
Kees van Veluw, teacher of Farming Systems Ecology

'The sea wants to get onto the beach to see the light break up. The meeting of sunbeams and happy foam – usually, that is. What are you waiting for? The ocean wants to kiss your loneliness goodbye. Only there's no rocking. Listen better and be inseparable. You can do it.'
Arita Baaijens, biologist, writer, explorer and the driving force behind Taal voor de toekomst (Language of the future), the learning language machine that speaks for the sea

'My foreign colleagues give me light in these dark days before Christmas. For example, I celebrated Saint Nicholas remotely with them and sent them a chocolate letter with the traditional gingernuts from Saint Nicholas. The fact that a colleague 1500 km away opens a parcel from the Dutch Saint Nicholas makes me very happy.'
Marjolein Elings, researcher on Agriculture and Care

'I hope the Covid situation in Suriname will allow PhD student Nicholas Pinas and me to go there at the end of March 2022 to look for a hidden swamp where, according to Maroon legend, a forest spirit planted a rice field. If wild rice really does grow there, I hope postdoc Marieke van de Loosdrecht can use the DNA of this forest-spirit rice to find out to what extent this wild rice has contributed to the diversity of Maroon rice, and thus to their successful settlement in the Amazon forest, far from slavery and oppression.'
Tinde van Andel, special professor of Ethnobotany

'If there is one thing that gives me cause to hope, it is that our relationship with nature is changing. We no longer just assume that nature belongs to humans and exists for us. A river in New Zeeland was granted legal personhood in 2017. In the Netherlands, we've got the Ambassador of the North Sea – represented by the motto "An eel is an Amsterdammer too". Marvellous.'
Matthijs Schouten, emeritus professor of the Ecology of Nature Restoration and 'house philosopher' at the state nature service Staatsbosbeheer

'Hope and love are humanity's strongest suits. Even small, insignificant things like a sincere smile can make someone's day. Every evening I think: "Did I remember to smile today?" If not, I always try to do better the next day.'
Johan Bucher, Plant Breeding

'In uncertainty you hear the whispering voice of hope for the future. My hope is that people will become aware of the effects of the current health and environmental problems, and will actively work towards a better future. This is possible through trust in research systems and the recommendations that stem from research. And secondly, through a change in attitudes and realignment of personal habits toward responsible lifestyles.'
Shaphan Chia, a postdoc researcher at the Laboratory of Entomology

'We hope that all students will soon have more freedom to relax in whatever way suits them. Covid doesn't prevent us from developing in terms of exercise. We are keeping our spirits up by making big and small changes to our routine.'
Fleur Pos, secretary of W.S.R. Argo rowing club

A modern-day Jacques Cousteau

Sobbing over *Free Willy*

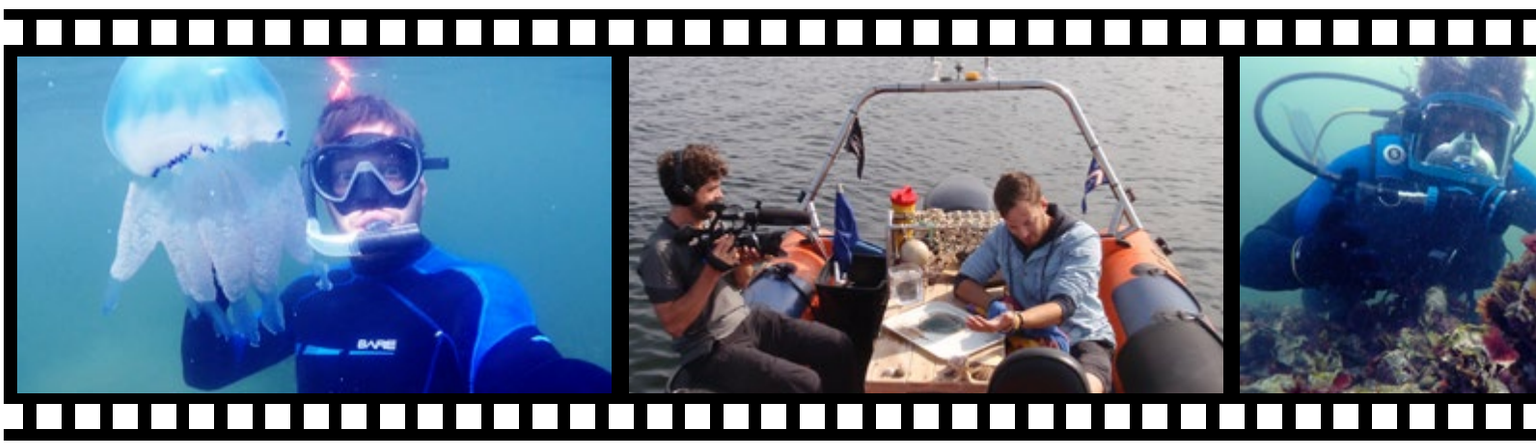
His dream is to show the young generation how beautiful the underwater world is, like a kind of Jacques Cousteau of the 21st century. But Master's student of Biology Hilmar Derksen doesn't just dream big, he has the drive to give it all he's got. The result so far is his own miniseries on Zapp TV.

Text Marieke Enter

'Hi, I'm Hilmar, I'm a biologist and I'm crazy about diving. Captain Lex and I go looking for strange, slippery and dangerous underwater animals. Which one is the prettiest? Which one pinches the hardest? Or stings like mad? I test it all.' With these words, viewers of the children's television programme Zapp your Planet were introduced to Hilmar Derksen, a Master's student of Biology at WUR in daily life. In the series 'Koppie Onder' he examines with infectious enthusiasm things like how the camouflage of the spider crab works, or whether a dead jellyfish can still sting you (spoiler: it can!)

'Koppie Onder' is a dream come true, Derksen tells *Resource* on the phone. He is currently in Scotland, where he is doing research for his thesis on a new, less invasive way of tagging sharks and rays (see inset). It takes a bit of improvisation, because Storm Arwen caused serious problems on his side of the North Sea, including at the marine lab. There are still regular power cuts, so Derksen has to work with generators to secure the oxygen supply for 'his' fish. After a Saturday morning round to check on them, luckily there is time for a call with Resource. So what's this about an underwater nature series on Zapp?

'Once you have seen what lives under water, you are bound to value it more highly.' Derksen cites these words of Jacques Cousteau. And that is his motive too, he says. 'As the son of a diving instructor, I could swim almost before I could walk. I was six when my father took me for my first dive, in a lake called the Grevelingenmeer. Breathing with his diving equipment, we dived down together. I was enchanted from the start. That almost weightless feeling underwater has something magical about it for a start, and that magic only gets more powerful when you see all the beauty living down there. The wafting seaweeds, the glorious colours of crabs and lobsters, and the amazing little creatures such as the hermit crab, one of my favourite species.' There was another,



more corny source of inspiration too, he admits: the 'lonely orca' film *Free Willy*. 'That made a deep impression on me. I sat sobbing in front of the TV,' says Derksen with a grin.

Escaped lobster

His love of underwater nature did not diminish, even during his secondary school years. Derksen went to a secondary school with a technical emphasis, with the subject of Research & Design in pride of place. That was right up his street. 'WENR researcher Ivo Roessink and I measured the grip strength of lobsters,' he recalls. 'That caused quite a stir at school, because one of the lobsters escaped.'

Long story short: Derksen went to Wageningen to study Biology, launched a YouTube channel as an outlet for his creativity, discovered the joys of working with children and teenagers during the Education minor ('I taught for six months and I've never had so much fun'), and clocked up a lot of filmmaking hours for WURTube and his own BioVlogWild. All this helped keep the ball rolling: after he'd been knocking at their door for a long time, the public broadcaster NTR gave him the chance this summer to make five pilot episodes about Dutch underwater nature. 'And hopefully it won't stop at that – we are already talking about a new concept.'

The voice of nature

Combining vlogging and television work with a Master's degree is quite hard work, admits Derksen. 'I don't lead a typical student life, and there really are things I have to forego – going out for instance. I live quite a disciplined life; I get up at 6 am every day and go to bed at 11 pm. In that time, I will have worked on my videos and done some studying, every day. Because I thoroughly enjoy studying: science has so much to offer that is interesting!'

But Derksen does not focus exclusively on science. He dreams of travelling around the world once day to make beautiful documentaries on subject such as extraordinary orca populations that are under threat from human influences. 'For most people what goes on below the waves is one big mystery. Scientists give them a window on that, and kind of give nature a voice. They are always discovering new stories, and those stories must go on being told. In my opinion, we should all do our bit towards protecting our planet. I'm good at storytelling. So let that be my contribution.' ■

> 'Scientists are always discovering new stories, which must go on being told'

Tagging for ElasmoPower

Are sharks and rays bothered by the electromagnetic fields of the electricity cables that connect the wind farms out at sea with the mainland? There is anecdotal 'evidence' but no scientific research has yet been done on this. Annemiek Hermans' PhD project ElasmoPower is changing that. Hilmar Derksen got his MSc thesis topic from the project: he is researching whether the sharks and rays that will be monitored can be tagged by a less invasive method than tags on the dorsal fin or incisions in the abdomen, by gluing the tags in place instead. The rough skin of these fish species makes this a challenge, but initial trials are promising.

Want to see for yourself? The QR code will take you to the Zapp web page with Derksen's videos.

THE WONDERFUL WORLD OF WUR SCIENCE

Much WUR research is on issues that are very much in the spotlight and that urgently demand solutions. Sometimes the solutions seem far off or even impossible, but WUR scientists are working away at turning the tides of the climate crisis, the nitrogen crisis, deforestation and biodiversity loss. A few examples of research that gives cause for hope • Text Editorial team

‘HELP BRING ABOUT THE TRANSFORMATIONS THE WORLD NEEDS’

‘LIGHT AS PART OF BIOLOGICAL CROP PROTECTION’

Light in the darkness for hothouse plants

Colours in LED light may improve the growth and photosynthesis of plants, as well as their resistance to insects. The Wageningen PhD students Martina Lazzarin, Davy Meijer and Mara Meisenburg are studying this. Far-red light is particularly important for the plant. This type of light stimulates plants to grow faster, but that happens at the expense of their defences against insects. Red light boosts photosynthesis and provides protection against diseases and pests, but too much of it can lead to light stress. So every light frequency has its pros and cons for the greenhouse horticulturalist. The PhD researchers are looking for the right balance between the light colours so as to achieve both good growth and strong resistance. Meijer reckons the right light composition can greatly reduce the numbers of pest insects on tomato plants. ‘You can see light as part of biological crop protection.’

From loss to restoration of biodiversity

With a new initiative, Wageningen researchers want to reverse the trend of biodiversity loss and help build a nature-inclusive society. Together with other WUR researchers, Liesje Mommer, professor of Plant Ecology and Nature Management, launched the Wageningen Biodiversity Initiative (WBI) in June 2021. ‘We want to achieve a turnaround by pooling the expertise in this field within WUR,’ says Mommer, ‘and by doing so we want to help bring about the transformations the world needs.’ The WBI community on the intranet already has 200 members from all the science schools. The research will focus on three areas next year: food systems that are positive for biodiversity, human-animal interactions and the various ways in which nature is of value. The first PhD course started this autumn: ‘How to be transformative as a researcher’. The WBI is also working on a student challenge on ‘nature-based futures’ and is organizing dialogues in collaboration with Wageningen Dialogues. Interested? Visit the ‘Biodiversity’ intranet group or send an email to biodiversity@wur.nl.

Vaccination against Rift Valley fever

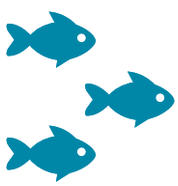
Vaccines against the dangerous Rift Valley fever virus are in the making: one for animals and one for humans. Although Rift Valley fever mainly affects sheep in Africa, humans are not out of the line of fire. So virologist Jeroen Kortekaas and his team at Wageningen Bioveterinary Research have developed a vaccine based on a live-attenuated virus. The virus thrives and alarms the immune system, but it is harmless, as it lacks pathogenic powers. This is due to small adjustments the researchers made to the genetic material. The approach is the same for the vaccines for humans and for animals. 'That is a nice example of One Health,' says Kortekaas. 'We are using technology from the veterinary field to develop a human vaccine. By protecting animals, ultimately you protect humans too.' The veterinary vaccine is currently being produced and prepared for registration. For the human vaccine, the first clinical studies in humans are due to start soon.

Breeding a climate cow

Precision breeding of cows can lower methane emissions by these animals by one per cent per year, says Wageningen Livestock Research. Together with breeding organization CRV and dairy giant FrieslandCampina, the researchers are studying how genetic factors affect methane emissions. There can be a 30 per cent difference in the amount of methane individual cows produce. Researchers are now selecting bulls whose offspring produce relatively little methane in their stomachs. If bulls are given a breeding value for low emissions, livestock farmers can breed specifically for that. That is an improvement on the current breeding policy, with which methane emissions per cow are rising slightly. With the new breeding policy, which will be ready in 2025, dairy farmers can reduce methane emissions by 10 per cent in 10 years. And that can be increased by applying additional technical measures. For example, DSM has developed an anti-methane additive that farmers can add to livestock feed. This cuts the cow's methane emissions by over 20 per cent, earlier research on WUR's Dairy Campus showed. The additive has not yet been approved by the EU, however.

Meeting nature and environmental targets with precision agriculture

Precision agriculture offers farmers better and more precise ways of applying fertilizer, combatting diseases, irrigating their crops and meeting nature targets. The evidence for this comes from the Dutch national precision agriculture living lab (NPPL). Arable farmer Pieter van Leeuwen Boomkamp has been practising precision farming in Nijkerk. He applies weedkiller very precisely using an electronic scanner fitted on his tractor. This saves him 10 to 15 per cent on pesticides. He also has a harvester with a location-specific yield meter, so he can adjust his soil management strategy according to the yield. Thirdly, he makes use of precision irrigation, in which sensors measure the soil humidity and report where crops are suffering drought stress. He constantly weighs up the costs and the environmental benefits. 'If the chemical and the technical options cost the same, I opt for the technical one.'



Global fish farming much more environmentally friendly

Vistelers produceren drie keer zoveel vis met minder Fish farmers are producing three times as much fish than 20 years ago, with a smaller environmental impact. This finding comes from an overview published in *Nature* in March by Simon Bush and his international colleagues. Twenty years ago, farmed salmon, shrimp, tilapia and catfish were fed on large quantities of other fish, in the form of fishmeal. The excess nutrients and drugs also led to water pollution. 'Since then, fish production has been tripled but the quantities of fishmeal have been reduced,' says Bush, professor of Environmental Policy at WUR. The aquaculture sector makes much more efficient use of feed, most of which is sourced from waste streams in the food industry, and it has developed plant-based fish feed. The global aquaculture industry now produces 112 million tons of fish. Asia accounts for 92 per cent of fish farming. Few Asian fish farmers have any links with western sustainability labels, and yet the environmental impact is decreasing there as well. This is due to stringent legislation and regulation, and the fact that fishmeal has become much more expensive. ■

Artists in residence ***on hope***

‘Never lose your imagination’

One left and the other arrived – this calendar year, WUR had not one, but two artists in residence. The first transformed a scientific failure into an aesthetically interesting living artwork. The other finds auditory inspiration in the protein transition that he sees as a source of optimism. We asked artists Arne Hendriks and Remco de Kluizenaar: is there still hope?

Text Marieke Enter

‘We understand each other very well at heart’

Arne Hendriks, outgoing artist in residence: ‘Given that hope is a product of our imagination, and that imagination is what makes us human, there will be hope as long we don’t lose our imagination, and thereby ourselves. Our imagination maintains the internal mechanism that you need to be able to see at all, just as blinking stops us getting snow-blinded. Seeing is the product of comparing one moment with another, linked with a certain expectation about what is going to happen – just like imagination. Hope is the optimistic version of this mechanism. Where there’s hope, there’s life, as they say.

‘Perhaps it’s because of the time of year, but I was reminded of the work of the French artist Philippe Parreno, who once put a Christmas tree in a museum as a sculpture. The title of the work was something like “It’s an artwork for 11 months a year and in December it’s just a Christmas tree”. For 11 months of the year, the Christmas tree creates a reference point that we test reality by, until in the 12th month, the Christmas tree fits with what we accept as reality. At that point, Parreno’s work effectively becomes “invisible”.

‘Maybe that’s what an artist hopes for: that an idea that arose in the space of the imagination, the sculpture, eventually gets assimilated by society. Maybe that is also what I’m hoping for as artist in residence in Wageningen: that the new perspective on things we look at together ushers in a new reality. As an artist, you start decorating your Christmas tree some time in January, and it feels a bit uncomfortable – you get some funny looks and you can understand them too. And you hope that one day December will come.

I must say, to be honest, that during my residency, in spite of the Covid restrictions, I’ve met a lot of people who helped me decorate the tree. Of course, that’s because scientists and artists understand each other very well at heart. Both groups are looking for something. Together we imagine that something beautiful is starting. We haven’t given up hope.’

Art in practice

Arne Hendriks’ algae reactor Algeamist, which built on a ‘failed’ experiment by algae researcher Rick Wieggers, is on display at Rijswijk Museum until 16 January. Following an earlier computer game, Remco de Kluizenaar is currently working on a musical instrument inspired by the protein transition, plus an audio tour of the Wageningen campus that (subject to possible Covid restrictions) should be premiered in mid-February. Resource-online.nl will keep you informed.

‘With the right narrative, anything is possible’

Remco de Kluizenaar, artist in residence: ‘Wageningen researchers and research projects inspire me, amaze me, and give me hope for a sustainable future for humanity. All the people I talk to are gentle and modest about their own contributions. And also very committed to the welfare of the whole planet. At WUR you feel surrounded by people who have the best of intentions for the world.

Personally, I am continuously swinging between moods of hope and of despair. I have a feeling that our society is at a tipping point – that we are now starting to mourn the loss of biodiversity, to realize the seriousness of the situation, and to go into action. The musician Nynke Laverman wrote a moving song about it, in which she apologizes for the consumer society. It’s called “Your Ancestor”. Two years ago, she couldn’t get the message across, she told me, but now people are open to it.

What does hope sound like? What does despair sound like? As a sound artist, I ran a competition in the protein transition group. That brought in fantastic entries. The buzzing of bumble bees from Thijs Feijen’s lupin research, for instance, which revealed a beautiful interaction: white lupin pollinated by bumble bees contains more protein. Converted into sound, it becomes a song, with the buzz of the bees like some kind of organ and the lupin pods rattling like shakers. Each sound is beautiful on its own, but in combination they’re gorgeous too.

The winning sound is spacy, a feast of technology, but a little bit spooky as well. It is the NMR resonance of hydrogen atoms in a protein, converted into the audible spectrum using software. The researchers express it very poetically as “the story of the oleosomes”. The point is that this NMR resonance tells you something about the structure of a protein. So without our knowing it, they have a story to tell us. It creates an inimitable sound that’s impossible to make with any digital synthesizer or physical instrument. But it sounds gorgeous and is vaguely reminiscent of the NASA sound recordings of the frequencies of the planets.

As a sound artist, I find it fascinating that technology that is actually intended for other purposes can also produce fantastic music. And it gives me hope for what else people might be able to use technology for. Anything is possible if only you have the right narrative.’ ■

Artist in residence and sound artist Remco de Kluizenaar is currently developing a musical instrument inspired by the protein transition and based on duckweed ◆ Photo Duncan de Fey

UNIque houses

There are student houses, and there are weird and wonderful students houses. In this feature we visit those UNIque student homes.

House:
A campervan near Wageningen

Residents:
Lobke Zijlstra (MSc Nutrition and Health), her boyfriend Bram Peeters (who is studying in Leeuwarden) and their two cats.

UNIque because:
It`s an old Italian school bus

Lobke: 'We bought this old school bus last summer with the idea of turning it into a tiny house. It's very expensive to rent a room and it feels a bit like you're throwing money away – it will never be yours. And also, living in a tiny house is environmentally friendly: you use less gas and water. But we did want a tiny house on wheels so you can park it anywhere.'

'We thought we would finish the bus in one summer, but it took us a year of working on it every weekend. We did absolutely everything ourselves: when we bought the bus, the seats were still in it. We have even raised the roof by 25 centimetres. We cut it loose all the way round and welded an extra section in between. So now we can stand up inside. The bus was ready in October and we've been living and working in it since then on the days when we have to go to uni or an internship. On the other days we live with our parents, and we can do our laundry there too.'

'Behind this door there's a bathroom with a toilet, which isn't completely finished yet. But in emergencies, if it's really cold for instance and you desperately need to pee, you can use it. It's a dry toilet, in which you dispose of the urine separately and compost the rest.'

'It's a tight fit with two people and two cats in a space of a few square metres, but it's going well. I'm in the lab at the uni nearly every day to work on my thesis research. And it's just a few minutes to the woods here, if you want to clear your head. But if we had another strict lockdown and we were both at home all day, it would be tough I think.' CJ

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

Lobke (left) and Bram ◆ Photo Guy Ackermans

Flavours of WUR

Christmas special

Side dish

Split pea purée (Fava)

Katerina Mouka (25), a Master's student of Plant Sciences from Greece, shares her recipe for split pea purée.
'Fava originally comes from Santorini (Greece). It reminds me of summer days by the sea, especially when accompanied by mussels, salad, and a glass of ouzo.'

1. Boil the split peas and purée them.
2. Add olive oil, lemon and salt.
3. Caramelize the onions.
4. Serve garnished with parsley and onions.

Main course

Vegetarian Bobotie

Julia van der Westhuyzen, a Master's student of Plant Breeding from South Africa, shares her recipe for bobotie.
'My grandmother used to make this when we visited. Its origins are unclear, but probably Indonesia or Malaysia. The recipe was adopted by South Africans around 1600.'

1. **Filling:** Fry the first 6 ingredients until almost cooked. Add the next 6 ingredients, and cook for a further 5 to 10 minutes. Mix in chutney to taste. Pour the filling into a tray and smooth the top.
2. **Topping:** Beat together ingredients 1-3 and pour over the filling. Arrange the bay leaves and sliced banana in a pattern and bake for 30 minutes or until the topping is stiff and golden. Serve with brown rice and/or fresh chilli paste.

Dessert

Strawberry & chilli ice cream

Yvette Langenberg, a Master's student of Forest and Nature Policy, shares her recipe for ice cream with a kick.
'I once had this ice cream in Amsterdam and I dreamt about it for a long time afterwards. I made it for my family at Christmas and they loved it. It's creamy, fruity and a bit spicy.'

1. Bring cream and milk to the boil together.
2. Meanwhile, beat egg yolks, sugar and salt to a thick foam.
3. Remove cream and milk from the stove and pour a little into the egg mixture.
4. Pour the mixture back into the pan and keep stirring.
5. Heat slowly while stirring until it starts to thicken. Don't let it boil! Continue until it's smooth.
6. Cool at room temperature.
7. Wash the strawberries, remove the tops and mash them.
8. Decide how much chilli you want to use and chop the chillis finely. If you want very smooth ice, whizz the strawberries and pepper in a blender and sieve them.
9. Add 1 tsp lemon juice.
10. Mix the puree into the basic mixture.
10. Follow the instructions on the ice cream maker.
12. Serve on a base of biscuit crumbs with a dollop of whipped cream and/or fresh strawberries on top!

Ingredients:

Split pea puree (4 people):

- 250g split peas
- Juice of half a lemon
- 1 onion, chopped
- 6 tbsp olive oil
- Pinch of salt
- chopped parsley

Vegetarian Bobotie (4-6 people):

Filling:
- 2 large onions, chopped
- 1 cubed aubergine
- 2 garlic cloves, crushed
- 3 medium carrots, grated
- 1 celery stick, sliced
- Zest and juice of 1 small lemon
- 2 1/2 cups cooked brown lentils
- 3 tbsp garam masala
- 1 tbsp ground cumin and 1 tbsp ground coriander
- 2 tbsp curry powder and 2 tsp turmeric
- Salt and a large pinch of pepper
- Handful of raisins (soaked)
- 2 tbsp mango chutney

Topping:
- 1/2 cup cream/
- 1/2 cup milk
- 2 large eggs, beaten
- Generous pinch of salt of black pepper
- 1 small banana, sliced
- Bay leaves

Strawberry & chilli ice cream (6 people):

- 400 g strawberries
- 200 ml whole milk
- 200 ml whipping cream
- 150 g sugar
- 1 sachet vanilla sugar
- 3 egg yolks
- Pinch of salt
- 1 tsp lemon juice
- 1 standard chilli pepper or a quarter of a 'Madame Jeanette` pepper

END-OF-YEAR QUIZ

answers:
1A, 2B, 3D, 4B,
5A, 6A,B,C,
7D, 8B, 9B,
10B, 11C, 12D,
13A

A year flies by in no time. A lot happens. You remember some things but not others. In the end-of-year quiz we recall some of this year's events. But *you* have to provide the details. The answers are given too, but do have a go first. RK

The wooden house near the pond in front of Zodiac looks like a nesting box. Why?

- **A** The house references the battle against the oak processionary caterpillar
- **B** The house references the battle for inclusivity.
- **C** No reason: the house is a folly
- **D** The house is a present from WUR publicity officer Simon Vink (*vink* = finch), who retired this year

02

WUR teacher Koen Arts slept out of doors for a whole year. Why?

- **A** To win a bet
- **B** To restore his bond with nature
- **C** To write a book
- **D** To get to know himself better

03

'I didn't sleep well at all that night. Maybe I felt sub-consciously that something great could happen'. Who's talking?

- **A** Ellen van der Kolk, about her appointment as Wageningen's City Poet
- **B** Ernst van der Ende, about his move as director from Plant to Animal Sciences
- **C** Emma Oosterwegel, about her bronze medal for the Olympic heptathlon
- **D** Frédérique Matla, about the Dutch women's hockey team's Olympic gold

WUR wants to strengthen the ecological function of the Dassenbos wood by

- **A** Leaving it alone
- **B** Building a fence around it
- **C** Rerouting the planned cycle path past it
- **D** Reconsidering the possible extension of Aurora

05

Extinction Rebellion (XR) made itself heard loud and clear this year. What didn't XR do?

- **A** Stop construction work at the Upfield site for a day
- **B** Run an alternative market at Unilever
- **C** Point out WUR's 'toxic' activities to guests at the opening of the academic year
- **D** Form a living clock at Atlas, with the pointers at 5 to 12

07

06

WUR president Louise Fresco's successor will preferably be a woman. Why?

- **A** To reach the quota for women
- **B** Because women make better directors than men
- **C** Because all the other board members are men
- **D** We don't know

08

The first outdoor Impulse exhibition, of photo journalism, was taken down within days. What was the controversial exhibition called?

- **A** Power to the Waste
- **B** Power of the Wasted
- **C** Power to the People
- **D** From Africa with love

Amazing Wageningen Science: the development of a reactor for an alga that grows on both CO_2 and O_2. What is this alga called?

A *Galdieria sulphuraria*
B *Dual purpose alga*
C *Mixotrophia abiusi*
D *Algae algae*

13

The documentary about the Ceres house Villa Sanoer was popular. What was the film called?

A De Beerenburgh
B De Bierenburgh
C De Burlenburgh
D De Bottleburgh

11

12

Four out of ten first-years chose Wageningen because...

A Their parents advised them to
B WUR has been the best university in the Netherlands for 17 years
C Nearby Ede has such a nice town centre
D They want to help make the world a better place

The sign saying 'No crop tops' in the gym at De Bongerd caused a stir. Why was the sign put up?

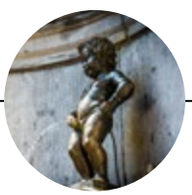
A Henri ten Klooster, head of the Sports Centre, can't cope with bare midriffs
B Bare midriffs are intimidating for some gym users
C The heating was out of order so it was too cold for crop tops
D Crop tops are out of keeping with WUR's new inclusivity policy

10

Amazing Wageningen Science: composting woodchips produce more heat if...

A You add sulphur to them
B You pee on them
C You dry the wood properly first
D You sterilize the wood first

09



08

On the Anthropology of Basic Nature Skills course, Koen Arts is teaching his students to make a fire in the woods with...

A Damp matches
B Two sticks rubbed together
C A lighter
D Flints

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 or 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

klimaatneutraal
natureOffice.com | NL-077-434311
gedrukt

FSC www.fsc.org
MIX
Papier van verantwoorde herkomst
FSC® C007225

[no]WURries

‘I always make New Year resolutions, but I never manage to keep them. I’m not giving up and I hope this year will be different. Who has tips to make them a success?’

Hannah, Master’s student
(full name known to the editors)

Don’t wait

‘A familiar problem. That’s why I don’t make New Year resolutions anymore. First, ask yourself whether you yourself want to change, or whether it’s the people around you who think you should. For the things that you do really want to change, you can consider whether your New Year resolutions really will lead to the desired behavioural change. If so, put your resolutions into action at once and don’t wait until 1 January. Enjoy the process and don’t be too critical of the result. And lastly, a very boring tip: early to bed and early to rise... helps get things done!’
Janine Quist, programme manager for Lifelong Learning at Wageningen Academy

Small steps

‘If you’ve got resolutions in mind this time that you really want to keep, ask yourself what you want to achieve by them, and what need is behind them. Maybe there are other ways of achieving that goal, and possibly some more feasible ones. And you don’t always have to start making a change with big steps. Divide your goal into small steps and then you can gently work towards the future you have in mind. That always works well for me. Good luck!’
Andrea Bolhuis, Senior Buyer

Not too rigid

‘Don’t be too rigid about your New Year resolutions but see them as a starting point or a working method that you can adjust in the course of the year. When you are working on yourself, you go on learning and you use your new experiences to adjust how you go about it. That way you won’t be disappointed if you haven’t achieved your resolutions by the end of the year.’
Nico Polman, Economics researcher at Green Economy and Land Use

Be kind to yourself

‘Think about why these resolutions are so important to you. Does the wish to change come from you or from someone else? You can only keep resolutions when the motivation is your own. Next, set realistic goals. Start with one day, then a week and then a month: that way you’ll automatically get into the swing of it. Reward yourself when you reach a milestone. And if it goes a bit wrong at some point, be kind to yourself and don’t throw in the towel straight away. Ignore the negative voice in your head and tell yourself what you would tell a good friend to keep their spirits up.’
Tamara Vreman, Agile Coach

NEXT WURRY

In love

‘I am in love with my best friend’s girlfriend. We spend a lot of time together in our group of friends and I find it increasingly hard to see so much of her, but I don’t want to lose my best friend. What should I do? Should I be honest about it or should I just keep out of the way?’

W.F., student
(name known to the editors)

Do you have advice or tips for this WURrier? Or could you use some good advice yourself? ***Email your tips or your question (100 words max) by 5 January to resource@wur.nl*** *subject noWURries.*