

Resource

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FOREWORD

Long live...

Scientific facts seem particularly irresistible when they can be summed up in a simple formula, the prime example being $E = mc^2$. A plain relationship that explains a whole universe.

Professor Erik van der Linden likes that simplicity. Even the most complex systems can often be described using straightforward associations between variables, for example scaling laws or power functions such as Einstein's formula. Van der Linden has created a course that teaches students to look for that simplicity (page 22). It's called Unifying Concepts for Life Sciences. That is rather an ambitious title, but rightly so.

The course is recommended for anyone who likes to be surprised. For who knew that the 10th largest city in a country always has about 10 times fewer inhabitants than the largest city? And the 100th largest city 100 times fewer? In all countries, all over the world. And there is an explanation for this too. This article is the start of a series *Resource* will be doing on new courses at WUR. It is guaranteed to amaze and entertain you. Long live education. Long live science.

Roelof Kleis
Science editor





MASKED

This is what a roomful of students wearing face masks looks like. Here they are attending a seminar on Ethics with guest lecturer and emeritus professor Henk Jochemsen. One of the organizers was Biology lecturer Sander Kranenbarg. 'After yet another period with online question times and interaction on the Brightspace discussion forums, it was nice to see students in person again today. It really is pleasanter and more beneficial to discuss ethics face to face. Unfortunately, face masks hide every smile, but that is a relatively minor drawback.' ^{WA}

Photo Guy Ackermans



Scientists want new appraisal system

Most WUR university staff are dissatisfied with the current staff appraisal system, shows the survey conducted by the Recognition and Rewards Committee.

The survey was completed by over 500 employees, 34 per cent of the total. More than half are dissatisfied with the appraisal method, while a quarter are satisfied. But although the appraisal system gets poor scores, the vast majority of Wageningen

‘We don’t want a return to subjective assessments’

scientists feel appreciated by WUR and their colleagues in their current job; only 17 per cent do not. Many academic staff are appraised using the Tenure Track system. They feel it puts too much emphasis on points, with the assessment depending on how many grants you get, how many PhD candidates you have and how many articles you publish in leading journals. Too little attention is paid to contributions to the team, personal goals, teaching, social impact and academic leadership.

Objective

‘Appraisal committees are too busy counting points,’ says Maarten Voors, a researcher at Development Economics, who conducted the survey. ‘There is a clear wish for the system to change, especially among women and staff in the Social Sciences Group.’ Voors is a member of the Recognition and Rewards Committee, which has spent the past 18 months identifying the problem areas in the appraisal policy. Now that this phase has ended, the committee will be designing a better system.

Voors sees pointers for improvements, but he is wary of making ad hoc changes. ‘We currently have an objective, transparent system and we don’t want a return to subjective preferences and assessments.’ AS



Delta regions are the subject of the new challenges • Photo Shutterstock.com

Nature-inclusive solutions

Two new Student Challenges revolve around what are known as nature-based solutions: using nature to solve problems on a landscape scale.

One example of this approach is the Dutch Sand Motor, in which a sand bank is created with sand dredged from the seabed. The wind, waves and tides play their part in depositing the sand along the coast, reinforcing coastal defences in the process.

‘Don’t control nature, collaborate with it’

‘This is a completely different way of thinking,’ says Marta Eggers (a project leader for WUR Student Challenges). ‘We human beings are used to controlling nature for our purposes. With nature-inclusive solutions you see it the other way around: these are our goals, and how can we achieve them through collaboration with nature?’

The first challenge starts on 22 February and goes on until November. Registration is possible until 13

April. ‘The set-up is different from previous competitions,’ says Mirjam Troost (another WUR Student Challenges project leader). ‘The focus is more on local impact. Participating teams produce a design for a local nature-based solution. A jury will pick the eight best designs. These teams will receive 2500 euros and some guidance from experts on how to carry out their plan. The winner is the team that best works out their idea into a detailed plan.’ In the second challenge, scheduled for the academic year 2023/2024, the focus is on a concept for the future development of delta areas. The announcement of the new challenges also marks the end of the current ones: the Urban Greenhouse Challenge is currently in its third and final round, while ReThink Protein’s second and last edition was held last summer. LZ

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It is 687 days ago today that the first ('intelligent') lockdown started and we began to work and study from home. This *Resource* issue went to press before the latest government announcements, but the indications are that we will slowly be released from this lockdown. We shouldn't cheer too soon, but we hope the count will stop at around 700. ^{WA}

China off the homepage

Last week, the Dutch news broadcaster NOS revealed that human rights research at VU University Amsterdam is partly funded by China. In response, the university decided to hand back the money. The next day, a story on the WUR website about collaboration between Wageningen and China disappeared from a prominent position on the homepage. 'Pure coincidence,' says WUR spokesperson Vincent Koperdraat. 'I understand why there might be questions, but that's all it is.'

The article that was highlighted on the WUR website last weekend was about a six-part series on collaboration between Wageningen and China. The article was actually first posted elsewhere on the site on 11 January. Koperdraat: 'An article like that gets put in a prominent place over a weekend for some extra attention, and then gets replaced the following Tuesday.' In this case, coincidentally one day after VU University's China row.

University wants discrimination hotline

As part of the three-year DARE project, WUR wants a hotline for people reporting discrimination and racism.

WUR aims to be an inclusive and diverse organization, says rector magnificus Arthur Mol, and that means no

'Teachers will check whether lectures are sufficiently inclusive'

discrimination or racism. To combat racism and discrimination, a three year project was set up last year entitled DARE, which is all about

decolonization, anti-racism, anti-discrimination, equity and equal chances. 'The aim of DARE,' says Mol, 'is to raise

awareness, assess when discrimination and racism occur – are these one-off incidents or is it structural – and then work to minimize this. You can only achieve change if you are aware of your own blind spots.'

Never expected it

DARE Diversity & Inclusion Officer Percy Cicilia never expected there would be so much progress. 'We would not have had this conversation 10 years ago. There is actually already a hotline for inappropriate behaviour, but now there will be more focus on racism. We will have 50 confidential contact people: hopefully such a large network will create a sense of a safe social environment. Teachers will also be checking whether their lectures are sufficiently

inclusive, and we will be helping them with that. An example is the references in class materials: they need to be not just European but African and Asian as well. It's about challenging our assumptions as academics.' WUR ombudsperson Jacqueline Schoone: 'We really need to turn the spotlight on reporting racism and discrimination: lower the threshold so that people feel comfortable saying that a particular remark, text or image crosses their boundary. I know the fact that I'm white makes it more difficult for people of colour to report incidents to me: "Will she truly understand the problem?" Now we need to make sure the project takes on concrete form and we need to reduce thresholds.' ^{WA}

Wageningen measures Tonga eruption

The eruption of the volcano near Tonga in the Pacific was deafening. But we didn't notice a thing here, 16,400 kilometres away. Or so you might think. But in fact the equipment at WUR's Veenkampen measuring station picked the signal up loud and clear. Not just once, but several times as the pressure waves circled the Earth repeatedly.

The first peak came 15.5 hours after the eruption, as PhD candidate Wouter Mol's graph shows. Given the distance of roughly 16,400 kilometres,

The first peak came 15.5 hours after the eruption

that means a speed of 308 metres per second, which is not that different to the standard speed of sound. But

hang on, there's a second peak. It is smaller but still clearly visible, especially in the graph that is adjusted to take account of background air pressure.

The second peak puzzled Mol at first. But then he realized the sound trav-



The volcanic eruption near Tonga • Photo Shutterstock

elled in all directions, and that means it arrived in Wageningen from the other side of the globe too. He was thrilled when the two peaks were seen again in the days that followed. Three sets of peaks were eventually recorded, showing a signal that went 2.5 times round the world.

According to experts at the Royal Neth-

erlands Meteorological Institute, the blast was comparable to the famous eruption of Krakatoa in 1883. Even Pinatubo in 1991 was not as powerful. ^{RK}



Who is tallest?

First-year students of Plant Sciences and Biology doing the Genetics course are on campus, standing in front of signs giving heights: 151-154, 154-158, through to 203 and above. Teacher Fons Debets: 'We are demonstrating the normal distribution for height. The first photo of such a "living histogram" was taken in 1914 and it can be found in the genetics book. This is the eighth time we are taking such a photo, and the first time with face masks. So it's a historic photo...!' ^{WA}

Photo Fons debets

Trust breeds resilience

Societies that trust one another recover faster from a Covid wave.

This is the striking conclusion reached by Professor Marten Scheffer in a study published in the *Scientific Reports of Nature*. Rather than trust in the government and its institutions, people's trust in one another turned out to be related to the speed at which infections and hospital admissions fall during a Covid wave.

Collective action is easier in countries where people trust one another

wave declined could be summarized in a single number, the exponent. There were big differences between countries in the rate of decrease (their resilience).

Sacrificing freedom

Trust in one another was the deciding factor. The more people agreed with the statement 'most people can be trusted', the more resilient the recovery from the Covid wave.

Scheffer refers to collective action to explain the resilience. 'Collective action – such as vaccination campaigns – is easier in countries where people trust one another. In such societies, people are willing to sacrifice a little of their own freedom because they trust other people to do the same.'

The Covid vaccinations are an example of collective action, says Scheffer. 'Trust in one another makes societies more resilient when faced with unexpected, far-reaching disruptions.' ^{RK}

Scheffer and his co-authors studied the first coronavirus waves in more than 150 countries. Most followed an exponential pattern, meaning that the rate at which the



Dendrometers accurately record changes in trunk diameter • Photo Bas Lerink

Trees shrink during heatwaves

Trees can handle a heatwave as long as it falls outside the growing season, a European study shows.

The study, which was set up by Ute Sass-Klaassen (Forest Ecology and Management), examined the way trees responded to the 2018 heatwave, making use of a large number of dendrometers: instruments that accurately record changes in trunk diameter.

In total, the growth and water reserves of 21 different species of trees at 53 locations in European

'If the tree can't replenish the moisture at night, the trunk shrinks'

many places, the heat only really kicked in after the trees had already had their main growth spurt. But that does not mean that these trees didn't suffer.

The heat caused trees to shrink considerably. You can't see this with the naked eye, but the dendrometers pick it up. 'If the tree cannot replenish the moisture at

night that it loses during the day, the trunk literally shrinks,' says Sass-Klaassen. 'Moisture deficiency and leaf damage caused by the tremendous heat lead to less photosynthesis. And that can have an effect on growth in subsequent years.'

Oaks

The study also shows that trees vary in their capacity to withstand water shortages. Oaks do better than many conifers, probably because their roots go deeper, so they have more access to groundwater. After a period of drought, the trees absorb their fill of water again and resume their growth. According to Sass-Klaassen, the study demonstrates the value of looking for signals from the trees themselves. 'With dendrometers, you can measure and map the physiology of the tree: the things that happen invisibly.' In collaboration with European partners, WUR is trying to put tree monitoring on the map. The Wageningen dendrometer network already includes more than 100 trees. ^{RK}



A Little Wiser

Why do some birds migrate south in winter but not others?

Over the next few days, large numbers of Dutch people will be counting birds in their gardens or on their balconies for the national bird count. But birds such as the swift, the cuckoo and the garden warbler will not be among them. Like many other bird species, these birds migrate to warmer climates in the winter. Other birds, such as the great tit and the winter wren, do stay in the Netherlands. What's the decisive factor in this?

A lot of birds live on insects and worms. 'These are hard to find in the winter, so they migrate south in search of food,' says associate professor of Behavioural Ecology Lysanne Snijders. But there are bird species that are less dependent on insects, or not at all. Some species are good at tracking down hidden insects and spiders in tree bark or sheltered spots. Others, such as great tits, switch to a diet of seeds in winter. And then of course, there are birds such as pigeons that do not eat insects at all. They do not need to migrate south for food, so they stay in the Netherlands.

Funnily enough, certain species of birds from further north spend the winter in the Netherlands. 'Geese and bramblings, for example,' says Snijders. 'Those birds eat grass or seeds, which are covered in snow in the winter in Scandinavia.'

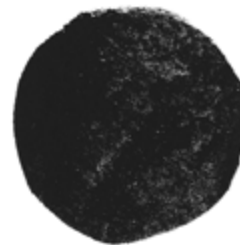
They then migrate to our country where there is less snow so there is more food available.

If the south has so much food to offer, you might well wonder why birds fly back

in the summer to breed. 'The days are longer during the summer in the north, giving the birds more time to find food for their young,' Snijders explains. 'There are also fewer predators here coming after their eggs or chicks.' The fact that there are fewer pathogens in the north might be another factor. 'The scientific jury is still out on that.'

It is clear, though, that birds are slowly adapting their migratory behaviour to changes in climate and land use. 'We can see a trend that more birds from Scandinavia are coming to breed in the Netherlands,' says Snijders. Migratory behaviour can change especially rapidly in species where migration is learned and not innate, such as the barnacle goose. 'Because our winters are getting milder, these birds don't always migrate south anymore!'

One of the risks then is that if we do get a severe winter, the birds will not survive. NVTWH



'Because our winters are getting milder, birds such as barnacle geese do not always migrate south anymore'

Lysanne Snijders,
associate professor of
Behavioural Ecology

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

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

Illustration Marly Hendricks

Fish stocks grow as sea gets warmer

Fish stocks in the oceans fluctuate with the temperature of the water.

Fish populations vary in size from year to year. Why is this? A team of researchers led by WUR ecologist Peter van der Sleen has a surprisingly simple answer: the temperature of the water is the key. Van der Sleen obtained his doctorate as a forest ecologist at WUR with research on the annual growth rings of tropical trees. But he has another interest besides trees, namely fish, and this led him to switch research field after his doctorate. As a postdoc at the Marine Science Institute of the University of Texas, he worked on growth rings again, but this time those of fish.

The ossicles of fish have annual rings just like tree trunks. Researchers use this fact to determine the age of fish. ‘Until a few years ago, that was all they did,’ says Van der Sleen, ‘but you can get much more information out of the ring pattern. Just like with trees, it tells you something about the growth and living conditions of the fish.’

Pacific Ocean perch

That growth is related to the temperature of the seawater first became clear to Van der Sleen when he studied the Pacific Ocean perch (*Sebastes aluatus*). ‘The pattern in the annual rings, and therefore the growth of the fish, almost perfectly tallied with the fluctuation in temperature’. And that pattern seems universal.

But that pattern says nothing about the fish population of a species. ‘Data on fish stocks often show a very different pattern, with fluctuations over several years or decades. The growth of individual fish responds to the temperature of the seawater every year,



A school of fringelip mullets, a tropical species of mullet. • Photo Peter van der Sleen

but fish populations show fluctuations on a completely different timescale. What’s behind that?’

Van der Sleen found the answer in delayed reactions to those annual temperature fluctuations. The degree of delay is related to the lifespan of the fish and their place in the food chain. ‘A small, short-lived fish like anchovy reacts immediately to temperature. But a fish like the ocean perch, which is much higher up the food chain, does not show this immediate reaction.’

Mathematics

The mathematical models developed by Van der Sleen reproduced the long-term fluctuations in fish populations surprisingly well. ‘It is quite intuitive, actually,’ he says. ‘Everyone understands that when an animal builds up fat reserves, for example, they act as a buffer in the following year. If you calculate these kinds of processes mathematically, you can generate long-term patterns. With the water temperature as the main driver.’ The link between fish stocks and

‘The ring pattern says something about the growth of the fish’

temperature makes it possible to predict the consequences of climate change. Climate change will cause the temperature of the seawater to fluctuate more dramatically. ‘This could cause populations to experience higher peaks and deeper low points,’ suggests Van der Sleen cautiously. ‘Of course, fish could also adapt to the new situation, for example by moving to colder water. And fish populations are affected by other factors apart from temperature.’ ^{RK}

Minerals keep chickens going

Broiler chickens fed on calcium and phosphorus from collagen develop stronger bones and their legs are less likely to give way beneath them.

While chickens in the 1950s weighed 700 grams, they now weigh over three kilos. But the growth of their bones has not kept pace with this rapid increase in weight. The result: the chickens' legs give way, and they sometimes incur injuries and fractures. 'In some countries the mortality rate is over 30 per cent,' says Bahadır Güz of Adaptation Physiology. For his PhD, he studied how you can make the chickens' leg bones stronger.

Minerals

The best way of doing so, according to Güz, is to feed broilers minerals, especially phosphorus and calcium, from biological sources. These come from collagen (bone meal) from pigs. Because they are bound in organic materials,

the chickens can absorb them better than minerals obtained from rocks. Güz found that chickens fed on minerals of biological origin grew larger and denser

'In some countries mortality from fractures is over 30 per cent'

bones, and thus stronger legs. These effects were smaller in chickens fed on inorganic minerals. 'Minerals of biological origin are more expensive, but it pays off for the farmer because the chickens are healthier,' says Güz. Enriching the chicken coops with climbing frames and live insect larvae also improves the chickens' bone density because they get more exercise. But should we aim for stronger bones, or would it be better to keep smaller chickens? Güz: 'As a researcher, I would prefer the latter: I have seen these chickens and how they suffer. But that is not realistic in



Photo Shutterstock.com

the poultry sector. Using slower-growing breeds is more realistic as a first step – chickens that grow to three kilos in 50 days instead of 40. 'Ten more days means better bone development and thus better welfare for the chicken!' ss

In other news science with a wink

◆ FAST WORK

Scientists from Stanford Medicine have succeeded in decoding a complete human genome in five hours and two minutes. An official Guinness World Record and quite an achievement. And the analysis of that mountain of data was ready just two hours and 16 minutes later. Still, it takes less time to make such a genome: between five and 45 minutes after intercourse.

◆ NOT RANDOM

Mutations of genes are not random. American and German researchers from Davis University and the Max Planck

Institute respectively came to this surprising conclusion after studying numerous mutations in the sand rocket. The plant is picky about repairing mutations, so vital genes get protected better than others. The result is that vital DNA mutates less. This discovery turns the established theory on its head.

◆ HIJACKING

Dengue-infected mosquitoes bite more often than their uninfected colleagues, researchers from Duke NUS Medical School (Singapore) have discovered. The virus prompts the mosquito to behave like this, effectively hijacking the mosquito's controls.

A clever trick to spread infection. It is not yet clear exactly how the virus does this.

◆ HEARTACHE

Dying from a heart attack during or shortly after sex is extremely rare, according to a study by St George's, University of London. Only 17 of the nearly 7000 cases of death by heart attack were found to have happened during or within an hour of sex. That is 0.2 per cent. Moreover, 11 of those 17 were fairly young people (average age 38) with heart problems. So don't let it put you off. RK

Rutger Bregman

As a vet working in nutrition research, I think a lot about animal welfare and the role of animals in our food production. Although many Wageningen researchers work on these issues as specialists, as a vet (and a consumer), I deal with them too. I've been following with great interest the court case between animal rights organization Dier&Recht and the farmers' organization Agractie about the Stop Dairy campaign. On

You can't pick and choose among court verdicts

appeal, the court ruled that there were insufficient grounds for Dier&Recht's claims in the publications it referred to. The court therefore ruled that in a publicity campaign against the consumption of dairy products, Dier&Recht is not allowed to present as a fact that separating calves from their mothers at birth causes severe animal suffering. I suspect that confidence in the Dutch judiciary went up a bit in many a Dutch farmhouse, which I see as a good thing, whatever my personal opinion on the matter. However, this was not the end of the story, because in the Correspondent magazine, Rutger Bregman not only wrote of a 'historic blunder by the Dutch court',

but also challenged the court's ruling by ending his column with the prohibited words, followed by 'Sue me! You could dismiss this as poetic licence or hyperbole, but it didn't feel right to me: it undermines the court's verdict and encourages people to ignore it. Moreover, Bregman was full of praise for the same judiciary when it called Shell to order.

And that's the problem, in my view. Court verdicts are not a menu from which you can pick and choose. At a time when the boundaries of democracy are being sought and crossed with increasing frequency, both at home and abroad, I hope that as many people as possible will do their best to respect all aspects of the rule of law, and that includes court judgments.

I wholeheartedly applaud debate about animal welfare in the food production chain, and just as I extended an invitation to Roos Vonk in this column some years ago, I would be happy to engage in a debate with Rutger Bregman about animal welfare, animal rights and consumption. After all, an open debate at the university is an expression of democracy, while pouring scorn on a court verdict is not.

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Guido Camps

Guido Camps (38) is a vet and a researcher at Human Nutrition and OnePlanet. He enjoys baking, beekeeping and unusual animals.

From chemical to environmentally friendly crop protection

The transition is stalling

The phasing out of chemical pesticides is going faster than the development of alternatives. As a result, Dutch farmers and horticulturalists are in trouble when it comes to combatting pests and diseases. So what's the next step? *Resource* followed a Dutch parliamentary hearing with WUR researcher Marleen Riemens, LTO and the Louis Bolk Institute.



Text Albert Sikkema

Dutch agriculture and horticulture currently rely on the systematic use of crop protection products to combat diseases (fungi, bacteria, and viruses), pests (nematodes and insects) and weeds. The products not only increase the yield, but also the quality and reliability of the harvest. Worldwide, diseases, pests and weeds cause a 40 per cent yield reduction if they are not dealt with, but there are increasing concerns about the harmfulness of chemical pesticides. That is why governments want to reduce dependency on them. In the Farm to Fork strategy, the EU wants to reduce the use of chemical agents by 50 per cent, a process that is already underway. Dutch growers used five million kilos of pesticides in 2020, 11 per cent less than in 2016, according to figures from Statistics Netherlands.

New system

The Dutch government wants to develop a new system of integrated crop protection with its Crop Protection

Implementation Programme 2030. That new system is based on five principles, explains Marleen Riemens, research coordinator for Field Crops at WUR.

'Firstly, we need farming systems with more crop diversity in terms of space and time, such as strip cultivation, which limits diseases. Secondly, we need to develop robust plant varieties that are more resistant to diseases and pests. Thirdly, we should introduce sustainable soil management and, fourthly, sensors and precision agriculture should be used to ensure that growers can intervene quickly and precisely in the event of pests and diseases. Fifthly, growers must have access to low-risk pesticides; natural enemies of pests, and weeding robots.'

Old shoes

The growers, united in the farmers' organization LTO Nederland and the sector organization Arable Farming, welcome this programme, but with reservations. 'LTO agrees with the

objective, but in the implementation the growers' scope for action gets lost. Old shoes are being thrown away before there are any new ones,' LTO wrote to the Lower House. 'Dutch farmers have great difficulty in growing a healthy crop because the traditional crop protection package is shrinking rapidly while there are still no effective and affordable alternatives.'

The transition to a new farming system with low pesticide use is stalling. There

'Old shoes are being thrown away before there are any new ones'



Natural crop protection: ladybirds eat aphids • Photo shutterstock

are several reasons for this. Approval of alternative products is slow because they have to go through a stringent and lengthy procedure. It takes an average of eight years for a new product to be authorized, says Artemis, the sector association for biological crop protection agents. 'If the admission procedure isn't speeded up, we can't possibly achieve the objectives of the Implementation Programme,' writes Artemis. Several interest groups recommend that bodies such as EFSA and CTGB (see inset, page 15) are given more money to expand their evaluation capacity.

Potatoes and onions

Another problem is that both the government and the private sector invest too little in research into integrated crop protection, Marleen Riemens argues. This is because both the devel-

opment and the application of alternative agents and systems are very knowledge-intensive and complex in practice. Riemens gives two examples related to potato and onion cultivation. 'Potato growers have to contend with two major diseases: phytophthora and potato cyst nematodes. Some potato varieties are resistant to either phytophthora or nematodes, but no varieties are resistant to both diseases.' The development of such a variety takes years, even with new techniques such as CRISPR-Cas, so Riemens is now concentrating on looking at other ways of reducing the disease pressure for potatoes. The most important of these is a broader use of crop rotation.

There is a similar problem with onions, which suffer from a fungus called downy mildew. There was a resistant

'We must all take a holistic view'

onion variety, but that resistance has probably been overcome. Weeds are a problem for onion growers too. They have always used herbicides to control weeds, but these will eventually be banned. So what's to be done? Riemens' group is researching cultivation systems that give mildew less of a chance and is simultaneously looking into whether



and how growers can limit weed infestation with a combination of sowing methods, sowing dates and mechanical weeding.

Puzzle

Riemens' group is also studying the potential of bacterial preparations for potato leaves, which give phytophthora less chance, and of natural enemies of thrips, a harmful insect for certain vegetables such as leeks. They are also carrying out trials with strips of flowers



CONTROL

Two bodies play an important role in the phasing out of existing crop protection products. The European Food Safety Authority (EFSA) assesses the safety of active substances in Europe and the Dutch Board for the Authorization of Plant Protection Products and Biocides (CTGB) assesses their safety and use in the Netherlands. They operate on the cautious principle that a substance may only be authorized if it has been demonstrated to be safe.

CTGB not only assesses the effects of active substances on humans, animals and the environment, but also the expected exposure during use. If the exposure is lower than the limit, the substance is deemed safe. CTGB often prescribes measures to reduce use and/or exposure.

The work of the EFSA and CGTB has been criticized. A major criticism is that they determine the effect of one pesticide or active substance on diseases such as cancer, but that they do not simulate common practice, in which a cocktail of pesticides is used. Critics such as Nijmegen neurologist Bas Bloem think that combinations of agents are much more likely to have adverse health effects. For example, there are indications that a combination of glyphosate and the neurotoxin MPTP is extra toxic. EFSA should also test frequently used combinations of pesticides, according to Bloem.

running through fields of vegetables, so that ichneumon wasps are attracted, which can then attack pests. Riemens: 'Each time, the researchers have to solve a complicated puzzle, looking at plant varieties, cultivation methods, soil quality, cropping plans and pest control options: all aspects of the five principles we've mentioned.'

For the organic sector, the transition seems very simple: produce only organic food, and you will be rid of chemical pesticides. This is why the Louis Bolk Institute, the research organization for organic agriculture, advocates a paradigm shift. The old system was based on controlling individual diseases and pests, sought to eliminate natural variation and aimed to achieve a static balance using chemical agents. The new organic paradigm, on the other hand, is based on the cropping system, it exploits natural variation, it wants to support the self-regulation of natural systems, and it opts for a dynamic balance.

'Researchers always have to solve a complicated puzzle'

The organic sector is already applying measures that WUR's Field Crops group is investigating, such as the use of micro-organisms, flower strips and a broader cropping plan to suppress diseases. However, this new system is not yet well developed. According to Artemis, in outdoor crops, less than two per cent of the pesticides applied are biological, so there is a huge amount of catching up to do. Likewise, the Louis Bolk Institute says research into crop protection based on ecological processes is lagging behind.

Two sides

So the organic sector too is in need of more research and control options. Organic growers now achieve an average yield of 72 per cent of what conventional growers get. Switching to organic cultivation and crop protection therefore only pays off for the conventional growers if the price or yield of organic produce increases significantly. 'Organic farming uses far smaller amounts of pesticides, but not exclusively organic ones,' says Riemens. 'A sense of opposing sides is often created, but the task for the organic sector is the same as for the conventional sector. We must all take a holistic view of diseases and pests in order to develop a new system.'

This is an urgent matter because the EU's Farm to Fork strategy aims to halve pesticide use by 2030. What can farmers do meanwhile? 'Try out alternatives,' says Riemens. 'There is no point in digging your heels in. They could test new robust varieties or try mechanical weeding instead of herbicides – things like that.' ■



UNIQUE houses

There are student houses and then there are weird and wonderful student houses. In this feature we visit those UNIQUE houses. This time squat Eekje.

'We've been living here for over a month now and we've been pretty busy during that time. The roof had to be repaired and we are working on making the place cosy and comfortable. We also had a neighbours' day to get to know the people around us and we have set up a diner where people can come and eat on a donation basis.'

'Our relations with the neighbours are actually very good. We knew Wageningen was fairly open-minded, but we had no idea how the neighbours would react. Fortunately, it's working out fine, and we've even had Christmas cards and cookies. We sometimes wonder if that would have happened if we hadn't been white and in

higher education.'

'Squatting is a political statement for us, but it's also just a necessity: many of us didn't have anywhere to live before this. It looks as though we can make good arrangements with the owner about the conditions for staying here.'

'Living in a squat, with all new residents, creates a lot of freedom. We can organize things however we want. A slide down the stairs? Why not!

We are free to decide together how we want to live, what our norms and values are, and what our traditions will become. We talked a lot about that beforehand. Look, on this whiteboard you can see the mind map we drew of our ideas about squatting and living together.'

'We want to organize more diner evenings and political debates, and

Squat Eekje

Residents :

Seven residents, who prefer to remain anonymous due to the nature of their living space. Squatting is illegal.

UNIQUE because :

it's a squat.

breathe new life into the Wageningen squatting helpdesk. We are now quite UNIQUE, but we don't really want to be. We've received a lot of messages from people who are also interested in living in a squat. The housing shortage is still acute.' ¹ ²

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



The Eekje residents (who wish to remain anonymous) • Photo Guy Ackermans





ON THE DISSECTION TABLE

A dead wolf is hardly news in the Netherlands these days. The one that was found last Monday on the hard shoulder of the A67 near Ekenrooi is the seventh since the wolf first entered the country in 2015. An autopsy is done on these animals at the Dutch Wildlife Health Centre at Utrecht University. Wageningen ecologists like Dennis Lammertsma (photo) are always involved. 'We do the ecological research. We take samples of the stomach contents and determine the age and condition of the animal.' ^{RK}

Photo Parallel Universum Photography

Online | Offline

I'm fed up with it



Lecturers can teach in-person again at last. Is that good news, or have they had enough of all the switching between online and offline? Six lecturers on teaching after yet another lockdown.

Text Resource editors • Illustration Shutterstock.com



Gemma van der Haar

assistant professor of Sociology of Development and Change

'Campus education is extremely important to students. You can tell that from their motivation. So I don't want to go back to being entirely online again. But I do embrace the flexibility of online education. In period 1, for example, I was able to invite a guest lecturer from Kenya to teach.

It is not compulsory, but I intend to continue offering my courses in a hybrid form so that students who are not feeling well or are in quarantine can attend classes from home. To start with, especially, it was stressful to cater for both the students online and those in the lecture hall, and there is definitely room for improvement, but I am glad it is possible. I expect Covid to be around for a while and by offering education in a hybrid form, we make it future-proof.' LZ



Hannah van Zanten

associate professor of Farming Systems Ecology

'It means changing gear all the time and that requires a lot of flexibility. I am teaching a course in this period, but WUR's Christmas holidays did not coincide with the children's school holidays. In addition, the schools closed a week earlier due to the lockdown. Fortunately, I was able to hand over the first week of teaching to someone else, so that I could really enjoy the Christmas holidays. But when the children had been at school for three days, a friend tested positive and we had to quarantine at home. There's always something. In that respect, I am glad that we are now continuing to give the lectures online, because that is clear to everyone. Of course, I prefer to lecture on campus and I miss the informal conversations. Now I don't really know how the students are doing, but I'm also aware that my options are limited.' AS



Tarek Alskaif

assistant professor, Information Technology Group

'Teaching the first two periods on campus this year was a very nice experience. For me, a three-hour online class where I'm talking to a screen causes way more stress than a four-hour class on campus. Also, the students had clearly missed it, and there was a lot of energy. In the third period, we were asked to switch to online again. By now, we know how to do that, but it is not very convenient to keep switching, especially in the middle of a period. WUR teachers are flexible, but there is a limit to that. We have been working overtime a lot in the past two years. I think if it goes on like this, we'll be asking too much of our teachers.' LZ



Dieuwertje Lont

lecturer in Breeding and Genetics

'It hasn't affected me personally as I didn't have to change any courses because of the coronavirus measures in this period. In period 2, I taught a course to 30 students on campus, which was wonderful. That made me think: this is what I do it for. In this period, I am teaching a course in which the students have to carry out a consultancy assignment pretty independently, and it is now done online. That's complicated, especially for the students. I am also a study advisor and I notice that more and more students are really fed up with it all. They spend more time at home with their parents, they are working less effectively, and some of them are really not progressing in their studies.' AS



Catriona Lakemond

assistant professor of Food Quality and Design

'I take it as it comes, I can't change anything anyway. The December lockdown was unexpected, but the course I was teaching had been online the year before, so it was doable. I didn't have to change it completely overnight. I think I can make the switch fairly easily. I was quite happy working online. You can sometimes be more in touch with people that way: I take more time to ask how someone is doing. I will miss that when everything is back on campus. At first it was difficult to combine it with the family, but now we are used to it. We're making the best of it.' SS




Jeroen Scheper

lecturer in Plant Ecology and Nature Management

'Nobody likes this situation, of course, but I don't get worked up about it. We always come up with solutions. The hospitality industry and the cultural sector have been much harder hit. I am now preparing the Restoration Ecology Master's course for period 4 in February and March. There will be more than 150 students. With linked lecture theatres, it might just be possible. Lectures can still be given online, but online group work is really not ideal. The course also includes an excursion. The Peek app, introduced just before Covid, is a wonderful solution. Students use the app to do the excursion themselves; we supervisors are around to help them.' RK

How do you find the teaching at the moment? Let us know at:

 resource-online.nl

Tackling inappropriate behaviour

‘FOR NOW, EVERY REPORT WE GET IS GOOD NEWS’

Gossiping, bullying, intimidation, discrimination, nasty comments or unwanted touching: inappropriate behaviour takes many forms. WUR held three workshops about it, coincidentally in the week that a scandal blew up around the Dutch version of *The Voice*.

Abuse is not the preserve of TV studios; higher education can be a pretty unsafe environment too. Well-known scandals in the Netherlands include the trading of grades for sex by a University of Amsterdam professor of labour law who could not keep his hands off female students, or the ‘perverted pedagogy’ at work in art schools. That students are not the only victims is clear from fairly recent revelations about abuse of power and intimidation at, for example, a statistics group in Leiden and the VU Amsterdam department of Psychology.

Misbehaviour at Wageningen

Relatively few stories are circulating (so far?) about misbehaviour at Wageningen University. That is not to say that inappropriate behaviour does not occur here, as ombudsperson Jacqueline Schoone knows. Last week she facilitated one of the three workshops on this subject run by the Integrity and Undesirable Behaviour working group.

Originally, the idea was to work with employees, students and PhD students to establish the acceptable limits for behaviour, to complement WUR's codes of conduct.

These tend to state the obvious and use upbeat language, and therefore risk remaining paper tigers. Schoone: ‘You can question whether rules of conduct such as “we treat



Text Marieke Enter

each other with care” or “we give everyone equal treatment” offer enough support if something happens to you that you are not sure is really acceptable,’ she explains. ‘In such a situation, you’d probably benefit more from a specific guideline about what is acceptable behaviour and what isn’t. This can be especially useful to internationals, who are more likely to face things that seem a bit weird to them, due to cultural differences. The boundary between such differences and inappropriate behaviour is not always clear.’

Although Schoone believes that the workshops yielded many important insights – *Resource* cannot verify this: the editors were kindly but firmly asked not to attend so as to ensure people could air their views in an optimally safe environment – they did not produce guidelines of that kind. ‘As we were talking, we realized that everyone has their own frame of reference for judging behaviour. Take a question about your private life: for one person it is harmless chat, while another finds it very intimidating. And it is not for the working group to determine where the dividing line lies,’ Schoone explains.

According to the ombudsperson, such examples also show why WUR needs a climate in which everyone feels completely free to say what is and is not OK for them.

‘Inappropriate behaviour is still too often trivialized and dismissed as the injured party’s problem. And perpetra-

‘INTENTIONS ARE BESIDE THE POINT WITH INAPPROPRIATE BEHAVIOUR’



'Inappropriate behaviour thrives on secrecy and shame. Don't look away but stand up for the person who is being targeted', says WUR ombudsperson Jacqueline Schoone • Illustration Valerie Geelen

tors often go on the defensive straightway, saying with a sigh that they really didn't mean any harm. White people are particularly prone to doing that. But intentions are beside the point with inappropriate behaviour. Much more relevant is how the other person experiences it.'

Bullying and gossip

Schoone emphasizes that inappropriate behaviour can be a matter of little things too. Like surreptitious victimization such as deliberately ignoring someone's dietary requirements for departmental outings or treats. Or by making supposedly concerned remarks behind someone's back: 'I'm shocked at the poor quality of this work', or 'I don't think he/she fits in here'. That kind of gossip can be very damaging, in Schoone's experience. 'The sum total of this kind of microaggression can drive someone crazy. Actually, there should be a ban on talking about people behind their backs. It would prevent a lot of distress if we stopped tolerating surreptitious trouble-making.'

According to Schoone, bystanders play an important role. 'Inappropriate behaviour thrives on secrecy and shame. So even if it is not directly aimed at you, speak out if you see gossiping, bullying or other inappropriate behaviour. Don't look away but stand up for the person who is being targeted.' That takes guts, Schoone acknowledges – especially from management. 'It is up to them to promote open dialogue about what is acceptable and what is not,

and to put an end to inappropriate behaviour,' she says. Of course, management needs a clear idea of how to go about it. And that is lacking, as the workshops showed. 'WUR could do with developing some more tools for that,' Schoone agrees.

The ombudsperson also suggests setting up an accessible helpdesk that you can go to anonymously if necessary. 'People can be afraid to report misbehaviour, for fear of repercussions or making things worse,' Schoone notes. This fear is not unfounded: there are more power imbalances and dependencies at universities than in other organizations – some academic careers can be made or broken by just one or two individuals. Schoone: 'This makes it all the more important to tackle every form of inappropriate behaviour, even when it concerns the internationally renowned professor who attracts so much research funding. In that sense, for the time being, every report we get is good news, because it will help us to turn the tide.' This does not mean, however, that the ombudsperson follows the trend of trying to solve the problem primarily by making the victims more resilient. 'The solution lies precisely in stopping the perpetrators. Everybody should feel safe here, without having to read a manual first.' ■



Use this QR code to find your confidential advisor. Students can contact vpstudent@wur.nl

New course helps understand the world

THE LAWS OF SCALE

Even the most complex systems often obey simple laws. A sustainable society would do well to study those laws, says Professor Erik van der Linden.

At first sight, an elephant has little in common with a mouse. They are quite different in size, for a start.

Yet there is a simple mathematical relationship between their metabolic rate (the energy production in watts) and their mass (in kilograms). In mathematical terms, the rate = $70 \times \text{mass}^{3/4}$. The Swiss zoologist Max Kleiber discovered this correlation in 1945, although he couldn't explain it. Such a relationship between two units variables is called a scaling law. It took the American physicist Geoffrey West and his team five years to explain this correlation, says Professor of Food Physics Erik van der Linden. West discovered numerous scaling laws in all kinds of complex systems. In cities, for example, there is a fixed relationship between the number of petrol stations and the number of inhabitants. Mathematically, those relationships are power functions, as described above. The relationship is not linear (which means if one quantity doubles,

so does the other) but exponential. And it doesn't matter where in the world you are, they apply everywhere. Van der Linden and his colleagues Jaap Molenaar (emeritus professor of Mathematics) and Mehdi Habibi (associate professor) have devoted a course to the subject: Unifying Concepts of Life Sciences. The key text for the course is West's book.

Food chain

'I had been walking around with the idea of doing something with complex systems for about 10 years. These kinds of systems are of interest to a physicist. I am the chair of the Food Physics group. We study the physical properties of food at different *scales*, from production to storage and consumption. Sustainability is a key issue. How do you make a food chain more sustainable? As a physicist, I can tell you which process is the most sustainable in terms of thermodynamics. But physics is just one

aspect of the food chain'.

So Van der Linden began to delve into the subject of complex systems, and three years ago he came across West's book, *Scales*. West's explanations for the laws of scale that he found are primarily a matter of self-organization and transport. 'One way or another, a system (for example, a city) with a given input (the size of the population) will organize itself so that its output (the number of petrol stations) costs it as little energy as possible. The social, economic and infrastructural networks appear to interact in a very particular way'. This was a lightbulb moment for Van der Linden. 'If I want to understand how



Text Roelof Kleis

to make a food chain more sustainable, I have to be able to describe the separate parts of the network and their interrelationships. And the crudest and most basic relationships at work in this are the scaling relationships. If I can define these, I can make predictions about what will happen if you push some buttons and add a bit more of one thing or another. And about whether the scales of the subsystems in the chain are aligned with each other. I realized that you can analyse complex systems in this way'.

And the beauty of this, of course, is its simplicity. If you just explain the basics, says Van der Linden, a student can get straight to work. In fact, that is exactly what happens during the Unifying Concepts of Life Sciences course. And the students are enthusiastic. 'In the

first year I ran it, four students signed up, and three of them dropped out. In the second year the course attracted 24 students, mainly nutritionists. Last year, we had 34. But heck, all Food Tech students again.'

Data Science

And that is a pity, Van der Linden thinks. This course should really be on the curriculum for every WUR student, so that they are better able to see the connections between the various disciplines. 'For example, West also studied the laws governing the vascular system of plants. And I think there is so much more to which this can be applied, if only you look for it.'

This research field is still in its infancy, but Van der Linden sees plenty of opportunities. Especially with the

development of the Data Competence Centre and the focus that WUR is putting on data science. 'What West did with his research into cities is just data science: the analysis of big data. Everyone should realize that with the current datasets on complex systems you can still say something useful by simply measuring and quantifying. Isn't that great? What could be better than educating students to make them aware of these simple concepts and able to view data in that way? Attacking data with artificial intelligence and deep learning is always an option later on. The truth is often simple. I may be old-fashioned in this respect, but a scaling law gives me something to hold on to in order to understand something. Reality is a dynamic state with a lot of internal synchronization. That is sustainability. Without synchronization, we are wasting a lot of energy.' ■



'THE TRUTH IS OFTEN SIMPLE'

'YOU CAN ANALYSE COMPLEX SYSTEMS THIS WAY'

FIGHTING FOR THE AMERICAN DREAM

Since Bachelor's student of Food Technology Karlijn van der Staaij (23) started at Wageningen University in 2018, she has had one goal: to go on an exchange to the University of California in Los Angeles (UCLA). She has now arrived at the university of her dreams, but not without fighting for it.



Text Luuk Zegers

When Van der Staaij saw her cherished dream shattered, she decided not to take it lying down. Determined to get to America, she left no stone unturned in trying to get the university's travel policy changed. A story about perseverance.

First of all, why UCLA?

'It's a good, internationally oriented university with a lovely campus. When I was 19, my parents spent four months in Santa Monica, Los Angeles. I came to visit them and loved it. I knew then that I wanted to study here one day. Since my first year at university, I have been aiming for the highest grade average I could get, so that I would stand a chance of going on this exchange. I was more focused on being admitted to this exchange than on getting my Bachelor's degree'.

You were accepted in 2020, but that didn't happen because of Covid. How was that?

'Everything went to plan until September 2020: I had applied to go on an exchange at the beginning of 2021

and was already emailing UCLA teachers to see which courses would suit me best. The application process for UCLA is doubly stressful because you have to be accepted twice: once for the university and once for the campus. I was accepted at the university, but in September all exchanges were suddenly cancelled due to Covid. I was devastated when I read that email. I had done my utmost for that exchange and now it was cancelled? I could finish my BSc without an exchange, but I wanted to go to UCLA so badly. So I decided to take an extra year over my Bachelor's.'

That worked out well: you were admitted again, to your favourite campus.

'I was so happy. I worked fulltime from September to mid-December, because studying in America is expensive.'

So you were getting ready to go. And then?

'WUR sent out an email: "You are not allowed to go to orange countries" and America was orange. But America is big and it is quite safe at UCLA, so why shouldn't I be allowed to go there? I talked to the Exchange Team about it. A friend of mine in Groningen told me that she was allowed to go to an orange country

'I WAS DEVASTATED WHEN I READ THAT EMAIL'



Karlijn on the University of California campus in Los Angeles (UCLA) • Own photo

'I AM GRATEFUL THAT WUR CHANGED ITS POLICY'

after signing a liability waiver, in which the student accepts the responsibility for travelling to an orange area. Girls in Utrecht who were also going to UCLA told me they could apply for an exception to be made. I sent all this information on to the Exchange Team, thinking that WUR could do the same. At the beginning of December – about a month before my exchange was due to start – I received an answer: the Executive Board did not want to waive its duty of care. Attending universities in orange areas was not allowed.'

You didn't leave it at that.

'No, I didn't. I had read an article about an Amsterdam University student who had started a petition asking for students to be able to go on an exchange to orange regions. That had worked, so I approached him for advice. He had also approached the media and had hired a lawyer. I had one month. I looked for like-minded people through the Facebook group Wageningen Student Plaza and in no time at all, there was a WhatsApp group with 130 students in it. We asked

the Student Council to write to the Executive Board on our behalf. I also wrote personal letters to the Executive Board and UNL, the association of Dutch universities (formerly VSNU, ed.). At the beginning of December, I put a petition online calling for students to be allowed to travel to places that are safer than the Netherlands. Within a few days, the petition had more than 1500 signatures. And we had a lawyer draft a letter. I don't know what the decisive factor was, but it worked: the travel policy was changed on 17 December. I flew on 19 December. Just in time, because my classes started on 3 January.'

What is it like to be there now?

'When I went through customs in America, I thought: I did it! Because of all the hassle with the travel policy, I had almost forgotten that I had worked hard for three years to get the grades to be able to come here. I am grateful that WUR changed its policy, not an easy decision. Now I am enjoying myself here. The campus is great. Classes are still online but from the end of January we will be taught face-to-face. I'm really looking forward to that.' ■

Mild winters, dry summers

Forest managers help trees survive

Harsh winters seem to be a thing of the past, and yet the trees growing on Dutch soil benefit from the winter cold. It is good for the seeds, blooms and buds. Will we still be rambling through the same woods in 30 years' time? *Resource* takes a walk through the woods of the future.



Text Stijn Schreven

It's a Monday afternoon and about 7 degrees centigrade. We are standing beneath a dull grey sky in the woods at Oostereng, tall Douglas firs towering over us. 'You can already see the future in the undergrowth,' Louis König points out. Under the Douglas fir canopy grows the Christmas greenery of young shade-loving hemlock conifers in abundance. König and his colleague Bas Leerink are PhD students at Forest Ecology and Management, and Wageningen Environmental Research. Their research is on climate-smart forestry and the forest of the future.

It is a bit chilly in the forest, but is it really wintry? In view of the vanishingly small chance of the traditional Frisian Eleven Cities skating race this year, this month Dutch TV broadcast the last such

'Winter cold is important for the spring blossom'

race, in 1997. The lack of serious cold is a pity, and not just for the Frisians, but also for nature. Many trees need wintry spells to flower, and many seeds germinate better after a cold snap. What will be left of the forest now that the winters are getting milder and the summers are plagued by drought and heatwaves?

Rejuvenation

We walk past a plot where two old Scots pines stand out above a carpet of young pines and birches. König: 'This is called a shelter wood system: you leave a couple of parent trees to reproduce. Natural rejuvenation is cheaper than planting, but it is less predictable.' The system becomes more complex: with natural rejuvenation, germination and the survival of seeds are affected by the climate.

König is working on the EFISCEN Space model, which simulates the composition and growth of European forests in a

range of different climate change and management scenarios. He bases his modelling on forest inventories across Europe. 'Our current models define in advance what kind of forest will return after logging, or simply assume that the same forest will return. These assumptions rarely hold true.' He points to a larch wood. 'The old model would predict a new larch forest, but that is not correct: we are already seeing that the undergrowth consists of hemlock. I hope my approach will reflect those trends.' Leerink applies the model to calculate





Louis König and Bas Leerink, PhD students at Forest Ecology and Forest Management, are researching climate-smart forestry, the forest of the future. 'We expect that climate change will influence flowering and seed production, but exactly how is a complex question.' ♦ Photo Guy Ackermans

how much carbon a forest can store and how much timber we can harvest in the future. ‘We want to move towards a bio-economy, by building wooden houses for example. But nobody knows how much wood is going to be available.’ Softwood from conifers has long fibres that are suitable for building. Deciduous wood is less suitable for that purpose.

Winter cold

Cold is an important factor in the reproduction of trees, says König. ‘We expect that climate change will influence flowering and seed production, but exactly how is a complex question and we don’t know the answer yet. For most trees, winter cold is important for the spring blossom. Without that cold, flowering can be delayed or irregular, or there may be fewer flowers and seeds’. Winter cold and spring temperatures also play a role in seed dormancy and germination.

Meanwhile, we have kicked our way through a thick layer of leaves. The forest is more open here. An old beechwood surrounds us. ‘Trees have different strategies for building up a seed bank,’ says König. ‘The beech tree relies on a seed rain: every year it drops a new batch of seeds that germinate in the spring. Depending on the conditions, they go on growing or die off. In coniferous trees, the seeds remain stuck to the tree in cones, which the tree drops when the conditions are right. Climate change may influence these strategies differently, but it’s not clear how yet’.

Winners and losers

The beech wood looks robust enough, but beeches are vulnerable too. The greatest threat to European forests is drought, says König. Droughts are becoming longer and more severe, and there are more and more heatwaves. Trees can then die of heatstroke, especially in southern Europe: they evaporate too much water and just dry out. There has been massive die-back in beech woods in France, for example.’ The Norway spruce is particularly

‘If the seeds germinate here, the seedlings are better rooted than transplanted ones’

‘Trees can die of heatstroke’

hard hit by climate change. Lerink:

‘The spruce produces less resin due to drought and heat and therefore has little defence against the European spruce bark beetle.’ This necessitates extensive tree-felling. ‘Almost three quarters of the German timber harvest can be put down to this beetle,’ adds König. As a result of climate change and changing management approaches, König expects conifers to retreat to colder climates and beech and oak to spread here.

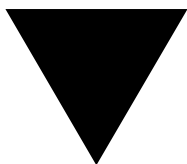
Resilience

We can also give the forest a helping hand by planting drought-tolerant trees, Lerink suggests. ‘We call that assisted migration. But we are cautious about planting trees from the south: in the Netherlands you still get late frosts in March and April. That can affect the early flowering of southern trees.’ Natural rejuvenation also makes trees more resistant to drought than planting

does, according to König. ‘Because the seeds germinate here, the seedlings are better rooted than transplanted ones are.’ Also, rejuvenation leads to a transition from monoculture to mixed forest, with multiple layers. This helps make the forest more resilient to extreme weather. Despite the retreat of conifers to colder regions, König therefore believes that pine and spruce can continue to survive in mixed forests.

Creative with wood

The two forest ecologists look at the treetops, with their dark branches against the grey sky. Lerink loves the ‘mystique’ of the forest and enjoys working with wood: in his spare time, he makes furniture. ‘The bark beetle makes beautiful patterns in the wood of the Norway spruce, and I use that wood to make chairs.’ König’s hobby comes from his grandfather, a woodcutter, who used to take him into the forest when he was a child. ‘He encouraged me to go into forestry. It is the nicest profession: being out in nature, the fresh air and the peace. Trees are just wonderful.’ ■



Key people: Jurgen Groendijk

They are indispensable on campus: the cleaners, caretakers, caterers, gardeners, receptionists – the list is long. *Resource* looks up these key people. This time, meet Jurgen Groendijk (19), a gardener with Donker Groen. Text Stijn Schreven • Photo Guy Ackermans

'Three years ago, I was looking for an internship when I was at the Pantarijn secondary school. I already knew I wanted to do gardening work, but where? My father, who is a technician at WUR, said: "I see Donker Groen vans driving around campus." So he had a chat with the foreman and that's how I ended up here.

The day starts with coffee here in Donker Groen's shed in Bennekom. We discuss what we are going to do and then drive to campus in a van. At WUR, we often work in a team of three or four people. From seven thirty to four,

we work outside or in the two indoor gardens at Gaia and Lumen. I love working outside and working with my colleagues makes it fun too. Summer is my favourite season; I don't like the cold. In the summer our work is mainly weeding and mowing, and it's all about grass. In winter there is a lot of pruning and hedge-trimming to do.

There are many nice spots here at the university. The garden behind Lumen, for example. It needs mowing twice a year – not all of it, just the sections that have flowered. And then it's time to tidy it up. You don't see many flowers now, but later in spring and summer it will look lovely.

At Aurora we recently dug new borders, which involved shifting a lot of soil.

It was very muddy, and it came up to the top of my boots. We spent quite a lot of time on that – it took five days, working with the whole team of 15 people. I think it will be beautiful there when it has all matured.

I am now working towards getting a tractor driving licence, because I'd like to do something involving tractors eventually. A contracting company appeals to me: driving a tractor and shifting soil, like BMG does here on campus. Preferably with a New Holland tractor. I used to be picked up in one of those as a child.'

'Eventually I'd like to do something involving tractors'



Groundsman Jurgen Groendijk (on the left) working near Orion with his colleague Peter Helbach.



Campus ♦ residents

Super Ninja

The fruit-fly trap is Super Ninja's chief product. The company moved into its own office in Plus Ultra II this month. Its product is a little trap made of recycled plastic that lures fruit flies with a particular mix of odours. 'The trap is not just ecological,' says Stef ten Dam, R&D manager at Super Ninja, 'but also handy: you can stick it onto the bin where most of the fruit flies collect.'

The fruit-fly trap is for sale at most Dutch supermarkets. It went like this: when the supermarkets started selling freshly squeezed orange juice, they found themselves with a fruit fly problem. Super Ninja's product was so successful that the retailers now also have it on their shelves. The small company – three people – is now aiming to sell to supermarkets in Germany and the UK. It has also developed traps for silverfish and golden fern mosquitoes (found in potting soil). 'The business is doing well,' says Ten Dam.

Super Ninja has been around for four years and started out in Rotterdam, but it has been based

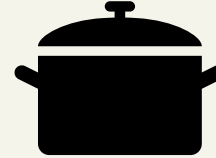
on the Wageningen campus for a few years now. Ten Dam studied Forest and Nature Management in Wageningen and came to the company through an ACT project

(Academic Consultancy Training) on biological ant control. An ACT project to develop a product against mosquitoes may follow soon. 'If we grow any bigger, we might start doing research at the university.' As

Supermarkets selling orange juice found themselves with a fruit-fly problem

There are about 100 companies on the campus. We introduce them to you in *Resource*. This time: Super Ninja in Plus Ultra II.

All the flavours of the world can be found in the WUR community. Katerina Mouka (25), MSc student of Plant Sciences, shares a Greek recipe for spinach pie.



Flavours of WUR

Spanakopita

'This is one of the typical dishes that every Greek grandma makes. It reminds me of my grandma, who loved herbs, because she made this pie every time she was expecting us. This recipe is the basic one and not how my grandma used to make it. Apart from spinach, she used to add some herbs that she picked in the wild. Most of them are endemic to Greece and not easily found elsewhere, but the pie is still delicious without them!'

For the filling:

- 1 Chop the onion and the leek in small pieces
- 2 Fry the onion and leek in a pan.
- 3 Remove the pan from the heat and add the spinach, 5-6 tbsp of olive oil and the feta

For the filo pastry:

- 4 Mix the wheat flour, water and vinegar in a bowl.
- 5 Add 5-6 tbsp of olive oil and a pinch of salt.
- 6 Continue to mix until the dough doesn't stick to your hands.
- 7 Roll out the dough until you can make 4 thin layers with it.

Put it together:

- 8 Place 2 layers of the thin dough in a baking tray. Then add the filling.
- 9 Cover the filling with the other 2 layers. Don't forget to spray

Ingredients (for 3 people)

- 1 onion
- 3-4 leeks
- 500g spinach
- 1 cup olive oil
- 200g feta cheese
- 500g wheat flour
- Salt
- 2 tbsp vinegar
- 1 cup lukewarm water

some olive oil between the filo pastry layers.
10 Bake in a preheated oven for an hour at 200°C. Enjoy!



Katerina Mouka (25)
Master's student of Plant Sciences

10-euro lunch voucher

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Colophon

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

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Drink

'My roommates and I have agreed to do Dry January, but I succumbed on only day 3. Without any alcohol I couldn't sleep and could hardly concentrate. I was so desperate for a drink that I made up some story and cycled to the wine shop. I don't dare admit it to my roommates, but I can't seem to keep off the bottle. Do I have a drink problem, and if so, what should I do about it?'

G., Master's student
(name known to the editors)



Find support

'You are certainly not the only student with this problem; it's brave of you to bring it up. When you consciously stop drinking alcohol, you realize what role it plays in your life. Some people find that it is a way to numb emotions, stress or worries. In your case, it affects your sleep and concentration. That would seem to suggest a dependence on this drug. Take a look on [Iriszorg.nl](https://moti4.nl) to find out what steps you can take. This institution also has a project for young people in search of more understanding, awareness and the motivation to break a habit: <https://moti4.nl>. Another option is to sign up with the student psychologists. In an intake interview we will zoom in on your problem with you and see what kind of support you need. You can also follow the online Alcohol under Control programme on our WUR page, by clicking on the "Gezondeboel" link.'

Lisette van Baars, student psychologist

Drawbacks

'Yes, you have got an alcohol problem. Although it is a socially accepted addiction, a dependence on alcohol can do serious harm, both physical and mental. Have a think about it: do you have personal motives for joining in with Dry January? Or did you only do it because your housemates did? Make a list of all the things you dislike about drinking. I'm doing Dry January too and I'm finding that I can control the urge to drink by going for the 0% alternatives. January is not over yet. You can still break your habit and join in for the rest of the month!'

Steven Snijders, Master's student of Management, Economics and Consumer Studies, and a *Resource* columnist

Professionals

'It sounds like you feel dependent on alcohol, but without knowing more about your background and more context, I find it hard to give you suitable advice. I think it's wise to seek help from a professional such as a student psychologist, a GP or a study advisor. You can discuss your situation and hopefully find out why you've become dependent on alcohol and what steps you need to take to break your habit.'

Joanne LeerLooijer, education coordinator and lecturer in Knowledge, Technology and Innovation, and in Strategic Communication

Alcohol-free beer

'I'm not an addiction specialist, but it sounds like you're suffering from withdrawal symptoms. Nowadays we all know that alcohol is unhealthy. So really persevere for a while. Try to find an alternative to alcohol, such as tea (perhaps herbal) or alcohol-free beer. For some time now I have been drinking mainly non-alcoholic beer. It tastes just as good as beer with alcohol, although you might have to search for a brand that you like. These days I find the taste of alcohol in "normal" beer too strong, so my tastes have adapted. Maybe the same thing will happen to you before long.'

Paul Smeets, a researcher at Human Nutrition and Health

NEXT WURRY

'There is someone in my workgroup who calls themselves non-binary: neither man nor woman. I find this difficult to understand, and maybe I don't have to. But I also have difficulty knowing what to call them and switching from he/she to... well, what exactly? When talking to this person I lose all spontaneity. How can/should I deal with this?'

R.K., Master's 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 2 February to resource@wur.nl subject noWURries.***