
Which way now with CRISPR-Cas?

'The current EU policy is untenable
long-term' | **p.18** |

Fresco appointment controversial

Good decision or damaging
science's credibility? | **p.22** |

One Master's, four countries

From Wageningen to Cork,
Paris and Lund | **p.24** |

RESOURCE [EN]

For everyone at Wageningen University & Research

no 19 – 6 June 2019 – 13th Volume

A photograph of a wolf howling upwards in a lush green park. In the background, a city skyline with a prominent blue skyscraper is visible through the trees. The scene is bathed in warm, golden light, suggesting sunrise or sunset.

**INTERNATIONAL
EDITION**

How welcome is the wolf?


'In Finland they are already
holding protest marches' | **p.12**

Bianca + Weller soldering iron

WUR staff work with all kinds of apparatus. This time we meet Bianca van Leeuwen, a technician at Tupola, the workshop where research equipment is made.



JUST THINK LOGICALLY

She started years ago as a volunteer at Tupola, Wageningen Plant Research. After three months, they couldn't do without her. Bianca van Leeuwen repairs 'anything with a plug on it'. With a soldering iron, like the Weller in the photo. Or centrifuges, lights, autoclaves, vortex mixers, shakers, ovens, gel baths... 'It all boils down to the same thing,' she explains. 'You've got to be able to think logically, and I'm very good at that. It's very satisfying when you've mended something and it can be used again.'  RK, photo Sven Menschel

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Students make educational play apparatus

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NOT THE SAFE OPTION

Imagine if Louise Fresco had said 'no' to the seat on Syngenta's supervisory board. Then WUR's communications department would not have been wondering what to do about all those angry tweets. And Fresco could have continued influencing key players in science and industry through her other — rather less controversial — ancillary positions. That would have been the safe option, keeping everybody happy. But Fresco doesn't do safe. She wants to use science to make the world a better place and is willing to get her hands dirty at Syngenta to do so. She thinks she can change the multinational. Call her old-fashioned, in our postmodern society devoid of ideals. Or audacious. But don't say she is 'falling for the temptations of power and commercial interests' as the journal *Vrij Nederland* did this week.

Fresco is totally independent. WUR's figurehead decides for herself what she does, regardless of Syngenta and WUR. Many WUR employees are not happy with the Syngenta appointment as they fear public opinion will turn against WUR (see p. 22-23). Fresco could have foreseen this but she still went ahead. She believes the wellbeing of African farmers is more important than the opinion of Dutch image obsessives.

Albert Sikkema, editor



>> Jip Ramakers discovered that leading journals sometimes publish mediocre studies, concluding in a provocative proposition that: 'The higher the impact factor of a journal, the more suspicious one should be of its content'. Read more about this in [The Proposition](#) | p.11

Second she-wolf on the Veluwe

A second she-wolf has moved onto the Veluwe, shows Wageningen research on wolf droppings.

The wolf has been given the code name GW 960f. At the end of February, she had been in the country for six months. Officially, that counts as settling here. The she-wolf was preceded by Female GW998f in January.

There were a total of six wolves in the Netherlands between February and May. A new find was wolf droppings in the Meerssen area of Limburg. It is not clear which animal this was, as the genetic material was not good enough to make identification possible.

At the end of January, Male GW893m was observed for the first time in the territory of Female GW998f on the northern Veluwe. At the end of April the pair were captured together for the first time by a camera trap. The researchers do not rule out the possibility that there are cubs by now. **© RK**

The wolf is back. But do we really want that? Read about it on pages 12-15.



FIRST GROUNDBREAKER PRIZE GOES TO WUR

Soil biologist Gerlinde de Deyn is the first person to win the new GroundBreaker Prize. She gets quarter of a million dollars.

The prize has been awarded this first time to two scientists who are doing ground-breaking research on soils. In addition to De Deyn, soil ecologist Keith Paustian (University of Colorado) was rewarded for his research achievements. The Wageningen professor got the GroundBreaker Prize for her work on the interaction between plants and the soil. 'I study how plants and soils interact physically, chemically and biologically, and how you can use that knowledge to make both healthier. My aim is to be able to measure determining characteristics of combinations of plants from the air. To do that, I work with Lammermt Kooistra in the Remote Sensing group at ESG.' De Deyn, who is originally from

Belgium, came to Wageningen in 2011. Three years ago, she was appointed professor holding a personal chair in Soil Ecology.

APPLICABLE KNOWLEDGE

De Deyn investigates how pairs of plants growing in rows next to one another reinforce one another in their use of nutrients in the soil. 'I want to understand how that works and what you can do to steer it. The aim is to generate easily applicable knowledge for practitioners.' De Deyn thinks it was the combination of agriculture and ecology in particular that appealed to the jury.

The GroundBreaker Prize is an initiative of the New York investment platform FoodShot Global. The participants invest in innovations that can make the food system more sustainable. The group of venture capitalists includes the Rabobank. The prize will be handed over



next Tuesday in New York. Gerlinde de Deyn wants to use the money to make a start on a study on how to improve nutritional drinks based on sorghum in Zambia. Residual products resulting from that process will be used to improve the soil. The sorghum study, which is one of University Fund Wageningen's projects, involves collaboration between several science groups. **© RK**

TOASTING WAGENINGEN FOOD SAFETY RESEARCH

Rikilt officially merged with the research lab of the Netherlands Food and Consumer Product Safety Authority (NVWA) on 1 June, to form Wageningen Food Safety Research. Staff and

management raised a glass to celebrate this on 3 June. The partners have been living together for some time in the Vitae building on the Wageningen campus, and already coordinated

their activities. Now that the merger is a fait accompli, about 100 NVWA staff have become WUR employees. **© AS**



PHOTOS: GUY ACKERMANS

FIVE VIDI GRANTS FOR WAGENINGEN

Five WUR researchers have received a Vidi grant from the Netherlands Organization for Scientific Research, NWO. They will get 800,000 euros to spend on setting up their own innovative research line.

Virologist Vera Ros is going to use her Vidi grant to do research on viruses that are latently present in insects without causing diseases. Emilie Wientjes of the Laboratory of Biophysics is doing research on photosynthesis and wants

to spend her grant on using molecular technology and advanced microscopy to find out how plants adapt to the amount and the colour of light during the day.

David Ludwig of the Knowledge, Technology and Innovation group is doing research on multicultural collaboration in tackling climate change. Environmental technologist Annemiek ter Heijne wants to know how electrons get through biofilms, so as to be better able to guide the biotransformations

during purification of waste water. And meteorologist Chiel van Heerwaarden does research on clouds, with the aim of being better able to predict the fluctuations in sunlight in the context of solar energy generation.

In total, NWO handed out 85 Vidi grants in May to researchers at Dutch universities. The Vidi is intended for experienced researchers who have done successful research for several years since getting their PhDs. **AS**

IN BRIEF

>> WEDAY

1700 participants

Around 1700 WUR employees took part in WeDay, WUR's sports day, on Tuesday 4 June. They gathered in and around De Bongerd sports centre for individual or team events. They could choose from football, volleyball, inline skating, an obstacle course, cycling and climbing, among others. The first unfortunate employees with a bandaged ankle could already be spotted by mid-afternoon. **AS**



PHOTO: ALBERT SIKEMA

>> STUDENT DEBT

No interest rise

The proposed bill to increase the interest rate on student debt has been scrapped. The minister, Van Engelshoven, could not get enough support in the Upper House of Parliament. The Cabinet wanted to link the rate to the yield on 10-year government bonds, which would leave former students with an average debt (21,000 euros) and above-average income paying about 12 euros a month more. The plan would have given the Treasury an extra 226 million euros a year. The Lower House voted in favour last year with the smallest possible majority. But the Upper House saw too many objections, so Van Engelshoven had to withdraw her plan. **HOP**

>> CITYTREES

No air-purifying effect

The municipality of Amsterdam is stopping the Citytrees project. The idea was that moss-covered walls would filter out fine particles, but the effect is negligible according to a study by WUR, the municipal health service and TNO. In spring 2017, the municipality installed eight Citytrees, large panels covered in moss. Ventilators in the 'trees' suck in air that is then filtered through the moss. 'It's the kind of idea that sounds appealing,' says Maarten Krol, professor of Meteorology and Air Quality. Krol contributed to the report, which shows that Citytrees do not make a significant improvement in air quality. The professor says the moss walls are a cosmetic measure. 'What is more, they divert attention from the real issue, the exhaust fumes.' **TL**

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In short supply

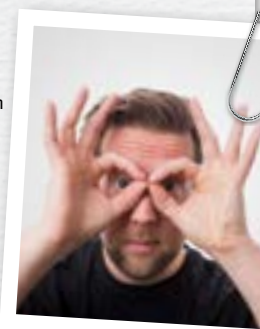
WUR is doing well. So well that we need new buildings to accommodate new staff and students. And the sooner we start, the better. In fact, we should have started a bit earlier. In some buildings, people are sitting in the corridor, in Axis they're in a container in the car park, and at our office in Helix, every square metre is being measured up to see whether another desk can be squeezed in. Meanwhile, it's not just WUR that's doing well but the whole economy. As a result, the Netherlands has a very low unemployment rate: the second lowest in Europe. That is good news for graduates: take your time, pursue several options and take the best offer you get, because as a highly qualified WUR alumnus, you are in short supply at the moment, and scarcity pushes prices up.

'What we offer PhD students does not adapt to the competitive labour market'

But scarcity on the labour market has a complex side effect for the university, as it makes it harder to find new PhD students. Gone are the days when you could take your pick of the good MSc students. What we offer PhD researchers is enshrined in the law and the labour agreement, and it does not adapt to the competitive market. Plus, if you come here you might end up with half a desk in the corridor.

So as well as advising new graduates to be selective, I have a question for the university. If this tight labour market is the 'new normal', as some predict, how are we going to offer the best deal, as befits the best university in the Netherlands? **B**

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



The most sustainable, but no prize

Once again, Wageningen University is the most sustainable institution in Dutch higher education. Nevertheless, it was the Technical University of Eindhoven that took home the SustainaBul 2019 award for its 'best practices'.

The student network for sustainability in higher education, Students for Tomorrow, awarded the SustainaBul for the seventh time on Friday 24 May. Eighteen universities were assessed under the headings of education, research, operations and 'integral approach'. The institutions filled in a questionnaire, after which the students gave points based on the answers and the evidence for them.

Wageningen University scored the maximum possible points in the first two sections, which puts it in first place again. But this time, after five years, WUR won neither gold nor silver. Van Hall Larenstein University of Applied Sciences rose from third to second place and the bronze went to TU Eindhoven, which scored the most points in 2018.

Yet it was TU Eindhoven that took home the SustainaBul award of 2019. Because this year it was given not to the most sustainable institution but to the university which shares its expertise on sustainability best with other institutions through 'best practices'. **HOP**

SPONSOR FOR SOIL MUSEUM

World Soil Museum ISRIC has a sponsor: Royal Eijkelkamp Soil & Water, a specialist in measuring and sampling equipment for water, soil and the deeper substrate.

Board chair Fons Eijkelkamp of the Giesbeek company visited the museum last autumn with a group of retired former employees when he caught sight of a photo of a man forging an Edelman drill, says museum manager Stephan Mantel. 'That was his father. It made a big impression. Which is what started the ball rolling.'

The story of the Edelman drill is a classic, one that made it to the list of key historical facts compiled by the Dutch Soil Science Society. Wageningen Agricultural College was closed in the final years of the Second World War. The professor of Soil Science at that time, Cees Edelman, was in hiding in the Bommelerwaard district where he did research with some students. To create soil maps, they used a drill from Hamburg.

When the drill broke, the Lathum village smith Jan



'Sponsoring gives the museum more scope and a more secure future'

Eijkelkamp was called in to repair it. After the war, the smith decided to start manufacturing the drill. Jan Eijkelkamp was the father of the current board chair and the grandfather of the current boss of Royal Eijkelkamp, the company that grew from that smithy. The drill is named after Edelman because the Wageningen professor used it to create the first complete soil map of the Netherlands.

Eijkelkamp is ISRIC's first sponsor but Mantel would be happy to see more. 'Scientific collections are always under threat and sponsoring gives the museum more scope and a more secure future.' Eijkelkamp has made financial commitments to the museum for three years. Mantel says the money will at any rate be spent on the collection. In return, the company gets a visible presence in the museum. **RK**

LESS INTEREST IN BACHELOR'S DEGREES

Wageningen University could well see fewer first-year Bachelor's students in the coming academic year compared with last year. The number of preliminary registrations as at mid-May for BSc programmes was 5 per cent less than the same time last year.

The Biology and Food Technology programmes in particular are less popular

A Studielink overview shows that the decline is mainly in Dutch students. Their numbers have dropped by 150 to just under 1700 preliminary registrations. European student numbers on the other hand have increased by 50. The Biology and Food Technology programmes in par-

ticular are less popular than last year with 50 per cent fewer preliminary registrations. In contrast, the Environmental Sciences programme has seen a 45 per cent increase and Molecular Life Sciences looks set to grow next year too.

All in all, Wageningen is currently facing a drop of 5 per cent. This suggests WUR will have a smaller share of students compared with other Dutch universities, going by the early registrations. The 13 academic universities combined have attracted 1 per cent more first-years.

The figures are based on the registrations so far. In these figures, prospective students who have registered for three degree programmes, for example, are counted as one third per programme. **AS**



▲ Prospective students and their parents get to know WUR at an open day.

EPPO DOEVE EXHIBITION

He came to Wageningen to study Colonial Agriculture, but his talent for drawing got the upper hand. Now Museum De Casteelse Poort is honouring Eppo Doeve with an exhibition.

The name Eppo Doeve (1907-1981) is unlikely to ring a bell with many people under 50. But in his time, he was one of the most famous illustrators in the Netherlands. And one whose career started in Wageningen. In 1927, at the age of 20, he came here from Bandung, West Java,



to study Colonial Agriculture. A degree course he never finished.

CERES

Doeve joined Ceres, where his talent was soon put to good use. He illustrated the student magazine and the yearbook, and designed posters and stage sets. He was also a member of the Ceres band. Short of money after a trip to London to hear the American saxophonist Adrian Rollini, he applied for a job with the Amsterdam advertising agency De la Mar. He went on combining his artwork with his studies until 1932. Museum De Casteelse Poort is dedicating four rooms to an overview of the multifaceted work of the self-taught Doeve. He produced posters, book covers, political cartoons and a lot more besides. He worked for magazines such as *De Groene Amsterdammer*, *Vrij Nederland*, *Elsevier* and *De Avro-bode*. He also made large murals for companies and municipal councils.

EYE-CATCHER

One of the four rooms is devoted to Doeve's Wageningen work. The eye-catcher here is an enormous poster that he designed (in 1938, long after his student days) for the performance of the play *De Mallemolen* by the Ceres Dramatic Society. The original notebooks that he used during lectures are also on display. In amongst the



chemical formulae, Doeve drew lots of doodles and exercises. Besides drawing, Doeve painted too. The exhibition includes some fine examples of what he was capable of. A few of the paintings, including a portrait of his wife, are for sale, even. There is also some film footage of Doeve, thanks to the Institute for Image and Sound. The exhibition, 'Eppo Doeve back in Wageningen', runs until 20 October. **IK RK**



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▲ In all the possible future scenarios, Europe would benefit from improved aquaculture.

HOW WILL WE USE THE SEA IN 2050?

What will European fisheries and aquaculture look like in 30 years' time? And what research is needed for us to be as prepared as possible for that future? Researchers at Wageningen Marine Research looked into this.

Luc van Hoof, a researcher in European Research Development at Wageningen Marine Research, coordinated the study. He and his colleagues asked 92 European stakeholders, including marine biologists, policymakers, businesspeople and nature conservationists, to spend a few sessions brainstorming about how people might use the sea in 2050. 'We imagined four different future worlds that are all realistic but are very different to each other.'

ECO-WARRIORS

In to the first scenario, there is a European policy for sustainable (small-scale) fisheries and aquaculture by 2050. It is important to consumers that we treat the ocean responsibly. Environmental movements and small-scale fisheries have a strong influence on the public debate. Knowledge is shared widely and everyone can access information. Scientists help develop products with a low environmental impact and look for new materials and plant-based products such as microalgae and seaweed. A lot of attention is paid to animal health and welfare.

OWN INTERESTS FIRST

Due to an economic crisis, in the second sce-

nario, politicians are preoccupied with crisis management. There is no internal collaboration between EU member states. They face food shortages and compete with each other in using the sea. There is not much demand for expertise and only limited scope for scientific research, which focusses mainly on increasing food security by, for example, developing technologies for food processing and aquaculture. People are also trying to identify 'new' edible species.

EUTOPIA

In the third scenario, European and national policy are harmonized. Levels of education are high and people are very aware of health and environmental issues. The marine ecosystem is doing well: the number of species is going up as a result of climate change, although certain species such as sole are in decline. Science pays a lot of attention to sustainable fisheries. There are breeding programmes for recovering species, and researchers are giving thought to the best use of by-products, such as in animal feed or the pharmaceutical industry.

FORTRESS EUROPE

In the fourth scenario, Europe has closed its borders and is maximizing its exploitation of the sea. The ecosystem is holding its own but is under pressure. Research is almost entirely privately funded and financiers are the owners of the knowledge it produces.

Research programmes mainly focus on long-term protection of food sources and ways of motivating member states to adhere to sustainable fisheries targets. Less food comes from the sea. Fisheries try to compensate by investing in new boats and techniques.

'We focus most of our efforts on the food supply problem on land'

BETTER USE

The scenarios sketched are based on the European situation but are relevant worldwide, says Van Hoof. For him, the main message is that we do not make enough use of oceans currently. 'At present we focus most of our efforts to solve the food supply problem on land. By making sustainable use of the sea, we take the pressure off agricultural land and fresh water.'

In all the scenarios it becomes obvious that there is a need to improve aquaculture, by farming fish in the open sea, for example. Other needs are for the development of seaweed production and less complex management systems. So these topics are on the research agenda that the researchers drew up on the basis of the four scenarios for Cofasp, the EU-funded research network on improving the marine economy. The study has also been published in *Marine Policy*. **TL**

SUNFLOWER SEED MORE USEFUL IF COLD-PRESSED

The residue of sunflower oil production, known as oil cake or press cake, usually goes to the livestock feed industry at present. PhD student Dimitris Karefyllakis thought of a way of using it to make useful food ingredients for human consumption.

Sunflower oil cake is rich in protein and therefore an interesting waste product for food production. One use for the protein could be to stabilize food products. The standard method of extracting protein from waste products is to first dissolve it at a low acidity level (a pH of over 8). The problem is, however, that oil cake made of sunflower seeds is also rich in natural antioxidants known as phenols. At such low acidity levels, these form dark-coloured compounds with the proteins, and these compounds are not as good at stabilizing food products. Removing the phenols from the oil cake beforehand is difficult and expensive, says Karefyllakis. He knew, however, that phenols and proteins do not form these problematic compounds in a neutral, watery environment (a pH of 7). This gave him the idea of just leaving the phenols in the protein mixture and only using water to dissolve the proteins. With this method he arrived at a

mild and more sustainable way of processing the sunflower seeds.

Producers of sunflower oil often press the oil at temperatures of over 100 degrees, and later use the organic solvent hexane to squeeze the last bit of oil out of the cake. Karefyllakis first pressed most of the sunflower oil out of the seeds at a low temperature (below 45 degrees). He then mixed the oil cake with water, thus dividing it in two parts: a soluble part with proteins, phenols and a residue of oil, and an insoluble part with a lot of fibre.

The researcher tested the stabilizing properties of the protein part of the oil cake. And what did he find? 'Sunflower proteins are good stabilizers, but they worked even better in combination with the phenols. My emulsions became even more stable,' says Karefyllakis.

The oil yield from cold pressing is 20 per cent lower than the yield from hot pressing. But Karefyllakis sees sufficient compensation for that in the fact that the protein mixture can now be used in foods. He also made a surprise discovery: 'Some of the oil in the protein part turned out to be present in its original form, as oleosomes.' These can be used in products like vegan milk substitutes or as carriers of bioactive ingredients.

✎ AJ



VISION



'Multifunctional agriculture even bigger than believed'

Farm tourism, care farms and farm shops are booming. The turnover from such multifunctional agriculture in the Netherlands has doubled in the past five years, shows research by Wageningen Economic Research (WECR). The real growth is even bigger than that, says Henk Oostindie, a researcher in the Rural Sociology chair group.

According to WECR, one in four farms are now multifunctional.

'My colleagues at Wageningen Economic Research use a socially acceptable but limited definition of multifunctional. They leave out on-farm activities such as wind turbines and riding stables. If you include these, the total scale of multifunctional agriculture is much bigger than the 887 million euros calculated by WECR in 2018. And WECR only calculated the turnover at the farm level, and not at the area level. I think multifunctional farmers generate economic value beyond the farm. I would venture to state that houses next-door to an intensive pig farm are generally worth less than houses next-door to a multifunctional farm. Multifunctional farms also strengthen other kinds of economic activity in the countryside. The precise value of that is hard to calculate, though.'

The study shows that nature conservation is not a very lucrative sideline.

'True, the number of farms that generate income with that has gone down. Farmers using to agree to conservation packages that they could implement quite easily, but standards have gone up and the areas that qualify are smaller. So nature and landscape management is not a money-maker. That might change with the new government plans for circular agriculture, but it all depends how that is interpreted.'

Is there more growth to come?

'There is the potential for it. There is a growing demand, for instance, for small-scale care facilities in a green environment. And the strength of multifunctional farms lies in their ability to combine different activities. The care farm grows vegetables or keeps livestock in order to offer its clients meaningful work. Then the same clients can sell vegetables or meat in the shop, attracting friends and family. This often makes the combination of activities a strong business model.' ✎ AS

'BIODIVERSITY CAN EASILY INCREASE'

It is not very difficult to increase biodiversity, says Rob Alkemade, who became professor by special appointment of Biodiversity and Ecosystem Services Modelling. The appointment is financed by PBL Netherlands Environmental Assessment Agency.

You studied Plant Diseases here and did your PhD on nematodes. How do you get from nematodes to modelling biodiversity?

'In my PhD I made a lot of use of statistics and modelling. After getting my PhD, I got a job with the Netherlands National Institute for Public Health and the Environment as a mathematician, making models for the soil biology department. Gradually I began to work more and more internationally on models that quantify biodiversity on a global scale.'

Your field of study combines biodiversity and ecosystem services. Why?


'Biodiversity is necessary for providing ecosystem services to agriculture, for example. I was involved from the start in the global biodiversity model Globio, which describes biodiversity using "pressure factors" such as land use and climate change. Now I'm working on expanding that model to cover ecosystem services.'

You worked on the worrying IPBES report on biodiversity that was recently presented at a summit in Paris. How did you feel after that summit?

'I actually came away from it feeling positive. The alarmist side of the story got a lot of attention in the media. But a lot of the report is about how we can increase biodiversity. That is the optimistic side of the story. A lot can be improved just with simple options such as more vegetation in cities and gardens, more sustainable products or rejecting pesticides.'

'The alarmist story gets a lot of attention in the media'

What are you going to do as a professor?

'My research focuses on improving the models for biodiversity by including the management of ecosystems in them. Are pesticides used on arable land, for instance? Do you leave a strip uncultivated? Different management approaches lead to more or less biodiversity. We are trying to work out how to quantify that on a global scale. That hasn't been done before.' 



▲ Rob Alkemade is professor by special appointment, funded by the Netherlands Environmental Assessment Agency.

COWS ON SEAWEED DIET BETTER FOR THE ENVIRONMENT?

Cows at Wageningen Livestock Research's Dairy Campus in Leeuwarden are going to be given feed containing seaweed. Researchers will find out whether they then burp up less methane.




The aim of the study is to find livestock feed ingredients that reduce greenhouse gas emissions so that livestock farming contributes less to climate change. From mid-July, 48 cows will get feed for 10 weeks that contains three kinds of seaweed. Another 16 cows form the control group.

The research picks up where Australian lab research left off in 2016. The Australian results that showed that seaweed reduces methane emissions by more than 90 per cent drew the attention of agricultural organization LTO Noord, and of BlueO2, a business working on 'ocean-based climate solutions'. Together with Wageningen Livestock Research, they are setting up a broad consortium of companies to initiate this research, which is financed by the ministry of Agriculture, Nature and Food Quality and the Dairy Livestock Fund. The researchers started with a literature study to find out which of the roughly 250 different species of seaweed in Europe were suitable candidates for a trial. 'The Australians got good

results with red seaweed, in which bromoform is probably the active substance that reduces methane production in the cow's stomach,' says researcher Wouter Muizelaar of Wageningen Livestock Research. 'In our study we work on seaweed without bromoform, because it might be toxic and could get into the milk.'

'We work with seaweed that is found in the North Sea and the Atlantic Ocean'

We work with seaweed that occurs naturally in the North Sea and the Atlantic Ocean, because if it is successful we want to be able to grow it here.' Muizelaar lets us in on the fact that the three species of seaweed being tested in Leeuwarden don't achieve the same level of reduction the Australians got. But they are interesting enough to be worth testing *in vivo*.  **AS**

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THE PROPOSITION

High impact ≠ high quality

While he was working on his PhD, Jip Ramakers regularly discussed scientific articles with colleagues in a 'journal club'. He discovered that even leading journals sometimes publish mediocre articles and he penned a provocative proposition about this: 'The higher the impact factor of a journal the more suspicious one should be of its content.'

'In a journal club, the members take it in turns to choose an article for discussion each week. No one wants to read 30 pages so people often choose shorter, eye-catching articles from high-impact journals such as *Nature* and *Science*. As a new PhD student, you are easily

intimidated and it is not hard for an article to impress you. But as the discussion went on, we often realized that the data did not fully support the hypothesis or provide the basis for firm conclusions. Particularly in the major journals, news value sometimes takes precedence over quality. Their popularity creates the impression that the articles are of higher quality, but that is not necessarily so. Scientists are only human and we all want to be published in leading journals. Me too.

'News value is more important to leading journals'



PhD candidates are required to append a few propositions to their thesis. In this feature they explain their most provocative proposition. This time, Jip Ramakers, who graduated *cum laude* on 8 May for his study on the influence of climate change on evolutionary processes among wild populations of great tits.

One chapter of my thesis was published in *Nature Ecology and Evolution*. That was because it was a large-scale data study and because we used open science, which is hot right now. I wouldn't mind betting that it wouldn't have got into that journal otherwise, because we only found a very tiny effect. It is difficult to get those kinds of minimal results published, but we managed to sell the article anyway by focussing on specific, fashionable aspects. I don't have a problem with that, as I know it was good quality research. And I also believe that negative results should be published, otherwise you get a bias in the literature.' TL



Do the Dutch want to live
alongside wolves?

Who's afraid...

Ecologists are all agog for a birth announcement from the Veluwe region. It might even be that wolf cubs have already been born there. This makes the question more urgent: how welcome is the wolf here, actually? Experts are pessimistic. 'In Finland they are already marching in protest.'

text Roelof Kleis *illustration* Geert-Jan Bruins

'You should take fear seriously, otherwise you get polarization'

Until a few years ago the idea of wolves in the Netherlands sounded utopian. But since the first wolf was sighted in March 2015, things have moved quickly. And the high point so far was the pair that were snapped by a camera trap on the northern Veluwe early in May. A male and a female wolf together. So we've got the wedding photo; now all we have to wait for is the children. The first since the wolf disappeared from the Netherlands in 1869. For ecologists, the arrival of the wolf is something to celebrate. But others, particularly farmers, see nothing to smile about. They think the Netherlands is too small for the 'big bad wolf'. So what are we to do with this wild animal? *Resource* asked an ethicist/ philosopher, a social geographer and a cultural geographer from WUR. With a hunch that it won't be nature's carrying capacity but human tolerance that will decide whether the wolf is made welcome.

MYTH FORMATION

We have uneasy feelings about the wolf, says animal ethicist and environmental philosopher Bernice Bovenkerk to kick off with. She studies people's ideas about nature and the changing relationship between humans and animals. 'The wolf is "discomforting wildlife", as the Nijmegen scientist Mateusz

Tokarski described it in 2017 in his thesis *Wild at Home*. And I agree entirely. The prevailing thinking is that we should take animals into consideration but the fact is that wild animals can also be inconvenient. We are strongly inclined to put things in boxes. There are domesticated animals and there are wild animals. And wild animals must not intrude on our space. A wolf in the Oostvaardersplassen nature reserve is fine. But if it is suddenly standing by the entrance to Lidl, that's a different matter. Then it crosses a boundary. It is somewhat comparable with the discussion about genetic modification, where another red line is crossed for a lot of people. And we feel uneasy about that.'

Fear plays a big role in this, says Bovenkerk. 'The boundary is related to fear. And to the myth around the wolf. The wolf was wiped out in the Netherlands 150 years ago because it came too close and devoured our sheep. That's an issue again now. But if you look at how many sheep are killed by wolves, and how many by foxes and dogs, the fear is excessive. The wolf is really not a danger to humans. So there is obviously something else going on here.'

EATING BABIES

'What I find striking about the wolf discussion is the number of statements made without knowing whether they are true,' says cultural geographer



▲ This photo was taken by WUR wolf researcher Hugh Jansman in semi-wild nature reserves in Germany and Denmark.

Maarten Jacobs. 'About our fear of the wolf, for instance. Who is afraid, and what are we assumed to be afraid of? Yes, wolves kill sheep: that is true. But you hear the craziest things. That they eat babies, for instance. It makes me wonder who leaves babies behind in the woods.' In his work, Jacobs studies images of nature and how people relate to animals and the landscape. He recently became an advisor to the Wolves in the Netherlands alliance. 'I had criticized their website in a lecture. It starts with the fear of wolves and then explains why we don't need to be afraid of them. The implicit message at the end is: if you are still scared of wolves now, you're really a bit stupid. Well, that's how not to go about it.'

Jacobs thinks you should take fear seriously. 'Otherwise you get polarization, as we are seeing in Finland now. There the wolf has become a symbol of the opposition between groups: a kind of currency in the us-and-them discourse of city versus country, nature-lovers versus hunters. At

some point, the conflict is about those clashing interests rather than the wolf itself. Then you've got a real problem. In Finland they are holding protest marches against the wolf. We're not getting that here yet, but the discussion does seem to be heading in that direction.'

It is not surprising that fear plays a role in the wolf debate. After all, we all grew up with Little Red Riding Hood, The Wolf and the Seven Goats, and songs and games which make the wolf the 'baddie'. Yet fear doesn't influence our behaviour all that much, according to social geographer Birgit Elands. This was seen in research she did in 2012 on risk perception in relation to the arrival of the wolf. 'Most people at that time considered encountering a wolf an acceptable risk. Except if they were to meet the wolf in their own back gardens. The wolf shouldn't get too close: that is the crux of the matter.'

One year previously, Elands got Bachelor's students to conduct a survey in two residential neighbourhoods of Nijmegen. 'Slightly over half

of the respondents were in favour of the wolf coming here, one third were neutral and a few were against.' But at that point not a single wolf had actually been seen on Dutch soil. 'Last year, my students did the same survey in the woods of the Speulderbos, the hunting grounds of the wolf pair seen now. This time, 45 per cent were against the coming of the wolf. And of course, this is just a small study, and it was done in the woods and not in the city. Many of the respondents were elderly, whereas young people generally tend to be in favour of the wolf. But still...' Elands plans to repeat the survey in the Speulderbos. This time, on request of the forest ranger, local residents will be questioned.

EVOLUTIONARY EXPLANATION

Jacobs confirms that people's wolf-friendliness is not a given, and that it depends on how close the animals get. 'Research in our neighbouring countries shows that attitudes are at their most positive before the wolf arrives in an area. And

1869

Last wolf in the Netherlands killed near Schinveld (Limburg).

1982

The Convention of Bern makes the wolf a protected species.

Jul
2013

A dead wolf is found near Luttelgeest (Flevoland). It turns out the animal was put there; it was shot earlier in Eastern Europe.

Mar
2015

A live wolf is spotted in the Netherlands for the first time since 1869. It roams around Drenthe and Groningen provinces for a few days. After this, sightings follow one another in quick succession.

that tolerance decreases once it has arrived.’ Jacobs has done some research of his own among students, looking at emotions in relation to the wolf. ‘Of the positive emotions, the highest scoring was pleasure. Of the negative emotions, it was fear. But fear varies a lot – from a bit scared to really terrified. But what exactly are you measuring in this kind of self-assessment? Do people know themselves how frightened they are? Are they aware of their fear?’

From an evolutionary point of view, the fear of large predators is explicable, says Jacobs. ‘But that has never been confirmed by research. Fear is seen as an inborn basic emotion. But you cannot deduce that from existing empirical research. We can demonstrate that something elicits attention – “arousal” – and that people ascribe value to it – “valence”. But there isn’t a physiological set of reactions that is specifically linked with fear. In that sense, fear is an interpretation of physiological reactions.’

UNCONTROLLED

According to philosopher Bovenkerk, fear is actually part of the value of wild animals. ‘A lot of people value that scary, uncontrolled side of wild animals. Going out into nature is a way of reacting against everyday life, and feeling one with nature for a while. It is part of the experience of nature that you might encounter animals that you cannot control, and that you can feel small yourself for a moment. And that doesn’t have to be a pleasant experience, but it is part and parcel of your idea of nature. That is where the contrast lies between the wolf’s supporters and its opponents. Supporters value that uncontrollable aspect of the wolf, whereas opponents say we don’t have any wild nature in the Netherlands and we shouldn’t aim to have it either.’


WAITING FOR TROUBLE

On the question of whether the Netherlands is ready to live alongside the wolf, Bovenkerk is pessimistic. ‘Look at what happened in the Oostvaardersplassen, and how we have treated the game there. I am very disappointed in that.’ Elands is apprehensive too. ‘It is very easy to say the wolf should be welcome from your armchair, so at a distance. But I am afraid there will be trouble sooner or later. That it won’t be a sheep

but a dog that gets killed. A lot of people let their dogs off the lead in the woods. And the Dutch are extremely emotional about their pets. I think all it would take is for something to happen, and a huge emotional discussion would break out. And however small the chances of that are, it is sure to happen eventually because the Netherlands is a densely populated country. The Dutch are so naïve in the way they behave around wild animals.’

‘The big question, if you ask me,’ says Jacobs, ‘is how we treat people who are bothered by the wolf. Okay, there are compensation arrangements in place, but is that sufficient? And even if there is compensation, it is not a sheep farmer’s aim to supply wolves with food. So the problems are not solved by good compensation arrangements. As for fear: you need to avoid making people feel they are not respected. You should frame the message that there is nothing to be afraid of differently. Acknowledge the fear: it’s understandable that you are afraid, although it is not strictly necessary. In Finland they did research on whether you could reduce fear of bears by taking groups of people on trips to see bears. The bears are chipped, so the guides know exactly where to find them. But of course you can’t take everyone out on wolf-spotting trips.’

HOSTILE

The first Dutch wolf cubs have not been born yet – or have not been spotted, at least. But both the friends and the enemies of the wolf agree that it is only a matter of time. What is certain is that they will be born into a partly hostile world, where by no means everyone will welcome them with open arms. Then again, the wolf is used to that. Has it ever been any different? 

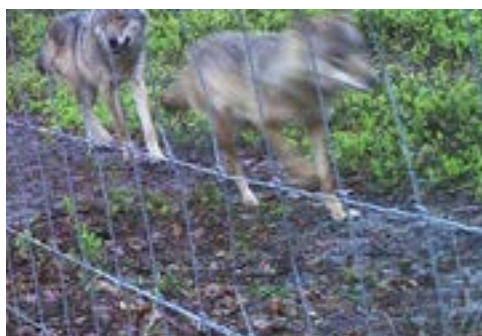


PHOTO: ZOOGDIENVERENIGING



‘They are said to eat babies, but who leaves babies behind in the woods?’

Maarten Jacobs, cultural geographer



‘The Dutch are so naïve in the way they behave around wild animals’

Birgit Elands, social geographer



‘A wolf in the Oostvaardersplassen is fine, but he shouldn’t stand outside Lidl’

Berenice Bovenkerk, animal ethicist and environmental philosopher



A wolf is run over and killed on the A28 in Drenthe.



A wolf wanders through the streets of Bennekom and Veenendaal at night.



Female GW998f stays on the northern Veluwe for more than six months. That means the wolf has officially settled in the Netherlands.




The first wolf pair is captured on camera on the northern Veluwe.



For the first time in one and a half centuries, wolf cubs are born in the Netherlands.



CREATIVE WITH SAND

Octopuses, cakes, Aztec pyramids and a team member's cat. These were just a few of the subjects that 13 student teams took as inspiration for their sandcastles on Thursday 23 May. One extremely inventive creation was the CRISPR Castle, a large cauliflower-like structure on top of a research lab. Studium Generale's sandcastle competition, part of the 'World of Sand' theme week, was won by the Pink Fluffy Unicorn team, formed by four comedians from Comedy Club Wageningen. They made a replica of the Forum, guarded by the film monster Godzilla.  RK, photo Guy Ackermans



Which way now w



CRISPR-Cas is quite a headache for Europe. The new technology has the potential to solve current problems but the risks are still unknown and there is strong opposition. Testing on the basis of usefulness to society might be the answer, we learned at the *Resource* debate on 20 May.

text Albert Sikkema photos Aldo Allesie

CRISPR-Cas technology could unleash a plant breeding revolution, say experts. With this molecular technology you can make precise changes to DNA to arm plants against disease, drought or salinization, to name but a few possible applications. The technique is fast, accurate and cheap: reason enough in 2015 for the top journal *Science* to proclaim CRISPR-Cas the scientific breakthrough of the year.

with CRISPR-Cas?



‘The EU’s current policy lacks credibility and is untenable in the long term’

But while companies in the US are adopting the technique at lightning speed, the European Court slammed on the brakes last summer. It decided to bring CRISPR-Cas under the rules for genetically modified organisms (GMOs), which means CRISPR crops have to go through a long and expensive admissions procedure (see inset).

LACKING CREDIBILITY

This is an untenable situation, says CRISPR

discoverer John van der Oost. The personal professor of Microbiology was one of the speakers at the CRISPR debate on 20 May. He explained to a full house in Impulse that the current GMO policy lacks credibility and is untenable in the long term. To start with its credibility: CRISPR-Cas changes DNA much more precisely than mutagenesis, which is used in vegetable and fruit breeding to date. In these techniques, breeders force changes in the DNA in a hit-and-miss fashion using

▲ Almost everyone at the *Resource* debate in Impulse expressed support for more flexible approval procedures for CRISPR-Cas.



▲ CRISPR-Cas has not yet delivered any products that solve societal problems, said Michelle Habets of the Rathenau Institute in Impulse during the debate.

chemicals and radiation. In the case of tomatoes, about 10 to 20 million base pairs have been changed using this blunt tool. The tiny scissors of the CRISPR-Cas technique, by contrast, cut and paste 20 to 30 base pairs, after which we can also check whether the intervention has been successful. And yet CRISPR-Cas is subjected to strict safety controls, while mutagenesis is not. That is the wrong way round, says Van der Oost. Moreover, he says the European policy will be impossible to implement because crops created with CRISPR-Cas cannot be differentiated from crops created with conventional breeding methods – cross-breeding and selection. Old GMO techniques always left a signature in the form of a recognizable genetic construction, but CRISPR-Cas does not do that. So institutes that provide analyses, such as Wageningen Food Safety Research, cannot determine whether a consignment of food in Rotterdam harbour was made using CRISPR-Cas or conventional breeding techniques. This has become a pressing problem now that countries such as the US, Canada, Australia, Brazil

and Russia have relaxed their approval procedures and will be exporting CRISPR-Cas foods to Europe.

NEW PROCEDURE

So Europe will have to change the way it deals with CRISPR-Cas somehow. But how? Supporters of the technology argue for a liberal approval

‘The question is whether CRISPR will deliver on its promises’

policy with little or no policing. But this fails to take into account the widespread opposition to biotechnology in Europe or the fact that no risk analyses have been done yet on CRISPR crops. A certain degree of filtering and control does seem to be needed. The question is therefore: what approval procedure should take the place of the redundant GMO policy?

Esther Kok, a GMO expert at Wageningen Food Safety Research, proposed a revision of the

approval procedures several years ago. She participated in European projects in which independent research was done on the need for and usefulness of rat studies aimed at identifying unintended effects of GMOs. The research confirmed that these studies do not generally have any added value. Kok proposed that we could save a lot of time, money and rats by scrapping compulsory animal experiments as a standard procedure. Instead of focussing on the technique – GMO or not – we should focus on the characteristics of the product being bred: what is new and what is already known about the product? Has the risk been assessed before? Using these data, her institute would be able to decide whether a short or an extensive risk analysis is needed, proposed Kok.

NOT DELIVERING

But a nuanced risk analysis tailored to the characteristics of the CRISPR product is not enough to silence all the criticism from opponents. One of their arguments for restricting approval of the new technique is that it is not delivering on the claims made for it – namely, that it will produce

more food and make agriculture more sustainable. At present, CRISPR-Cas has produced no more than a mushroom that doesn't go brown so fast, a sweeter strawberry and soya beans with less saturated fat, said Michelle Habets of the Rathenau Institute at the *Resource* debate. None of these CRISPR products have solved societal problems or made the food supply chain more sustainable, she concluded. Moreover, there is a power issue at stake in the plant-breeding world. The companies that want to use CRISPR-Cas concentrate aim primarily at making a profit. They have little or no interest in the position of farmers, the freedom of choice of consumers, or social justice, said Habets in the debate. So it is by no means certain that CRISPR-Cas will in practice deliver on its promise.

OWNERSHIP ISSUE

It could be argued that the large seed companies are currently investing a lot in sustainability, including new varieties that are more resistant to diseases, pests, drought and salinization. Sustainability is business, but the question of ownership still arises. Current patenting policy protects and benefits not just the discoverers but also the big companies that have the money and lawyers to develop and protect the technology.

Here too, the current European approval policy is not having the intended result, the debate revealed. Van der Oost pointed out that the extensive risk analyses required make CRISPR-Cas so expensive that only the big breeding companies can use the technique. Monsanto's opponents thus play right into Monsanto's hand. Habets commented that the patenting law and the monopolization of the seed sector make the multinationals stronger.

TESTING FOR IMPACT


So how can we ensure that CRISPR-Cas is used 'to good ends'? By establishing a European framework of criteria for GMOs, the Rathenau Institute advised earlier this year. The institute asked experts, civil society organizations and businesses which criteria should be included in such a framework. What came out of this was that the modified crop should promote sustain-

ability and diversity in agriculture. It should increase the grower's freedom of choice and improve the quality of the landscape. And it should strengthen the export position of Dutch agriculture, the position of farmers, and knowledge and innovation.

Norway is already well on the way to establishing this kind of testing, based on social impact. In 1993, the country passed the Gene Technology Act, to ensure that only GMOs get approved that have been tested on ethical issues, social impact and sustainability. The Norwegians have now worked out two proposals for a new GMO policy. During the *Resource* debate, Rathenau Institute scientist Habets described the broad lines of these proposals. For genetic changes that can also occur naturally and be made with classic breeding techniques, registration is compulsory. There is a fast-track procedure for genetic changes involving genes within one species (cisgenesis). So only genetic changes across species and synthetic DNA are submitted to an extensive GMO test, which also looks at ethics, impact and sustainability.

In the second Norwegian proposal, the authorities look first at whether the CRISPR products meet the social criteria, and only then at the technique being used. So, for example, if the Norwegian government wants to reduce pesticide use in agriculture, the CRISPR-Cas crops that are resistance to diseases and pests will pass the tests easily, and crops that are resistant to pesticides will not.

BREAKING THE DEADLOCK

The Norwegian approach weighs up both the risks and the social benefits of gene technology, and therefore seems like a good way of breaking the present deadlock in Europe. CRISPR pioneer John van der Oost made clear at the debate in Impulse that he is in favour of it. After all, new crops that help us reach climate targets would get on to the market faster than they do at present. The question remains as to whether the European Union is ready for that. And as to who should sit on the committee that gets to decide what 'good' means. 



▲ John van der Oost: 'The extensive risk analyses make CRISPR so expensive that only big companies can make use of the technique.'



OPEN DIALOGUE AT CRISPRcon

The conference CRISPRcon, to be held on the Wageningen campus on 20 and 21 June, will bring people together to discuss the future of CRISPR-Cas and related new gene technology. These technologies can make a huge contribution to the quality of life, but there are also serious concerns about safety, the integrity of life, and unfair distribution of ownership. The aim of CRISPRcon is to promote an open dialogue on these aspects of the subject. The conference will be in English. More information: crisprcon.org.

MEANWHILE IN BRUSSELS...

The European Court of Justice decided last year that new breeding techniques, including CRISPR-Cas, are subject to legislation for genetically modified organisms (GMOs). Crops developed using CRISPR-Cas must therefore go through an extensive and costly risk analysis as part of the approval procedure. The court's argument is that, unlike the traditional process of cross-breeding and selection, CRISPR-Cas has no history of safe use. The Court's ruling is binding as long as the European Commission does not change the legislation. The new European Commission will probably decide later this year whether it will prepare new GMO legislation. It is not clear at all whether such legislation

will exempt CRISPR-Cas from the strict rules applying to GMOs. The European member states are divided on the topic of gene technology and the decision-making process has been in deadlock for years. Meanwhile, civil servants in Brussels are thinking about adaptations to the law. The European Commission's Joint Research Centre has published a report stating that the current GMO procedure should be changed, given that CRISPR products are no longer distinguishable from classically bred plants. And the EU's Agricultural and Fisheries Council has put changing the GMO policy on its agenda.

FRESCO APPOINTMENT CONTROVERSIAL

Last month, Louise Fresco was appointed non-executive independent director at the plant-breeding company Syngenta. A nice expression of science for impact, say those in favour. Damaging to the credibility of science, say those against.

text Roelof Kleis, Tessa Louwerens and Albert Sikkema

Ivonne Rietjens



Professor of Toxicology and on the supervisory board at food company Wessanen

'A board position with a company is something you do primarily for yourself. It brings you into a different setting, it challenges you and you get to see how the industry works. **There is no reason to doubt Fresco's integrity; there will be no question of a conflict of interests.** But something can also look like a conflict of interests, and you have to be extra careful about that.'

'That is typical of WUR, where we don't stay in our ivory tower'

Bert Lotz



Applied Ecology Team leader at Wageningen Plant Research

'I am proud of our organization and its clear mission. I think we carry out this mission well by doing reliable independent research in strong interaction with society. Our figurehead Louise leads us well in this. **I think this board position is a surprising move. Why would the figurehead of WUR forge such a strong link with one particular multinational?** That raises all sorts of questions, including questions about your independence. And why Syngenta and not their competitor Bayer, for instance? I think you should steer clear of this, especially as WUR's figurehead. We work right across society.'

Jeroen Candel



Assistant professor of Business Studies

'As a scientist I stand for an open academic debate and I see it as the duty of the board to facilitate that. The credibility of science is already under pressure. So it is extra important to be above reproach and honest and to safeguard your independent status. The board president taking this kind of position means WUR will be identified with a particular position in the public debate. Even if you think you are an independent director, this affects your credibility to the outside world. **As the president of a university it is not on to accept any additional positions in organizations with private interests, no matter what they are.** Then we won't be taken seriously anymore.'

Peter Jongebloed



Project Manager at Corporate Strategy & Accounts

'I'm a bit ambivalent about it. In itself, it's a good thing if Fresco works for a company like that as an independent expert, so as to contribute to the transition to more sustainable agriculture and food production. That is typical of WUR, where we don't stay in our ivory tower but are constantly in dialogue with the various stakeholders in our field. We do that through public-private research projects, through public debate and as advisors. **Only through co-creation can you achieve transitions and impact.** On the other hand, with this appointment Fresco could create the impression that she has hitched her wagon to a big company. But I am sure she is confident enough to adopt an independent position.'



▶ Louise Fresco with Syngenta CEO Erik Fyrwald during F&A Next.

Laurie van Reemst



Researcher at Wageningen Environmental Research

'It seems to me that creating the impression of a conflict of interests is harmful, especially in her position. **WUR is often accused of being too closely involved in the business world.**

Look at the discussions about bee deaths, for example, and the relationship with Bayer. For me the question is, what is her real motive? How much money is she paid for this, and how does she intend to use her position as the public face of WUR? How can she keep her roles separate? It would be good to have more openness about this.'

Thom Kuyper



Personal professor of Soil Biology

'You can't combine being President of the Executive Board of Wageningen University with a position on the supervisory board at Syngenta. And that doesn't only apply to Syngenta: this would be just as out of order if it

was Greenpeace. And that is nothing to do with Louise Fresco's integrity, which is beyond doubt for me. The point is that you are combining positions that can't be reconciled. In the academic community there is a lot of discussion about the role of companies such as Syngenta in making agriculture sustainable. That community needs to be certain of the freedom to develop a diverse range of views.

'It's not just about Syngenta: this would be just as out of order if it was Greenpeace'

A professor of seed breeding could sit on an industrial board because of his or her expertise, but the President of the Executive Board should not. By the same token, it would be strange if the prime minister Mark Rutte sat on the board of a company, wouldn't it?'

Louise Fresco



President of the Executive Board of Wageningen University & Research

In *Resource* on 18 April: 'It is part of WUR's aim to ensure our findings and insights benefit influential organizations that are working hard on sustainable solutions for food production. By working together in this way we can make big strides, and that is an urgent necessity.'

In the newspaper *Financieel Dagblad* on 27 May: 'It would be wrong if I didn't dare collaborate with the private sector. Companies need independent thinkers. I have shown that I am one. **I am not part of Syngenta. I advise Syngenta** (...). I want to make a difference by making the global food supply more sustainable. You need science to do that and Syngenta's work is science-based.' ③

Giulia Fusari: 'This programme helps me to grow as a person'

One Master's, four countries

A lot of Wageningen students make one or two trips abroad in the course of their studies. But the students on the 'European Master's in Food Studies' are ahead of the game. They take courses in four different countries. Giulia Fusari thinks it's terrific.

text Luuk Zegers illustration Alfred Heikamp

After a Bachelor's in Food Technology at the University of Bologna, Italy, Giulia Fusari came to Wageningen for her Master's degree in Food Studies. After a few months, she moved to Ireland, only to pack her bags again after eight weeks to go to France. Now she is in Sweden. Fusari is taking the European Master's in Food Studies (EMFS), an international Master's with courses at four European universities.

Why not a regular Master's in Food Technology?

'During my Bachelor's degree in Italy, I discovered that I would like to work in production development. But in Bologna, students are primarily educated for an academic career, and there are no good opportunities for a long internship. Then I found out about EMFS, which offers more than just lab work and food law, and a lot more time working in industry.'

'We learn different things at each university'

How do you like it?

'I am very happy with it. I chose EMFS mainly for the long internship, which I will do next year at Mars Nederland, but this Master's is also fantastic for learning to work in a team. It started with a team-building week in August 2018, during which we learned to express ourselves, to listen to others and to respect everyone's opinion. We also played games to get to know each other. Then we were divided into two groups of eleven, which stay together for the whole of the Master's. Each team has to develop an innovative product. Although we take all the same courses as students of Food Technology, we work on our group projects at the same time,

and we have to present our products in June 2020. So teamwork really is an important component of the programme. And that is great, because collaboration is fundamental in a modern work context.'

Isn't it tiring to move so often?

'Yes, EMFS is challenging and sometimes it is heavy going. But it is all worth it. At each university we've been to, we learned about other aspects of food technology. Cork was fantastic, also because we had time to travel and see a bit more of Ireland. Paris was very hectic because we had six hours of classes every day, and then we still had to do homework and work on our group project too. On the other hand, the social side of it was very nice there, because we went out every Friday night. Appropriately, we finished that period with a cheese and wine party. After a week's holiday we got together again, this time in Sweden, ready for a new experience.'

It sounds like a rollercoaster

'It is a bit. For me, Wageningen was the toughest period so far, because I was still getting used to working in English, as well as to new methods of study and new people. But



when I was packing at Christmas to go to Cork, I noticed that I was really looking forward to embarking on that new adventure with my new friends.'

What's on the menu in Sweden?

'In Lund, we've been given a group assignment for which we have to use waste products from plant-based milk to develop a new product. It is quite similar to our big team project, only on a smaller scale and with two months to do it instead of two years. My group is working on a fruit spread, and we are doing experiments in the lab at the moment.'

What is the most important thing you've learned so far?

'In Cork, two representatives from each team had to present the ideas to "the board", a group of representatives of the four participating universities and 11 companies. I had to give that presentation and it caused me quite a lot of stress, because when I started on the Master's in August, I was quite shy and insecure about my English. But it went well and I was very pleased with myself afterwards. EMFS is helping me to grow as a person by challenging me. That's what you get if you bring 22 motivated students from all over the world together to learn and travel together and share their ups and downs.'



▲ Giulia Fusari: 'All that moving around can be tough but it is worth it.'

EUROPEAN MASTER'S IN FOOD STUDIES IN A NUTSHELL

The 'European Master's in Food Studies' (EMFS) is a joint venture by WUR and the universities of Cork (Ireland), Lund (Sweden) and Agro-Paris Tech (France) and 11 big companies, including Heineken, Nestlé, Unilever and Mars. During their first year, the students are taught at all the participating universities: from September to December in Wageningen, in January and February in Cork, in March and April in Paris, and in May and June in Lund. In their second year they do an internship with one of the industrial partners. The students also work in teams on an innovative product over the entire two years.



IN OTHER NEWS

BODY CLOCKS

Our main internal clock for the diurnal rhythm is located in the brain. But our organs have their own clocks, research by the University of California has shown. In mice, the liver clock has proven to go on working even if the brain's clock is put out of action. It is not yet understood how these internal clocks coordinate with each other.

MAKING OXYGEN

Researchers at Caltech have discovered a new way of making oxygen. They shoot CO₂ at a hard object at great speed, and the collision distorts the CO₂ so badly that both O atoms split and form O₂. This is only proof of principle, though: for a few molecules of oxygen you would still need 100 kilos of CO₂. But you have to start somewhere. The method could provide travellers to Mars with oxygen, suggest the researchers.

HYPHENS

The more hyphens there are in the title of an academic article, the less often the paper is cited. This distressing conclusion was reached by researchers at the University of Hong Kong. It is because the citation algorithms get confused by dashes. One dash can mean 10-15 fewer citations: two dashes cost you 20 or more citations.

PIKE FOOD

The swan pair on the Forum pond had eight fluffy babies. And all eight have disappeared. They were probably eaten by pike, says park manager Elike Wijnheijmer. Pike are at the top of the food chain in the pond and baby waterbirds are on their menu. A question of natural selection.



VeSte wins, S&I bigger

VeSte won the Student Council elections and will once again fill 7 of the 12 seats next academic year. S&I has gained an extra seat (going from three to four) at the expense of CSF. The Christian student party is left with only one seat.

The election results were announced in the Forum on Tuesday 28 May. 'We are delighted with this result,' says Roos Verstegen of VeSte. 'It shows that our efforts for high quality education are appreciated and supported by the students. That's nice because after all we are doing it for them.'

Last year, CSF won two seats but there will now only

'Our efforts for high quality education are appreciated'

be one CFS member on the Student Council in the coming academic year. 'Harm Ligtenberg will have to work hard,' says CSF chair Cito Gilbert Wakenge. 'My advice to him is to choose your battles wisely. Because if you want to make an impact, you need to focus.'

S&I (Sustainability & Internationalization), which, like CSF, was founded in 2014, is continuing to make progress and now has four seats. No one from



The new Student Council

VeSte Sophie Kuijten, Camille de Regt-Harvey, Lucas Hulsman, Larissa van der Zon, Ralph van Herpen, Rick van der Tol and Kaj van den Heuvel.

S&I Yichun Zhou, Zheng Wu, Xiaoxiao Peng and Domenico Renders.

CSF Harm Ligtenberg.

S&I was available for comment at the time of writing.

At 35.19 per cent, the turnout for the Student Council elections was about two and a half percentage points down on last year (37.72 per cent). **R LZ**



PHOTO: GUY ACKERMANS

Ceres board in a stagecoach

Ever since the first horse show held at the Bennekom stately home, Hoekelum, in 1898, Ceres has been involved in this annual show jumping event. The members of the Wageningen Student Riding Association,

Rough Riders, a subsidiary society of Ceres, help set up the course. In this photo, the Ceres board are taking a turn in an English stagecoach drawn by Gelderland horses. **R LZ**

Students and schoolchildren make educational play equipment

Generating energy on a swing

Five WUR students plan to work with primary schoolchildren to make a sliding block puzzle with LED lamps lit by an energy-generating swing. The aim of the project is to give the children an idea of the energy used by electric equipment.

‘The Cityscapes research project of the Honours programme requires us to come up with a solution for problems that occur in cities,’ says third-year student of International Development Studies Iris van Holsteijn (20), who is on the *Energie is Kinderspel* (‘Energy is Child’s Play’) team. ‘The project could be about waste or air pollution, for example. We opted for the lack of space for children to play and came up with an idea that lets children play and learn something about energy consumption at the same time.’

The students collaborate with children from *De Vallei* primary school in Driel. ‘They will be

building the puzzle with us,’ says Van Holsteijn. ‘We will do that at the Walhallab in Zutphen, a kind of engineering lab where children can build things. We will be assisted by a 13-year-old teacher – which is quite normal there. The children will also learn a lot from being allowed



PHOTO: ENERGIE IS KINDERSPEL

▲ Honours students Ben Tumulero, Kim van Vliet, Iris van Holsteijn, Magda de Roon and Ludo Diender have dreamt up some play equipment that will teach children a bit about energy consumption.

to make the puzzle themselves.’

The sliding puzzle is one square metre in size and slightly different to regular sliding puzzles. ‘In our puzzle, a series of lamps have to be connected. If the puzzler succeeds, the lamps will light up. That is, assuming sufficient energy has been generated with the swing, of course.’ The energy-generating swing with the sliding puzzle that lights up should be ready by early July.

To find out more about this project, follow the students on Twitter @EnergieKindSpel. **R LZ**



MEANWHILE IN... NEPAL

‘You don’t have to reach the top to feel spirituality’

A photo of a human traffic jam at the summit of Mount Everest went viral last week. 11 climbers lost their lives in the congestion. The Nepalese government issued about 380 climbing permits this year. Too many, says Pallavi Shakya. ‘It’s no surprise that queues could form.’

‘In the severe earthquake of 2015, the most difficult part of the ascent collapsed, so a lot of people try to summit Everest now, as it has become easier. Since it’s beneficial for the government, they are handing out lots of permits, even to inexperienced climbers. There’s only a certain time in the year when conditions are suitable, so it’s no surprise that queues could form on the mountain.

Frankly, most Nepalese people aren’t interested in climbing Everest, mainly because of the costs. Permits are cheaper for us than for foreigners, but living conditions are difficult in Nepal, especially after the earthquake in which many people lost their homes. So people are more focused on sustaining themselves.



Pallavi Shakya, a Master’s student of Plant Biotechnology from Nepal, reflects on recent affairs on her home country.

There’s this Buddhist practice called Vipassana. Its core philosophy is that everything is impermanent.



PHOTO: HOLLANDESE HOOGTE

In meditation, you pay attention to your body and breath. You endure pain and see it as something temporary. Perhaps mountaineering is also a form of meditation, as you seek the adverse conditions in high altitudes and then endure them. It’s just that I find the western way to be very goal-oriented. In Nepal, we believe that you don’t really have to reach the top to feel spirituality.

In a way, if the routes on Everest are well managed, it could be a good way for the government and local climbing firms to earn money. But I think there should be limits to the number of people allowed, and tests so that only experienced climbers can go up. There are so many mountains to climb; inexperienced climbers could practise on those.’ **R GH**

YOU

ON CAMPUS

There are more than 12,000 students on the campus in Wageningen. What keeps them busy? For each edition, *Resource* asks a student picked at random.

Amina Marelli (23), a Master's student of Environmental Sciences, is on her way to a meeting to plan her next event for Girls' Club Wageningen, a project she started recently.

'This week we have our first lecture, so I'm doing some last-minute prep. Two therapists are coming to speak to us about mental health awareness and body positivity in the age of social media. Even as adults, when we consciously reject the norm that the media presents, it can still be difficult to find self-acceptance. Later on, we would also like to deal with issues around the perception of women in science, and the bias still surrounding women's leadership: how do we thrive in a society that remains very masculine?'

Violence against women is a problem in Italy, Amina's home country. 'Which is why I decided to start this project. In Wageningen, there

are many clubs, but I could not find one that would fit me. I wanted to create a safe space to celebrate women, femme folks and female-identifying individuals, all our feminist allies that fight and break barriers every day. We decided to call it Girls' Club instead of Women's Club because it's less restrictive. A lot of people that come along are men who wish to explore feminism.'

'I started the Girls' Club because I wanted to create a safe space to celebrate femininity'

In Italy, feminism has kind of a bad name, says Amina. 'As if being a feminist means being extreme. Luckily, in Wageningen, people

are very open-minded and it's very easy to get people on board if you want to start a project. I guess it's because we all share this common trait that we want to make an impact, and we all have this yearning for improvement, be that for the environment, politics or gender equality.'

Combining her studies, the Girls' Club and other ventures isn't difficult for Amina. 'It's a lot of research and organizing, but if I'm doing something that I really enjoy, I always find the time for it.' **AvdH**

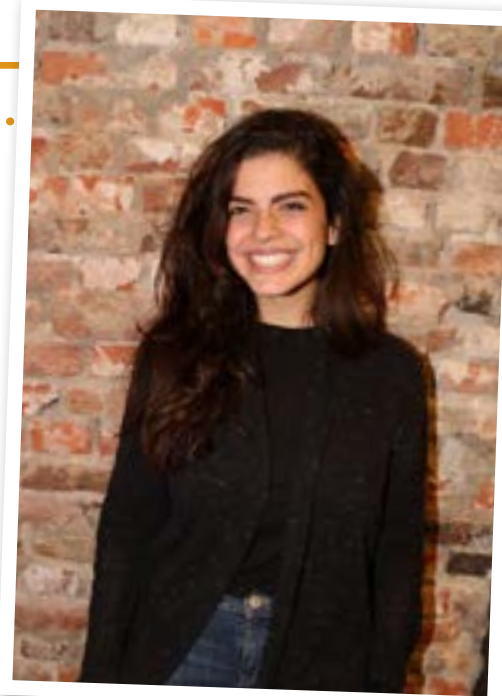


PHOTO: ANNE VAN DER HEIJDEN

'Scientists are anti-social? I really don't think so!'

Working on her Master's thesis changed Kaavya Raveendran's perspective on scientists. 'Most people think scientists are socially awkward. But oh boy, you should see them at a party.'

'Super-smart, kind of anti-social, geeky, with strong interests, highly patient and humble. These are the defining characteristics for researchers, validated by *The Big Bang Theory*. But 2.5 months down the line with my Master's thesis, I realize those are nothing but stereotypes and I want to redefine the enthusiasts of science.

'They keep everyone engaged and put you at ease in an instant'

It is one thing to be loaded with knowledge of a subject and immediate answers to almost any question, but these researchers take being smart to a whole new level. They are not just smart, they are witty. If you want to see it for yourself, try engaging in small talk with one of them. You'll be cornered with snappy comebacks so soon that you won't even realize when it happened. Then there come the hours after

work. Most people think scientists are socially awkward and shy away from festive events. But oh boy, you should see them at a party. Dancing, drinking and singing along with iconic numbers. Did someone say anti-social? I really don't think so! They keep everyone engaged and put you at ease in an instant. I still remember how nervous I was before my first meeting with my supervisor because, hello, years of experience! But it was so much easier than I thought.

KINDNESS

And finally, I want to talk about the culture that these amazing people

BLOG



Kaavya Raveendran is a Master's student of Food Technology. You can read all of her stories on resource-online.nl.

bring to the field. They treat science like a very healthy sport. They help, support and encourage each other. Since I started my thesis, I have had to speak with numerous people and never have I ever been able to arrange things so easily. Everyone agreed immediately to help in any way they could, even though they might not get anything in return. So for me, science has now become all about kindness.' **AvdH**

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

Luxury is relative in Zambia

'I'm the first student to do an internship here. I'm at Lake Kariba, in volume the largest human-made lake in the world. My research is about carrying capacity: how much fish can they produce here without harming the water quality? I also help the company with the changes required to comply with the criteria for the ASC consumer label for responsibly farmed fish.

'Resort or not, all the equipment breaks down'

It is quite difficult to get hold of a room or house here, so the company arranged for me to stay in a luxury resort. I can see the lake from my room. But resort or not, it is still Zambia. All the equipment breaks down. I don't have Wi-Fi indoors and a little while ago the whole town was without electricity and so my room key didn't work. You have to learn to deal with these things.


FISHING AND BEER

There is not much to do here at weekends. If I ask Zambians what they do in their spare time, they say: sleep or watch TV. They are not terribly enterprising. They do play a lot of football, though. People from the company sometimes do something together, like go out for a beer or go fishing. Other than that, I read a bit. Soon my girlfriend will come out here and we are going to travel around and visit the Victoria Falls.

I have to travel quite a bit for my research, and take various water samples. In general it is sensible to have a Zambian driver here. If a white person wants to buy something, it is five times the price. It's nice to have someone with you who knows how everything works.

NEVER BAD NEWS

The difference between the culture here and in the Netherlands is huge. You notice it in everything. 95 per cent of the company em-

ployees are Zambian, but half of those in the higher positions are international. People here do not have access to good higher education. And the way they work is not always very efficient. If two men are working on something, four others stand and watch. Zambians feel it is impolite to give people bad news. Once I had to wait two hours for the boat, while the captain kept on saying it was nearly there. And if people break something, they hide it. Zambians are very friendly, though, and they laugh a lot.'  EvdG



THE WORKS

Who? Kees te Velde (25), MSc student of Aquaculture and Marine Resource Management
What? Internship at aquaculture company Yalelo
Where? Sivonga, Zambia

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

Announcements

Student Council 2019-2020 election result

The results of the SC election were determined and announced on 28 May 2019. The 12 seats will be divided as follows: CSF: one seat, S&I: four seats and VeSte: seven seats. The following candidates have been elected as members of the Student Council 2019-2020: Harm Ligtenberg for CSF; Yichun Zhou, Zheng Wu, Xiaoxiao Peng and Domenico Renders for S&I; Sophie Kuijten, Camille de Regt-Harvey, Lucas Hulsman, Larissa van der Zon, Ralph van Herpen, Rick van der Tol and Kaj van den Heuvel for VeSte.

Become a Buddy Mentor in/after the Summer AID

1xESN Wageningen is looking for Buddy Mentors. A Buddy Family consists of two or three enthusiastic Mentors and approximately 10-15 international, newly arrived students.

As a Buddy Mentor you'll show international students around in our lovely town and make them feel at home. Together you'll take on lots of activities for at least one semester. These can be icebreakers like a little game of time's up, guess who, various name games, a simple drink or a little trip to the nearest supermarket. If you have an open mindset and are keen to join the Buddy Families, register alone or in a group via ixesn-wageningen.nl/what-buddy-mentor.

Rising Talent Prize for women in science

The aim of the Rising Talent Prize (€3500) is to further the academic careers of young women researchers in the Netherlands, to recognize their academic achievements and to improve their future prospects. The laureates of the Dutch Rising Talent Prize can also be nominated for the International Rising Talents programme run by Women for Science. The initiative for the prize came from

L'Oréal Netherlands, the Netherlands National Commission for Unesco and the Royal Holland Society of Sciences and Humanities (KHMW). Women who want to be considered should be working as PhD students or postdocs in the life sciences or the exact sciences, with a maximum of three years post-doctoral experience.

UNESCO.NL

Agenda

Thursday 6 to 20 June

FILMHUIS MOVIE W

Nureyev: a documentary about the extraordinary life of the Russian ballet dancer Rudolf Nureyev. *Camino*: a Dutch documentary about the famous pilgrimage to Santiago de Compostella. Martin decides to walk the Camino without any preparation worth mentioning. He films himself, his feet, his shadow, the path, the field and woods, in a quest to understand why he embarked on this ad-

venture. *Claire Darling*: a tragicomic French family drama with Catherine Deneuve. A film about letting go and closure. *Dirty God*: a British portrait of a strong woman and mother and her struggle with outer beauty and inner worth. *Mirai*: a masterful, magical-realistic animation about four-year-old Kun, who gets a little sister and is finding it hard. *Rafiki*: a colourful Kenyan film about the budding forbidden love between two Kenyan girls. Location: Wilhelminaweg 3A, Wageningen. €6.50/€5.

MOVIE-W.NL

Tuesday 11 June, 12:30 / 17:30

WAGENINGEN YOUNG ACADEMY PRESENTS: PUBLIC LECTURE & SEMINAR BY DR RANA DAJANI

The Jordanian molecular biologist, Dr Rana Dajani, who has been characterized as one of the most influential women scientists in the Islamic world, will give a public lecture about her work, entitled 'To see what everybody sees but to think what no

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- Professional Skills in English
- Summer Boost Camps
- one-day skills training

Dutch August

19 - 30 August

- Basic Dutch 1 & 2

'Language gets you further'

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one has thought'. Dajani's work centres on theories on biological evolution, focusing on genome-wide research on diabetes, cancer and stem cells. Having received many honorary titles and awards, Dajani is not only a leading scientist, but also a role model in the Arab world as an advocate of women's and Muslim emancipation, and an active social entrepreneur. In 2018, Dajani authored *Five Scarves: Doing the Impossible — If We Can Reverse Cell Fate, Why Can't We Redefine Success?* In this book, she reflects on her own life as a scientist, mother, teacher, entrepreneur and feminist and explores questions such as 'can a breakthrough in stem-cell research revolutionize feminism? And 'can a scientist apply the scientific method to her own life to find solutions to social problems?' The public lecture and free discussion on her book will take place between 12:30 and 14:00 at Speaker's corner in Impulse. The Seminar at 17:30 will be in the Waaierzaal in Orion.

WUR.EU/DAJANI

Tuesday 11 June, 12:30-13:20 LUNCH WORKSHOP WAGENINGEN WRITING LAB 'REVISING OF TEXTS'

It is a myth that a well-written text is written in one go. Revising is crucial! At first you fully concentrate on the content of your text, and only in the second stage on all the other aspects of academic writing. We will offer you practical strategies for revising your text. Do bring the draft version of your text with you! Free access. Be on time, as participant numbers are

limited to 20. Venue: Forum C0406. Info: info.wageningenwritingLab@wur.nl.

Saturday 15 to Sunday 16 June, midnight to morning
AMNESTY WAGENINGEN STUDENT GROUP: NIGHT OF THE REFUGEE
In the 10th edition of the Refugee Night, thousands of participants will walk through the night to raise money for emergency aid for refugees worldwide. This is a unique event that takes place in 10 different cities. Are you coming along? Together with the Amnesty Nijmegen student group, we will walk 40 km from Nijmegen to Arnhem starting at midnight on 15 June. Participation is free. The idea is that everyone asks friends and family to sponsor the group or individual. Please register at nachtvandevluchteling.nl/team/aisnaisw to join the team.

Sunday 16 June, 13:00-19:00 8TH EDITION OF THE BELMONDO FESTIVAL

A lively festival with theatre, music, singing, dancing and numerous children's activities. Many Wageningen and international instrumental, vocal and dance groups will provide a continuous show in the beautiful Belmonte Arboretum. There will be workshops and children's activities going on at the same time. Admission is free and you can find the programme on the website: belmondofestival.nl

Wednesday 19 June, 13:30-15:30 LECTURE 'HIGHLY GIFTED AND AT UNIVERSITY' BY DEAN RUUR

BOERSMA (IN DUTCH)

As part of national 'Highly gifted week', Ruur Boersma talks about her experiences in relation to being highly gifted and combining that with a university degree. Students often don't know that they are highly gifted and struggle for years before they discover that their giftedness is a factor in their problems, such as fear of failure, lack of motivation and feeling lonely. Often the pieces of the puzzle fall into place when they find out that they function a bit differently to most people.

Location: The public library, Stationsstraat 2, Wageningen.

BBLTHK.NL

Thursday 20 June to Friday 21 June CONFERENCE CRISPRCON 2019: CONVERSATIONS ON SCIENCE, SOCIETY AND THE FUTURE OF GENE EDITING

You can join sessions on several aspects of gene editing. CRISPR-Cas is a new technology that makes it possible to change genetic material from viruses, bacteria, cells, plants and animals in a relatively simple, very accurate and efficient way. This technology can make an enormous contribution to the quality of our environment, our health, agriculture and economy. At the same time there are concerns regarding ethical aspects, the integrity of life, unfair distribution of property, security and who benefits. The conference is aimed at the largest possible cross-section of society and aims to stimulate an open dialogue. CRISPRcon 2019 is one of Keystone Policy Center's programmes and will be hosted by WUR. More about the programme, speakers and registration on the website.

CRISPRCON.ORG/CRISPRCON-2019

Colophon

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FOR	Talented female zoologists who aim to do a PhD
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>>TYPICAL DUTCH



ILLUSTRATION: HENK VAN RUITENBEEK

Giving birth in your own bedroom

Childbirth is not child's play. In my home country, people usually go to the hospital to deliver their baby with the help of doctors, nurses and all kinds of equipment. But my perspective on giving birth has changed in the Netherlands.

My friend's wife was expecting a baby at the end of last year. He delivered a message to my WhatsApp group that his wife would give birth at their home in Wageningen. At first I was shocked. I always thought a delivery must take place in a hospital, because it's a matter of life and death. But my friend told me that during a pregnancy in the Netherlands, a midwife or doctor assesses whether giving birth in the home is safe. Since his wife and the unborn baby were in excellent health, they decided to go through labour at home in their bedroom, with the help of a midwife.

I checked on the internet and the Netherlands has the highest percentage of home births in the Western world. Many Dutch doctors and midwives believe it is best to deliver your baby in a familiar environment so the mother can be relaxed. Besides, there are special nurses who go to people's homes and help mothers in the first few days after the baby is born.

Another nice thing about having a baby is that mothers-to-be receive many gifts in several Dutch stores. All in all, pregnancy and childbirth in the Netherlands sound like fun!

🇮🇩 **Atrasina Adlina, an MSc student of Aquaculture and Marine Resource Management, from Indonesia**

All in all, pregnancy and childbirth in the Netherlands sound like fun!

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