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RESOURCE [EN]

For everyone at Wageningen University & Research

no 4 – 4 October 2018 – 13th Volume



**INTERNATIONAL
EDITION**

**Circular agriculture
Of course. But how?**

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Gonny + Kühne organ

Gonny van der Maten, organist in the Aula



WUR'S OLDEST INSTRUMENT

We never actually see the organist in the Aula (the main auditorium). She sits high above the hall with her back to the audience. But no one can miss the powerful instrument Gonny van der Maten plays. After a comprehensive restoration, the organ was installed in the Aula in 1977. The original organ (16 registers, hundreds of pipes) was built by the north German company Kühne and dates from 1852. Van der Maten plays for inaugurations and graduation sessions. She thinks it's a wonderful tradition. 'The Netherlands is a goldmine as far as organs are concerned.' RK, photo Sven Menschel

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PHD FACTORY

About 300 PhD students graduate in Wageningen every year. This makes one of the Netherlands' smallest universities one of its biggest 'PhD factories'. That gains us prominence in the university rankings, but the emphasis on PhDs has its downsides as well. The PhD students do very little interdisciplinary research because they do not have time to discuss complex social problems with stakeholders, says soil scientist Johan Bouma in an interview on page 18. And this holds up the appliance of science.

Last week I spoke to two potential applied research clients who complained about this situation. 'If I come up with a question, Wageningen says: just fund a PhD,' one of them explained. In his view, WUR is not so much contributing to addressing complex practical issues as aiming to squeeze as much of its research as possible into four-year PhD projects.

Professors and tenure trackers are judged by the number of PhD students they get and graduates they turn out. And the PhD candidates are tasked with producing new knowledge, not with applying existing knowledge in a complex practical context. Is there a solution to this schism within WUR? Maybe PhD students from different disciplines should collaborate more on complex problems. Then WUR would become less of a PhD factory and more of a research atelier.

Albert Sikkema

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UNIVERSITY RECEIVES GIFT OF CARILLON

A seven-metre high carillon is to be erected on the campus. The bells will ring out on festive occasions such as the university's Founders' Day and degree ceremonies.

The carillon is a gift from the University Fund Wageningen (UFW) and several of the centenarian university's donors. The 18-bell tower, contemporary in design, will go up on the festival grounds between the Forum and Atlas, parallel with Orion. The plan is to inaugurate the carillon at the closing of the centennial year on 9 November.

The idea of a carillon comes from emeritus professor Rudy Rabbinge. 'I've been professor in various parts of the world, including Berkeley. A lot of universities have a tower with a carillon that is played on ceremonial occasions. I thought it would be nice to have something like that in Wageningen. And the UFW embraced the idea.' The carillon will have an exclusively ceremonial function, Rabbinge stresses. 'It is not a church clock that will chime every hour.'

According to fundraiser Arianne van Ballegooij, the UFW has a tra-



▲ An impression of the carillon on the intended site on the campus.

dition of gifting artworks on the occasion of jubilees. 'The tree at the entrance to the Forum is one such gift. The big steel flower in the Belmonte Arboretum is another. The bell tower belongs to that series.'

The carillon has been designed by SW Architects in Wageningen. It has 18 bells which are suspended above the ground in a circle

three metres wide. The circle is supported by five curved steel posts and the whole structure rests on a sloping concrete base. The tower sticks out about seven metres high above the grass.

The licence granted by Wageningen municipal council stipulates that the carillon may be rung a maximum of 12 times a year for ten minutes. A committee is draw-

ing up the rules of use. The council's condition for the siting of the carillon is that the surrounding area is tidied up. The council thinks the central area of the campus is a mess, with its waste bins, advertising hoardings and flagpoles. It suggests a landscape architect should be hired to complete the landscaping of the campus. **Ⓜ RK**

AN EXTRA FIVE MILLION TO DEVELOP 'SLIMMING BACTERIUM'

A-mansia, a joint startup by WUR and the University of Louvain, has won another five million euros on top of starting capital of 13 million. One of the company's aims with this funding is to speed up the development of nutritional supplements to counteract overweight.

For this purpose the company makes use of the bacterium *Akkermansia muciniphila*, which was more or less accidentally discovered in 2004 by professor of Microbiology Willem de Vos. De Vos and Belgian professor Patrice Cani set up the company A-mansia in 2016, and

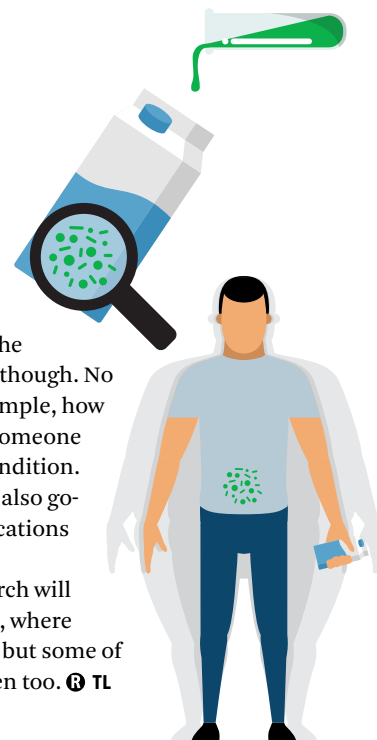
within a year they had acquired the necessary starting capital of 13 million euros. And now they are getting another five million from the investment fund Innovation Industries.

Prescribing *Akkermansia muciniphila* helps combat overweight and probably other diseases such as fatty liver disease and bowel infections. 'But you shouldn't treat it as a solution to an unhealthy diet and lack of exercise,' says De Vos. 'By prescribing the bacteria you shift the tipping point a little and the patient doesn't become overweight as quickly.'

The advantage of this bacterium is

that it works in its pasteurized form too, which makes it safe to add to food products. There are still a lot of uncertainties surrounding the creation of actual products, though. No one knows precisely, for example, how useful the bacterium is for someone with a particular medical condition. 'In the next few years we are also going to look at possible applications in medicines,' says De Vos.

Most of the further research will be done in the Brussels area, where A-mansia's office is located, but some of it will be done in Wageningen too. **Ⓜ TL**



WUR RISES UP TIMES RANKING

Wageningen University & Research has risen in the Times Higher Education (THE) ranking from position 64 to 59. This makes WUR the second highest Dutch university in this ranking, after TU Delft (at 58).

The rankings are still topped by Oxford and Cambridge.

Eight of the 12 Dutch universities in the top 200 have lost ground, and Tilburg Univer-

sity, at position 195 last year, has now fallen just outside the rankings.

The Times Higher Education World University Rankings uses five indicators to assess quality. Education, research and citations each count for 30 percent, international position for 7.5 percent and 'industry income' for 2.5 percent.

WUR scores particularly highly in the areas of citations and external research

assignments, at 97 and 100 points respectively. The score for education is 49, for research 54 and for international position 82. WUR's rise up the rankings is thanks to higher scores for education and international position. The Netherlands scores well for a small country. Of all the European countries only the United Kingdom (29) and Germany (23) have more universities in the top 200. **Ⓜ HOP, AVE**

in brief

>> MOST SUSTAINABLE ENTREPRENEURS Kipster and Kromkommer

Two young companies, Kromkommer and Kipster, received the Mansholt Business Award for Sustainable Entrepreneurship from the University Fund Wageningen on 19 September. Kromkommer ('Crookedcumber') takes up the cudgels for 'misshapen' fruit and veg that ends up on the rubbish dump instead of the supermarket shelf. Founder Chantal Engelen aims to inform consumers about this form of food waste and motivate supermarkets to sell this produce anyway. Kipster is a poultry farm that puts the principles of circular agriculture into practice. It uses chicken feed made of waste from the food industry, and runs on solar power. The female chicks become layers while the males are no longer ground up but raised for meat. Kipster signed a contract with Lidl last year to supply Kipster eggs and meat.

Kromkommer founder Engelen and Kipster owner Ruud Zanders each received a cheque for 12,500 euros. **Ⓜ AS**

>> ART PROJECT Genes make music

You can't see what goes on inside a plant. But you can hear it. At least, an art project in the Forum called Bio Orchestra attempts to do so. The result can be viewed and heard for a month on the ground floor of the Forum. The project is a collaboration between molecular plant physiologist Sander van der Krol and Tom Kortbeek, the artistic head of KunstLab Arnhem. The 'orchestra' consists of plant trays full of thale cress at various stages of development: the seedling, rosette, flowering and withering stages. Each stage is characterized by certain genetic activity, and the artwork links that gene expression with tones and sounds. A gene such as TOC1, for example, plays a role in the plant's diurnal rhythm. The visitor gets to make music by pressing buttons and sliding knobs on panels. It is all a bit like a synthesizer. Van der Krol and Kortbeek will explain exactly how it works on Sunday 7 October during the National Science Weekend and the Campus Safari. **Ⓜ RK**



PHOTO: LIEVE DE KWANT

◀ The Bio Orchestra in the Forum

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Solar park

'NO SOLAR PARK ON HAARWEG! NO WAY!' says a sign on (you guessed it) Haarweg. Just in case the message isn't getting through, this is followed in smaller letters by: 'Protect the outskirts!' The sign has been there a while as a silent protest against the plan to place solar panels on seven hectares of WUR land.

I'm not sure what the status of the project is exactly and to be honest, I'm not sure it's much of a hot topic within the university. Sure, the student union has complained. They think the roofs of all the WUR buildings should be covered with solar panels first. But it's a subject that is rarely discussed during the coffee break, and never in terms of the fundamental underlying question: what role should the rural outskirts have if we really get going on the energy transition.

That is a pity but also understandable. Some people even see Leeuwenborch as the periphery of the university, which of course puts the Haarweg fields completely off the radar. Except for one day of the year. When the annual Earth Drilling competition is held in the field next to the planned solar park, the place is seething with people. So if whoever put up that sign wants to get lots of attention for their protest, they should seize their opportunity on Wednesday 10 October.

Anyway, it is worth taking a moment to examine the L-shaped area of grassland and the strip of maize stubble beyond. An insignificant-looking plot of land but the symbol of a debate that could do with broader involvement. **Ⓜ**

Vincent Oostvogels (23) is exploring the delicate interface between nature management and food production through his two Master's programmes, Forest and Nature Conservation and Animal Sciences



Lecturers protest about heavy workload 'WE ARE CONSTANTLY RUSHING'

There were protests throughout the Netherlands last week against the increasing pressure of work at universities. Wageningen too saw protests as part of the WOinActie (Universities in Action) week. 'We are doing twice as much work with the same number of people as 10 years ago,' said protesting lecturer Gerard Verschoor.

The nationwide protest movement WOinActie wants to reduce the pressure of work at Dutch universities so that students can get a better education. The movement wants the 'efficiency' cuts of 183 million euros to be scrapped and for government funding to be restored to the level in 2000 (which would mean 1.15 billion euros more every year).

Assistant professor of Sociology Verschoor ran round some of the university buildings with his students as a protest. 'We are always busy, we are constantly rush-



▲ Assistant Sociology professor Gemma van der Haar gives an open-air lecture as a light-hearted protest against workloads.

ing,' he told the students. 'You want a good education, but it's becoming increasingly difficult for us to deliver that.' WUR's lecturers are actually paying the price for their own success, says Verschoor. 'In the past 10 years, we have seen the number of students nearly double for the Master's pro-

grammes in Forest and Nature Conservation, International Development, and Development and Rural Innovation. In our chair group, we are doing twice as much work with the same number of people as 10 years ago. Teaching is suffering as a result.'

'The Netherlands has constant-

ly been cutting back on higher education over the past 20 to 30 years, whereas more and more people have been going on to university,' says Bram Büscher, professor of the Sociology of Development and Change. He and his colleagues are barely able to use their holiday allowance because that would leave them unable to get the work done. 'Of course science is a lot about your love of the subject but the current system allows less and less time for really profound study.' There wasn't even much time for organizing the protests. 'The FNV trade union gave us some help. They took over the coordination,' says Büscher.

'The situation is getting desperate at all Dutch universities,' continues the professor. 'We want to draw attention to that with these actions. This is the first step. But if it doesn't produce any results, WOinActie will turn to different kinds of protest, such as strikes.' **LZ**

FIRST COMPANY DAY GETS 400 VISITORS

Getting inspiration – that was the main reason for the 400 or so visitors to come to WUR's first Company Day on 27 September.

Managers, innovators and developers from companies large and small attended thematic sessions where they were updated on the potential applications and impact of big data, block-chains, climate-smart and circular food production, CRISPR-Cas, photosynthesis and precision agriculture.

Rudi Cartuyvels from the Belgian research institute Imec kicked off with a keynote speech about the relevance of nano-electronics for agriculture, the food industry and the healthcare sector. It was announced last month that Imec is planning a joint research centre with WUR and RadboudMC. Gelderland

province has been asked for a cash injection of 65 million euros. Provincial executive member Michiel Scheffer for the D66 party followed Cartuyvels with a speech praising the favourable climate for innovation and start-ups in the province. However, he was unable to confirm the grant of these funds.

There will almost definitely be another Company Day, says the organizer Sebastiaan Berendse, director of Corporate Value Creation. Perhaps the target next time will be not just companies but government organizations too, making it more of a Customer Day. Berendse found it striking that the session with the least pre-registrations, the presentation on photosynthesis, still got a very enthusiastic reception. Berendse: 'It's an incredibly very challenging field of research with a lot of opportunities for collaboration with companies.' **AVE**

◀ Organizer Sebastiaan Berendse (left) and keynote speaker Rudi Cartuyvels at the Company Day.



LANGUAGE LESSONS IN EXCHANGE FOR VOLUNTARY WORK

By linking free language lessons with voluntary work, the new Taalclub Wageningen aims to bridge the gulf between Wageningen residents and international students and PhD researchers. 80 people have already signed up.

The language club was student Anne Walther's idea. She notices that the average international student or PhD candidate has very little contact with the Wageningen population. 'I think it's a pity to see how people spend a few years here, studying or working, and then leave without ever having spoken to a Wageninger.'

Students live in a bubble, and international students doubly so, says Walther. 'Wageningen is a lovely small town. How can we build a community together?' She was pondering that question with Machteld

Speets of the Wageningen Volunteers Centre when the idea of the Taalclub was born. Language is a major barrier to contact between foreigners and Wageningers, but languages classes can be expensive, says Walther. By linking free language lessons with voluntary work, you get a win-win situation.

There is plenty of interest: a first post on Student Plaza brought Walther 80 sign-ups. Many of them were international students, but there were also PhD candidates and asylum seekers among them. The level of interest creates a 'luxury problem'. 'There isn't all that much suitable voluntary work,' says Walther. 'For most of the voluntary work you need a basic knowledge of Dutch.' But she sees a solution. 'If someone is a good cook, for example, he or she could give cookery classes at a community centre.'



▲ Anne Walther: 'It's a pity if people go home after a few years never having spoken to a local.'

From next week, Walther will be giving the language lessons herself with the help of Go Dutch!, a free online language module for students. The students form small groups that set their pace them-

selves. Once a week there is a contact hour with Walther, who will hold the classes in the Pomhorst community centre and Vreemde Streken café. **RK**

SIX NWO GRANTS FOR INTERNATIONAL RESEARCH

Six Wageningen researchers have been given grants by Dutch funding organization NWO to spend on their research within the Consultative Group of International Agricultural Research (CGIAR), a global platform for research on food security.

The recipients are Marrit van den Berg, Inge Brouwer, Erwin Bulte, Ruerd Ruben, Jeroen Groot and Marc Verdegem. NWO awarded seven grants, six of which went to WUR scientists. The seventh researcher has Wageningen roots too: Anton Vrieling, now an associate professor at the University of Twente, did two Master's and a PhD at WUR.

The researchers are being given more than 150,000 euros to collaborate with the CGIAR agricultural research institutes for a period of three years. The research propos-

als focus on fighting poverty, improving nutrition and food security and improving access to natural resources.

Jeroen Groot, a researcher at Farming Systems Ecology, has been given a grant by NWO to assess and harmonize the agro-ecological models used by various CGIAR institutes. The CGIAR institutes are therefore also financing part of Groot's research, which means he can devote all his time to this project over the next three years. Groot will still supervise a few Wageningen MSc and PhD students.

Marc Verdegem of Aquaculture and Fisheries will spend 40 per cent of his time for the next three years to collaboration with CGIAR in the ecological intensification of fish farming. That is an ongoing study that Verdegem is doing with WorldFish, one of the CGIAR institutes. **AS**

Earth

7 Oct	Campus Safari
10 Oct	Creative Innovation: Art meets Science: Erik Overmeire & Kasia Molga
15 Oct - 19 Oct	Science week 'System Earth'

You'll find everything about 100 years of WUR on www.wur.eu/100years

LEARN TO GET ALONG WITH WILDLIFE

We need to fundamentally change our approach to wild animals. Wildlife management should be based on getting along together rather than control. That means learning to think like animals, says Susan Boonman in her doctoral thesis *Rethinking Wildlife Management*.

Boonman says current wildlife management is inflexible, static and based on control. 'It's numbers policies founded on assumptions about the availability of food and risk of conflicts. That leads to a desired number of animals and anything above that gets shot. But boars, wolves and bears are not objects; they are individuals with brains and the capacity to learn. You can teach wild animals where they can and can't go.'

Boonman studied the management of wild boar in the Veluwe and black bears in the Rocky Mountains. Bears sometimes enter villages and houses in search

of easy-to-obtain food. According to Boonman, you can prevent that with simple measures. 'Make sure the waste is stored away properly, for example. Don't plant fruit-bearing trees in the middle of your town or village. In short, think like a bear.'

Or to put it in Veluwe terms, think like a boar. 'Wild boar like grass. You could cultivate grassland in certain areas where you want the boar to go. That would be appealing for both the boar and tourists. There is not a single universal solution. But we actually know far too little about wild boar. If we had more knowledge, we could key into their behaviour more specifically.'

Boonman says this requires a different approach first, one that is not based on culling and erecting fences. 'We need to discuss how we can let the wild animals live. It may not always be possible to avoid culling, but that should not be the starting point for a poli-



PHOTO: SHUTTERSTOCK

▲ Crop farmers are not always happy with wild boar. Simple measures can help, says Susan Boonman.

cy.' Boonman calls this dynamic wildlife management. 'Adapt to what nature does, and our response to that.'

Getting along with wild animals also requires an end to Dis-

neyfication, says Boonman. 'Wild animals are not Disney characters. They are wildlife and we should respect that. 'They are living, learning creatures, not cuddly objects.'

📍 RK

CONSUMERS PREFER LIGHT PRODUCTS IN BRIGHT PACKAGING

Light products are often presented in pale blue packaging. Not the best choice, discovered PhD candidate Irene Tijssen of Human Nutrition. Consumers associate pastel colours with health, but don't find them as appealing as bright colours such as red or orange.

In collaboration with the Netherlands Organisation for Scientific Research (NWO), Unilever and FrieslandCampina, Tijssen investigated how you can make healthy products more attractive, thus making the healthy option the easier option too. 'You can tell people what is healthy, but we know that they don't generally behave accordingly. So we especially want to see how we can

make sure people make healthier choices, without necessarily emphasizing the health benefits.'

Tijssen got participants to play a computer game in which they had to connect various colours with certain words with attractive and unattractive meanings. It came out that people found warm, bright colours more attractive. Tijssen also scanned participants' brains to see what happened there as they evaluated the packaging. 'We saw more activity in the reward centre in the brain when people looked at the packaging in warm, bright colours.' She also tested whether the packaging influences what people thought of the taste, but that turned out not to make a difference.

Tijssen has one reservation about the study. Most of the participants were Wageningen women whose health awareness is above average. 'Of course I would have preferred to have a more representative group, but I don't think that makes the results less valid. In fact, we would expect an even clearer effect. Because we think that people who are less health-conscious choose food mainly for its taste, and are therefore even more put off by products that are promoted as healthy, as they are thought to be less tasty. Whereas people who are already health-conscious are also influenced by other information on the label.' 📍 TL

◀ It turns out pale blue is not the best choice for light products.



TESTING GROUND FOR NATURE-FRIENDLY FARMING

On 26 September, WUR opened the Agro-ecology and Technology Test Location near Lelystad. The key question for this trial centre is how to create a form of arable farming that is nature-friendly, climate-neutral and productive.

WUR's new research centre combines studies of healthy soil management with the benefits of crop diversity in the fields. The centre wants to 'use the self-regulating capacity of ecology in agriculture,' researcher Wijnand Sukkel of the Field Crops department at Wageningen Plant Research told interested farmers and nature organizations at the opening ceremony.

WUR stopped deep ploughing nine years ago on part of the experimental farm on Elandweg in the Flevopolder. Instead, the scientists have been experimenting with superficial ploughing and non-inversion tillage. The main benefit is that the organic content of the soil has increased substantially. That is why the WUR arable farmers now need much less fertilizer to achieve the same yields.

The second theme for the research centre is making use of crop diversity. WUR uses mixed cultivation, with strips of potatoes, sugar beets, onions, carrots, wheat, clover and flowers. Such mixed cultivation is good for bio-

diversity because there is always food for insects. That means fewer diseases and pests because the pests' natural enemies are better able to survive. Yields do not suffer either, at least as long as you grow the right combinations of crops next to one another. That is one of the areas the applied research is concentrating on.

Dutch farmers are keen on monoculture, but mixed cultivation is more productive, argued Niels Anten, professor of Crop and Weed Ecology. A literature study showed that mixed cultivation needs 35 percent less land on average for the same yield. That is because the plants benefit from one another in obtaining nutrients. There are also fewer weeds, diseases and pests.

However, farmers cannot easily turn these benefits into profits. If each strip of land has a different crop, farmers can no longer use a standard approach to work the land, fertilize it, irrigate it, control disease and harvest. Each strip needs its own regimen. That is why GPS and precision agriculture are essential elements in agro-ecological arable farming.

Drones and robots can be used to assess the weed situation and do the hoeing. 'We don't want to go back to the days of the *Potato Eaters*,' said Anten, referring to Vincent van Gogh's painting from 1885. 📍 AS



PHOTO: ALBERT SIKEMA

▲ Researcher Marleen Riemens explains agro-ecological crop protection.

VISION

'Lots of battery eggs in pasta, bread and cakes'

Battery cages aren't allowed here for animal welfare reasons but increasing numbers of cheap battery eggs are being imported into Europe from Ukraine. Not only does this mean unfair competition for European poultry farmers, but European consumers are also eating more battery eggs than they realize, says poultry economist Peter van Horne of Wageningen Economic Research.



Why are imports from Ukraine increasing?

'The battery eggs and products made from battery eggs that are imported into the EU often come from the US and India. But Ukraine has become more important in recent years. Keeping chickens is really cheap for them because all the feed is grown there. Labour costs are also incredibly low and poultry farmers don't have to comply with strict regulations. As a result, Ukrainian eggs are 25 percent cheaper. On top of that, the egg prices were higher in the Netherlands in the first half of this year because of the fipronil crisis. So buyers have been looking elsewhere.'

Dutch poultry farmers are fed up.

'That is understandable. They have to stick to all kinds of rules on animal welfare, the environment and food safety, whereas other countries that don't have these rules produce cheap battery eggs and are still allowed to export to Europe. The EU realizes this is a problem and it uses import tariffs to protect the European market. But the EU also wants to trade with Ukraine and they agreed a free trade deal a couple of years ago. One of the agreements was that Ukraine would be allowed to export 3000 tons of eggs without import tariffs. In exchange, we send cars and machinery to them. As an economist, I'm in favour of free trade, but in the case of chickens and eggs this does not create a level playing field.'

Can consumers do anything?

'Ukrainian eggs are imported as egg products that are processed in sauces, pasta, bread and cakes, for instance. Consumers don't have a good overview of that, and you can't expect them to read every product label to see whether it contains free-range eggs. Retailers need to sort this out but it's tricky for supermarkets too with thousands of different products.'

📍 TL



GHANA IS NOT HELPED BY DIETARY GUIDELINES ALONE

More than half of the rural households in Karaga district in Ghana cannot meet their own needs for food and nutrients. Information about good nutrition is not going to help them as long as their access to food does not improve, concludes researcher Ilse de Jager of Plant Production Systems.

Dietary guidelines based on the local diet are rare in Africa: only 7 out of 58 countries have them. In order to establish guidelines for Ghana, De Jager studied the nutritional status of 329 children in the countryside in Karaga district. Forty percent of the children had stunted growth and suffered from chronic undernourishment. De Jager: 'We drew up nutritional guidelines based on the information gathered about local eating habits among these children – along the same lines as the Dutch pie chart of essential food groups.'

De Jager then looked at the extent to which households were capable of following those guidelines if they ate the produce of their own farms. 'People in this region depend on their own food production to provide for their food requirements and incomes.' Their main crops are maize, rice, black-eyed beans and yams. Very little fruit and vegetables are produced or consumed. De Jager noticed that many households did not manage to meet their energy and



▲ Ilse de Jager measures a boy's height in Karaga district of Northern Ghana.

nutrient needs with this production. Fewer than half of the households succeeded in meeting their needs for calcium, vitamin A, vitamin B12 and vitamin C.

On the basis of these results, De Jager concludes that simply providing information about good nutrition is not enough in Ghana.

'People need to have access to the recommended nutrients too, and that is why it is important to identify where the gaps are. Additional measures are needed in order to close these gaps, such as growing other crops or stimulating local markets so that people can have a more varied diet.' **TL**

MORE WIND IN THE CITY THAN OUTSIDE IT

It can be windier in a city than in the surrounding countryside, discovered PhD candidate Arjan Droste. He calls this surprising phenomenon the wind island effect.



The name is a nod to the already known heat island effect, through which a city is often hotter than the countryside. But does something similar happen for wind? That is completely contrary to intuition, admits Droste, who works in the Meteorology and Air Quality chair group. 'That can't be right, was my first thought when I saw the results of my model calculations. The average wind speed was higher in the city than in the countryside. Whereas the wind can blow where it wants in the country, with no buildings in

its way.' But it turned out to be right. And so what initially looked like an error provided material for an interesting paper in the latest edition of *Environmental Research Letters*.

Little is known about wind in cities. According to Droste, this is mainly because it is so difficult to measure wind there. 'Because of the buildings, nearly every location has its own wind speed. There is a lot of variation. And the wind speed varies at different heights as well.' Droste took a different approach to the problem. 'I made a straightforward set of comparisons which describe the atmospheric boundary layer, the lowest layer of the atmosphere, where our weather takes shape. I zoomed in on the way the

wind speed changes over time, both in the countryside and in the city.' And the unexpected result was the wind island effect. 'In the early morning it is not as windy in the city, but then it changes and the wind picks up in the afternoon.'

Droste reckons this phenomenon has to do with the interaction between the atmospheric boundary layer and the troposphere above it. 'At the border between the two layers, the air mingles and that speeds up the wind. That acceleration above the city is different to what happens in the countryside because the atmospheric boundary layer is broader above the city.' The effect is small but Droste believes it is significant for models that calculate urban air quality, for example. **RK**

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PROPOSITION

'The initial selection is based on gut feeling'

Scientific publication is like being on Tinder with the editors, says PhD candidate Yavanna Aartsma. The editors swipe you right or left based on the barest information.

'My husband and I have been together for 11 years so I don't have much personal experience of online dating. But I know people who do and I see similarities. When you submit a paper, the editor first has to decide whether it's suitable for the journal before it even gets sent for peer review. The problem is that those editors are often doing this essentially as volunteer work alongside their other jobs and they have very little time. More and more papers are being written but the journals and number of editors aren't growing at the same rate.

So editors plough quickly through the submissions and, like in Tinder, have to decide whether you advance to the next stage on the basis of very little information — your accompanying letter, keywords and possibly the abstract. That makes it a kind of gut feeling. I can't judge whether that's a good thing



Yavanna Aartsma will receive her PhD on 5 October. She investigated how plant odours in the landscape attract parasitic wasps.

for online dating, but it doesn't work for science. There's this idea that publishing is an objective process in which you are assessed on the quality of your research. But that's difficult if you never reach the stage at which your research actually gets read.

It also costs a lot of time because then you have to send the article to another editor. One of my papers was rejected three times without a review. I could tell from the general comments I got from the editors that they hadn't spent much time on it. Whereas the reviewers were really positive once it did get a peer review. In my opinion, learning how to get through the initial selection round is an important part of your development as a scientist. What I've learnt is that you need to take a good look at the journal's scope and spend a lot of time on the accompanying letter. The fact that a journal has previously published papers similar to yours is not a good indicator of success.' **TL**





THE CABINET'S CIRCULAR AGRICULTURE VISION

Minister of Agriculture Carola Schouten presented the new agriculture vision at the beginning of September, on behalf of the cabinet. In this vision, Dutch agriculture and horticulture hold on to their 'tone-setting global' position while at the same time addressing 'several major societal challenges': soil depletion, loss of biodiversity and climate change. The cabinet opts for 'a transition to circular agriculture by 2030.' 'This means generating as little waste as possible and keeping emissions of harmful substances and losses of resources and of end products to a minimum.'

Five experts on implementing government's vision on agriculture

How do we close the cycles?

Dutch minister of Agriculture Carola Schouten wants the Netherlands to become a pioneer of circular agriculture. Her vision is still very broad-brush, though. *Resource* asked five Wageningen experts to fill in the details from the point of view of their field of expertise: soil, crop farming, livestock farming, nutrients and the economy.

text Albert Sikkema illustrations Jeroen Murré

More organic matter in the soil

Lijbert Brussaard, emeritus professor of Soil Biology at WUR, cites the cabinet's vision of circular agriculture with approval: 'The soil forms the basis for circular agriculture. A soil that contains plenty of organic matter is better able to absorb water and to withstand drought. Such soil can also retain more nitrogen and minerals, offers a richer soil life and contributes to healthy crops.'

The amount of organic matter is indeed at the heart of good soil quality, says Brussaard. Because organic matter provides nutrients (good for crop production), carbon storage (good for the climate), and a buffer against drought.

If farmers want good quality soil, they must adapt their cropping plan, adds Brussaard. 'You capture carbon in the soil with deep-rooted crops such as cereals, not with shallow-rooted crops such as potatoes. Arable farmers should therefore include more cereals in their cropping plan. Another good option is to

plant more deep-rooted plants on the same plot.'

It also helps to plough less and make more use of non-inversion tillage, which prevents the stored carbon disappearing into the atmosphere as CO₂. An added advantage of ploughing less is that the farmer works the land less often with heavy tractors that damage the soil structure. These measures help you create a good basis for circular agriculture, says Brussaard. The second important point for him is to link crop farming with livestock farming, as a way of making sure manure is better used. 'But then the crop farmer has to be able to trust the quality of the manure. Liquid manure is not good enough, composted manure with straw is much better for the soil.' To be able to supply good manure, it is better to separate the faeces and urine of the livestock at source, in his view. The urine can be spread on the land as a fast-action sub-

stitute for artificial fertilizer, while the fibre-rich solid waste is suitable for building up organic matter in the soil. 'I think you can develop cycles if buyers and government set criteria for organic waste in the chain, with a view to optimum usability.'

Finally, Brussaard envisages a circular agriculture system that is fossil fuel-free. 'Agriculture is using much less artificial fertilizer now than 20 years ago, but does still use a lot of chemical pesticides.' Brussaard thinks we need to get rid of these, which requires more knowledge of the interactions between crops and biological pesticides.

'For good quality soil, farmers need to adjust their cropping plans and plough less'

Lijbert Brussaard, Emeritus professor of Soil Biology



Feeding livestock on what's left over

Imke de Boer's chair group, Animal Production Systems, used to make footprint analyses to measure the external impact of livestock farming. One of the outcomes was that eating chicken is not as bad for the environment as eating beef. However, that conclusion ignored the fact that chickens eat grain – which is suitable for human consumption too – while cows eat grass, which is not.

For this reason, De Boer's group switched to the food systems approach developed by researcher Hannah van Zanten. That approach takes three important conditions as its starting point: 1. Arable land is used for the pro-

duction of plant-based food for humans and grassland for the production of livestock feed. 2. Waste flows are primarily used for enriching the soil and feeding animals. 3. Aquatic crops such as seaweed are used at all levels of the food pyramid.

Just as in the old days, in the food systems approach pigs and chickens eat up our leftovers, but through a more modern and large-scale system, says De Boer. This approach gives the livestock sector a sustainable position in a circular agriculture system. In fact, this form of livestock farming makes less demand on resources than a vegan diet, De Boer's group calculated, because a vegan diet does not make use of waste flows from the food industry for food production.

A food systems approach would restrict numbers of production animals, adds De Boer. Using grasslands and waste flows, you can produce about 23 grams of animal protein per person per day. 'In that scenario, we in Europe would have to halve our production of animal protein, while in Asia there is scope for eating slightly more animal products.'

A key bottleneck for circular livestock farming is that many waste products in the food chain are not allowed to be used in livestock

feed. Feeding kitchen waste and food waste to cows, pigs and chickens has been banned since 2003. Animal meal – which is made of the carcasses and other remains of animals – is banned for use in feeds, in part because of the risk of BSE (mad cow disease). That legislation should be reviewed, thinks De Boer. 'In Japan they do allow this; that country recycles 35 percent of its food waste. If you heat this waste properly and only feed it to pigs, it is safe and highly nutritious as an alternative to maize and soya.'

'If you heat food waste properly and only feed it to pigs, it is safe'

Imke de Boer Professor of Animal Production Systems



Fair prices for agricultural products

With circular agriculture, you try to make production circular, with a closed cycle and no leaking of material, says Krijn Poppe, business developer at Wageningen Economic Research. 'At present, those materials do leak out because they are extremely cheap. Artificial fertilizer has become so cheap that animal and human manure no longer has the value it once had. Food has become so cheap that people don't feel it's a problem to throw out quite a lot of it. An economist thinks those low prices are fine; that's what has made us so prosperous. But

there is an economic problem because the market doesn't automatically function well.' Resources get exhausted in the long term and may be irreplaceable, says Poppe. Producers who use phosphate, produce waste and emit greenhouse gases harm the environment, but nobody pays the bill. 'To some extent you can solve this problem by improving the way the market functions: ensure that resources and waste materials that are wrongly priced fetch a good price. That way livestock feed manufacturers can decide to introduce a deposit system on minerals in the feed, motivating farmers to deliver the liquid manure.'

Poppe thinks you should stimulate the forma-

tion of a cycle economically, using pricing. 'What complicates it is that those prices are no longer a good indicator of our behaviour. City trips with Ryanair and a week's holiday in Thailand are far too cheap. So we invest in all sorts of sustainability labels. I think we should recalculate the cost price of agricultural products, this time the sustainable prices.'



'Materials do leak out at present because they are extremely cheap'

Krijn Poppe Business developer at Wageningen Economic Research



Returning plant waste to the land

For circular agriculture you need a broad perspective on production ecology, says Martin van Ittersum, professor of Plant Production Systems. You have to look at the total production of crop systems and biomass on the available land. So this is not just about the amount of corn per hectare, but also about the plant's leaves and stalks. What is more, you shouldn't look exclusively at uniform crops, but also at mixed cropping, with combinations of crops, such as wheat and legumes. These can be highly productive farming systems, says Van Ittersum.

You should then look at the growth factors from a circular perspective, says the professor. The main restriction in circular crop-farming systems is the availability of nutrients, especially if you cannot or don't want to use artificial fertilizer. How can this kind of farming still be made productive? His answer: first and foremost with the aid of all the waste flows from the food system and of nitrogen-binding

plants such as pulses.

In the north of the country, a foundation for experimental farms (*Stichting Proefboerderijen Noordelijke Akkerbouw*) in Kollumerwaard is conducting an interesting experiment on a crop farm with no external inputs. All the nutrients come from the crops themselves, with no livestock involved. After mowing legumes and other green fertilizer crops, the waste can be spread on the land immediately. 'This lovely experiment, at the cutting edge, shows what is possible in circular agriculture, as well as what the limitations are. It is totally clean, and efficient too, but the farm's yield is only half that of regular farms in the same area. Nitrogen is the main limiting factor.'

A totally closed cycle does not seem possible for nitrogen, says Van Ittersum, but it also depends on the amount of organic waste that comes from the food industry. We should first use those waste flows to improve the soil quality, he thinks, and only then should they be

processed into feed for livestock production – which in turn provides crop farms with nitrogen.

'We should mainly use waste flows to improve soil quality'

Martin van Ittersum Professor of Plant Production Systems



Isolating nutrients from animal manure

One aspect of circular agriculture is that manure changes from a waste product into a valuable resource. This makes new demands of agriculture, says Oene Oenema, special professor of Nutrient Management at WUR. 'Livestock farmers should start separating the types of manure on the farm, so as to provide specific fertilizers. For example: organic crop farmers often face a shortage of potassium in the soil. Regular crop farmers deal with this by using artificial fertilizer – a great product because you can apply specific nutrients. If we ban artificial fertilizer, livestock farmers will be able to provide crop farmers with potassium from manure. Potassium is in the urine. So separation should be lucrative for livestock farmers.'

Another aspect of circular agriculture is the reduction in imports and exports of manure, livestock feed and food, and the closing of cycles at the national or regional levels. This can have major consequences. Under current circumstances, for example, if the Netherlands stopped exporting manure – currently one quarter of all the manure is exported – we would have to reduce livestock numbers by one quarter to avoid a manure surplus, says Oenema. But, he adds, if we ban artificial fertilizer at the same time, the demand for animal

manure would increase and there might even be scope for more livestock.

A factor for livestock feed is that much of the feed the Netherlands currently imports is made of waste products. 'Feed manufacturers are very smart about combing the world market for the ingredients for good, cheap livestock feed. They use over 20 different waste products, such as orange peel and palm kernels. And they process it all into high quality feed. That is a circular economy but on a global scale. How are we going to deal with this in the future?'

The other important component of our livestock feed is imported soya. We can now grow that soya in Europe too, says Oenema, but that is more expensive so the price of the feed goes up too.

Growing 'Nethersoya' has implications for crop farming. 'Maize and soya beans are useful feed crops, but you don't want to end up with half the Netherlands full of maize and soya.'

Altogether, Oenema thinks we are heading for an agriculture system which imports less livestock feed and grows more feed in the Netherlands, which would mean all the manure can be spread on the land, without polluting the environment. 🌱



'Livestock farmers should separate the types of manure on the farm and supply specific fertilizers'

Oene Oenema Special professor of Nutrient Management

ELEVATED

'I can do better,' thought Biology student Bas Nooren when he saw a home-built penny-farthing on the Internet. The result is this vehicle, which you might come across in Wageningen. Nooren built it by welding together two old bike frames. Only the bicycle fork is new. 'It's made from two central heating pipes from the DIY store'. With a bit of imagination you can see the penny-farthing, the late-19th-century bicycle with a huge front wheel and small back wheel. Incidentally, Nooren says quite openly that he pinched the old bike frames. But it was 'ethically sound' theft: 'Those bikes had been left rotting away in Haarweg for ages.'

📷 RK, photo Guy Ackermans



Want to see a mega-bike in action?
Watch the video at resource-online.nl

Feted soil scientist wants more attention paid to practice

‘Make sure science doesn’t overdo it’

Soil science isn’t finished with Johan Bouma (77). The emeritus professor recently received three important prizes and he is a popular speaker at conferences. He likes to use these opportunities to impress on scientists their responsibility for what happens to their knowledge. ‘We need to offer a potential course of action.’

text Roelof Kleis photo Guy Ackermans

Last month, Johan Bouma experienced his finest hour at the annual meeting of the International Union of Soil Sciences in Rio. The Wageningen emeritus professor received the Dokuchaev Award, named after the Russian Vasily Dokuchaev who laid the foundations for soil science. Soil scientists see this award as the Nobel Prize of their profession. Just last year, the European Geosciences Union awarded Bouma the prestigious Alexander von Humboldt Medal. And the year before that, he was given the President’s Award by the Soil Science Society of America.

When asked, Bouma is quite prepared to show his prizes. It is the day after a special symposium that was organized on campus to honour the prize winner. But that does mean he has to pop upstairs in his house in Rhenen. There is nothing in the living room that refers to the accolades he has received. However, there is a soil profile on the wall taken from where his children were born in Wisconsin, where he worked for six years after doing his PhD in Wageningen. And a soil profile near the front door of his own place of birth, Vrouwenparochie in Friesland.

What does the Dokuchaev Award mean to you?

‘Well, it’s kind of the end of the journey. I’m about to turn 78. But of course it’s nice to get it. Although I want to emphasize that it’s *our* medal, not *my* medal. We did the work as a

group. That may sound a bit soft but it is true and I mean it too. We should be proud of ourselves as Wageningen scientists.’

There is more interest than ever in soil. Why is that?

‘It’s becoming increasingly clear that you can’t ignore the soil. There has always been a lot of research on plants and water but what matters is the entire system of soil, plants, water and atmosphere. One third of the world’s soil is severely degraded and that has a negative effect on the whole system. That’s a major problem.’

‘We need to apply the existing knowledge first before embarking on new research’

Is that because of a lack of knowledge?

‘No, in many cases we know quite well what we should be doing. Take erosion, which we have been researching for a century. We have the knowledge of how to combat erosion but it isn’t being applied. Which doesn’t mean we don’t need more research, because the web of life is incredibly complex. So far in the past 100 years, we have only scraped away and studied a thin outer layer. Very successfully, it should be said: we certainly don’t need to be ashamed of what

we’ve achieved. But we need to apply the existing knowledge first before we embark on new research.’

What does that mean for Wageningen?

‘The research culture needs to change. At present, the approach is often linear: there is a question, money is spent doing research, and this produces a solution. But you can’t achieve the UN’s sustainability goals through individual disciplines. The system of soil, plants, water and atmosphere requires more collaboration with other disciplines. It is also really important to get the stakeholders involved in the entire process. It’s not about *us* solving *their* problem, it’s our joint problem that we need to jointly research in the knowledge that there are no direct solutions.’

The efforts by WUR units to collaborate more as One Wageningen aren’t enough?

‘One Wageningen is a good idea but it is mainly geared to internal cooperation. But you can achieve that most effectively by going out into the field and tackling problems jointly with stakeholders. Stakeholders have become assertive and there are no simple solutions for sustainable development goals. What we should do is offer a potential course of action. Anything is possible in theory but we must say what the consequences are for the economy, society and the environment. Then people can make choices. That keeps the process transparent.



Johan Bouma:

‘Talking to stakeholders and farmers costs loads of time. Researchers don’t have that kind of time.’

Currently, decision-making is too often a question of backroom deals and bargaining.’

Can this be combined with the standard PhD project?

‘Interdisciplinary research and talking to stakeholders and farmers costs loads of time. Researchers don’t have that kind of time. Especially not PhD students, who have to produce their articles in four years under the current regime. Researchers should be given more time to reflect on matters. Wageningen is thriving and I’m proud of that, but looking to the future, I say we should watch out that we don’t overdo it.’

You are still active in your field, with regular publications. Will the work never stop?

As a scientist, you have a shelf life and you need to be very aware of that. But I have a lot of contacts abroad and I’m often asked to give keynote speeches. So it would appear I still have something to say. But that’s mainly about how we should act as a discipline in the broader context, on how to tackle interdisciplinary research and collaboration with partners in society. I definitely don’t keep up with the details of what’s happening in my discipline any more. That’s for the next generation. 🌱

GEODERMA HONOURS BOUMA

At the end of the year, the scientific journal *Geoderma* will be publishing a *Festschrift* (celebratory special issue) to mark the important soil science prizes that emeritus professor Johan Bouma recently received. The celebratory issue will contain papers by former PhD students of Bouma on their recent research. They include Wageningen professors Coen Ritsema, Arnold Bregt and Jan-Willem van Groenigen, the current chairing editor-in-chief of *Geoderma*. The topics range from sampling methods for digital soil mapping to an analysis of the suitability of soils in sub-Saharan Africa for rice production.

Groups get extra cash IS IT ENOUGH?



Chair groups are to get 40,000 euros extra a year from 2019, on top of the additional 25,000 they are receiving as of 2018. The money is intended for coping with work pressure and growing student numbers. Can that be done for 65,000 euros? And how do the groups plan to spend the extra cash?

text Roelof Kleis and Tessa Louwerens illustration Henk van Ruitenbeek

René Wijffels



lecturers. Of course the additional budget for financing

Bioprocess Engineering chair holder
‘The teaching workload has increased enormously. It is also important that tenure track staff still have time for proper research. We’re trying to manage the increase in the teaching workload by appointing

that is very welcome. We’ve appointed 1.6 lecturing FTEs in the past 18 months. They devote all their time to developing, preparing and delivering education. The idea is that this will prevent any further increase in the teaching workload for tenure track staff. **The money isn’t enough to cover all of those extra costs. But we’re also getting more income for education because the number of students is increasing.**’

Ellen Kampman



Nutrition and Disease chair holder

‘In Human Nutrition, five chair groups have joined forces in a cluster with a shared administration. We share the teaching tasks proportionately, which lets us pool resources. You can’t do much with this money

in terms of extra research and we will mainly be spending it on teaching. **We are considering additional temporary FTEs to refresh and improve the existing courses.** That’s currently being done for the Bachelor courses, and the Masters’ will follow. We will still have to pull out all the stops as a group in these challenging times for science and the university.’

Vincenzo Fogliano



Food Quality and Design chair holder

‘It is surely laudable that the Executive Board has decided to invest further in education. All the chair holders in the Food Technology and Food Quality Management programmes are hiring more staff and

investing in e-learning tools. In this way I feel we are managing to accommodate the growth in student numbers without compromising the quality of the courses and especially of the experimental graduation thesis. It is worth mentioning that AFSG added 250,000 euros to the money from the board. These funds were allocated to five different projects to support the efforts of our teachers. **I think the money is sufficient at the moment. What is more problematic for us is the lack of physical space,** like student desks, laboratories and meeting rooms. There is a plan for the next three years but we really look forward to having the new teaching building, which will solve this structural problem.’

Frits Mohren



Forest Ecology and Forest Management chair holder

‘This is the support we have long been waiting for. Teaching is really under pressure due to the growing student numbers. Our numbers have been growing annually by 7 to 8 percent for years. We now have around 90 first-years, whereas the teaching system is set up for 50 to 60 stu-

‘This is the support we have long been waiting for’

dents. You can cope with that for a couple of years by shifting up a gear. Lecturers do this because they are incredibly motivated, but they are being overtaxed. **That’s why we will use the extra money to appoint someone who can help change the teaching setup in a way that permanently reduces the burden for our lecturers,** for example by setting up courses differently or examining students more efficiently. I’d really like an extra lecturer but this will relieve things a bit too. So I’m really pleased with this.’

Geert Wiegertjes



Aquaculture and Fisheries chair holder

‘Aquaculture and Fisheries will be using the extra cash to expand both the permanent academic staff and the support staff, alleviating the situation directly for the current staff

as a result. This will involve capacity for both teaching and research. **Of course the money is not enough to cover all the costs but it is enough to take the gamble and make the decision to take on more permanent staff.** It’s certainly not merely a drop in the ocean and because it’s a long-term contribution, that drop won’t just evaporate either.’

Paul Struik



Crop Physiology chair holder

‘Together with Professor Niels Anten’s Crop and Weed Ecology group, we form the Centre for Crop Systems Analysis. **We pooled our money and used it to appoint a tenure track scientist.** We are doing this in anticipation of the retirement of a few people in the group over the next few years. I myself will be retiring at the end of 2021, for example. At present, the new appointment means additional teaching capacity, although of course a tenure track scientist also does research. We have several subjects where there has been a big increase in the number of students. Practicals for 200 students, for example, where it really is all hands on deck. We are also feeling the pressure in the supervision of thesis students. We have introduced a thesis ring to cope. The workload is quite high. But I’m not going to dramatize the situation. I also remember the days when I was lecturing to two students and one would call the evening before to cancel.’

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Environmental Technology looks at three promising methods

How can you remove meds from the water?

Fish that change sex, kidney failure in vultures — medicine residues in the environment can disrupt ecosystems. Alette Langenhoff is now heading an investigation in the Environmental Technology chair group of three new methods to remove the harmful substances.

text Albert Sikkema photos Guy Ackermans

A proportion of the medication people take disappears down the toilet via their urine and faeces. The compounds get into the sewage and end up in the surface waters, where they create a problem, says Alette Langenhoff, who is leading the research on this issue within the Environmental Technology group. The medicine residues pose little threat to the health of humans — the concentrations in the drinking water are too low — but they do harm the environment. For example, oestrogen from contraceptive pills makes

some fish change sex. And Indian vultures suffered kidney failure after they had fed on dead cows that had been treated with the painkiller diclofenac.

MANGANESE

That is why it is important to remove drug residues from the environment. Water boards in particular are interested in technologies that enable this (see inset). Environmental Technology has 12 PhD candidates who are researching promising methods with funding from WUR, water boards, engineering consultancies, drink-

‘Our marsh system works, but it is still a black box’

▲ In this test setup behind Axis, PhD candidate Yu Lei is finding out whether plants and bacteria can remove medicine residues from water in an artificial marsh.

ing-water companies, the research funding organization NWO and the European Union. Three of these students completed their PhD research in the past six months. Langenhoff explains their findings.

PhD candidate Wenbo Liu initially wanted to use bacteria to break down residual diclofenac in wastewater, but the results were disappointing. One plus point was that the control test that included manganese worked better than expected. Manganese ions with a positive charge (Mn^{+}) reacted with the diclofenac to produce harmless compounds. At the same time, the Mn^{+} was reduced to Mn^{2+} . Liu then investigated whether he could oxidize the manganese compounds back to Mn^{+} with the help of bacteria, so as to create a circular purification system. Liu is now working on this as a postdoc in China. ‘It looks promising but it’s not yet an application,’ is Langenhoff’s assessment.

MARSH TUBS

The second PhD candidate, Yujie He, built a lab model of a marsh system with aquatic plants and sediment. She then fed it with water containing a mix of seven medicine residues. Afterwards, she examined the biological processes in the artificial marsh. She discovered that UV breaks the medicine residues into smaller fragments. The medicine residues and breakdown products are then taken up by the aquatic plants, where enzymes convert them into harmless compounds. Meanwhile, bacteria in the water and sediment do the same with the drug residues that are still floating around freely.

The marsh system works, but it is still a black box, concludes Langenhoff. A new PhD candidate, Yu Lei, will now be testing marsh tubs with different plants and sediments to see precisely which plants and bacteria do the job. She hopes this will let her optimize the removal of medicine remains. The *Vallei en Veluwe* water board, one of the organizations funding the research, is supplying water from its purification plant for the tests on Wageningen campus. Langenhoff believes such a ‘constructed wetland’ would be suitable for the post-purification of water from a purification plant. ‘Such wetland systems already exist, for example for fixing nitrogen and phosphate, but we want to use them for medicine residues too.’

THREE-PHASE PURIFICATION

The third PhD candidate, Arnoud de Wilt, tested a combination of biological and physical chemistry methods. First he used a biological reactor to filter organic waste from the wastewater. Then he used ozone to destroy the structure of the drug residues, followed by a third phase in which bacteria were used to break down the resulting fragments.

This project is also getting a follow-up. The financier HaskoningDHV, which has since taken De Wilt on as an employee, sees a future in it; the company wants to develop the process further and scale it up for practical application. The new WUR PhD candidate Koen van Gijn will now be examining how much ozone is needed, how fast the wastewater can be sent through the three-phase purification and how he can optimize the biological reactors.



▲ Research leader Alette Langenhoff expects there will be properly functioning systems for medicine elimination in five to ten years.

INNOVATIONS

Langenhoff has spent the past six years on removing drug residues from water. This topic is unusual, she says, in that companies took the lead in funding the research and the government is now following. She expects the first effective and affordable systems for medicine decontamination to be on the market in five to ten years. And until then? ‘There are installations that can capture a lot of medicine residues using ozone and activated charcoal but they are expensive and inefficient. If we had to immediately convert all water purification plants to use these systems to prevent any medicine residues ending up in the surface water, the general public would have to foot the bill. That’s why our clients want innovation.’

IT’S UP TO THE WATER BOARDS

In the Netherlands, the water boards are in charge of the water purification plants and the surface waters. The purification methods they use at present don’t let them break down all residual medicines. That is why the water boards are looking for additional purification techniques, so that in future they will be able to minimize the undesired ecological effects of the drug residues and prevent the source of our drinking water from containing large amounts of residual drugs. The Ministry of Infrastructure and Water Management and the Water Top Sector recognize the importance of this and are providing grants for the development of innovative technology. WUR and the engineering consultancy Royal HaskoningDHV are currently using some of this money to turn a purification method that Arnoud de Wilt developed as a PhD candidate in Wageningen into a marketable product. De Wilt, who now works for Royal HaskoningDHV, expects the technique to have reached the pilot stage in two years.



'The open Master's is like getting a bespoke suit'

Create your own degree

Wageningen University is known for its flexibility: there are many optional courses in addition to the compulsory subjects. But a lot of students don't realize that you can also put together your entire Bachelor's or Master's yourself. Two students talk about their experiences with an open degree programme.

text Eva van der Graaf illustration Geert-Jan Bruins

'I LIKE A BIT OF LONELINESS'

David de Winter first heard about the open MSc programme during his introductory interview with his study adviser at the start of his Master's in Climate Studies. He had previously done an open programme in Utrecht in his Liberal Arts and Science Bachelor's. 'Flexible' is a better word, says De Winter, because you are not entirely free to choose what you want (see inset).

It did not take De Winter long to decide to go for the flexible Master's. 'I soon got interested in education and transformational learning processes and I saw possibilities for putting together a Master's on that topic in the Education and Learning Sciences chair group.'

It was not difficult for De Winter to create his own Master's programme because of his experience with his Bachelor's. 'In my Bachelor's degree, I took courses at different universities. That was much more complex than this Master's.' De Winter thinks his positive experiences with a custom-made degree are down to his self-reliance and preference for reflection. If you have these qualities, you can

choose an open programme that fits 'like a bespoke suit', he says. 'That feels so good!' He is not worried about his options after he graduates; he hopes to create them himself as an 'autonomous researcher and designer'. When asked whether it is lonely doing a degree no one else is doing, De Winter replies: 'I don't feel I'm excluded from a group because I'm doing a non-standard degree programme. And I like a bit of loneliness.'

David de Winter's tip

'It helps if you enjoy wading through study guides.'




'IT LETS YOU DETERMINE EXACTLY WHAT PATH YOU TAKE'

With a Bachelor's in Landscape Architecture, Bart Mesman started on the Earth and Environment Master's. When he discovered he wasn't that interested in modelling, he had a chat with his study adviser. She told him of the option of an open Master's. 'I wanted to combine my knowledge of Landscape Architecture with hydrology. I had already completed most of the hydrology courses by then and had chosen all communication courses for my optional subjects, so I was subconsciously already compiling a kind of open Master's.'

Mesman is pleased that the option of an open Master's was mentioned in that chat. 'I put together my own programme in which all the courses are geared towards the same goal: real expertise in the disciplines I hope to end up in later.'

Because he was always taking a number of subjects in various chair groups, Mesman was able to 'make friends everywhere'. 'I made some good groups of friends that I'm still in contact with, even though I haven't been on the same course with them for a year now.'

Mesman thinks science benefits from a multidisciplinary perspective. 'Sometimes lectures cover topics that can be interpreted in a number of different ways. The standard approach now is for a lecture on hydrology to be based on knowledge about water but it was even more interesting for me because I could see how to use that knowledge in spatial designs.'

For Mesman, the open Master's is a way of 'determining exactly what path you take'. But that doesn't mean you have to find out everything yourself. 'I asked for — and got — loads of help, especially from my study adviser.' 

Bart Mesman's tip

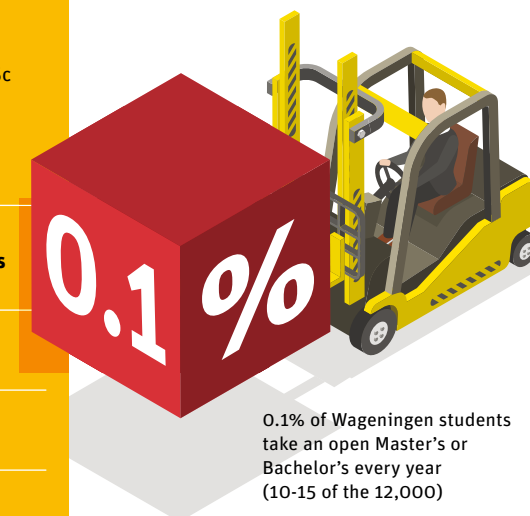
'When drawing up your programme, check immediately whether the courses you want to do clash. If you find that out later and have to drop a course, your programme has to get reassessed by the Examining Board.'



A TAILOR-MADE DEGREE IN FIVE STEPS

If the available degree programmes don't fit neatly with your interests and plans for the future, an open BSc or MSc programme could be the thing for you. This is how to go about it:

- Step 1** Discuss what you want with your study adviser.
- Step 2** Put together a degree programme with your study adviser or a student counsellor. **Note: the programme has to satisfy a whole load of requirements, designed to make sure it constitutes a serious degree.**
- Step 3** Use SPA (Study Programme Approval) to submit your degree programme to the Examining Board along with a letter explaining why you want to do an open degree.
- Step 4** Got approval for your programme? Start studying!
- Step 5** Receive your degree certificate. It will show the name of the degree closest to your programme, with the words 'free bachelor' or 'free master' below.



0.1% of Wageningen students take an open Master's or Bachelor's every year (10-15 of the 12,000)

COATING

Researchers at Columbia University have developed a coating that cools houses. The polymer forms an ultrathin, porous, foamy layer that reflects light and radiates heat instead of absorbing it. The stuff can be dyed any colour. Tests show that it makes a difference of 3-6 degrees compared with the ambient air temperature. So we'd better spray our houses next summer.

QUESTIONS (1)

Men ask 2.5 times as many questions after a scientific presentation as women, shows a study by the University of Cambridge in 10 countries. Women are hesitant to ask questions, as has also been shown by surveys among academics. According to the researchers, they often think they are not clever enough, or they are daunted by how knowledgeable the speaker is.

QUESTIONS (2)

The question discrepancy gets smaller the more time there is for questions. It also makes a difference if the first question is asked by a woman. And women ask female speakers more questions than male speakers. Speakers or moderators should bear these things in mind, say the researchers. They reckon this could help women break through the glass ceiling in the sciences.

ALIEN

Phosphate, an important building block in DNA, cell membranes and the energy carrier ATP, may come from outer space. Researchers at the university of Hawaii have proven that phosphine in ice cores of water, CO₂ gets changed into phosphates under the influence of cosmic radiation. Meteorites contain such ice cores. Our phosphorus chemistry, and thus life itself, could therefore be of alien origin. We are all aliens.



Idealis to charge registration fee

From January 2019, student accommodation provider Idealis will be offering rooms via ROOM.nl rather than its own website. Registering with Idealis was free but it will now be charging a one-off fee of about 35 euros. The advantage is that you can build up more registration time and take it with you.

New rules are being introduced along with the new system, says Hellen Albers from Idealis. 'You can register with ROOM.nl from the age of 16 so you start accumulating waiting time straightaway. In the current system, future students can only register from 1 January of the year in which they start their degree.'

This is handy for people who don't yet know where they will be studying: ROOM.nl also has rooms in Amsterdam, Leiden and Deventer, and there are plans to add Utrecht, Zwolle and Tilburg to the list. 'So it's a national platform and you also accumulate waiting time in all those other cities. That offers pos-



PHOTO: AART:JAN VAN DE GLIND

sibilities if you decide to do your Master's in a different city, for example,' says Albers.

Idealis's current system is provided by NCCW, a company that produces IT solutions for housing corporations. 'We are the last people to still be using this system, which means it is no longer viable for NCCW. So we had to look for an alternative. ROOM.nl had just come on the market and we thought: if we join in, we won't have to reinvent the wheel,' says Albers.

Albers offers reassurance that little will change for the current Idealis clients. 'No one who is already registered with us or renting will pay for the transition. They will also be able to take their registration period with them. Incidentally, you go back to the bottom of the list when you get a room in our current system, whereas ROOM.nl keeps your initial registration date. That will make moving again easier.' **LZ**

Milestone: 50,000 WUR alumni

In July, Eline Suijten (21) completed her Bachelor's in Biology, becoming WUR's 50,000th alumnus in the process.

The number of degrees per academic year is growing in step with the university. While 1297 degrees were awarded in the 2004-2005 academic year, there were 2946 degrees — over two and a half times as many — in 2016-2017. So it is unlikely to take another 100 years before the 100,000th student graduates. Suijten did her Bachelor's in three years. 'Zero resits, I passed everything first time.' She cites concerts with De Ontzetting,

where she plays flute and piccolo, and her time with the strength sports club Wageningen Beasts as the highlights of her student days in Wageningen. 'I had a really great time at university and got to know lots of lovely people,' says Suijten, who now lives in

Arnhem. 'Lots of my friends live here so I'll definitely be returning regularly.' Suijten is currently taking a gap year in which she will work and figure out what her next step should be. **LZ**



PHOTO: GUY ACKERMANS

Degrees for first 'online' students

The first four students who took an online Master's at WUR have now graduated. They received their degrees this week. They see the ability to combine a study with a job as the main benefit of this new degree option.

After her degree in Nutrition and Dietetics at Nijmegen, Milou Oosterwijk felt she was not yet finished with studying. 'I was already interested in epidemiology and I could choose between the regular Master's in Nutritional Epidemiology and Public Health at Wageningen and the online variant. I chose the online degree as that lets you work and build up experience at the same time.'

Jeroen Vermue went for an online Master's for similar reasons.

He works for a plant breeding company. 'One of my colleagues did the regular Plant Breeding Master's. At one point he had to go to the university three mornings a week for courses. That is difficult to combine with a job.'

The workload for the three on-

lyst for a pharmaceutical company for 28 hours a week and started the Plant Breeding Master's at about the same time. 'I was working two full days and three half days at the lab. On those half days, I'd study in the morning and work in the afternoon. Plus a day on



▲ Milou Oosterwijk, who did the online Master's in Nutritional Epidemiology and Public Health.

'You don't get the contact with other students but you have a lot of freedom instead'

line Master's that WUR currently offers (Plant Breeding, Food Technology, and Nutritional Epidemiology and Public Health) is about 20 hours a week and the programmes take three to four years. Iris Visscher discovered this option while she was applying for jobs. She found a job as a lab ana-

some weekends and the occasional evening.'

You need discipline to do an online Master's, say the brand-new alumni. 'It is largely self-study,' says Oosterwijk. 'You don't get the contact with other students, but that's your choice. You get a lot of freedom instead.' Con-

tact with the teachers is digital too. That went well, says Vermue. 'I got feedback quickly and felt I was getting attention.' **LZ**

MEANWHILE IN... THE UK

'Everyone is kind of confused at the moment'

Two years after the UK announced its withdrawal from the European Union, the British prime minister Theresa May published a proposal for a Brexit deal. This includes free trade for industrial and agricultural goods, as well as no hard border between Northern Ireland and Ireland. The plan was recently rejected by EU leaders, leaving the British government in crisis. Marcus Betts is tired of all the talk.

'When the referendum happened two years ago, it was my first time to participate in national voting. I voted for the UK to remain part of the EU. I know many young people also voted to remain. It's been two years and nothing's really happening. But you always hear it in the news, and it is now getting a little bit repetitive and annoying to me. There are not many differences in my and my family's life compared to two years ago, only the exchange rate has changed. Now they finally came up with a deal, but no clear solution or result is given to the public. What you hear all the time is still political talk and negotiations. I personally do not want to pay much attention to this issue until something actually happens. I have spoken to the



Marcus Betts, a Master's student of Geo-Information Science from the United Kingdom, reflects on current affairs in his country.



PHOTO: ALEXANDROS MICHAELIDIS/SHUTTERSTOCK.COM

ambassador from the UK, who came to Wageningen earlier. Even he could not tell what will happen, and what will be the future for British citizens. Everyone is kind of confused at the moment. I do not fully support Theresa May, her party and this deal they came up with, but I understand that they are in a very difficult position. They have to please everyone who wants to stay in the EU and everyone who wants to leave. Even some people from her own party disagree with her. It seems like she is trying to make the UK stay as close to the EU as possible, but on the other hand, she cannot just take all the best bits. At this point, everything just seems very chaotic and it is hard for me to follow. I think they still have a long way to go until they finally come up with a solution.' **CC**

YOU ON CAMPUS

It took Cate Mutemi (29) three years to get herself a place at Wageningen University. Which shows that she is not just highly motivated but also very determined. A quality that is sure to help the Kenyan student make a success of her time in Wageningen.

Cate came to Wageningen in early September from Nakuru county in Kenya. 'I heard of Wageningen during my BSc in Animal Science, when a Wageningen professor came to give a talk about artificial insemination in goats.' Cate was immediately interested and decided to enrol for the Master's in Animal Breeding.

'I was accepted in 2016 but unfortunately I didn't get a grant. Then I applied again in 2017. Once again, I got a place but not a grant. I did get the chance to come to Wageningen for a short course at the Centre for Development Innovation. I then decided to try a

third time and luckily this time I got both a place and a grant! My whole family was delighted for me.'

Cate is the only one in her family to have gone abroad to study. 'I've got three sisters and one brother. They were all very enthu-

'I was shocked to see that everybody got to class on time on the first day'

siastic about my decision to go and study in the Netherlands, even though they wouldn't easily leave Kenya themselves. I want to inspire them to take a look abroad one day too.'

The first two weeks in Wageningen were a positive experience. 'I really like the university setting and Dutch people – I think they are very friendly. The first day was a real experience. I was shocked to see that everybody

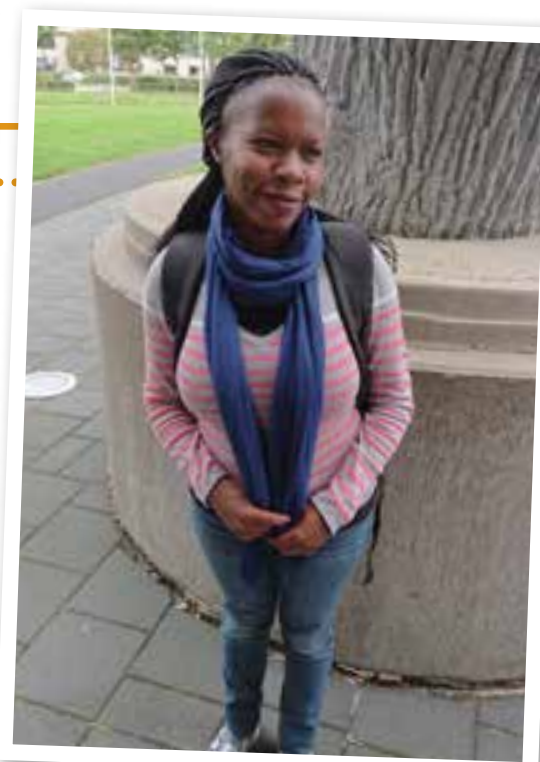


PHOTO: EVA VAN DER GRAAF

came to class on time on the Monday. In Kenya the first day of term is always chaotic. It takes about two weeks before a timetable is ready for staff and students. I was surprised at how organized everything is here.'

Cate has already got to know a lot of people. 'I met several people at the African day, which was very nice. And I've been to a church in Wageningen. I like singing and dancing. I'm going to get to know a few more churches in the coming weeks.' **EvdG**

That feeling of being lost on the first day of your internship

Blogger Kaavya Raveendran has started her internship and learned that with great steps come great challenges.

'Waking up on Monday is always hard, but this Monday was different. This one gave me butterflies in my tummy. Taking out formal clothes, making sure they are crease-free, pairing them with formal shoes and finally tying my hair into a neat hairdo – that's what it took to start the first day of my internship. I realized how different I felt from within already. It felt like I was suddenly bumped up to travel business class. But then the butterflies resumed their

activities in my tummy, making me anxious again.

JAMES BOND

I entered the building, swiping my first company ID, immediately gaining access to the professional upgrade that was awaiting me. Just by thinking of how I would tell my friends and family that I am "busy at the office" or "stuck in a meeting", I kinda felt as cool as James Bond. I was warmly welcomed by everyone in the department, and I was also introduced to my spot and work laptop. A little later, I sat in my designated spot, thinking about how I could make a difference

within the next six months.

In the afternoon I had a project discussion meeting with my supervisor. This is when I was reminded of all my friends who had started with their thesis two weeks ago and were struggling to find the right research question, and how I thought at the time that I wouldn't have to do that, because duh... I am doing an internship first. But boy, little did I expect, with greater steps come greater challenges. Halfway through my project meeting, I realized that the project was an even bigger ocean, with an immense scope to dive in and catch the fish of my choice.

WILLPOWER

Spoon feeding is one of the last things I expect, but when the responsibilities are big, risks look riskier and challenges look more challenging. After a momentary lapse of being lost, I regained perspective. I see this as an opportunity, bigger than any one I had to face before. A challenge which will assess my willpower and the willingness to innovate.' **EvdG**

BLOG



Kaavya Raveendran is an MSc student of Food Technology. You can read all of her blogs on resource-online.nl.

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.

Hanging out with the indigenous youth

'After years of studying, going to class and reading all the books and journals, I expected everything to be logical and coherent. But once I went to Nepal and talked to different people, I found that reality is very messy in a sense. As a researcher, it is tricky to navigate between those different perspectives, because they all make sense if you look at them in isolation. I found that hard to deal with.

I did an ethnographic study with qualitative data. I basically hung out with all kinds of people and I did a few interviews each week. Nepal is an interesting case as it is one of the most rural countries in the world, but at the same time it is urbanizing at a rapid pace. In the capital Kathmandu there are loads of indigenous migrants who grew up in rural villages and who lack possibilities. I studied how indigenous cultures are expressed in an urban setting.

RIHANNA

Two findings were most relevant. One is that policy papers from international organizations suggest that indigenous people have distinct needs and are specifically vulnerable to certain threats. This is only true to some extent. The young indigenous people are not as distinct as those organizations assume. Some of the young migrants I met liked to listen to Rihanna and to go to the mall and the cinema. Some of them were more interested in learning English than their indigenous language, because they wanted to be international and have a good job.

Secondly, I realized that indigenous people are not homogenous. There's always the idea that for example the Tharu people, the

fourth biggest ethnic group in Nepal, are all the same. But they are internally very diverse. There are a lot of internal conflicts or negotiations, for instance on how they have to celebrate their own New Year festival.

CRITICAL REFLECTION

My recommendation is to diversify the international policies. Instead of assuming homogeneity and distinct needs, we can be more open and say: okay we have one particular indigenous community, for instance living in an urban centre, what are their issues now, independently of the fact that they are indigenous? I think that would make policies more meaningful.

I also noticed that some organizations and activist networks that I talked to really tried to influence me. They had intense political debates and wanted me to think what they thought. At the university, we should have specific courses to teach students to be critical about how insights are being used by different people, and how research actually affects such people on the ground. **EvdK**

THE WORKS

Who? Roman Meier, MSc student of International Development Studies
What? Thesis on rural-urban migration of indigenous people
Where? Kathmandu, Nepal



▲ The Tharus' New Year festival in Kathmandu

More interviews on resource-online.nl

Announcements

EXHIBITION IN FORUM LIBRARY: DARWIN'S PARADISE
Gert-Jan Hofstede, a population biologist by profession, makes puzzles with pieces that have special significance. A piece can be a letter, animal or person, and the whole is more than the sum of the parts. The title puzzle shows Charles Darwin on one side, and on the

other what he might be thinking about. Location: third floor of the Forum Library. The Forum Library is looking for artists for forthcoming exhibitions. Are you an artist as well as a student or staff member? We offer you the chance to exhibit your work. Info: monique.braakhuis@wur.nl.

Agenda

**Thursday 4 to 18 October
FILMS FOR STUDENTS**

The Cleaners: a documentary about young people who remove shocking images from social media. *The Happy Prince*: a grim and intoxicating portrait of Oscar Wilde. *Den Skyldige*: A Danish thriller about an emergency call to an alarm centre from a kid-

napped woman. *Tampopo*: A Japanese comedy about a truck driver who comes to the rescue of an ailing noodle restaurant. *Whitney*: moving portrait of Whitney Houston. *Figlia Mia*: Italian drama about an adopted girl's love for both her mothers. Venue: Wilhelminaweg 3A, Wageningen. €6.50/€5. **MOVIE-W.NL**

**Tuesday 9 October, 12:30-13:20
LUNCH WORKSHOP WAGENINGEN
WRITING LAB/WUR LIBRARY
'CITING AND REFERENCING'**

To avoid plagiarism in academic writing, it is essential to cite and reference the sources you used. But what sources exactly, where do you put an in-text citation, and how do you make a reference list? These questions will be addressed in this workshop, together with different citation styles and how tools like End-

Note can save you countless hours formatting reference lists. Free admission. Be on time, as participant numbers are limited to 20. Venue: C0106 Forum. Info: info.wagenin-genwritingLab@wur.nl.

**Wednesday 10 October, 13:30-22:00
SYMPOSIUM INSECTSPACE 2018**

How can we overcome disgust and repulsion at the idea of eating insects? Researchers, food scientists, entrepreneurs and food designers

will present interesting insights about why and how to use insects in our diet. InsectSpace 2018 will be a meeting point for Food Science, Entrepreneurship, Food Design, and Gastronomy. Besides food for thought you will have a chance to taste insect snacks during the event, and after the symposium, you can join the dinner experience with delicious dishes with insects, curated by FoodSpace. Venue: Impulse. **WUR.EU/INSECTSPACE**

Campus Safari
Discover our 'Big Five'
Sunday, October 7th
from 11 am until 4 pm
www.wur.eu/campussafari

WAGENINGEN UNIVERSITY & RESEARCH
WUR WAGENINGEN WETENSCHAP

**MCB-51403: Capita Selecta
Commodity Futures & Options**

Always wondered about what is happening at the trading floor of exchanges like the ones in Amsterdam, London and Chicago? Wondered about how (agribusiness) companies manage their risks using commodity futures and options? Wondered about how it would be if you were trading commodity futures in Amsterdam, Frankfurt and Paris?

The *Marketing & Consumer Behavior Group* organizes a unique course that will introduce students to commodity futures and options markets. Students will develop an understanding of the markets and how they work, gain knowledge about the theory behind futures and options markets, identify their economic functions, and develop an analytical capability to evaluate their economic usefulness. This course is taught by Professor Joost M.E. Pennings (*Marketing & Consumer Behavior Group*, Wageningen University). There are only 40 seats available. If you are interested in taking this course (3 Credits) please register with Ellen Vossen at MCB (room 5029, De Leeuwenborch, e-mail: Ellen.Vossen@wur.nl, tel. 0317-483385). You can also pick up the materials here. Lecturers are on Fridays in period 5.

**ROOM WELCOMES
NEW PARTNER IDEALIS:
AS OF JANUARY EXTENDED
OFFER IN WAGENINGEN**

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DEVENTER - LEIDEN - HAARLEM

ROOM.NL
more than just a room

In memoriam

Woukje Maigret-de Weijer



On Saturday 15 September, our dear colleague Woukje Maigret-de Weijer passed away entirely unexpectedly at the age of only 54. Woukje came from Utrecht University in 1989 to what was then the Agricultural University to work as a secretary in the Plant Cytology and Morphology group. Over the years, she had various jobs within the Plant Sciences Group, the Life Sciences education institute and Impulse. In early 2016, she joined our Nutrition and Health programme team in Helix, a setting where she could put her many years of experience in WUR to good use as she handled and answered the many questions from students. Woukje had a lively character and was a key member of all

the teams she worked in. She liked to wear something a little different from time to time. She had a cowhide handbag that matched the painting in the office, and discussions during the coffee break regularly turned to boots. Colleagues would also often be complimented on their wardrobe choices. But Woukje did not mince words if there was something she didn't agree with or if things did not go as fast or as smoothly as she wanted. We will never forget her kind-hearted laugh and genuine interest in her colleagues. We will miss her hugely. Her husband and three children took leave of Woukje in a private ceremony.

On behalf of the programme team Nutrition and Health, Education and Student Affairs Rolf Marteiijn

In memoriam

Hanke Bloksma



Our colleague Hanke Bloksma passed away suddenly and unexpectedly on Tuesday 11 September. Hanke was only 60 years old when her heart failed while she was practising her hobby, teaching dancing to the Wageningen dance group De Wieleanders. Hanke started work as an analyst in the Virology chair group laboratory on 27 August 1979. In the nearly 40 years that she worked here, she was known for her great commitment to the virological research and education. She also put a lot of work into the lab managers' program and our in-house first-aid provision. Through the years she was successively involved in research on virus dissociation and assemblage, transport of plant viruses from cell to cell, and the mechanism for oral infection in insect viruses. In recent years she also took care of the breeding of insects for the baculovirus research.

Hanke helped large numbers of students and PhD researchers find their way around research techniques and precise reporting of protocols and research data. She was the key person in the preparation, setting up and implementation of many a virological practical. Thanks to her great sense of responsibility, she was available for this outside of office hours if necessary. Hanke was much appreciated by colleagues, students and PhD researchers alike. She was a pleasant, modest colleague who gave priority to the social side of the workplace as well. She was the life and soul of Christmas parties, and saw to the birthday decorations and gifts. Her tremendous input, reliability and loyalty made her indispensable. Our thoughts are with Hanke's partner Jan and their children Hannah and Jonas, and the rest of the family. We wish them strength in facing this great loss.

On behalf of the Virology chair group, Monique van Oers and Jan van Lent

Colophon

Resource is the magazine and news website for students and staff at Wageningen University & Research. Resource magazine comes out every fortnight on Thursday.

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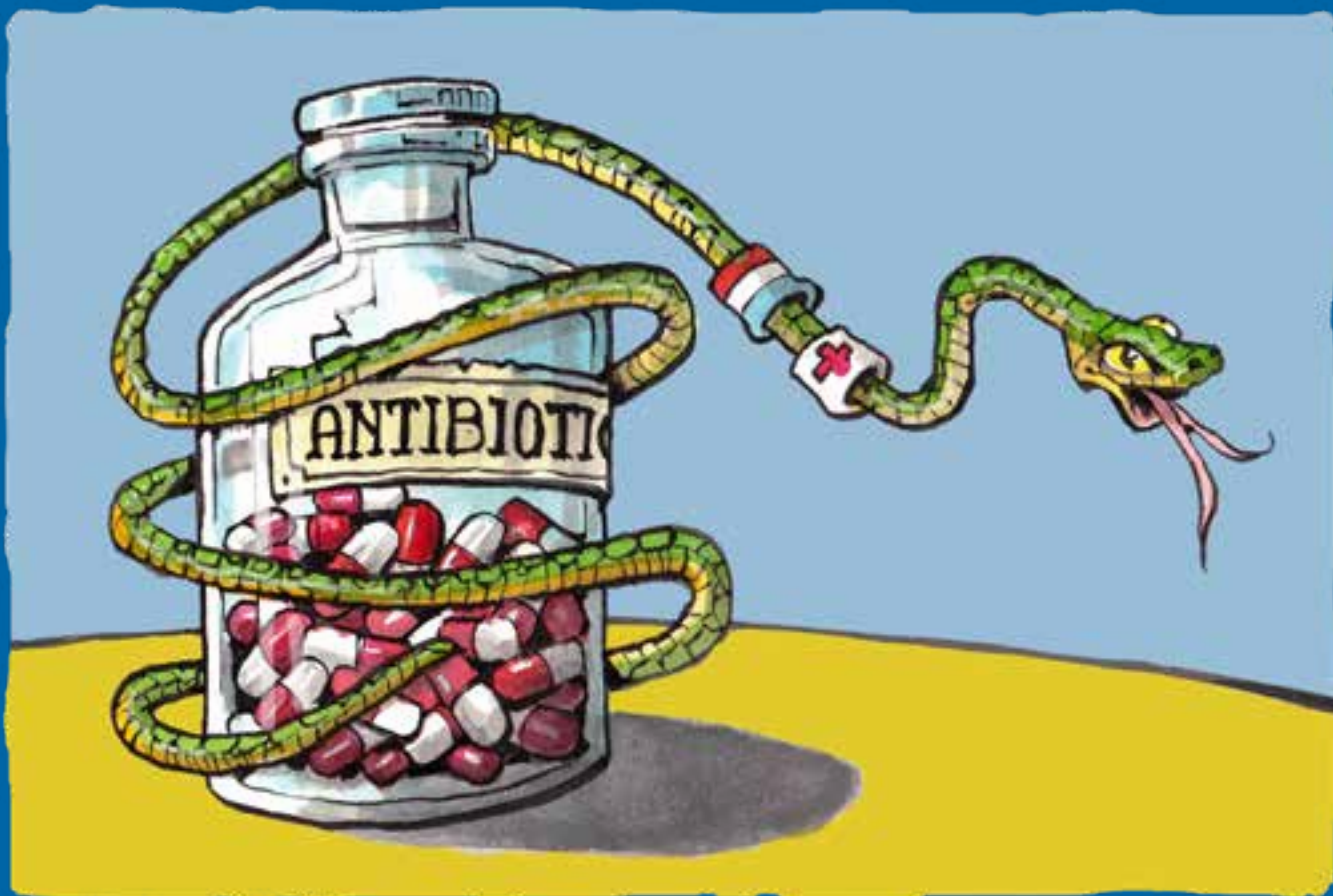


ILLUSTRATION: HENK VAN RUITENBEEK

The myth about Dutch doctors

While I was sitting at the bus stop after visiting a doctor, I thought about the complaints I've heard about the Dutch healthcare system. Many of my international friends say that Dutch doctors are ignorant or careless. I don't think they are. I believe that Dutch doctors treat international people like regular Dutch people who have sufficient information about their health system. Unfortunately, most international patients are badly informed about it.

International patients are often angry when a doctor tells them to go back home and rest; they always want some kind of medication, like antibiotics. However, Dutch doctors are reluctant to prescribe medication. I always thought the reason for this is that the doctors don't want patients to consume too many medicines that can make them depend on it. But when I did some research, I found that in the case of antibiotics, there is another reason.

The more antibiotics people use, the more bacteria will become resistant to antibiotics, which means the antibiotics will become ineffective and therefore useless when we really need them to fight off life-threatening bacteria. What is more, in the case of flu, which is a viral disease, antibiotics do not actually help because they only work against bacteria, not viruses.

According to the Organization for Economic Co-operation and Development (OECD), the Netherlands has the lowest rate of prescribing antibiotics. This must help make it one of the most efficient countries in preventing the further rise of antibiotics resistance in bacteria. So I guess Dutch doctors are not careless; we just don't always understand their motives.

📍 Ibnu Budiman, MSc student of Environmental Sciences, from Indonesia

International patients always want medication but Dutch doctors are reluctant to prescribe antibiotics

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.