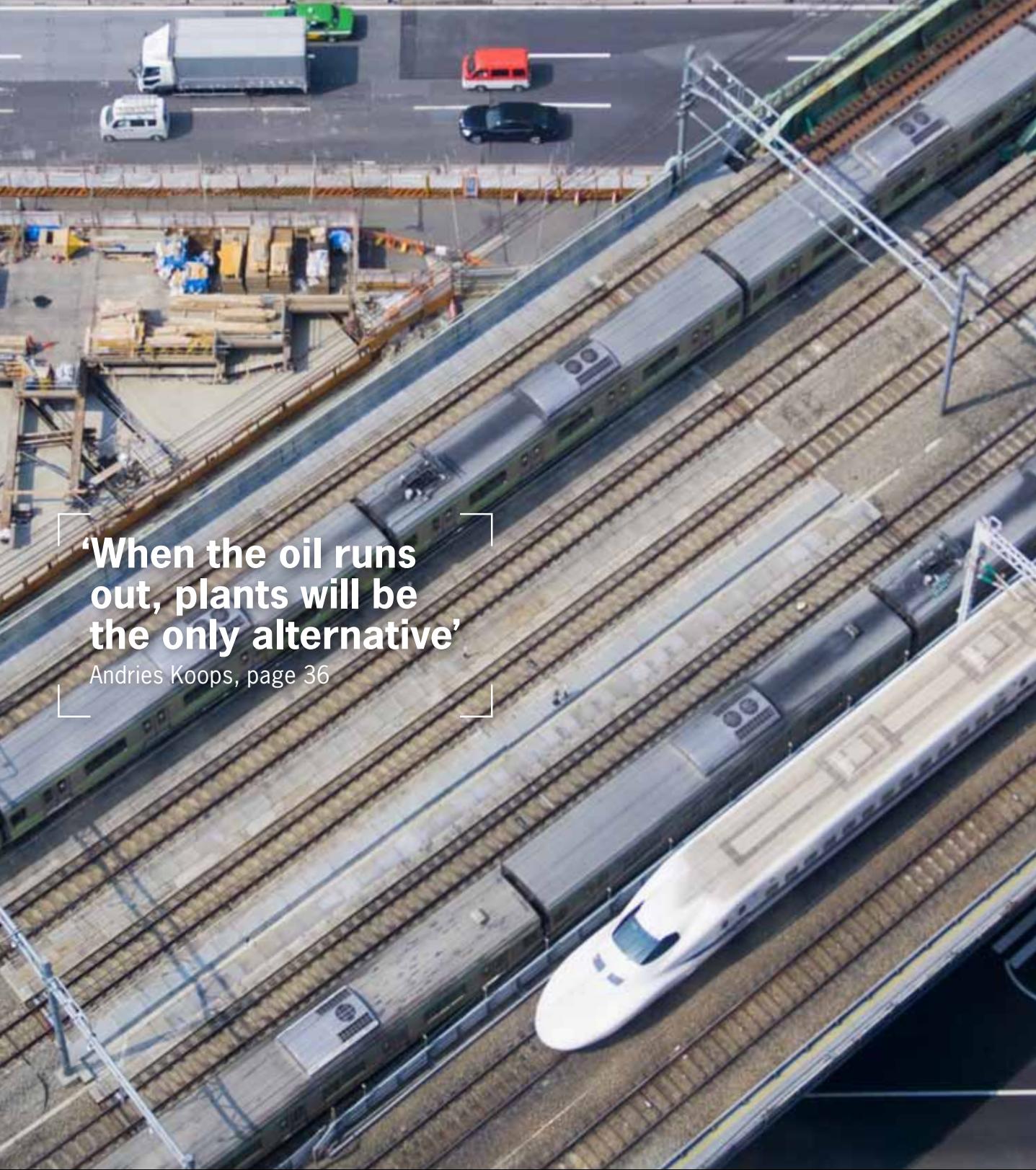


# WAGENINGEN WORLD

MAGAZINE OF WAGENINGEN UR AND KLV ABOUT CONTRIBUTING TO THE QUALITY OF LIFE

nr.1 2011



'When the oil runs out, plants will be the only alternative'

Andries Koops, page 36

**Malaria research** on sweaty feet | **Undernourished** in hospital | In search of **new bioplastics**  
**The otter** is back in Dutch waters | **Stacks of tulips** | Is the Netherlands too small for **big game**?



# 10

## MOSQUITO TRAPS

Wageningen researchers are working on combatting malaria on all fronts: from experiments involving sweaty feet to mosquito-killer fungi and the development of new plant-based medicines.

# 22

## UNDERNOURISHED IN HOSPITAL

One in five patients in Dutch health care are undernourished. That slows their recovery. In the Gelderland Valley Nutrition Alliance, Wageningen UR is working on improving patients' nutritional status.



# 32

## THE PLANT AS FACTORY

Plants seem to be a promising alternative source of energy and raw materials for the chemical industry. Wageningen UR is doing research on the vast potential of the plant as factory. This should make it possible to harvest chemicals directly from the land.



**COLOPHON** Wageningen World is the quarterly magazine for associates and alumni of Wageningen UR (University & Research centre) and members of KLV, the Wageningen Alumni Network. A PDF version of the magazine is available at <http://www.wur.nl/UK/publications/Periodicals> **Publisher** Wageningen UR, Viola Peulen, with KLV, Paul den Besten **Editorial board** Paul den Besten, Hans Bothe, Ben Geerlings, Wilbert Houweling, Petra Kanter, Jeanette Leenders, Francine Loos, Jac Niessen, Helene Stafleu, Erik Toussaint, Hans Wolkers **Editor-in-chief** Gaby van Caulil (editor-in-chief Resource), Pauline Greuell (Corporate Communications Wageningen UR) **Managing editor** Miranda Bettonville **Copy editor** Rik Nijland **News editor** Maaïke Breedveld **Translators** Clare McGregor and Clare Wilkinson **Language editor** Clare McGregor **Art direction and design** Jenny van Driel (Wageningen UR, Communication Services) **Cover picture** IQimages **Magazine design** Hemels Publishers **Printer** Mediacenter Rotterdam **ISSN** 2210-7908 **Address** Wageningen Campus, Akkermaalsbos 12, 6708 WB Wageningen, Post box 409, 6700 AK Wageningen, telephone +31 317 48 40 20, [Wageningen.world@wur.nl](mailto:Wageningen.world@wur.nl) **Change of address alumni** [www.wageningenalumniportal.nl](http://www.wageningenalumniportal.nl) **Change of address associates** [wageningen.world@wur.nl](mailto:wageningen.world@wur.nl), giving code address label **Personalia details** [alumni@wur.nl](mailto:alumni@wur.nl)



**4 UPDATE**

Wageningen UR news in brief.

**16 INNOVATION**

The tulip can be grown in stacks. This saves space and energy.

**18 THE DEBATE**

The natural management of large mammals has often aroused controversy in the Netherlands. Is the Netherlands just too small for big game?

**26 REINTRODUCTION**

The reintroduction of the otter into the Netherlands seems to be a success: the otter population is expanding. But there are still many traffic victims and a new problem has raised its head: inbreeding.

**30 SYNERGY**

Wageningen UR Food & Biobased Research is working with partners from the business world on developing new bioplastics.

**38 THEN & NOW**

Wageningen UR is on the move: the biggest relocation in its history.

## FEATURES

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**40 LIFE AFTER WAGENINGEN**

They both opted for degrees in Rural Sociology out of idealism. Twenty years down the line, Simone van Vugt and Suzanne van der Pijl look back.

**44 WAGENINGEN UNIVERSITY FUND**

Gert Peek was voted Teacher of the Year by students. His strength lies in his enthusiasm.

**46 ALUMNI**

News for and about alumni; announcements from alumni network KLV and the alumni office; activities and personal columns.

*The mission of Wageningen UR (University & Research centre) is 'to explore the potential of nature to improve the quality of life'. Wageningen UR includes nine specialist applied research institutes, Wageningen University, and Van Hall Larenstein University of Applied Sciences. These institutions have joined forces to contribute to finding answers to crucial questions related to healthy food and and living environment. Wageningen UR has a staff of 6,500, 10,000 students, 35,000 alumni and 40 sites, with a turnover of 662 million euros.*

*Institutes of Wageningen UR: Alterra, LEI, Plant Research International, PPO, Wageningen UR Livestock Research, Central Veterinary Institute, Wageningen UR Food & Biobased Research, IMARES and RIKILT. KLV is the largest Wageningen alumni network, with more than 7,000 members. The association dates back to 1886, and provides a network for Wageningen graduates and other professionals with a link with Wageningen. The aim is to promote contact between members and with the university, and to establish an online network that provides a lively virtual meeting place.*



FOTO GUY ACKERMANS

## Food prices have big impact

Although the protests in Egypt were chiefly driven by the desire for democracy and a rejection of corruption and massive wealth gaps, high food prices were a contributing factor too, as they were a couple of weeks earlier in Tunisia. The Middle East is highly dependent on the world market for its food supply; food-importing countries are always the first to be hit by food price hikes.

Countries such as the Netherlands are affected by rising prices too, of course, but the impact is limited because we only spend 10 to 15 percent of our income on food. In Egypt that figure is 40 to 60 percent, comparable to the situation in the Netherlands about 50 years ago. In such cases a big price rise hits people much harder. And it is precisely in countries with authoritarian regimes that the general mood of the public is greatly influenced by food prices, not just in the Middle East but also in Africa and Asia.

The fact that prices – of grains in particular – are spiralling out of control can be put down to a combination of factors: last summer's drought in Australia, for example and the fires in Russia. Once the prices have gone up, exporting countries misguidedly close their borders – which drives the prices up further. Add to that the fact that the US and the EU, for instance, have adopted a policy of using biomass for fuel. That is done at the expense of food production. On the stock markets in recent years we have seen a lot of activity by big speculators such as hedge funds.

China is very well aware of all this. Its growing prosperity comes with a rising demand for animal protein. Between now and 2040 crop production will need to double at least, and China cannot do that alone; it has 20 percent of the world's population but only eight percent of the agricultural land. So China is very busy working on a large scale to improve agricultural production in other parts of the world.

Rudy Rabbinge, professor of Sustainable Development and Food Security at Wageningen University, part of Wageningen UR

## Tempeh tempers diarrhoea

The soya product tempeh appears to help prevent diarrhoea by stopping pathogenic bacteria from establishing themselves in the intestines. This was demonstrated by Petra Roubos in the research for which she received her PhD last October from the Food Microbiology chair group at Wageningen University, Wageningen UR. To gain an insight into how this process works, she tested the soya product on cultured intestinal cells. Tempeh, a popular meat substitute, is made from fermented soya beans. It seems that a product of the breakdown of the soya is behind the anti-diarrhoeal effect. Info: [marcel.zwietering@wur.nl](mailto:marcel.zwietering@wur.nl)



## Worming out laughing gas

Worms increase the production of laughing gas in soils. And Lucas Nebert, an MSc student of Soil Science at Wageningen University (part of Wageningen UR) found out how they do it. Nebert's soil tests showed that worms stimulate micro-organisms to produce more laughing gas (N<sub>2</sub>O). Substances in the worms' slime tracks affect the enzyme production of bacteria. Secondly, worms change the soil structure so that more laughing gas can be emitted. Nebert, an American, won the Wageningen University Fund's publication prize for his thesis. The prize goes to a fresh graduate who publishes an academic article. Info: [janwillem.vangroenigen@wur.nl](mailto:janwillem.vangroenigen@wur.nl)

## French to use drought-tolerant wheat gene

French biotechnology company Biogemma is going to use a gene patented by Wageningen UR to increase the drought tolerance of wheat. The Plant Sciences group at Wageningen UR has signed a licensing agreement with the French firm. Wageningen researchers identified the gene sequence that boosts plants' resistance to drought, and patented it. The genes have previously been used in varieties of rice and potatoes. Demand for drought-resistant crops is rising, partly as a result of climate change. Info: [ton.dennijs@wur.nl](mailto:ton.dennijs@wur.nl)



FOTO: NATIONALE BEELDBANK

## Feed halves methane production

The addition of just small amounts of nitrate and sulphate to their feed lowers methane production by cows and sheep. This finding emerged from research by Sander van Zijderveld, a doctoral researcher at the Animal Feed chair group at Wageningen University, part of Wageningen UR. Van Zijderveld tested the effect of adding 2.6 percent of nitrate and sulphate to the feed of 20 sheep. The combined additives halved the methane production as the sheep produced less wind. A smaller effect was seen in cows. Livestock farming is a major source of methane, a greenhouse gas. Info: [sander.vanzijderveld@wur.nl](mailto:sander.vanzijderveld@wur.nl)

## AQUACULTURE

# Sea lettuce cuts acidification

**Giant beds of sea lettuce could halt the acidification of the world's oceans. What is more, the lettuce is edible. Ronald Osinga presented this solution to an international coral symposium held in Wageningen at the end of December.**

The symposium, an initiative of the International Society for Reef Studies (ISRS), addressed the effects of climate change on coral reefs. One of the consequences of raised atmospheric CO<sub>2</sub> levels is the acidification of the oceans. And corals are extremely sensitive to this: they become bleached and the calcium they contain dissolves.

Ronald Osinga works at the Aquaculture and Fisheries chair group at Wageningen University, part of Wageningen UR. He presented the symposium with a solution: sea lettuce. As it grows, this plant reduces the acidity of the water while providing food at the same time. Together with colleague Willem Brandenburg of Plant Research International, part of

Wageningen UR, Osinga calculated that a sea lettuce bed of 180,000 square kilometres would suffice to provide the entire world population with sufficient protein. A bed of these proportions would raise the pH level of the Mediterranean Sea by one tenth, enough to compensate for the increased acidity. And linking the cultivation of sea lettuce with fish farming would create a closed nutrient cycle, Osinga believes.

Willem Brandenburg will be trialling sea vegetable cultivation in the Scheldt estuary in the south-east of the Netherlands this year. Julia Wald of the Seafarm will be growing algae on floats with racks and ropes hanging from them. She wants to find out which system works best for the various algae. Info: [ronald.osinga@wur.nl](mailto:ronald.osinga@wur.nl)



## VIDI GRANT

## Self-healing tissue

Jasper van der Gucht of the Laboratory for Physical Chemistry and Colloid Science at Wageningen University, part of Wageningen UR, wants to make a new kind of tissue that is extremely strong and regenerative – just like organic tissue. At the end of 2010, Van der Gucht received a Vidi grant from the Dutch Organization for Scientific Research NWO to help him do this. The plan is that in five years' time, his research will produce artificial tissues for medical use. Two other Wageningen UR researchers also received Vidi grants, worth up to 800,000 euros, to enable them to form their own research groups. Phytopathologist Harrold van den Burg received the grant for work on the immune responses of plants to infection. Molecular biologist Kerstin Kaufmann will be researching how the interactions between proteins and DNA affect cell development.

## NUTRITION AND HEALTH



## Alcohol cuts risk of diabetes

A couple of beers a day fit into a healthy lifestyle and cut the risk of developing diabetes by about 40 percent, claims Michel Joosten in his doctoral thesis. Joosten monitored 35,000 Dutch subjects for ten years. Even in people with a healthy lifestyle, alcohol had a demonstrably positive effect. Joosten received his PhD on 12 January from TNO and the Human Nutrition department of Wageningen University, part of Wageningen UR.

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## Body has weapon against saturated fat

The consumption of saturated fat can set off severe inflammatory responses in the body, which seeks to defend itself by producing the protein Angiotensin-like protein 4 (Angptl4). This finding was published by Wageningen food scientists in the journal *Cell Metabolism* in December. Sander Kersten, associate professor of Nutrition, Metabolism and Genomics at Wageningen University, part of Wageningen UR: 'How exactly the saturated fat in our bodies works is still quite a mystery. This research, which took three and a half years, makes an important contribution to our knowledge.' Kersten and colleagues demonstrated in mice that the protein Angptl4 prevents saturated fat absorbed in the abdomen from setting off a severe inflammatory response there.

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## Cash for cutting-edge research

Two Wageningen researchers received about 2.5 millions euros each from the European Research Council (ERC) in the form of Advanced Grants for senior researchers leading innovative and ground-breaking research.

Marten Scheffer, professor of Aquatic Ecology and Water Quality Management at Wageningen University, part of Wageningen UR, received the grant for his research on 'tipping points'. This research generates insight into signals which announce a sudden transformation in a system, for example in the climate or migraine attacks. Scheffer received the Spinoza prize for this work in 2009. Martien Cohen Stuart, professor at the Laboratory for Physical Chemistry and Colloid Science at Wageningen University and Colloid Science at Wageningen University received an Advanced grant for his research on a new type of macromolecule: biosynthetic polyamides produced by natural methods.



Martien Cohen Stuart



Marten Scheffer

In total, 266 top European researchers received the ERC grant in 2010. Two of the grants went to Wageningen researchers in 2009 as well.

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## Picking robot for peppers

Applied Plant Research (PPO) at Wageningen UR is all set to develop a robot for harvesting bell peppers. The European Union has allocated eight million euros to the CROPS project, involving research institutes and companies from 10 countries. Wageningen UR is coordinating the project, which focuses on the development of new techniques for sensors, robot arms, grippers and intelligence.

Project leader Jan Bontsema: 'We are going to generate fundamental knowledge in the form of practical applications. In the Netherlands we will be working closely with Jentjens Machinetechniek on the development of the machine. Abroad, the various different partners will be working on an apple-picking robot, a machine for picking grapes selectively for first-class wine and precision instruments for spraying apple orchards.' The grant for the project comes from the EU's seventh Framework Programme (FP7). Info: [jan.bontsema@wur.nl](mailto:jan.bontsema@wur.nl)



FOTO NATIONALE BEEIDBANK

## Green neighbourhoods work

Green space in residential neighbourhoods has a positive effect on social cohesion. That may sound obvious, but the effect has now been proven by research at Alterra, part of Wageningen UR. In particular, small-scale green areas such as public gardens and allotments promote social contact between residents. The more urban the neighbourhood, the bigger the positive impact of the green space. These results provide policymakers with insight into the contribution made by such outdoor facilities to a pleasant, safe and clean neighbourhood. Info: [irini.salverda@wur.nl](mailto:irini.salverda@wur.nl)

## NATURE AND LANDSCAPE



FOTO NATIONALE BEELDBANK

# Dutch nature is unique in Europe

**Dutch natural landscapes have a special status in north-western Europe, thanks to the country's location on the delta of four major rivers, say three Wageningen researchers in a new book.**

People are often dismissive of the nature and landscapes of the Netherlands, saying they do not amount to much compared to those of other countries. Nothing could be further from the truth, claim Joop Schaminée, Joep Dirx and John Janssen of Wageningen UR. There are several landscape types of which the Netherlands boasts the only North-European exemplars. For three reasons, according to the authors. The main one is the location of the Netherlands on the delta of the Rhine, Maas, Scheldt and Eems rivers. This creates a continuous alternation between sand and clay, dry and wet landscapes. Secondly, because the delta, with its fertile land and ideal position for trade, was an attractive place to settle, the Netherlands has been densely populated

for much of its history. The inhabitants turned the delta into a highly varied cultivated landscape. Consequently, the most significant nature in the Netherlands, internationally speaking, is found in what are considered half-natural landscapes. The third reason is the early emergence of nature conservation in the Netherlands. This led to the preservation of many valuable landscapes, ecosystems and species. The book – *Boundless nature: the international significance of the Netherlands for species, ecosystems and landscapes*, was presented to Cor van Meijenveldt of the ministry of Economic Affairs, Agriculture and Innovation at a mini-symposium on 18 November 2010. Info: [joop.schaminee@wur.nl](mailto:joop.schaminee@wur.nl)

## ENTOMOLOGY



FOTO NATIONALE BEELDBANK

## Infected tick is more active

Ticks infected with Lyme's disease are more active than non-infected ticks. This was noticed by entomologist Fedor Gassner in the course of the research for which he received his PhD from Wageningen University in November 2010. Infected ticks are more likely to survive, too. For human beings this means the chances of being bitten by an infected tick are relatively high, says Gassner. He also discovered that there are fewer ticks in forest areas grazed by cattle or other large ruminants.

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# ‘Drink your milk’: still good advice

Nutrition scientist Sabita Soedamah-Muthu discovered that drinking three glasses of milk a day helps to reduce the risk of cardiovascular diseases. She looked at more than five thousand articles for her literature study.

Soedamah published her findings about the beneficial effect of milk in *The American Journal of Clinical Nutrition*. ‘We found rather conflicting results about the health effects of milk in the literature’, she says. Soedamah spent eighteen months studying more than five thousand articles in order to get a clearer picture of the role of milk in the incidence of the number one public health problem. Eventually she found four that were suitable for her research on the relationship between cardiovascular diseases and milk intake. ‘We were able to combine the different studies by converting all the experimental subjects’ milk intake into grams per day’, she explains. The analysis shows that drinking one glass of milk a day was associated with a 6 percent reduction in the risk of getting cardiovascular disease. ‘We

could show a positive effect of milk for up to three glasses a day, which reduces the risk of cardiovascular disease by 18 percent’, says Soedamah. The researcher – who works at the Human Nutrition department of Wageningen University, part of Wageningen UR – says it could be the minerals in the milk, such as calcium and potassium, which are responsible for the effect: ‘They tend to reduce blood pressure.’ So drinking more milk, as the cartoon character Joris Driepinter was recommending fifty years ago in Dutch adverts, is certainly a good idea according to Soedamah, but its effect should not be exaggerated. ‘There was no relationship between milk intake and mortality – it does not make you live longer’, she says, putting the findings into perspective. Info: [sabita.soedamah-muthu@wur.nl](mailto:sabita.soedamah-muthu@wur.nl)



## ANIMAL SCIENCE



## Improved aggression test for dogs

The test currently used to exclude aggressive dogs from breeding programmes works in only one third of all cases, claims Joanne van der Borg, an animal scientist at Wageningen University, part of Wageningen UR. She recommends adding additional test elements that increase the chances of identifying dogs very likely to bite. Her improved test can be used by pedigree dog breeders, but is also suitable for screening dogs from an animal shelter, for example. Info: [joanne.vandeborg@wur.nl](mailto:joanne.vandeborg@wur.nl)

## ENVIRONMENT

## Sustainability info on food

Wageningen UR will be collaborating with the Sustainability Consortium to make it easier to see how sustainable food products are. The Sustainability Consortium is a collaborative venture between universities and the private sector – set up on the initiative of the American multinational retail chain Wal-Mart and the University of Arkansas – which provides information about sustainability. Retailers and consumers can use this information to select the most sustainable products, and it encourages companies to make their products more sustainable. The consortium focused initially on North America but the participants now want to extend its reach to include Europe. More than sixty companies are affiliated, including Unilever and Ahold. Ahold played a key role in setting up the partnership with Wageningen UR. Info: [koen.boone@wur.nl](mailto:koen.boone@wur.nl)

## CLIMATE

# Horticulture sector close to energy targets

**Dutch market gardeners use energy much more efficiently than they did twenty years ago. They not only use less gas, they also produce 10 percent of the electricity needed to satisfy national demand with their combined heat and power plants.**

LEI, part of Wageningen UR, calculated that greenhouse horticulture used 53 percent less fuel per kilo of vegetables and flowers in 2009 than in 1990. That means the market gardeners are only 4 percent off the target in the Agro Covenant, which aims at a reduction of 57 percent per unit of produce in 2020. The market gardeners have already achieved the 2020 climate target for CO<sub>2</sub> emissions, which have fallen by 1.5 megatons to 5.3 megatons of CO<sub>2</sub>.

The market gardeners burn gas to heat their greenhouses. Better insulation and closed greenhouse systems mean they need less energy than in the past. What is more, they produce electricity as well as heat in their combined heat and power plants. These plants, which account for 10 percent of the national electricity production, are much more efficient than the average Dutch power

station. The combined heat and power plants do produce 1.7 megatons of CO<sub>2</sub>, but the equivalent electricity from power stations would result in 2.2 megatons.

LEI argues that the horticulture sector is therefore reducing total CO<sub>2</sub> emissions in the Netherlands. Moreover, the horticulture sector is producing more electricity than it consumes.

However, the sector is still a long way off achieving one of the other objectives in the Agro Covenant, which is to replace the use of natural gas in horticulture with sustainable energy. The share of solar energy, biofuels, geothermal energy and similar sources was only 1.3 percent in 2009. The targets in the covenant are 4 percent in 2010 and 20 percent in 2020.

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## AGRO FOOD

## The Netherlands in the driving seat

Services are the key to the Netherlands' strong position in, for example, the cut flowers trade. This is thanks not just to the transport hubs of Rotterdam and Schiphol, but also to the expertise of traders and the network of companies in IT, financial services, quality control and legal affairs. These are the findings of a study by LEI, part of Wageningen UR, entitled 'The Netherlands in the driving seat'. Info: frank.bunte@wur.nl

## NUTRITION AND HEALTH

## Processed vegetables are healthy too

It is not just fresh fruit and vegetables that reduce the risk of a heart attack: processed fruit and vegetables do so too, concludes Linda Oude Griep, nutrition researcher at Wageningen University, part of Wageningen UR. She used data on 20,000 Dutch people who were monitored over a period of ten years. Oude Griep finds the results surprising as certain compounds with a protective function are lost during processing. 'However, other compounds become more easily available for the body.' Info: linda.oudegriep@wur.nl



## FOOD SAFETY

## Test for prohormones

Jeroen Rijk, at the food safety institute RIKILT, part of Wageningen UR, can now identify banned prohormones in meat using a new screening method. Prohormones are compounds that are converted into growth hormones in the body. Rijk developed laboratory tests that are able to identify prohormones, for example in animal feed and urine. The use of growth hormones in livestock farming is banned in the European Union. Info: jeroen.rijk@wur.nl



CONTROLLING MALARIA THE NATURAL WAY

# Smelling out mosquitoes



Malaria mosquitoes can smell us from 100 metres away and find sweaty feet particularly irresistible. Wageningen researchers distilled the most attractive odours from human sweat to use in mosquito traps. Then deadly fungi move in to finish off the job.

TEXT MARION DE BOO PHOTOGRAPHY HANS SMID, NIELS VERHULST, IVAR PEL ILLUSTRATIONS SCHWANDT INFOGRAPHIC



**W**ageningen researchers set themselves apart by the way they look for solutions', says postdoc Niels Verhulst of the Laboratory for Entomology at Wageningen University, part of Wageningen UR. 'A nice example is organic pest insect control, which Dutch horticulturalists are using in all their greenhouses these days. That approach came from our laboratory. We got this going when pest insects in agriculture and horticulture were getting harder and harder to deal with using pesticides, because they were developing resistance. We are on the eve of a similar breakthrough in the assault on malaria. Since the nineteen thirties people have focused on the use of insecticides such as DDT and permethrin, with which mosquito nets are impregnated. Those substances have worked very well at times, but resistance is gradually becoming a big and intractable problem, as it is in agriculture. And the search for vaccines against malaria is promising, but then again, it has already been



**NIELS VERHULST**  
**Laboratory for Entomology**  
**at Wageningen University,**  
**part of Wageningen UR.**

'We are working on a toolbox of new organic mosquito control methods'

so for years.'

The topics that are the focus of Wageningen malaria research include odour traps, the use of mosquito-killing fungi, and the extraction of medicines from plant materials, among them chicory. The researchers breed their own mosquitoes for their work. 'But they are not infected with the malaria parasite', Verhulst adds.

In the muggy red-lit breeding room you cannot help getting an itchy feeling. Little black dots of eggs lie on wet filter paper. Within a couple of days out hatch the larvae that are wriggling around in trays of water laced with fish feed. In another two weeks, the larvae are fully grown and metamorphose into long thin mites which are sucked up by a special machine and placed into breeding boxes, where they turn into adult mosquitoes. These buzz around or sit on the mesh with their rear ends in the air.

'That is characteristic of the malaria mosquito', says Verhulst. 'You can recognize the males by the sprung antennae on their heads, while the females have antennae with very short hair. Only the females bite. They need a meal of blood in order to develop eggs. They pick their victims entirely by smell; and we want to know how that works.'

The odour research is going on down another corridor, in an advanced electrophysiological contraption standing in a 'Faraday cage' that protects it from any electric fields around it. 'You can virtually see the mosquito smelling something in here', says Verhulst. He pricks a minuscule needle into one of the hairs on the antenna of a mosquito and another into its head. 'If you apply an odour that the mosquito can detect, a current goes through its head. And we can measure that signal. If there is no signal, the mosquito apparently cannot smell anything.'

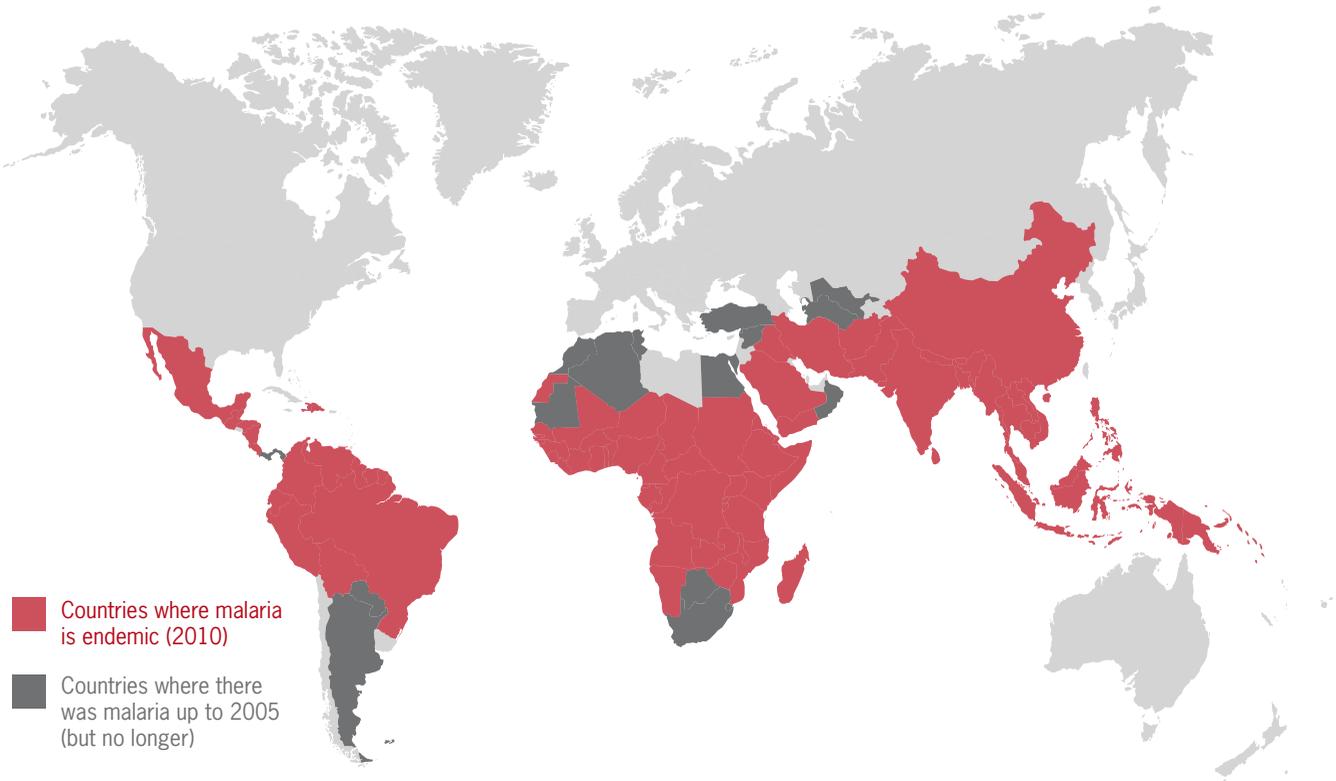
The next question is whether the mosquito likes what it smells, and whether it heads for the smell in order to track down a

blood meal. 'Mosquitoes use other odours of course, in order to mate for example', explains Verhulst. 'That is why we are also doing extensive behavioural research here.' In the PhD research he finished last year, sponsored by the Bill and Melinda Gates Foundation, Niels Verhulst discovered why mosquitoes find us so tasty. 'They smell all sorts of volatile odorous substances that are produced by bacteria on our skin. If you take some exercise, you don't stink for the first half hour afterwards – or hardly – but after that the skin bacteria get to work. They turn sweat into volatile odours and then you begin to stink. The smell of sweaty human feet turns out to contain at least 300 components', says Verhulst. 'You could make a mosquito trap with human skin bacteria in it, but that is difficult. It is easier just to use the right odours as lures.'

### **NO SHOWER FOR 24 HOURS**

Verhulst invited 48 male volunteers to take part in a sweaty foot experiment for which they were required to turn up for a test on three mornings. Before the test it was important that they did not shower, smoke or drink for 24 hours. And the last time they washed it had to be without any soap. 'It was a fun experiment; we laughed a lot and we also sniffed a lot', says Verhulst. 'The volunteers were not paid anything, but they kept on taking part enthusiastically. Strikingly, the special socks which the test subjects were given to wear exercised a tremendous power of attraction over the mosquitoes even after four years in the freezer. What was apparent, though, was that some feet smell more attractive to mosquitoes than others. The most significant difference, it emerged from further analyses, was the composition of bacteria on the foot: the bacteria profile. In order to learn more about this profile, the Wageningen researcher got in touch with the German University of Braunschweig, which is very good at odour analyses, as well as >

**MALARIA WORLDWIDE**



- Countries where malaria is endemic (2010)
- Countries where there was malaria up to 2005 (but no longer)

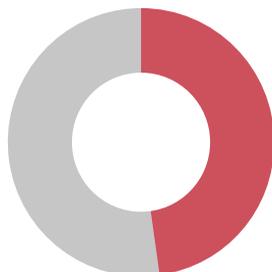
**At-risk group**

Annually, 3.3 billion people are at risk of contracting malaria.

Total world population (6.9 billion people)

At-risk group:

**3.3** billion people



The main victims are children under five and pregnant women.

**Deaths**

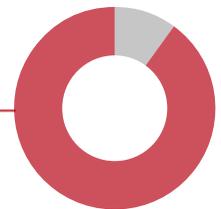
Number of deaths from malaria (2008):

**863,000**

That means 99 deaths per hour.



**90%** of the victims are in Africa, especially south of the Sahara.



Total number of deaths from malaria in Africa (2008):

**776,700**



**The mosquito**

Malaria is caused by the Plasmodium parasite which is carried by mosquitoes. There are thirty different types of malarial mosquito, but the main transmitter of the disease is the *Anopheles gambiae sensu stricto*, because this species concentrates its attentions on humans. Malaria is becoming increasingly resistant to medicines.



Odours are tested in an olfactometer.

with a research group in Colorado, US, which has a lot of expertise in the field of sequencing, or identifying the DNA of skin bacteria. It seems that the feet that mosquitoes find irresistible house more staphylococci. And the mosquitoes are less drawn to feet harbouring a wide range of different bacteria or many pseudomonas bacteria. Verhulst ordered the sixteen most attractive odours for mosquitoes, which came ready-made from a commercial company. The mosquito traps containing these odours were tested in small villages in Kenya. These tests revealed that some odours were attractive to mosquitoes while others did not interest them in the least. Back in the Wageningen department, odour blends are now being put together. 'Some blends with four components appear to be even more attractive than the original sweaty foot odour', says Verhulst. 'A mixture of this sort can also be used in programmes for monitoring mosquitoes, incidentally. At the moment monitoring is done by getting people to sit outside in the evening in shorts and count the mosquitoes that land on them.'

### SIX TESTS PER MORNING

For testing the odours one by one, the Wageningen mosquito experts use a large tunnel, the olfactometer. 'Don't touch anything please', warns Verhulst. 'Because if the odour on your hands gets onto that apparatus

it will affect the results. Look at this, on one side of the olfactometer we release 30 mosquitoes at a time, and on the other side we blow in clean, filtered air with a compressed air system.'

Because malaria mosquitoes are most active at night, it is pitch dark in the tunnel. And to keep the tropical mosquitoes happy, the researchers keep the air blown in warm and moist.

'It is all very precise', explains Verhulst. 'This is a closed system but as the air pressure drops outside, we notice that the mosquitoes inside fly less well. We always blow in some carbon dioxide as well, as we know that activates our mosquitoes.' Inside the testing apparatus, the mosquitoes are offered a sequence of pairs of odours from the left and right sides: an experimental odour and a control substance. This way we can test large numbers of substances; we do six tests in a morning. An odour that many of the mosquitoes head for is clearly a very attractive one.'

### MOSQUITOES IN THE WIND TUNNEL

In the interests of learning even more about mosquito behaviour, there is also a 3D camera in the Wageningen lab, which films the mosquitoes in the wind tunnel from three different angles. Because the mosquitoes are nocturnal, the only light is from infrared lamps, but a computer programme can automatically detect the flying mosquitoes.

The flight pattern is converted into coordinates in order to analyse flight behaviour. Verhulst: 'For example, does the mosquito fly faster or in fact slower when it encounters the odour? Does it approach the odour at a wider or a smaller angle? And which odour triggers a landing?' 'We are working on a toolbox of new organic mosquito control methods. An example would be the combination of odour traps or lures with fungi that are deadly for mosquitoes. Of course that idea still needs testing on a larger scale and perfecting, which takes a frustratingly long time, but I do have high expectations', says Verhulst.

### WIPED OUT

Infecting malaria mosquitoes with a fungal disease is a promising organic control method. The fungus is harmless for humans; it only infects insects, not mammals. PhD scholar Ernst-Jan Scholte and professor of Entomology Willem Takken were the first to write about this, in an article in *Science* in 2005. 'This is a sustainable solution', says Marit Farenhorst, who received her doctorate at Wageningen University at the end of 2010 for research in which she demonstrated that fungi could effectively wipe out mosquitoes. 'It is very difficult to infect mosquitoes with fungi when they are at large, but you can easily infect them in their hiding places. They like to rest in clay pots,

for example, so you can easily use those.’ The results were encouraging. All the infected mosquitoes were dead within a week. What is more, it emerged that the two control methods investigated, the use of insecticides and the use of fungi, reinforced each other’s effectiveness. Resistant mosquitoes that were infected with fungi became more susceptible to the insecticides as well. Farenhorst managed to complete her thesis within three years. Meanwhile she published her findings in leading journals such as *Proceedings of the National Academy of Sciences* (PNAS) and *PLoS-ONE*. ‘Now it is time to bridge the gap between academic research and the practice in the field’, says Farenhorst, who has set up her own development company, In2Care, together with two colleagues. ‘We are going to focus on developing products such as good, cheap traps and applications for organic pesticides. Using chemical insecticides only leads to resistance among the mosquitoes. There are only four commonly used insecticides and more and more mosquitoes are resistant to all of them. And it is a bad business that DDT is still being used.’

### FUNGI ON NETS

There are still plenty of practical questions to be answered before the use of fungi can be put into practice. How many fungi do you need, how long do they go on working, which solvents do you use and how do you apply them? For example, if you apply to fungi to netting, is it enough for the mosquito to land on the netting and make brief contact with the fungi, or does it really have to get covered in spores to become infected? And how does the infection process unfold?

Marit Farenhorst: ‘We already know that the fungal infection slows down the development of the malaria parasite in the body of the mosquito, so that it no longer ends

up in its saliva and is not transferred when the mosquito bites. The infected mosquito may fly around for another week or two, but no longer poses a danger.’

During field work in Africa, Farenhorst discovered that what works in the lab is not always practical in the field. ‘What can you do with an electric odour trap if there is not a single electric socket in the village? And what can people do with all those mosquito nets that are distributed if they do not have beds? Sometimes parents sleep in a bed but the children lie on the floor outside the net. What is more, the mosquitoes start biting as soon as it gets dark, but who goes to bed at seven o’clock? You can also get bitten while you are sitting outside, or on the way to the local bar, or when you go outside for a pee’, she explains. ‘So large-scale eradication of mosquitoes is a more reliable and realistic approach. It is crucial that we tackle the mosquito in all the stages of its life cycle if we really want to have an impact on the transmission of this disease.’ ■



**MARIT FARENHORST,**  
**Insect research and**  
**development company**  
**In2Care.**  
**Received a PhD for malaria**  
**research in 2010 from**  
**Wageningen University,**  
**part of Wageningen UR.**

‘What can you do with an electric odour trap if there is no electric socket in the village?’

### CHICORY AS AN ANTIMALARIAL

The latest weapon in the battle against malaria is chicory. The Laboratory for Plant Physiology of Wageningen University, part of Wageningen UR, wants to use this plant to produce the antimalarial artemisinin.

The tropical plant *Artemisia annua* (sweet wormwood) contains this substance but only in small and variable quantities, and the regions where it grows are politically unstable. Producing the substance chemically is complicated and expensive. The Wageningen plant physiologists have therefore been collaborating with the R&D department at Belgium-based pharmaceutical company Dafra Pharma to adapt the chicory plant for the production of a precursor of artemisinin, dihydroartemisinin acid (DHA). It is then relatively easy to convert this substance into artemisinin. Introducing the genes for artemisinin production from sweet wormwood into chicory raises its production of the substance to eight times the original level. The price of the medicine can then go down to a level that is affordable for many people in developing countries. Professor of plant physiology Harrio Bouwmeester has already identified the enzymes and genes that are involved in the production of artemisinin. An advantage of chicory is that the plant is already in use for the extraction of inulin. This alone makes its cultivation feasible.

## BULBS THAT GROW IN THE DARK

# Stacks of tulips

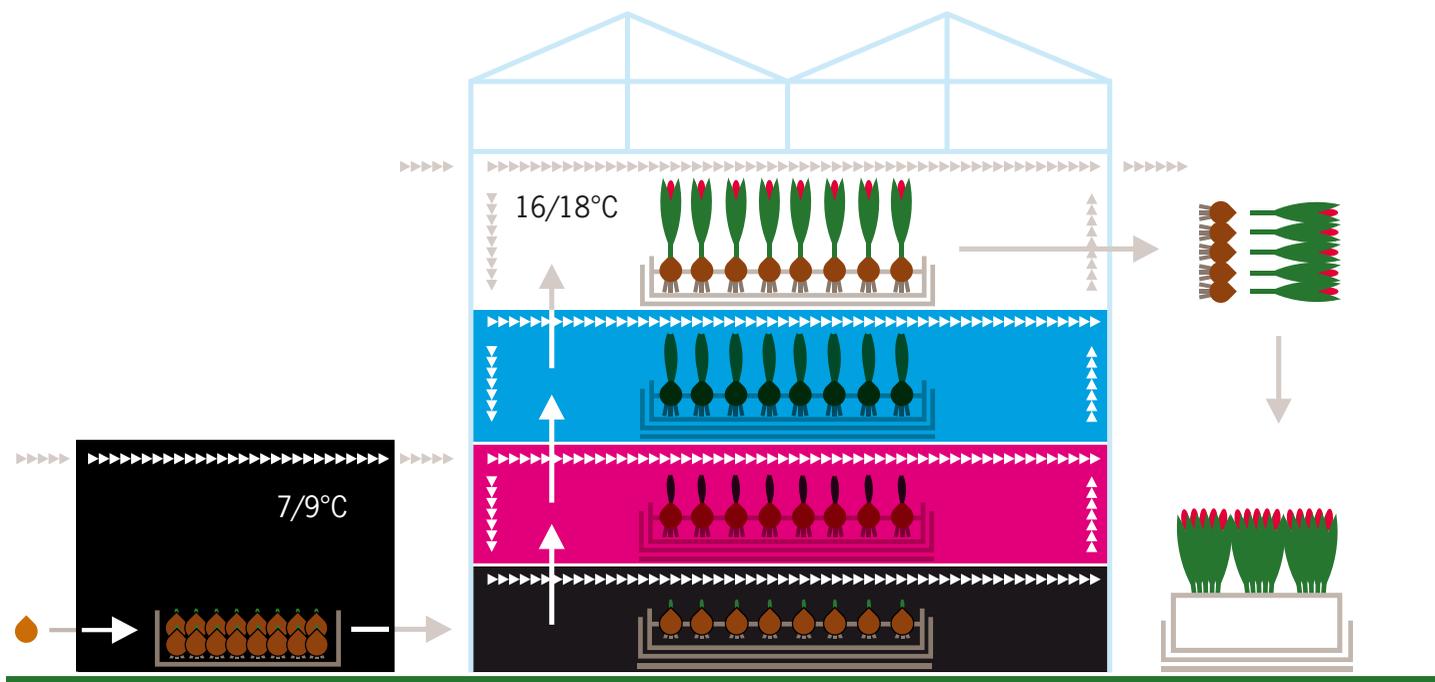
**You cannot generally grow flowers in stacked layers. But you can with tulips. Wageningen UR is developing a new system for growing these quintessentially Dutch flowers in four layers, each with its own colour of light. The method saves space and energy.**

**TEXT** MARION DE BOO **ILLUSTRATION** WAGENINGEN UR, JENNY VAN DRIEL

**T**he colourful fields of Spring flowers are an iconic Dutch sight. But cut tulips are grown in greenhouses, mostly by growers who produce bulbs in the summer and cut flowers in the winter. Together with a group of innovation-minded horticulturalists, Wageningen UR is investigating a new system for what is known in the trade as 'brewing' tulips, as opposed to growing them. The tulip – the Netherlands' biggest flower product by far, taking up 11,000 of the 24,000 hectares given over to flower bulbs – lends itself to growing in layers as it does not need very much light. The bulb is

packed so full of energy stored from the previous growing season that it can even get off to a good start in the dark. Applied Plant Research (PPO), part of Wageningen UR, has shown that the tulip plants can even cope without light for the first 30 percent of the 'brewing' season. They do then look a little yellow, but they soon recover completely. This characteristic makes the tulip suitable for multi-layer cultivation. In layered cultivation, each tulip spends a quarter of its growing time in each layer. They start at the bottom, in the dark. Then they move up to the second layer, where the light is red. The next layer up is bathed in





blue light and finally, at the top, there is full sunlight.

If the plant stays in the dark too long, its crooked growth becomes irreversible. But if it only gets as little as one minute of light every half an hour, it grows surprisingly straight and green. ‘We call that steering light’, says researcher Jeroen Wildschut of the Flower bulb business unit at PPO. ‘That is needed to steer the growth and development in the right direction. Under red LED light, the plants get a better leaf distribution and the evaporation gets going properly so that the flowers do not develop a notorious disease which causes them to grow too quickly, with weak stems. Blue light then ensures that the stem grows straight. We are now optimizing this four-layer system in practice.’

A robot moves the trays of tulips up one layer at the required intervals. The plants stand in water rather than soil, which makes the trays lighter. ‘This gives you four times the production in the greenhouse for

the same gas consumption’ says Wildschut. ‘Energy is getting more expensive all the time. What is more, you can raise your productivity with multi-layer cultivation without expanding your greenhouse. We now want to run trials using the system in eight companies.’

#### MERCURY LAMPS

The advent of energy-saving LED light bulbs played a key role in the development of the multi-layer growing system. ‘Mercury

**‘This gives you four times the production in the greenhouse for the same gas consumption’**

vapour lamps have to hang at least two metres above the crop, otherwise they give off too much heat. But you want to pile up the layers of tulips as close together as possible. The temperatures at which tulips are ‘brewed’ have to be very precise. If it is half a degree too hot or too cold for a couple of weeks, the logistical system gets messed up. The great thing about LED light bulbs is that they do not radiate any heat, so they can be hung closer to the crops than the traditional mercury vapour lamps could.’ To combat the excessive relative humidity between the layers of flowers – some species of tulips ‘sweat’ a lot – dry fresh air is warmed up and blown in between the layers.

Wildschut: ‘No doubt flower growers will develop their own recipes for each species, for steering their development. We would like now to research this system’s potential for hyacinths and daffodils. It is trickier for lilies, because they really have to have sunlight.’ ■



# Is the Netherlands simply too small for big game?

**Every winter when some of the wild cattle, horses and red deer in the Oostvaardersplassen nature reserve starve to death, a heated debate blows up again in the Netherlands: should the policy of letting nature run its course be abandoned? Hunting is another controversial topic. So is the Netherlands really just too small for large game?**

TEXTST RIK NIJLAND PHOTOGRAPHY GUY ACKERMANS ILLUSTRATION IEN VAN LAANEN

**T**he Netherlands is too big not to have any large mammals at all', says Ron Ydenberg, endowed professor of Fauna Management at Wageningen University, part of Wageningen UR. 'The answer to all the dilemmas is surely not just to ban these animals? No right-minded Dutch person would want to have that on their conscience. Precisely because this country is so densely populated, it really needs its nature; having animals around us is necessary for our wellbeing.' Ydenberg is director of the Centre for Wildlife Ecology at Simon Fraser University in Vancouver, Canada.

Geert Groot Bruinderink takes an equally firm stance. 'Do away with them? Oh no! From the ecological point of view we still lack a couple of species of large mammals, actually', asserts the ecologist, who works for the Mammal Society and Alterra, part of Wageningen UR. 'In the riverine nature areas, for example, we do not have any eland, and in the higher forested areas we lack the European bison. Just because there is a debate about management issues is no reason to stop the whole project. Sure, there is discussion, and we take each other to court. Well that's fine, there is life in the issue and discussion helps get things clear-

er, although I would prefer it if this one were less emotional and less driven by the political nonsense of the day. But, whether we like it or not, this discussion gives us frontrunner status in the world. People in other countries are watching with interest to see how we resolve these issues.' Wouter Helmer, director of ARK Nature Development and honorary associate professor at Van Hall Larenstein University of Applied Sciences, part of Wageningen UR, finds all the discussions about the management of large mammals fascinating too. 'It is clear that we are really alienated from our green roots. Nature is no longer some- >

thing we feel part of but has become a kind of décor, a leisure landscape for recreation or water storage. And this alienation brings with it a new kind of attitude to animals: we start to see them more and more as people. This ‘animal-friendliness’ gives us a different take on hunting or on the policy in the Oostvaardersplassen than we used to have. This is a temporary outlook, I expect, and will change into a more realistic one: where there is birth, there is death; it is as simple as that.

Helmer does not subscribe to the view that the Netherlands is too small. ‘That is contradicted by the facts: urbanization is actually leaving more space for large mammals, even now that the cabinet has shelved the ecological main structure. Throughout Europe the countryside is emptying, in the Netherlands as elsewhere. That creates new opportunities, even for species such as lynxes and wolves. In the Netherlands you can



**RON YDENBERG,**  
endowed professor of  
Fauna Management at  
Wageningen University

‘Because this country is so densely populated, it really needs nature’

see that red deer and especially wild boar are going their own way. Boar are reaching the centre of Nijmegen, whereas officially they are only allowed to inhabit the Veluwe and the Meinweg. Elsewhere they are supposed to be shot to keep the population at zero. If you ask me, it is in everyone’s interests to abandon this policy. If a farmer near Nijmegen suffers damage to his land from rooting boar, he cannot get any compensation because officially the animal is not found in the area.’

Albert Schimmelpenninck – who, as estate manager with the Twickel foundation, manages 6,500 hectares of nature and farmland – does want to keep to the zero population. ‘I think it’s a beautiful sight, a red deer or a wild boar. But if I look at the consequences for the Veluwe, with its grids and the limits on other interests such as traffic safety and agriculture – we’ve got land up there, near Dieren, too – it seems to be very difficult to arrive at a good policy. If our big neighbour, the nature organization Natuurmonumenten, doesn’t make sure that the red deer and boar populations stay within limits, we’ll end up with situations like those in the Oostvaardersplassen. Or visitors will start feeding the animals. Surely we don’t want that? Anyway, the large game populations are putting our forests under pressure. In fact young saplings just don’t stand a chance any more. When I see how it goes there, I don’t have much faith left in the chances of our making good arrangements in areas where farming interests are much bigger, or where there is more traffic’, says the estate manager.

Deep in their hearts, many private land-owners love seeing the occasional stag on their land, says Schimmelpenninck. ‘One or two stags or boar are not a problem, but what the Federation of Private Landowners and farmer organizations are afraid of is



**GEERT GROOT-BRUIINDERINK,**  
ecologist with the Mammal Society  
and Alterra, part of Wageningen UR

‘From the ecological point of view we still lack a couple of species of large mammal’

that we won’t be able to control the populations. Our system in the Netherlands is that the government has to issue culling licences, to which anyone can raise objections. This has placed heavy limitations on hunting, which has become a pawn in a political game. So a zero population policy has become the only option. The extreme protection of game in the Netherlands is shooting itself in the foot. There are big areas with limited populations of red deer and wild boar. This is possible if you can manage them adequately.’

Canadian Ron Ydenberg proposes a kind of polder model of collaboration, based on the way the Dutch managed the development of reclaimed land in the 20th century. ‘We need to tackle and solve the problems on the basis of scientific research and in consultation with all the stakeholders. And the Dutch have to relearn how to deal with large animals. Just as in the suburbs of Vancouver, residents had to learn to keep



their garbage cans under lock and key to prevent bear problems. Sometimes small adjustments are enough. I have understood that collisions with game in the Netherlands occur at certain specific locations, so putting up a couple of fences there would probably suffice.'

At the moment, Ydenberg thinks that



**WOUTER HELMER,**  
director of ARK Nature Development  
and honorary associate professor at  
Van Hall Larenstein University of  
Applied Sciences, part of  
Wageningen UR

'Urbanization is leaving space for large mammals'

hunting is a necessary measure for keeping numbers of large mammals under control. 'But in principle the aim should be the restoration of complete ecosystems, including top predators which cream off populations. Yellowstone is a good example of that. Until the reintroduction of the wolf in the mid-1990s, the park was totally overgrazed. Since then, the wapiti population has shrunk by 40 percent, and various other animals have made a comeback, such as the beaver. This is because there are young trees to gnaw on again.' So is that an option for the Netherlands? 'Perhaps; we should research it. Lynx are not big enough to tackle an ox or a red deer, but wolves may be.' Wouter Helmer cannot wait for the first wolf to reach the Netherlands from Germany. He thinks that the newcomer will be a huge success. 'In Yellowstone, the number of tourists shot up by thousands per year when the wolf came back. Make no mistake about it, large wild mammals do damage, but the excursions they prompt also generate profits into the millions through tourism and catering. The establishment of Konik horses and wild cattle in the Millingerwaard nature area led to a spectacular rise in visitor numbers, from a couple of hundred to 200,000 per year', says Helmer. 'We all like to see cows in the meadows, but that is less and less compatible with efficient agricultural business management. What could be lovelier than to see their place being taken by large, wild mammals?'

Groot Bruinderink is not so keen on the idea of wolves and lynxes controlling populations of roe deer, boar and red deer. 'I think hunting is the most realistic option. There is some talk of rounding them up and gassing, slaughtering or electrocuting them, but I am not in favour of that.'

The ecologist from Alterra and the Mammal Society observes that there is a lot of resist-



**ALBERT SCHIMMELPENNINCK,**  
estate manager with the Twickel  
foundation

'The extreme protection of game in the Netherlands is shooting itself in the foot'

ance to letting go of the zero population policy. Does fear of collisions on the roads play a role in this? 'I have approached the Dutch road safety organization to suggest research on collisions with wild animals, but they assured me it was not an issue. No, the resistance is mainly from the agricultural sector. At the moment there is no scope even for an experiment, to see for example what happens if these animals come into a new area, how much damage is really done, how many collisions there are, etcetera. The farmers feel threatened, not just because of the potential damage (boar eat anything) but also because of limitations for farm management and because they fear the spreading of animal diseases such as swine fever and foot and mouth disease. To be honest I don't think farming interests can always be allowed to prevail, but then someone must take responsibility for ensuring that other parties are very well aware of the fact that farmers' livelihoods are at stake.' ■

## THE GELDERLAND VALLEY NUTRITION ALLIANCE

# Eating out on the ward

**One in five patients at the local hospital are undernourished. Wageningen researchers are helping to find ways of tempting reluctant eaters, because patients who eat well feel better and require less care and medicine.**

TEXT ASTRID SMIT PHOTOGRAPHY AGE FOTOSTOCK & HOLLANDSE HOOGTE

**N**o sooner have you reached the main entrance of the Gelderland Valley hospital in Ede, near Wageningen, than you are offered nutritional advice. 'Eat well through the winter: a varied diet with enough vitamins and fluids' proclaims the poster on the revolving door. It is not for nothing that the hospital greets you this way. It wants to be known as the 'nutrition hospital' of the Netherlands. In other words, the hospital that closely monitors its patients' nutritional status, carries out advanced research and provides patients with an optimal diet, adapted to their needs, tastes and diagnosis.

This is all based on the conviction that good nutrition has much to contribute to a patient's treatment. Being ill is top sport, taking its toll on the body. So it should go together with top nutrition: that is the theory. But patients do not always act on it. In fact, quite a number of patients are undernourished when they are admitted to the hospital, while others lose kilos during their

stay. According to an estimate in a national report on problems in health care in the Netherlands in 2010, one in five patients, whether in hospitals and nursing homes or receiving home-based care, are undernourished, while another 40 percent are at risk of becoming so. Sometimes it is a case of not getting enough calories but it is also a question of insufficient protein or vitamins. These deficiencies can slow recovery, necessitating longer hospital stays and longer periods of requiring care and drugs. In 2008, the Institute for Medical Technology Assessment at the Erasmus University in Rotterdam calculated that undernourishment costs Dutch health care services a full 1.7 million euros per year.

### **FASTER RECOVERY**

So there is a lot to be gained by preventing undernourishment, and the Gelderland Valley Hospital and the Human Nutrition department at Wageningen University (part of Wageningen UR) decided to tackle it together. >



## ‘Nutrition was for the dieticians’

In 2007, they launched the Gelderland Valley Nutrition Alliance with the aim of ensuring a close collaboration between the university and the hospital in the field of patient nutrition. How could patients’ nutrition before, during and after a hospital stay be improved? Which knowledge was lacking and how could research provide it?

‘The department of Human Nutrition has always tended to focus on preventing diseases’, says Nicole de Roos, coordinator of the Nutrition Alliance on behalf of the university. ‘The reality is that people are getting older and older and end up getting one or more chronic diseases. We want to be able to do something for them too now. Are the old nutritional recommendations still relevant to them?’

Quite a number of research projects are under way already. Research is being done on whether patients make a faster recovery from operations in the chest or abdomen if they take extra vitamin D. Another project is looking at dialysis patients, who run raised risks of cardiovascular disease. Can that be blamed on the strict nutritional advice they receive? De Roos: ‘Collaboration with just one regional hospital has big advantages for us. It gives us access to substantial patient populations and the communication lines are short. If we want to consult our colleagues there we can just get in the car or jump onto our bikes.’

For the hospital too, there are benefits to having a direct

link with the nutrition experts at the university. ‘The most important thing is that we can now link clinical observations and research with fundamental research’, says geriatrician André Janse. ‘Nutrition used to be an issue for a couple of doctors who were doing a bit of clinical research, but now the topic is taken seriously across the board and is on a sound scientific footing. We have gone beyond amateurism.’

The geriatrician is currently studying the relationship between the use of multiple drugs and deficiencies in micronutrients such as vitamins and minerals. Drugs can suppress people’s appetites, leading them to grow weaker. Why it is that undernutrition among patients has received so little attention hitherto, he is not quite sure. ‘I think it is partly to do with our training. We were taught primarily about diseases. Nutrition was for the dieticians.’ But that is changing, Janse hopes. He and his colleagues are drawing up Guidelines on Undernutrition for doctors working with geriatric patients. The idea is that nutrition should be a concern for all the members of the treatment team, not just the dieticians. ‘For us ‘fluids and food’ are now a fixed item on the weekly multidisciplinary consultation’, says Janse.

Joke Huitinck, head of the dietetics department, is trying to get patients’ diet high on the agenda. According to a national guideline, hospitals should screen every patient staying longer than 24 hours for undernutrition. ‘Not every doctor or nurse is very alert to this. But we are managing it now with 80 percent of the patients, and that is quite high compared with other hospitals.’ The patients who turn out to be undernourished are advised on a diet that will enable them to build up their strength fast.’

### FASTER RECOVERY

A big problem in hospitals is that patients do not finish their meals. This is partly because they feel unwell and have poor appetites, but the strictly scheduled mealtimes, the predetermined menus and the hospital atmosphere do not help either. ‘We want to make some changes there’, says Menrike Menkveld-Beukers, who coordinates the Nutrition Alliance from the hospital side. She shows a pleasantly decorated room in the neurology department, furnished with wooden tables, linen photo prints of windmills and cows on the walls, and large pot plants on the windowsill. ‘People could

### COLLABORATION À LA CARTE

In the Gelderland Valley Nutrition Alliance, Wageningen University (part of Wageningen UR) and the Gelderland Valley Hospital are working together to improve patients’ nutritional status. A proportion of Dutch hospital patients are undernourished and this can slow down their recovery. The alliance is exploring how nutrition before, during and after hospital treatment can be improved.

Wageningen UR Food & Biobased Research is working on this topic outside the alliance too. The focus is on the question of how changing the ambience around mealtimes in nursing homes could improve old people’s appetites and help prevent undernutrition. The department is exploring the effect of pleasant surroundings on the consumption of drugs and diet products, and on health care costs. It is collaborating on this research with the Phliss company, national research organization TNO and the National Institute for Public Health and Environment RIVM.



Atmosphere has a big effect on appetite.

eat here with their visitors, choosing from an à la carte menu. Last year we piloted 'At your Request', a concept designed by the Sodexo company. It was a great success; patients were very satisfied, particularly with the choice of menu and of the timing of their meal, as well as with the different ambience. Here patients can get away from the hospital smells and atmosphere for a little while', says Menkveld-Beukers. 'But it also makes a difference that the food is mostly freshly prepared, so it is tastier. Before the pilot, patients gave the food 7.8 out of 10, and during the pilot more than 8 out of 10.

#### FORMICA TABLES

That atmosphere has a big effect on appetite was confirmed by a pilot study by Wageningen UR Food & Biobased Research last year. The residents of an old people's home in the Dutch village of Veghel were served their meals in a different setting for two months: no more Formica tables, no more warmed-up meals on compartmentalized plates. Instead they could help themselves to portions of organic meals, seated at nicely laid tables. It worked wonders. They ate one third more vegetables and carbohydrates and three quarters more apple sauce, and they gained an average of half a kilo.

In the same period, elderly people in a nursing home in Oss who continued to eat the old way lost almost half a kilo. 'The old people in Veghel also thought they had been at the table for a shorter time, whereas that was not the case. So the atmosphere matters with meals too – or rather, especially with meals', says Herman Peppelenbos, the coordinator of this project. He has received a grant of almost one million euros from the Ministry of Economic Affairs, Agriculture and Innovation and the Ministry of Health, Welfare and Sport in order to follow up this pilot in other care homes. 'We are convinced that this approach will cut costs. If people eat better, they will probably need fewer drugs and expensive diet products and will feel better, therefore requiring less health care.' The Gelderland Valley Hospital is already convinced of the advantages of a pleasant atmosphere for patients. Before long, the hospital board would like to see all patients' gastronomic tastes being catered to in congenial surroundings. It just has to be agreed on by the various advisory bodies. 'The Gelderland Valley will be the first hospital in Europe to have such luxurious dining rooms', says Menkveld-Beukers proudly. 'We hope that other hospitals will follow our example.' ■

THE OTTER POPULATION IS ON THE MOVE

# The Dutch otter is back

**It was well over twenty years ago that the last otter in the Netherlands was run over by a car in Friesland. Now, after a successful reintroduction, the population is booming, in spite of the number of road traffic victims. But the otter is threatened by a new problem: inbreeding.**

TEXT HANS WOLKERS PHOTOGRAPHY ANP ILLUSTRATIONS WAGENINGEN UR, JENNY VAN DRIEL



**T**he death of the last otter in the Netherlands in 1988 closed a troubled chapter in the history of the charismatic predator. The otter was never very prolific in the Netherlands: fishermen were its sworn enemies and hunted it down with considerable success. And a combination of water pollution, fragmentation of its habitats and, above all, traffic, saw the otter off between them. Once it was wiped out, researchers and nature conservation organizations began pulling out all the stops to improve the otter's habitats and to give the creature another chance. And they succeeded. Thanks to stricter regulations on the production and use of chemicals, the water quality of most Dutch rivers and lakes has improved tremendously. Nature conservationists have also met with success in their efforts to mitigate the fragmentation of the landscape, for example by placing wooden walkways under bridges. Otters tend to move along the banks of waterways and, if they come to a road they leave the safety of the water and cross it overland. These improvements to the conditions were reason enough to give the otter a second chance, thought both scientists and politicians. And in 2002, the time was ripe. Eight otters from eastern Europe were released in the north-west corner of Overijssel province. Over the next five years more than 20 animals were released here in the waterlands of De Wieden, De Weerribben and De Rottige Meenthe nature reserves.

#### **MORE THAN 100 YOUNG**

'All the provinces wanted to get the otter back', says Hugh Jansman, an ecologist at Alterra, part of Wageningen UR. 'In the end, we chose to release them in the north-west of Overijssel and in southern Friesland because there was a large network of lakes and waterways.' But it was a strategic choice of area too. 'De Weerribben and De Wieden are unique because together they form one of the largest swampy areas in Europe. Releasing the otters there provided an important motive for protecting the areas with legislation. So we took advantage of the otter – in a positive sense.' The newcomers did well, says the ecologist. They are reproducing and there are more than 100 young to show for it. 'The reintroduction area is getting pretty full now, with around 30 to 45 otters', says Jansman. 'Some of

**'Sadly, traffic victims often provide the first evidence that the otter has colonized a new area'**

the young have been run over by traffic, and some have migrated along the waterways to new areas.'

Evidence of otters is showing up with increasing frequency in other areas. Jansman says that signs of their presence have been reported in other parts of Friesland and Overijssel. There are probably a few otters living at Doesburg, near the German border in central Netherlands – one was run over there mid-January. There has also been a sighting near Kortenhoef, between Amsterdam and Utrecht, and a traffic victim near Hazerwoude suggests that the otter has reached the Vechtplassen lake area too.

#### **LOOKING FOR A MATE**

Sadly, it is often traffic victims that provide the first evidence that the otter has colonized a new area. Jansman: 'Otters can migrate a long way in search of a mate or territory. In spite of all the obstacles, they get everywhere. It just shows the resilience and opportunism of the species.' If their habitat can be improved further and the number of traffic victims brought down, the future should look fairly bright, thinks Jansman. 'Some improvements can be made quite simply and cheaply. The otter doesn't need much. Along the waterways it needs some shrubby vegetation every couple of kilometres, to use as a resting place.' This prevents the otters from going in search of a sheltered spot and then getting run down on the roads.

According to Jansman, traffic is responsible for 80 percent of otter deaths. And yet it would not take much to reduce the number of road deaths, he says. 'Besides resting places, you could consider a maximum speed at places where an otter migration route crosses a busy road. If you cut the speed from 80 to 60 kilometres an hour you reduce the number of deaths drastically.

Corrugations in the asphalt are another option; they make approaching cars much more audible.'

The other significant cause of otter deaths is drowning in hoop nets, which accounts for 20 percent of the otter deaths in the Netherlands. 'This is only usually a problem if the nets go all the way up to the banks. Otters generally swim fairly close to the banks. Fishers should not place their nets right next to the banks but about ten metres from them, for example.' It could also be effective to equip the nets with 'stop-grids' which let the fish through but keep out otters and water birds.

#### **GENETIC DISASTER**

But traffic and fishing nets are not the only hazards facing the Dutch otter. A far more surreptitious killer is at large: inbreeding. This reduces the vitality and fertility of the animal, and could eventually make the Dutch otter population non-viable. 'At present related otters mate. We can establish this from DNA profiles taken from intestinal cells in their faeces', explains Jansman. 'One of

the reasons is that a few very dominant males inseminate all the females in their surroundings. Their offspring then mate, and by then the genetic variation has been halved.'

Jansman believes this inbreeding would have been less of an issue if all 31 animals had been released at once. Due to an initial shortage of suitable animals for release in the Netherlands, small groups were released over a period of several years. 'It was spread out over too long a period', is Jansman's theory. 'This works to the advantage of dominant males. They can easily mate with all the females, and that is a genetic disaster.'

To prevent inbreeding problems, fresh genetic material is needed in the short term, says the otter expert. He argues for the introduction of new animals, in the Gelderse Poort nature area for example, which could eventually accommodate at least 50 otters. Nature conservation organization Ark Nature Development is currently working with the World Wildlife Fund on releasing otters in this area.

The riverine area of central Limburg could also accommodate about 50 otters. And a population here could form a link between the Dutch otter populations and those in the Ardennes in Belgium and the Eifel in Germany. Jansman would also like to see a small group living somewhere between the original population in Overijssel and the group to the south-east in Doesburg. 'For one thing this would facilitate the desirable exchange and for another, it would cater for the nomads that go in search of a partner.'

## NETHERLANDS SHOWS THE WAY

In spite of all the problems and bottlenecks, Jansman is optimistic. 'I am convinced that the otter will be back in most of its original distribution areas in the Netherlands in 20 years' time. But we do have to watch out that it doesn't die out again due to genetic impoverishment.' And that will require some funding, says Jansman, for monitoring the population, among other things. That has recently become problematic. 'The funding tap has been turned off', says Jansman. 'Out in the field we very rarely see an otter, but we know every single animal through DNA analyses of their faeces. This is the first winter that we don't have that data about them and are just fumbling in the dark.'

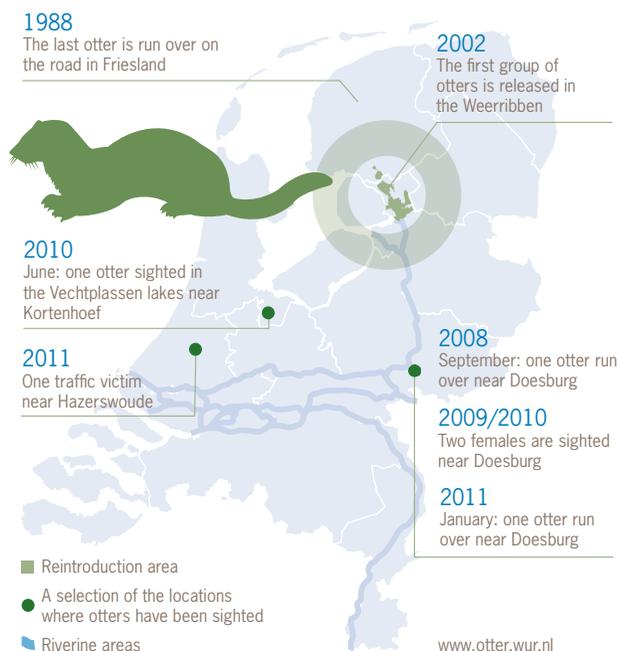
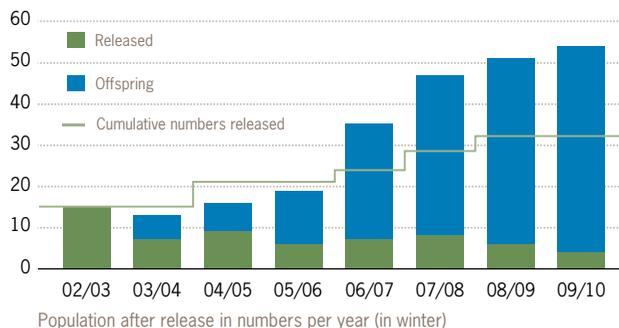
Jansman thinks the Netherlands should make every effort to save its otters. Not least because the project will generate a lot of new knowledge. Jansman: 'The problems China is facing with the conservation of the panda and the tiger are not very different to what we come up against in the conservation of the otter: the fragmentation of the animal's habitat and inbreeding. With the otter research, the Netherlands can profile itself as a model country for the conservation of threatened species.' ■

## SEALABLE EARS

The European otter (*Lutra lutra*) is found across large tracts of Europe and Asia, living both in fresh water and along rocky sea coasts. Like the stoat, the polecat and the badger, it belongs to the weasel family. At 12 kilos and almost one and a half metres in length, the otter weighs roughly the same as the badger, but is slightly longer. Its streamlined body, webbed toes, sealable ears and watertight skin make this fish-eater a real water rat.

The territories of male otters overlap those of several females. Otters come on heat twice a year and, depending on the food supply, have between one and five young per year, after a gestation period of two months. After one year, the young otters are ready for independence and go in search of their own territory. These are the animals that often fall victim to road traffic as they migrate.

## THE OTTER IN THE NETHERLANDS



## NEW RECIPE FOR TOUGHER PLA PLASTIC

# Coming soon: bioplastics in car bumpers

**Dutch consumers are familiar with bioplastics in the form of the crinkly packaging around their organic bell peppers. Rutger Knoop is working with chemical company Croda on a new generation of biodegradable plastics – not to end up in the organic waste bin but in laptops and car bumpers.**

TEXT KORNÉ VERSLUIS PHOTOGRAPHY MICHIEL VAN NIEUWKERK

**P**oly lactide (PLA) is one of the most promising of biodegradable plastics and can be processed into a wide range of products, from packaging material to polystyrene foam. It cannot yet compete with oil-derived plastics, however. 'It is too brittle and that limits its potential', says Rutger Knoop of Wageningen UR Food & Biobased Research. 'I am looking for ways of making PLA tougher so that it can also be used to make laptops and car bumpers.' Two years ago, the Dutch ministry of Agriculture, Nature and Food Quality put eight million euros into a collaboration programme in which research institutes and companies embarked together on a search for more broadly functional bio-

plastics – known as Biobased Performance Materials. Researchers from Wageningen UR and other universities are now working with companies on such topics as organic artificial gum, car varnish and materials for windmills and reusable bottles. One of these projects is High Impact PLA (HIPLA), in which Knoop will be working with chemical company Croda and other partners on additives that make polylactide less brittle. The other partners involved are HSV Technical Moulded Parts, Apeldoorn Flexible Packaging and Synbra Technology. Croda is an originally British company that started out producing ingredients for cosmetics, among other things. The company's first product was lanolin, a fat from sheep's

wool. Its Dutch branch is in Gouda and grew out of the local candle factory, which also processed fats and vegetable oils. Candles are no longer produced in Gouda, but the company still processes vegetable oils, using natural raw materials to produce a range of substances for paints and ink, fabric softeners and additives for plastics. HIPLA aims to find an additive that will make polylactides tougher.

### PRAGMATIC APPROACH

Knoop studied chemistry at Groningen University and obtained a PhD on polymers in Eindhoven. He has been working at Food & Biobased Research for two years. 'It was strange at first. The main difference is that





Hans Ridderikhoff (Croda) and Rutger Knoop (Wageningen UR).

when you do pure fundamental research you try and control the conditions as fully as possible. Here there is a much more pragmatic approach. Some time ago I had a great idea for making flexible cellulose fibres, but my colleagues immediately said, 'sounds wonderful but you can forget it. In practice it is impossible to make those flexible fibres.' It is the same story with the fatty acids at Croda. I was used to working with precisely defined substances. Croda says, 'That is not practical, but we can deliver a mixture guaranteed to have characteristic A and B.' You don't get into the scientific journal *Nature* like that, but it is nice to work on something that will be in the shops in a couple of years' time.'

Hans Ridderikhoff is manager of three research teams at Croda. He keeps in touch with Knoop. 'Of course we hope the project will develop interesting new techniques and procedures that will lead to new products for us.' The research group that Knoop belongs to provides him with 'a nice bridge between the university world and the business world'. Knoop: 'University researchers are primarily out for a nice publication, but that is not what interests us. The group in Wageningen is close to the practice in industry; they have the scientific drive, but they also have an eye for the commercial viability of an idea.'

The researchers at Croda will provide Knoop with substances to help him find the ideal

toughener for PLA. He has four years in which to do this. 'We have just started with making a thorough profile of the material that is now available. Then I want to start by making relatively simple additions.' Polylactide, like other plastics, is made up of long molecules. If these long strings lie side by side like uncooked spaghetti they form a rigid material that is very brittle. The fatty acid additives should prevent that. Knoop: 'Eventually I would also like to try and see if we can make little rubbery balls and integrate these into the PLA as shock absorbers. The balls have to be so small that they do not affect the light that shines through the plastic, but big enough to provide a rubbery elasticity.' ■

BRINGING IN THE CHEMICAL HARVEST

# The green factory

**Plants seem to be well suited to the production of a large variety of raw materials for industrial use and for medical drugs. Wageningen researchers are working on several fronts to perfect the processes that make this possible. It may lead to the production of a cancer drug from potato leaves.** TEXT RENÉ DIDDE PHOTOGRAPHY GUY ACKERMANS ILLUSTRATIONS KAY COENEN

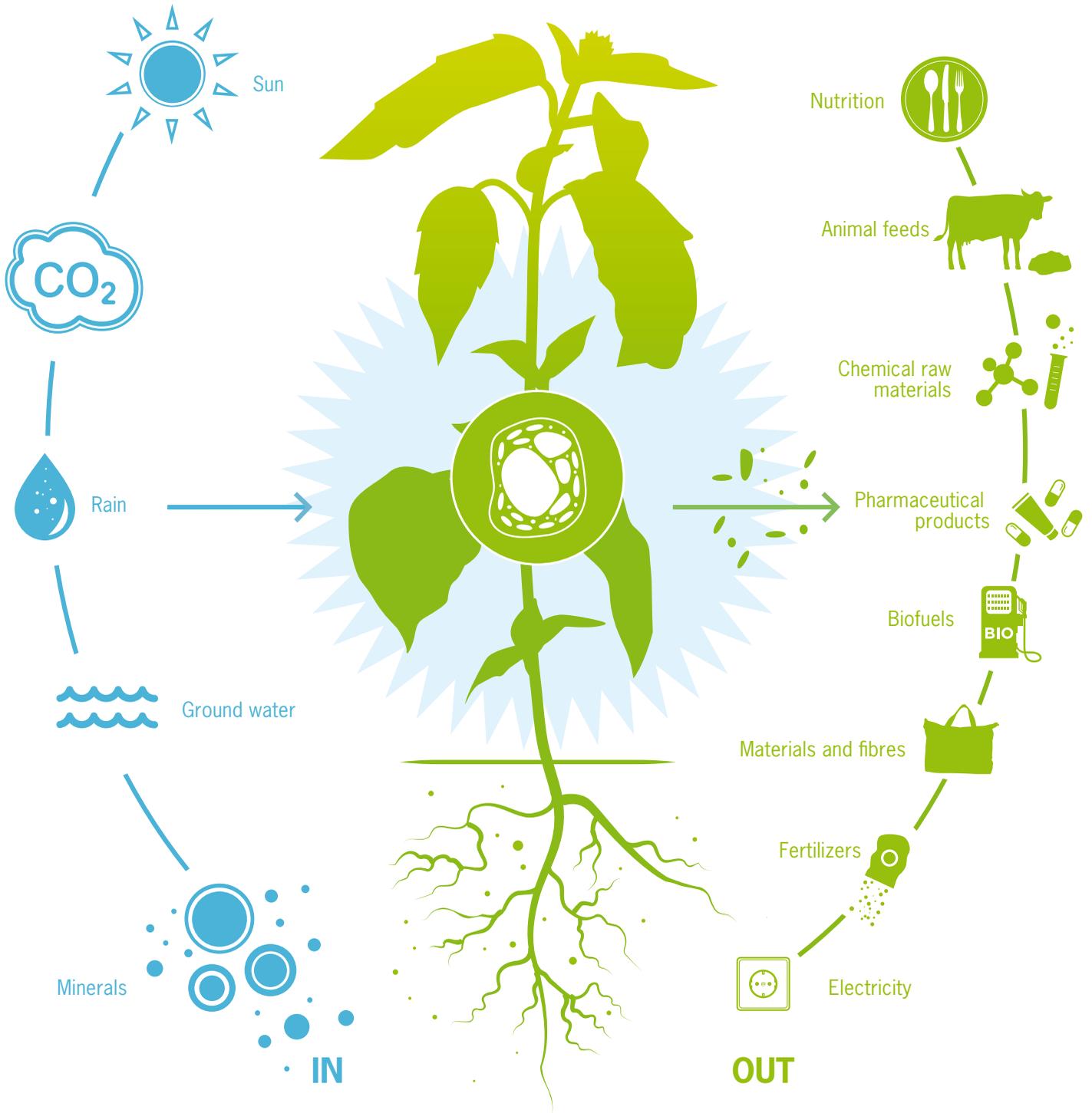
**A**gricultural crops are not just a source of food but can also constitute a factory for the production of green raw materials. Along with the climate crisis, rising prices of conventional raw materials are stimulating the rise of the 'biobased economy'. Researcher Andries Koops of Plant Research International, part of Wageningen UR, puts it like this: 'A sugar beet plant, for example, is really a highly efficient factory. One hectare of sugar beets has the same production capacity as a 100 litre industrial fermenter, which requires pumps, cooling, thousands of kilos of stainless steel and loads of energy.

A sugar beet is a self-contained factory based on sunlight; 60 percent of the factory is underground and 40 percent of it is located in the leaves. Which we don't do anything with; we just throw them away.' In the Radix building nearby on the Wageningen campus, Luisa Trindade, Biobased Economy research group leader at Plant Research International, tells a similar story. She is trying to link up the agricultural sector with the chemical industry, with the potato as the go-between. 'Of course we are all familiar with the potato from our mash or our French fries', says the Portuguese researcher. 'It is also well known that tens of

thousands of hectares of potatoes are grown for starch for the food industry, but quite a lot of the starch also goes into the chemical industry for use in products such as glue, plastic and paper.' But the possibilities do not end there. 'Potato leaves, which go entirely unused to date, contain substances that can slow the growth of cancer, or perhaps even prevent it. And parts of the potato waste can be used to generate energy.'

## **OIL-DEPENDENT**

The key motive for developing these new uses for plants is to create an economy which is no longer dependent on the oil >





**ANDRIES KOOPS,**  
manager of the Bioscience  
business unit at Plant Research  
International, part of  
Wageningen UR

'We are not talking peanuts but massive amounts of raw materials, all currently sourced from oil'

industry, but runs instead on renewable resources and fuels. Green raw materials are badly needed if ambitious sustainability goals are to be reached. The chemical industry, for example, aims to get half of its raw materials from renewable sources by 2030. At the moment the figure is one percent. Not long ago, the Dutch government was aiming at reducing CO<sub>2</sub> emissions by 30 percent by 2020, but it has recently shifted the goal to 14 percent. And the Platform for Biobased Raw Materials has set its sights on the Netherlands obtaining 30 percent of its energy from non-fossil fuels by 2030. At present barely 6 percent of the country's energy comes from renewable sources, and that is chiefly in the form of heating generated by burning waste. Yet these ambitions are not just empty prom-

ises and hot air. The green future is closer than we think. Mice exposed to substances in potatoes isolated by Luisa Trindade develop fewer cancers. Andries Koops has successfully made the potato produce 15 times more lysine than it usually does. Lysine is an essential amino acid for humans and other animals, but it is also a suitable basis for caprolactam, which in turn forms the basis for nylon production. 'Globally, we now produce 2.5 million tons of this stuff from crude oil, using a great deal of energy', says Koops. The ultimate goal for the Wageningen duo is to get plants to produce the desired 'chemical' substances directly, making it possible to harvest pure chemicals and intermediate products more or less directly from the land. Trindade explains that potato starch



manufacturer Avebe has to use substantial quantities of chemicals in order to adapt the starch for industrial uses. 'That takes amounts of energy equivalent to the annual consumption of a city like Amsterdam', says Trindade. This would no longer be necessary if the plant was able to synthesize the right kinds of starch itself.

**THE POTATO AS MODEL CROP**

But the plant will not do that of its own accord or for no good reason. 'We have to give the crops a helping hand and also to accept that the production of directly usable green raw materials happens to some extent at the expense of the production of – for example – sugar from sugar beets' says Koops. But that is the least of their concerns. 'Lysine is already worth four times as

much as sugar, so it more than compensates for the lower sugar harvest.'

Giving the plant 'a helping hand' is easier said than done, though. It is done by cross-breeding plant species and using genetic modification. Koops is now conducting his research on the model crop, the potato. 'If it works well in the potato, it will be a smaller step to do it with the sugar beet', he explains. In the case of lysine production, he exchanges a base pair in the gene for an enzyme that usually limits lysine production once enough has been produced for the potato's metabolism.

Koop's team is now working on a second change. 'We hope to use this to increase lysine production by five times. After that it will take us another four years to build the mechanism into the beet, hopefully >



**LUISA TRINDADE,**  
lecturer and Biobased Economy research group leader at Plant Research International, part of Wageningen UR

'If only because of the bio-energy, the 'plant as factory' is viable in the short term'



resulting in a beet that produces 500 to 1,000 kilograms of lysine per hectare. Our business case study suggests that at that production rate it is commercially viable' says Koops. 'Some Dutch companies are sure to be interested', he expects. It is up to society to decide whether we are going for a biobased economy, thinks Koops, but in his view there is not much choice. 'You cannot get chemical resources such as lysine from a wind turbine or a solar panel. When the oil runs out, plants will be the only way of securing the raw materials for the chemical industry. It is the job of scientists to show that it is possible to contribute in this way

to solving global problems such as climate change and sourcing raw materials. And then it is up to society to decide.'

### ABSORBENT DIAPERS

Another promising substance for production in plants is itaconic acid, a product which can be derived from the metabolism of the citric acid cycle in the plant. 'Itaconic acid is still made my means of a micro-organism, but we think plants would be cheaper', says Koops. The acid is used in the plastics industry for manufacturing polymers, but if the production price went down, it could also be used to produce poly-

acrylates, used for their super-absorbent properties in diapers. Koops: 'Please note, globally we are not talking peanuts, but massive quantities of raw materials, all currently sourced from oil.' In a comparable way, Trindade is working on changing potatoes. 'With the help of chemicals we are inducing a mutation in the genetic coding of an enzyme. We do this with the aim of stimulating the potato to produce starch that contains a lot of phosphate, opening up various potential applications', explains Trindade. 'If we do the opposite, we get the opposite effect: starch that is very well suited to processing in 'light' products.'

## BIOBASED RESEARCH AT WAGENINGEN UR

### Production of chemicals from green resources

e.g.: producing isosorbide from starch sourced from grain, maize or potatoes. Isosorbide can be used to make a new kind of phthalate-free plasticizer.

### Manufacturing materials from green resources

e.g.: producing polylactide (PLA) packaging from sugary waste matter.

### Research on the adaptation of crops

For use in a biobased economy. Example: a cross between *Miscanthus* and sugar cane.



### Biorefinery

Producing food, energy and chemicals, all from the same crop. Example: making crop waste products suitable for fermentation into biofuels. But biorefinery also includes such processes as the extraction of amino acids from grass, and this entails research on the logistical chain and production process as well.

### Social and economic aspects of biomass use

Examples: studies on sustainability or how to optimize the production chain, and life cycle analyses. There is also important research going on into potential land use changes resulting from competition between biofuels and food.

*Info: Erik van Seventer, Wageningen UR Food & Biobased Research*

There are potential applications not only in the food industry but also in pharmaceutical and medical products, reckons Trindade. Genetic modification, or the creation of mutations in genetic material using chemical substances, happens in a far more controlled manner than do natural genetic changes, whether in nature or in classical breeding methods, she points out. 'You know exactly which characteristics you are introducing into a plant. With classical breeding it is more a case of waiting to see how it turns out.'

#### BREAKING DOWN LIGNIN

Luisa Trindade is also working on ways of making the woody parts of a plant, such as the stalks of *Miscanthus* and maize, more suitable for fermentation. This would make it possible for yeast cells to use far larger quantities of biomass for manufacturing ethanol. *Miscanthus* is one of the best crops for this form of biofuel production. Trindade sums up why: 'Its production costs are low and so is its nutrient consumption, while its net energy yield is very high. What is more, this plant can fix nitrogen from the air.' One of the focal topics of the research is lignin, a substance which forms a protective coating on digestible cellulose and hemicellulose and up to now has hindered yeast cells in breaking down matter to produce the biofuels bio-ethanol and biogas. 'We have conducted tests in which we fed *Miscanthus* to a whole series of fungi. The fungi that can grow on it are the ones we need because they break down lignin. We must make sure we build the proteins that are responsible for this into *Miscanthus*' says Trindade.

But the researchers' repertoire does include classical plant breeding methods too. 'For example, we want to cross-breed *Miscanthus* with sugar cane', explains Trindade. 'Sugar cane is highly suited to fermentation for ethanol, but unfortunately it does not grow in Europe. We have already

got a long way with this research.' Just like Koops, she expects to see interest from companies wanting to market her new plant varieties.

#### RISING OIL PRICES

It is a promising and sustainable perspective. But the question is: is there a market for these newly bred plants as producers of green raw materials? Sure, there is, say Koops and Trindade unequivocally. 'If only because of the bio-energy, the 'plant as factory' is viable in the short term', Trindade believes. 'Oil prices are rising steadily. In a few years' time, if the market for green raw materials takes off, the cost price will go down and biobased resources will become increasingly valued as part of the economy. We are working out production chains together with plant breeding companies and the processing industry.'

Andries Koops has equal faith in the prospects of a breakthrough of the biobased economy. 'The more oil prices go on rising, the more this alternative has to offer.' He thinks it is important to make sure the biobased economy goes hand in hand with sufficient food production and the conservation of nature areas. Koops: 'For this reason we need in any case to raise the production per hectare, so that we generate a surplus for markets over and above the food and animal feed markets, while simultaneously reducing the need for scarce resources such as water, nitrogen and phosphates.' ■

'Potato leaves go entirely unused but contain substances that slow the growth of cancer'

#### MINISTER VERHAGEN GIVES 5 MILLION

The Centre for Biobased Economy of Wageningen UR is to receive 5 million euros. This was announced by Maxime Verhagen, Dutch minister of Economic Affairs, Agriculture and Innovation, during a working visit to Wageningen at the end of January. 'Through Wageningen University, the Netherlands is becoming a centre for biobased research', said the minister. 'We can use algae and plants to manufacture valuable green products. Sustainable fuels can help us reduce CO<sub>2</sub> emissions. Like this we will have not just a cleaner economy but also a more innovative one with which we can make money.' Verhagen embroidered on his theme during a guest lecture to students. He does not want to invest more in innovation, but more effectively. 'I would rather invest in a few world-class knowledge and research institutes such as Wageningen UR than in a patchwork of small, isolated institutes.' Collaboration between knowledge institutions, the business world and the government is the key to economic success, said the minister.

# WAGENINGEN



# 1951

In 1951 the buildings of the Agricultural College were spread out across the southern neighbourhoods of Wageningen.

# Wageningen on the move

**Wageningen UR is undergoing the biggest relocation in its history. Research institutes and chair groups that used to be scattered across Wageningen are being concentrated on the new campus on the edge of town, bringing teaching and research together.**

TEXT KORNE VERSLUIS ILLUSTRATION WAGENINGEN UR, KAREL HULSTEIJN

**D**riving into Wageningen from Ede, you cannot miss the results of the flurry of building construction the town has seen over the last couple of years. Between them, the striking Atlas building with its concrete exoskeleton and the massive Forum give Wageningen a real skyline.

At 40 metres in height, the lofty Forum is Wageningen UR's largest building. It was opened in 2007 as the central education building for the whole of Wageningen, has more than 100 teaching rooms of various sizes, and houses the library. Yet the university is growing so fast that the Forum quickly proved too small. And that is why signboards at the entrance to the campus announce the construction of a new education building: Orion. The foundations of this



# 2011

**In 2011 the Wageningen Campus, a hub of education and research on the northern edge of the town, is a hive of activity.**

- AFSG Agrotechnology & Food Sciences Group
- ASG Animal Sciences Group
- ESG Environmental Sciences Group
- PSG Plant Sciences Group
- SSG Social Sciences Group

pentagonal tower will be laid this year. This wish to see educational innovation and closer collaboration between the university and the research institutes lay behind the plans for the move, drawn up ten years ago. Gradually, the plans became more ambitious and now the most far-reaching vision – of the whole university on a campus on the edge of Wageningen – looks likely to be a reality in another couple of years' time. Several chair groups have already moved onto the campus, and more and more university researchers share a building there with counterparts from the research institutes. The plant scientists have moved into Radix and the environmental scientists occupy the trio of buildings at the entrance to the campus, Gaia, Lumen and Atlas, which they share with the staff of environmental institute Alterra. And on the agenda for 2011 is the arrival of the animal scientists and of the policymakers, now still based at the head office in the town centre. Wageningen UR hopes that the campus will eventually accommodate not just its own students, research

ers and managers, but also companies and external research institutes. Ecological research institute NIOO has already built a new headquarters opposite the campus. And to the south of the Wageningen UR buildings, a strip of land has been reserved for knowledge-intensive companies. The first one is on its way: dairy company FrieslandCampina plans to build a new R&D centre there for 350 staff.

### SOCIAL SCIENTISTS STAY PUT

Meanwhile, the Dreijen compound on the hill in Wageningen, which until a couple of years ago was the heart of the university, is rather quiet now that students are taught mainly in the Forum. In 2014, the last researchers will move from the Dreijen to the campus and the Dreijen will be sold off. So is nobody staying put? Not quite: if you are looking for the sociologists or the economists, you will still find them in the Leeuwenborch. Even in five years' time. Along with the Aula, this recently renovated bastion of the social sciences will then be the only university building off-campus. ■

## RURAL SOCIOLOGISTS TWENTY YEARS ON

# Sustainability at home, change abroad

**Both chose to study rural sociology in order to help in the Third World. And Simone van Vugt did indeed go abroad, but is now supporting development projects from the Netherlands. Her contemporary Suzanne van der Pijll helps Dutch companies with communication on sustainability issues.**

TEXT ALEXANDRA BRANDERHORST PHOTOGRAPHY HARMEN DE JONG

**T**he makeable society' was an oft-heard slogan in the Netherlands in the 1980s: a very Dutch concept that suggests the sky is the limit to social engineering. So were all rural sociologists idealists in those days? 'Well yes, really', says Suzanne van der Pijll, who 'wanted to go and help people in the Third World' herself. But she had changed her mind by the end of her first year. 'I thought it was crazy after all, that we would then go out and dictate how things should be done.' And at that time there was also a lot of interest in environmental issues. 'I realized that there was enough to be done at home in the Netherlands.' So Van der Pijll switched to environmental sociology. 'We took it for granted that the world would change if we just raised everyone's awareness: if your pamphlets are clear enough, people will get the point.'

Now Van der Pijll is deputy director of Schuttelaar & Partners, and advises companies such as Unilever, Heinz and Dutch supermarket chain Albert Heijn. At the end of the 1990s, she was the fifth member of staff to join this communication and advi-

sory bureau on health and sustainability. Now the company has more than 80 staff, half of them Wageningen graduates. And Van der Pijll is still idealistic. Once she starts talking about the need for change, she starts to look less jovial and more earnest. 'The world must become more sustainable and we have got to hurry up about it. It is not without reason that 2010 was the hottest year on record.'

### A GOAT ON CREDIT

Van der Pijll's contemporary Simone van Vugt still wanted to go abroad at the end of her first year at Wageningen. Having been born in Darfur and spent her first ten years in Africa, she wanted to go back. 'And I wanted to understand why people act as they do and why they are rich or poor',

Van Vugt explains, underlining her point with animated gestures. A 'very broad' education including courses on market economics, extension and gender, led to a job in north-eastern Niger, where she worked on a programme that enabled women to buy a goat on credit in order to start a livestock herd. Van Vugt then went on to develop training courses for NGOs and local councils in Niger and Mali, as well as to train trainers to give the courses. She also worked on ways of working together with local people to gain insight into local problems and to find solutions to them. And this has now become her specialism in her capacity as programme leader at Wageningen UR's Centre for Development Innovation (CDI, formerly >

**'When I first started I thought everyone wanted the same things'**



**SIMONE VAN VUGT**

**Age:** 44

**Studied:** Rural Sociology,  
1985 – 1992

**Job:** Programme leader Innovation  
& Change at Wageningen UR's  
Centre for Development Innovation



## SUZANNE VAN DER PIJLL

**Age:** 44

**Studied:** Rural Sociology and Environment, 1985 – 1992

**Job:** Deputy director at Schuttelaar & Partners

the International Agriculture Centre). In 2003, Van Vugt was ready for a change. 'I noticed that my interest was going down.' She has just got back from Bolivia, where she ran a training course for staff of Dutch aid organization ICCO in Latin America; and she will soon be off to Malawi and Zambia on an assignment for Dutch NGO Cordaid. But she does train people in the Netherlands too.

It is almost impossible to explain her work without falling back on jargon. Van Vugt facilitates 'multi-stakeholder processes' in complex conflicts of interest, and she also gives courses on this subject. She gives an example of a region of Ghana where the government has started a forest management project, but where there is illegal logging going on. Besides the government and the illegal loggers, there are also logging companies, civil society organizations and local residents with a stake in the issue. Van Vugt makes sure that all these parties – 'stakeholders' – analyse the problem and ponder solutions together; she designs and guides this often long-term process. 'With change processes, it is mainly all about the power relations between stakeholders. In retrospect I sometimes wonder why I used to work only with NGOs when I was in Niger. All the other players were on the periphery of my field of vision.' Between the ideal and the marketable

### WHERE DO WAGENINGEN'S RURAL SOCIOLOGISTS END UP?

The current occupations of 206 of the almost 400 graduates of Rural Sociology and Rural Development Studies are known. Only 16 of them live and work abroad. About 18 percent of the alumni work for an international or development-related organization; 14 percent work at a university, 11 percent for a consultancy firm and another 11 percent for the Dutch government. About seven percent work in marketing and communications.

## 'There is a reason why 2010 was the hottest year on record'

Van der Pijll, too, has gained the wisdom of hindsight in her work. 'Consciousness-raising is not enough. Such campaigns are definitely needed in order to create support and involvement, but you've also got to make sure there are sustainable products on the shelves. The government and businesses shouldn't necessarily leave the responsibility for that with citizens and consumers. People have to make so many decisions already.'

Enthusiastically, Van der Pijll grabs a packet of De Ruijter chocolate sprinkles from a shelf in her office. She points out the UTZ Certified logo on a bottom corner of the box. 'All the cocoa De Ruijter uses is sustainably sourced. So as a consumer you don't have to choose. That is great. That is positive for us in the Netherlands, and for the world as well. That cocoa isn't grown in our country.'

It is precisely the mixture of ideals and business that is needed to move things on, says van der Pijll. 'If you can act on an idealistic principle in a professional way, you achieve more.'

Her Wageningen background helps her to do this. 'In Wageningen I learned to understand what happens in the air and in the soils. We also learned about agriculture and nutrition. Now I work a lot for companies in the food sector. So it is important to know what we are talking about.' As chair of SKAL, a certification organization for organic farming, Van der Pijll can put her knowledge to good use. 'The organic sector is based on ideals, of course. That is nice, but it is also good to bring in some professionalism.'

### ONLY GETTING POORER

Simone van Vugt has no regrets about studying at Wageningen either. Twelve years later, she went back to Niger, where her career started. 'It has only got poorer,

more traditional and more conservative', she observes. And yet she is not disenchanted; she would say she is 'more realistic'. 'When I started I was more naive. I thought everyone wanted the same things. Now I know that that isn't even true of development workers.'

Development cooperation has been under heavy fire in recent years. Van Vugt understands the criticism. 'The whole structure of the sector needs to change. Projects used to be monitored because a donor was spending money on them. Now we collect data and experiences so that we can identify the most effective approaches.'

What is more, we should approach local problems from a more global perspective, thinks Van Vugt. One major problem is the increasing presence of China in development countries. 'So I might have gone to great trouble to build something up and make sure people can participate in decision-making, and then China buys up land there and establishes a gigantic infrastructure. And there goes the whole decision-making process; it just gets trampled all over. We have to do something about that.'

### CHEAP MEAT

For sustainability too, there are some hot items on the agenda, says Suzanne van Pijll. The biggest issue for the future, in her view, is the debate about the consumption of animal proteins. She would also like to find out more about consumers' love of a bargain – at any environmental price. This leads to ludicrously cheap special offers on meat, and the sale of cheaply produced T-shirts. 'We are not going to see consumers demanding from government and retailers that they be able to pay more for ethically produced goods. We have to change that mentality. I struggle with these sorts of issues sometimes, but that is exactly the challenge.' ■

## TEACHER OF THE YEAR: GERT PEEK

# ‘I want to enthuse them in any way I can’

**‘He can even make a handful of soil interesting.’ This is how his students talk about him, so it came as no surprise to them when he was announced teacher of the year 2011. ‘He is so enthusiastic that he makes boring subjects nice and you start trying harder.’**

TEXT YVONNE DE HILSTER PHOTOGRAPHY GUY ACKERMANS

**W**hat do we find in the soil here?’ Gert Peek goes down on his hands and knees in front of his students and scrabbles at something white in the sandy soil. When the pebble won’t come away he loosens it with his green rubber boot, picks it up and wipes it down. ‘River sediment, very good. This comes from the Eifel or the Ardennes’, says Peek, holding it up to view. Peek is a lecturer in soil science at Wageningen University, part of Wageningen UR, and this chilly Friday morning he is taking first year students of Forest and Nature Management on a bicycle tour of Wageningen’s botanical gardens and woods. This rounds off a series of lectures and practicals and is intended to provide them with more insight into the relationships between landscapes, soils, hydrology and land use. ‘And what sort of tree is that, the one with the scaly bark? Yes, an acacia, one of the loveliest of trees. When it blossoms in May-June, you smell perfume. Then you really should come and study here.’ Peek delivers his story with great zeal, even though he was telling exactly the same

thing to another group an hour ago. He never has to ask his students to stop talking; they listen enthralled. ‘He can even make a handful of soil interesting. His enthusiasm makes it easier for me to follow his lessons’, says Sophie Keizer later, before getting onto her bike. Most teachers are much more serious and duller, adds Simone Lohuizen.

The many examples with which Peek livens up his lectures are not just entertaining, but also help you to understand the subject matter. ‘Those examples come to mind spontaneously when you read over your notes’, says Kinga Corbet. When she saw a ditch with a high water level from the train recently, Simone was reminded of what Peek had said about ditches. ‘Things like that never happen to me with other teachers’ she says.

Later in the afternoon Peek meets the students on the Grebbe dyke, where he reviews what they have seen that day. The students – their hands and noses red from the cold – fill in the last six questions on their forms. ‘Hand in your answer sheet. You can win a bottle of wine with it.’ Peek has five bottles

to give away. ‘We want to enthuse them in any way we can, especially with a general module like this.’

Peek won a prize for his teaching at Wageningen eleven years ago, but he feels even more honoured by this prize, which is awarded by students. The election is organized annually by the Wageningen University Fund to reward outstanding teachers and highlight the importance of good education at Wageningen University. The prize goes to the teacher with the most student votes.

### RENT A BUS

‘Fortunately, education has regained some of its status in the last couple of years’, says Peek. The Executive board now allocates a total of one million euros to the 25 best modules and the 25 best teachers. ‘This means that as a teacher I bring funding into the chair group, so people look at me differently.’ Peek wants to use the sum of 2,500 euros for educational purposes that comes with this prize for field trips and nice books for students. ‘Students sometimes ask me to run an extra field trip at the weekend, and now I can at least rent a bus.’ ■





## KLV calls on alumni to come up with ideas

**KLV is calling on all alumni of Wageningen University to think about how to solve the world food problem. The solution to that problem is the focal point in the anniversary programme celebrating 125 years of the alumni network.**

‘We have opened up all communication channels: our jubilee website, e-mail, LinkedIn, Facebook and Twitter’, says KLV’s Vice Director Elvire Schlösser. ‘People are also coming to us spontaneously with their opinions.’

This year, KLV is celebrating 125 years with more than thirty activities – some social, some more scholarly – on the theme of ‘How to feed our world?’ ‘This is a key theme within the University too, and it is

relevant to the work of many Wageningen alumni, which is why their input is incredibly important’, says Schlösser. ‘After all, they are the experts in this area.’ KLV is getting the programme together for this anniversary event using crowdsourcing. Crowdsourcing is a process whereby input is gathered from large groups of people consulted through the Internet. KLV is asking the alumni community to provide expertise and ideas, and to contribute to the discussion. ‘We want to get our graduates all across the world thinking about this.’

It is also the alumni who will decide what is on the programme for the conferences being organized in the Netherlands and abroad throughout the year. The climax of the anniversary programme will be a big

conference in Wageningen on 10 November. ‘It is really being organized bottom-up, which is an exciting process.’ Schlösser is expecting this way of organizing things to increase alumni involvement. ‘It is obviously great if you can see your input being reflected in a conference programme.’ The working language for

**‘We would still like to hear from people who have other points they want to put on the agenda’**

## QUESTIONS

- 1  
Is it really worthwhile to invest in small scale entrepreneurship in the developing countries?
- 2  
Is it inevitable to use genetically modified (GM) products to produce food and feed?
- 3  
Is governmental population control a key solution for our challenge to feed the world?

Give your response via:

[www.klv125.nl](http://www.klv125.nl)

[www.linkedin.com](http://www.linkedin.com) (KLV Wageningen Alumni Network)

[twitter.com/klvnetwork](https://twitter.com/klvnetwork);

[www.facebook.com/klvnetwork](https://www.facebook.com/klvnetwork)



the debate is English in order to allow as many graduates as possible to take part, both in the Netherlands and abroad. 'The contributions are flooding in, and they are of high quality', says Schlösser.

Earlier this year, KLV distilled three key questions from the responses to the theme in order to streamline the debate. Alumni are invited to respond to these questions (see above). 'But we would still like to hear from people who have other points they want to put on the agenda', adds Schlösser.

Everything should come together at the conference in November. How is not yet clear. KLV will be concentrating on collecting ideas until September. 'So I am appealing to everyone to contribute ideas and join in the debate.' Info: [www.klv125.nl](http://www.klv125.nl) ■

## RESPONSES REWARDED WITH GIFT TOKEN

*'We learned about the need for sustainable development far too late. What we do not seem to learn, not even in the distant future, is responsible consumption',* was one of the contributions to the debate about the world food problem on the jubilee website [www.klv125.nl](http://www.klv125.nl). The kinds of solutions put forward range from more efficient use of water through improved food safety and reduced CO2 emissions to birth control.

Each month, KLV is handing out prizes to alumni who make an exceptional contribution to the debate. The first to win a prize were Jing Zhang and Mans Lanting, who each received an iTunes gift token. One of Lanting's statements was: *'Today overall losses in the food supply chain are estimated at 10 to 30 percent. Reduction of those losses would be the most logical target to pursue.'*

## ANNIVERSARY PROGRAMME

The main activity in KLV's jubilee year is the international conference on 'How to feed our world?' to be held on 10 November in Wageningen. Prior to that there will be preparatory meetings in the Netherlands (in The Hague in April, in Zwolle in May, and in Tilburg in September), as well as in Ethiopia, Brazil and China - countries that are the home and workplace of many Wageningen alumni who can help give shape to the programme. Each preparatory conference will focus on a specific area, such as food safety or the role of the food industry. Representatives of research institutes, agri-business and government bodies will debate the issues

and the results will then be presented at the conference in November. External parties will also be putting the world food problem on the agenda this year. The *Natuurwetenschappelijk Gezelschap Wageningen* (Wageningen Scientific Society) will also be organizing a conference in November, called 'How to feed our world in 2050?' Alongside these thematic discussions, there will also be festivities on the programme. One of these will take place on 8 September, the date on which the foundation of an alumni society for the then Royal Agricultural School was announced 125 years ago. A list of the activities can be found at [www.klv125.nl](http://www.klv125.nl).

## KICK-OFF IN ADDIS ABABA

On 28 January the first group of Wageningen alumni met for their conference about the world food problem. The meeting took place in Addis Ababa, Ethiopia, where more than 50 Wageningen graduates working for research institutes, NGOs, embassies and the World Bank discussed agricultural development in Ethiopia and the status of research and international cooperation. A central topic of the debate was the importance of biodiversity to global food production. Ethiopia is home to many different kinds of food

crops and can play a role as an incubator for biodiversity. This will definitely be an issue the participants in Ethiopia will want to discuss during the KLV anniversary conference in November in Wageningen. Paul den Besten attended the conference in Addis Ababa on behalf of KLV. 'One nice side-effect is that the alumni who organized the conference became enthusiastic about the idea of setting up an alumni chapter in Ethiopia together with other former Wageningen students.'

## COURSES

# Wageningen UR Centre for Development Innovation Info: [ww.cdi.wur.nl](http://ww.cdi.wur.nl)

### ► May 9 – 20

#### **Agriculture in transition: innovative approaches to sustainable farming**

This course aims to offer participants a systems perspective on agriculture as well as the skills to design innovative sustainable farming options. It looks at how farmers can balance sustainable production practices and market demands within a changing policy environment.

Location: Wageningen

### ► May 30 – June 24

**Seed potato technology, certification and supply systems** This course aims to provide course participants with insights, knowledge and skills for applying modern technology in seed supply systems in different agro-ecological regions of the world. The course covers both formal and informal seed supply systems. Seed quality control, seed certification and seed policies will also be covered. Relevant examples from the Dutch seed potato industry will be demonstrated and discussed.

Location: Wageningen

### ► May 30 – June 17

**Integrated Pest Management (IPM) and food safety** Good Agricultural Practices (GAP) and Integrated Pest Management (IPM) have become essential components of sustainable agriculture, while supportive policies and institutional development are needed to create an enabling environment. Location: Wageningen

### ► June 20 – July 08

#### **International training of trainers on wetland management: facilitation of multi-stakeholder processes and curriculum development (ICWM-TOT)**

The training aims to provide participants with the knowledge and skills necessary for curriculum development in the field of wetland management in their own region. Within the field of wetland management, the ICWM-TOT will focus on the need for transboundary and cross-sectoral cooperation, the facilitation of multi-stakeholder processes and facilitating learning within wetland management planning. Location: Wageningen

### ► June 20 – July 08

#### **Plant Variety Protection (Plant Breeders' Rights)**

This course aims at facilitating the introduction of plant variety protection in countries where legislation on this matter is being developed, or has recently been passed. It will enhance the participants' capabilities in the practical implementation of a legal framework on plant variety protection. The course will also offer visits to key organisations in the operation of a plant variety protection system, a breeding company and the Aalsmeer flower auction.

Location: Wageningen

### ► June 06 – 24

#### **Food and nutrition security impact assessment**

The course offers the basic principles of Monitoring and Evaluation (M&E) systems with an emphasis on FNS. The course is a combination of theoretical sessions and practical case studies on how to set up an M&E system, including impact assessment.

Location: Wageningen

## COURSES

# Wageningen Business School

Info: [www.wbs.wur.nl](http://www.wbs.wur.nl)

### ► April 11 – 15

#### **Advances in Feed Evaluation Science**

The objective of the seminar is to provide a concise update on the principles of feed evaluation as applied to the livestock industries.

### ► June 5 – 10

#### **Food Law Academy Summerschool 2011**

A postgraduate course in food regulatory affairs. The Food Law Academy introduces the different forces that are active in the field of food law. Much of the course is devoted to the system and content of food law in the European Union.

## WAGENINGEN WORLD

# Wageningen in the world!



Wageningen World really does get around. Here it is at the University of Florida, snapped by Wilfred Vermerris. Are you reading the magazine far from Wageningen too? Send your photographic evidence to [wageningen.world@wur.nl](mailto:wageningen.world@wur.nl)

## CLIMATE



FOTO NATIONALE BEELDBANK

# Wageningen UR is going solar

**The buildings of Wageningen UR institutions will soon feature solar panels that will provide the city of Wageningen with electricity. The flat roofs of other Wageningen businesses will also be used for generating energy.**

The solar panels will be placed through the project 'What is that on my roof?', which aims to be generating two megawatts of solar power by the end of 2012, enough to supply 500 households with electricity. Wageningen city council received a grant of 800,000 euros for the project, which is part of the Climate-neutral Cities Innovation Programme. The department of Environmental technology at Wageningen University, part of Wageningen UR, is going to do research

on how to match energy demand with supply.

Wageningen UR is already producing wind energy. In Lelystad it has 26 wind turbines that generate 77 million kWh of power per year. At Wageningen UR's experimental farm De Marke, electricity is also generated from biogas. And from 2011, the organization has decided to buy only green wind energy as well as to make big gas savings through heat and cold storage on campus.

Info: [www.themaklimaat.wur.nl/juk](http://www.themaklimaat.wur.nl/juk)

## ALUMNI NETWORK

## KLV survey of brand recognition

At the end of last year, the alumni network KLV asked the marketing and research firm Trigenum to measure its brand recognition. When asked to name an alumni organization, 62 percent of the nearly two thousand respondents – including more than 1,700 alumni – spontaneously said 'KLV' or 'KLV Wageningen Alumni Network'. If they were given a list of organizations, that figure rose to nearly 90 percent. KLV ordered the survey so that it could measure the effect of all the publicity surrounding the anniversary celebrations in 2011. The alumni network is expecting this to increase its brand recognition and is counting on a positive impact on its image. Brand recognition will be measured again at the end of the anniversary year. Info: [elvire.schlusser@wur.nl](mailto:elvire.schlusser@wur.nl)

## PERSONALIA

**Dr. Willem Brandenburg**, MSc WU in Plant Breeding 1978; PhD WU 2000, won the PSG Business Challenge with the Sustainable Aquatic Farm project. 5 January 2011.

**Prof. Erwin Bulte**, MSc WU in Forestry 1992; PhD WU 1997, professor in the Development Economics Group at Wageningen University, has been awarded a Netherlands Organization for Scientific Research (NWO) Vici grant for the social sciences totalling 1.5 million euros for research on agricultural development in Africa. 9 December 2010.

**Dr. Harrold van den Burg**, MSc WU in Molecular Sciences 1997; PhD WU 2003, Laboratory of Phytopathology, has been awarded an NWO Vidi grant for a maximum of 800,000 euros for innovative research. 23 November 2010.

**Dr. Maria Forlenza**, PhD WU 2009, has been awarded an NWO Veni grant of 250,000 euros for research on viral diseases in carp. 2 November 2010.

**Dr. Jasper van der Gucht**, MSc WU in Molecular Sciences 1999; PhD WU 2004, Laboratory of Physical Chemistry and Colloid Science at Wageningen University, has been awarded an NWO Vidi grant of a maximum of 800,000 euros for innovative research. 23 November 2010.

**Dr. Alfred Hartemink**, MSc WU in Soil and Water 1994; PhD Reading University, UK, 2002, has been appointed Secretary General of the International Union of Soil Sciences (IUSS). 31 August 2010.

**Dr. Marleen Kamperman**, PhD Cornell University, USA, 2008, working at the Laboratory of Physical Chemistry and Colloid Science at Wageningen UR, has been awarded an NWO Veni grant of 250,000 euros for research on adhesion systems based on nature. 2 November 2010.

**Kerstin Kaufmann**, PhD Friedrich-Schiller University of Jena, Germany, 2005,

working at the Laboratory of Molecular Biology at Wageningen University, has been awarded an NWO Vidi grant of a maximum of 800,000 euros for innovative research. 23 November 2010.

**Dr. Maria Koelen**, PhD WU 1988, has been appointed professor of Health and Society at Wageningen University. 1 November 2010.

**Dr. David Lentink**, PhD WU 2008, won the Annual Academic Prize of 100,000 euros for the 'Flight Artists' project. Dr. Lentink was made a member of the Young Academy of the Royal Netherlands Academy of Arts and Sciences in March 2010. 17 November 2010.

**Prof. Mark van Loosdrecht**, MSc WU in Environmental Protection 1985; PhD WU 1988, professor of Environmental Biotechnology at Delft University of Technology, has received an honorary doctorate from ETH Zurich, the Swiss technical university. 20 November 2010.

**Dr. Michiel van der Molen**, MSc WU in Soil, Water and Atmosphere 1996; PhD VU University Amsterdam 2002, was awarded the highest distinction awarded by the Russian Academy of Sciences, for his research on climate change in the forestry and tundra ecosystems in Northeast Siberia. 18 November 2010.

**Prof. Michel Nielen**, working at RIKILT, part of Wageningen UR, has been appointed scientific director of the new TI-COAST institute (Innovation in Analytical Science & Technology). 1 January 2011.

**Dr. Erik Poelman**, MSc WU in Biology 2003; PhD WU 2008, has been awarded an NWO Veni grant of 250,000 euros for research on the effect of herbivores on the reproduction of plants. 2 November 2010.

**Dr. Jan Post**, MSc Delft University of Technology 2008; PhD WU 2009, has been awarded an NWO Research grant of 250,000 euros for research on the

desalination and draining of seawater. 2 November 2010.

**Pierre Ramakers**, MSc WU in Phytopathology 1974, has received the Award of Excellence for extraordinary contributions to augmentation biological control and its use in integrated pest management. 8 November 2010.

**Prof. Marten Scheffer**, Professor of Aquatic Ecology and Water Quality Management at Wageningen University, has been awarded an Advanced Grant of around 2.5 million euros for his ambitious research plans. 17 December 2010.

**Dr. Tobias Seidl**, PhD University of Zurich, Switzerland, has been awarded an NWO Veni grant of 250,000 euros for research on the feeling motion in desert ant legs and robot legs. 2 November 2010.

**Dr. Patrick Smit**, MSc WU in Molecular Sciences 2002; PhD WU 2007, has been awarded an NWO Veni grant of 250,000 euros for research on the hereditary characteristics of plant cells in the area of fatal defence mechanisms in plants. 2 November 2010.

**Dr. Gert-Jan Steeneveld**, MSc WU in Soil, Water and Atmosphere; PhD WU 2007, has been awarded an NWO Veni grant of 250,000 euros for research on the role of atmospheric turbulence and heterogeneity in the landscape on the life cycle of mist. 2 November 2010.

**Prof. Martien Cohen Stuart**, of the Laboratory of Physical Chemistry and Colloid Science at Wageningen University, has been awarded an Advanced Grant of around 2.5 million euros for his ambitious research plans.

**Dr. Ryan Teuling**, MSc WU in Soil, Water and Atmosphere 2002; PhD WU 2007, has been awarded an NWO Veni grant of 250,000 euros to answer the research question 'Do forests amplify heat waves?' 2 November 2010.

## LIVESTOCK

## Developing Ethiopia's dairy sector

A five-year programme to develop Ethiopia's dairy sector has been launched this year at the request of the Dutch Embassy in Addis Adaba, Ethiopia. Livestock Research, the Centre for Development Innovation (CDI) and LEI, all part of Wageningen UR, will collaborate on this project with the Dutch development organisation SNV and other partners. The programme will focus on achieving integrated chain development in order to get more milk into the cities, and on a market-oriented system of agricultural innovation to tackle problems in the dairy chain and in milk production. This programme will utilize the combined knowledge of chain parties, knowledge institutions, government organizations and development organizations. The programme will also build on previous work done by Wageningen UR, SNV and other partners, and will be financed by the Dutch Ministry of Foreign Affairs (development cooperation).

## BOND OF FRIENDSHIP

## Wageningen on TV in China

The mayor of Wageningen, Geert van Rumund, and Olaf van Kooten from Wageningen UR, appeared live on Chinese TV on 9 January. The inhabitants of Zhangzhou, a Chinese megacity with links with Wageningen, were introduced to Wageningen in the 'Two towns meet' TV series broadcast by the CCCT4 channel. The programme included shots of Wageningen town centre and the campus. Van Kooten, professor of Horticultural Supply Chains at Wageningen University, answered questions through a satellite link about Food Valley and developments in Dutch flower production and trading. Zhangzhou is known as the 'City of Daffodils' and is interested in setting up a flower auction. Van Kooten had visited the Chinese city previously for joint research with the local university.

Info: [olaf.vankooten@wur](mailto:olaf.vankooten@wur).

## PERSONALIA

## Paul van den Brink SETAC president



Paul van den Brink, researcher at Alterra, part of Wageningen UR, has been chosen as the new president of the World Council of SETAC, the Society of Environmental Toxicology and Chemistry. SETAC is a global non-profit organization with 5,300 members, all of whom are professionals involved in research, education and management linked to solving environmental problems in the natural environment and the use of natural resources. Van den Brink has served as president of SETAC's European branch since June 2008. In addition, he was vice president of the SETAC World Council.

## TRACING ALUMNI

Wageningen University and KLV Wageningen Alumni Network, strive to remain in contact with all Wageningen UR graduates. Unfortunately, we lack some addresses. Do you know the address of any of the alumni mentioned below with year of graduation? If so, please send this information to [alumni@wur.nl](mailto:alumni@wur.nl)

Dr. D. Kanté MSc, 2001  
A.M. Karanja PhD MSc, 2002  
Dr. K.A. Karatzas, 2002  
Dr. J.N. Kariuki, 1998  
Dr. J.N. Kariuki MSc, 1998  
D. Karmanov PhD, 2009  
M. Kaul PhD, 2010  
A. Kavalenka PhD, 2009  
G.L. Kennedy PhD, 2003  
Dr. J.F. Kessy, 1998  
Dr. W.M. Khaemba, 2000  
M.N. Khan PhD, 2009  
Dr. P.R. Khanal, 2003  
M. Kheirkhah Zark PhD MSc, 2005  
Dr. A. Khlystov, 1998  
Dr. Ki-Byung Lim, 2000  
E.M. Kikulwe PhD, 2010

J.B. Kim PhD, 2005  
J. Kipkemboi PhD, 2006  
Dr. T. Kippie Kanshie MSc, 2002  
K.H. Kissawike PhD, 2008  
S.J. Krishnan PhD, 2007  
C.C. Kruk Gencarelli PhD, 2010  
Dr. O. Kufoniyi, 1995  
A. Kumar PhD, 2003  
Dr. Ir Y. Lauw, 2006  
R.A. Lee PhD MSc, 2002  
Dr. Li Chengwei, 2005  
M. Liakath Ali PhD MSc, 2002  
Dr. D.J.L.M. de Lima MSc, 1998  
Dr. M.I.P. de Lima, 1998  
Hsueh Shih Lin PhD, 1998  
Liu Yi PhD, 2005  
Dr. Z. Lompo-Ouedraogo, 2003  
Dr. A.M. López Contrera, 2003  
S. López Ridaura PhD, 2005  
Mai Anh Khoa PhD, 2007  
O.V. Makarova PhD, 2003  
G. Mamalakis PhD, 2007  
K. Mantlana PhD, 2008  
E. Marfo MSc PhD, 2006  
J. Martín-Tereso López PhD, 2010  
Dr. C.I. de Matos Martins, 2005

Dr. D. Mazvimavi, 2003  
Dr. V.M. Mazzucato, 2000  
E.V. Mbugi PhD, 2009  
K. Meekanon PhD MSc, 2002  
A. Mehari Haile PhD, 2007  
R.A. Mehribi PhD, 2006  
L. Melchert Saguas Presas PhD MSc, 2004  
Dr. N.J. Mendez V, 1998  
D. Mendola PhD, 2008  
S.K. Mertens PhD MSc, 2002  
Dr. A.A.F. Miguel, 1998  
P. Milone PhD, 2004  
Dr. M. Minor, 1998  
R. Mirabella PhD, 2004  
Dr. S.A. Mirikhozani, 1993  
C. Mishra PhD MSc, 2001  
Dr. A.A. Mohamed, 1999  
Dr. J. Mojet, 2004  
S.M. Mtshali PhD MSc, 2002  
P.N. Muendo PhD, 2006  
Dr. R.P. Mula, 1999  
Dr. D. Mulumba, 2005  
Murniati PhD MSc, 2002  
Dr. R. Musampa, 2000  
Dr. I. Mustika, 1990  
A.M. Mwangi PhD MSc, 2002



## Illegal logging ban: is it good for the Ghanaians?

Of course, Nico Rozemeier of Wageningen UR's Centre for Development Innovation (CDI) realizes that illegal logging in Ghana is unacceptable. But that is just one side of the story. At the request of the Dutch Foreign Office's Directorate-General for International Cooperation and in collaboration with the Forest and Nature Policy chair group at Wageningen University,

part of Wageningen UR, Rozemeier has been looking into the consequences of the EU policy of curbing illegal logging. Ghana and the EU have agreed to process only legally produced wood from 2012. 'That is good for the forest, but is it also good for the people? The forest has always had an important social-economic function: 100,000 Ghanaians depend partly on

cutting down the rainforest for their livelihood. There will be nothing for these people in future; they can never hope to meet EU criteria if the regulations do not give them a chance. This is the sort of knowledge we bring in; last year we got this dilemma onto the agenda both in Brussels and in the Ghanaian government.'

*Info: [nico.rozemeier@wur.nl](mailto:nico.rozemeier@wur.nl) ■*