

WAGENINGEN WORLD

MAGAZINE OF WAGENINGEN UR ABOUT CONTRIBUTING TO THE QUALITY OF LIFE

no.4 2013



‘It is not a sterile
freezer but a highly
productive
environment’

Polar expedition to Antarctica,
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The wolf is gaining ground in Europe. Alterra is drawing up a plan to prepare the Netherlands for its arrival in the country. A key feature of the plan is establishing a central Wolf Office.

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Aalt Dijkhuizen is stepping down after 12 years as chair of the executive board at Wageningen UR. He looks back: 'Our model of fundamental and applied research has become a model for others.'



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A FREEZER FULL OF LIFE

Four IMARES researchers sailed to the sea ice of Antarctica on the icebreaker Polarstern. Jan Andries van Franeker talks about the cold, the krill, and the charm of working in a magical environment.



COLOPHON Wageningen World is the quarterly magazine for associates and alumni of Wageningen UR (University and Research centre) and members of KLV, the Wageningen Alumni Network. A PDF version of the magazine can be found at www.wageningenUR.nl/en/wageningen-world **Publisher** Wageningen UR, Marc Lamers, **Editorial Board** Hans Bothe, Yvonne Fernhout, Ben Geerlings, Bert Jansen, Jeanette Leenders, Desirée Meijer-Michielsen, Jac Niessen, Erik Toussaint, Delia de Vreeze **Editors-in-chief** Pauline Greuell (Corporate Communications Wageningen UR) **Magazine editor** Miranda Bettonville **Copy editor** Rik Nijland **Alumni news** Alexandra Branderhorst **Translation** Clare McGregor, Clare Wilkinson **Language editor** Clare McGregor **Art direction and design** Jenny van Driel (Wageningen UR, Communication Services) **Cover picture** Getty Images **Overall design** Hemels Publishers **Printer** Mediacenter Rotterdam **ISSN** 2212-9928 **Address** Wageningen Campus, Akkermaalsbos 14, 6708 WB Wageningen, PO Box 409, 6700 AK Wageningen, telephone +31 317 48 40 20, wageningen.world@wur.nl **Change of address alumni** www.wageningenUR.nl/en/alumni.htm **Change of address associates** (mention code on address label) wageningen.world@wur.nl **Change of career details** alumni@wur.nl

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 and Wageningen University. These institutions have joined forces to contribute to finding answers to crucial questions related to healthy food and a sustainable 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, Applied Plant Research, Wageningen UR Livestock Research, Central Veterinary Institute, Wageningen UR Food & Biobased Research, IMARES and RIKILT.



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PHOTO GUY ACKERMANS

Typhoon damage

'It is impossible to say whether an individual typhoon is a direct result of climate change, but a typhoon as powerful as Haiyan certainly fits the pattern of a warmer atmosphere and warmer oceans. Typhoons develop when sea water is at least 27 degrees and the weather is calm. The large amount of condensation that accumulates in the air creates so much energy that, combined with the turning of the earth, it causes a typhoon. In the area where Haiyan developed, the sea water was as warm as 30 degrees.

'Thanks to American research in the Atlantic, we know that the number of hurricanes there has increased relatively quickly since the nineteen seventies. But there is a lot of variation from year to year, due to natural fluctuations in the atmosphere and the oceans. Fortunately, the forecasting of hurricanes and typhoons has been much improved, so warnings can be issued in good time.

'Sadly, little can be done about the development cycle of a hurricane or typhoon. The research projects on this that were running in rich countries have all been stopped. The scale is just too large. A typhoon can have a diameter of 200 to 500 kilometres, and the area in which it develops is even bigger. 'But we could soften the impact of hurricanes and typhoons, even of those that do not make landfall and only cause problems because of the water surge they create. Damage could be limited by means of stronger construction methods, dykes, and houses that move with the water or are built on mounds or piles. This demands big investments and good governance. If Dutch know-how is of use anywhere, it is in the field of defences against water.

'Together with the Dutch meteorological institute KNMI, we recently submitted a research proposal to the Netherlands Organization for Scientific Research (NWO). The aim is to get a more accurate forecast of the future risks of hurricanes and floods in the Dutch Antilles. Those risks have not been analysed sufficiently. Hurricanes are already causing coastal erosion there, whereas the islands earn their money from their beautiful beaches.'

Bert Holtslag, professor of Meteorology and Air Quality at Wageningen University

Kids eat more fruit thanks to School Fruit

At the end of September an EU School Fruit programme was launched in 1100 primary schools in the Netherlands. As a trial, pupils at 15 secondary schools were also offered three free fruit or vegetable snacks per week over a period of 20 weeks. Research has shown that children at schools where fruit is eaten regularly during breaks eat more fruit at home as well. Wageningen University's support office for tasting classes and the EU School Fruit programme is co-responsible for running the programme.

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HUMAN HABITAT

Joint metropolitan research with MIT

Together with the Technical University of Delft, the Massachusetts Institute of Technology (MIT) and a few big companies, Wageningen UR has won Amsterdam municipal council's design competition for a new scientific institute. The Amsterdam Institute of Advanced Metropolitan Solutions will receive a budget of 50 million for 10 years and will work on innovative solutions to problems in the areas of traffic, energy, food, people, waste and climate. It will also offer a Master's programme in Metropolitan Solutions.

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Reporting ambrosia with an app

Anyone in possession of a smartphone can now help to map the distribution of the hay fever-causing plant Ambrosia. Alterra, RIKILT and Wageningen University, all part of Wageningen UR, have developed an app that helps people recognize the plant.

The Dutch website for nature recordings natuurkalender.nl has been getting reports locating ambrosia for years, but the plant is easily confused with a more common species such as mugwort. 'The app should help reduce the number of mistakes while making it easier to report sightings as well,' says Arnold van Vliet.

The exotic ambrosia species came to the Netherlands in chicken and bird feed, and is feeling more and more at home, thanks to the effects of climate change. The problem with this for hay fever sufferers is that the plant prolongs the traditional hay fever season, making it desirable to prevent it from flowering and spreading. The Ambrosia Alert app can be found on Google Play

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WATER TECHNOLOGY

IMARES tests ballast water purification

Since September, IMARES Wageningen UR has been running a test facility for systems for purifying ballast water, for release into fresh water in particular.

Cargo ships carry billions of tons of ballast water around the world every year. The water contains organisms such as plankton and jellyfish which can disrupt local ecosystems and economies if they are dumped in harbours elsewhere in the world. In order to prevent this, it was agreed at an international convention in 2004 that all ships will eventually be equipped with a treatment system for ballast water. The water will, as a rule, be filtered first and whatever gets through the filter will be killed using UV light or chemicals. The substances used must not, however,

be harmful for the environment when they are dumped. The IMARES facility enables producers to assess their systems in terms of the criteria for certification. A special feature is that the effects of the treatment systems in fresh water will be studied as well. Some major ports are made up partly or entirely of fresh water. Info: klaas.kaag@wur.nl



ENVIRONMENTAL TECHNOLOGY

WAGENINGEN UR

Algae thrive on urine

A PhD researcher at Wageningen University has succeeded in growing algae on undiluted human urine. This opens up new possibilities for water purification and for using valuable elements in urine.

It was already known that algae can grow on diluted urine. Human urine is full of nitrogen, phosphate and organic matter. But *Chlorella* algae can also cope with undiluted urine as long as you add certain trace elements, discovered PhD student Kanjana Tuantet.

The fast-growing micro-algae extract all the phosphate and most of the organic matter from the urine, but leave much of the nitrogen behind. So what you are left with is not clean water. The big gain is the production of algae. Chlorella algae are a potential source of proteins and biochemical, as well as of biofuels and fertilizers. The simplest process is the one for producing fertilizer: all you have to do is dry the algae out and spread them on the land.

The research also revealed that the algae go on absorbing nitrogen at night, although they need daylight in order to grow. 'We think the algae lay down starch reserves during the day and use them at night for

further growth,' says research supervisor Hardy Temmink. Because the urine is not diluted with clean water, the researchers are working on a closed reactor in which urine can be processed into algae day and night. A few problems will have to be solved before growing algae is commercially viable, warns Tuantet. The large-scale cultivation of algae, for example, is only profitable if other valuable products are extracted besides biofuel. The cultivation process also requires a high-tech system.

Desah, the company that is partner to the research, will be taking the lead in the further development of a urine reactor. The researchers guess that it will be located on in a new housing estate where the toilets will be equipped with a system for separating faeces from urine. This would keep the processing plant close to the source. Tuantet's findings were published in the *Journal of Applied Phycology*.

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PHOTO GUY ACKERMANS

Queen Máxima at Academic Year opening

On the occasion of her visit to Wageningen for the opening of the Academic Year on 2 September, Queen Máxima officially opened the new teaching building Orion. After helping the audience count down, she pressed a button that started a film about the most sustainable building on the Wageningen campus. That evening students took over 'their' building with a big party. As the second teaching building on Wageningen campus in addition to the Forum, Orion boasts facilities for 2600 students. On the same day Queen Máxima attended several short presentations of innovative projects. She saw a test by Wageningen UR Greenhouse Horticulture in which ripening tomatoes exposed to red and blue LED lights contain twice as much vitamin C, and she listened to an explanation at RIKILT Wageningen UR about how to trace the origin of cocoa beans. And IMARES Wageningen UR informed the queen about the creation of oyster reefs in the Oosterschelde estuary, which is part of its *Building with Nature* programme. Speakers at the opening of the Academic year, the theme of which was Responsible Growth, included Dutch minister of Economic Affairs Henk Kamp and Jason Clay, senior vice president of the World Wildlife Fund in the United States.

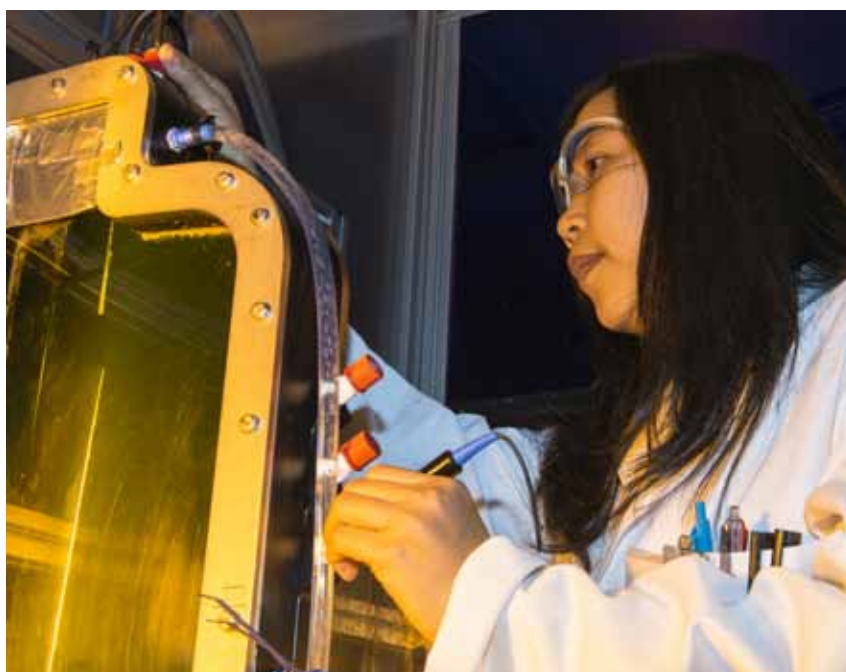


PHOTO HANS WOLKERS

CLIMATE

European forest too old to absorb much CO₂

European forests are absorbing less and less carbon dioxide. This is because the forests are ageing, causing growth to stagnate and the capture of carbon to slow down. What is more, the loss of forest coverage due to the construction of roads and infrastructure is going faster than the planting of new forest. This means European forests can only be used to offset the greenhouse effect if there is a change of management strategy, concluded a team of researchers from Wageningen UR and their international colleagues. They argue that forests should be assessed for their value for carbon sequestration, ecosystem services such as clean water and erosion control, and goods (such as wood, fruit and game). The management strategy could then be adapted to the results. The research was published in August in *Nature Climate Change*.

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PHOTO SHUTTERSTOCK

FOOD SAFETY

No point testing GM crops on animals

Animal tests in which rodents are given genetically modified crops to eat are not necessary for determining the crop's safety, said researchers from RIKILT Wageningen UR in *Plant Biotechnology Journal* in June. The European Commission made the animal test compulsory at the behest of several EU countries. The animals in the test have to eat the whole crop. The test is difficult to implement, however, and it is not very sensitive. Making the test compulsory flies in the face of the European intention to cut down on animal testing. Info: harry.kuiper@wur.nl

LIVESTOCK BREEDING

Robust cow with healthy milk

The livestock farming sector faces the challenge of providing a growing number of consumers with milk that is rich in healthy fatty acids and comes from 'robust' cows that live long and healthy lives. In an EU project called RobustMilk, researchers have developed methods of breeding these robust cows. The fatty acid composition of the milk can be used to obtain detailed information not only about the quality of the milk but also about the energy balance of the cow. The energy balance indicates how much energy the cow uses to produce the milk and how much she is left with herself.

A summary of the project results appeared in *Advances in Animal Biosciences*. Wageningen UR is now leading an international consortium which aims to integrate feed efficiency into breeding programmes. Info: roel.veerkamp@wur.nl



CHAIN MANAGEMENT

Kenyan rose survives sea voyage

Kenyan roses still flourish in the vase after being transported to the Netherlands by ship rather than by plane. This was demonstrated by a test using fully refrigerated transport.

Wageningen UR Food and Biobased Research is working on a more sustainable chain and lower transport costs, in collaboration with Dutch businesses and Kenyan growers, sector organizations and transporter Maersk. The Kenyan-Dutch decorative plant sector now exports 120,000 tons of flowers per year.

The first test cargos of roses were shipped from Mombasa to the Netherlands in September. In total, the sea voyage meant

a saving on CO₂ emissions of 87 percent compared to air freight. Depending on the cultivar, the rose then lasted between 7 and 10 days in the vase. The results show that refrigerated sea transportation of flowers holds potential for the sector, says project leader Eelke Westra. 'If it is possible from Kenya, with a sea voyage lasting more than 25 days, it must be possible for transport within Europe as well.'

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AQUATIC ECOLOGY



ILLUSTRATION: DLG

Fish bypass cuts through the dyke

IMARES Wageningen UR is involved in an innovation in hydraulic engineering: a fish migration river at the Afsluitdijk, the dyke closing off the IJsselmeer lake from the Wadden Sea.

The fish migration river provides a way for migrating fish to get around the barrier formed by the Afsluitdijk. They include the eel and the European smelt, a migrating fish found in the Wadden and North Seas which hardly spawns in the IJssel or Marker lakes anymore, as research by IMARES and the Free University of Brussels has shown. To create the fish migration river, a new exit through the Afsluitdijk will be made near the

sluice gates at Kornwerderzand. A naturally landscaped tract of land on the IJsselmeer side will accommodate a meandering channel; to the north there will be route in and out of the passage. This gradual transition over about six kilometres between salt and fresh water, will give migrating fish more space for spawning, living and growing up. The project will benefit fisheries and recreation on and around the Afsluitdijk. On a visit to the Wadden region in August, State Secretary Sharon Dijksma of Economic Affairs called the fish migration river a unique project: 'It restores the link between the Wadden Sea and the IJsselmeer, so that the number of fish species will grow and

more birds will be attracted to the area. This will help us to achieve our nature-related goals and fulfil our European obligations.'

The fish migration river is part of the New Afsluitdijk programme (DNA), a joint venture by the provinces of Friesland and North Holland and the municipalities of Hollands Kroon, Súdwest-Fryslân and Harlingen. The initiative for the 1.5 million euro project came from the Wadden Association, fishing association Sportvisserij Nederland, the IJsselmeer foundation Het Blauwe Hart and static-net fishing association Vereniging Vaste Vistuigen Noord. Info: martin.baptist@wur.nl

BIOBASED ECONOMY

Small farmers barely benefit from biodiesel

The Brazilian government programme to boost production of biodiesel, and in particular to enable small farmers in the poor north-east of the country to make a profit on it, has failed. This conclusion was drawn by researchers from Wageningen University, part of Wageningen UR. Five years after the start of the stimulation programme, 80 percent of the biodiesel is being produced by large-scale soya producers from central Brazil. Subsidized crops

such as oil palm and constitute no more than 2.6 percent of the production. Before the launch of the biodiesel programme in 2004, the government hoped to do better than it did with the stimulation programme for ethanol production, which was running from 1975. The country did gain independence from oil imports at that time, but got large-scale sugar cane plantations around São Paulo in exchange. Info: arthur.mol@wur.nl



PHOTO LINEAR

No coral reef without sponges

Coral reefs owe their existence to the sponges that live on them. This finding was published by a group of Dutch researchers including Ronald Osinga of Wageningen University, part of Wageningen UR, in October in *Science*. Sponges are primitive water creatures which live off the waste products of corals and algae. The excreta of the sponge are then eaten by reef dwellers such as crabs and worms, which in their turn are food for larger animals. This cycle keeps a supply of food and energy available in nutrient-poor tropical waters. This knowledge is important both for the conservation of coral reefs and for the development of sustainable forms of aquaculture. Info: ronald.osinga@wur.nl



PHOTO CORBIS

BIOLOGY

Migraine publication by Spinoza laureates

The three scientists who won the Spinoza prize in 2009 have published their first joint article on the subject of migraine. In *PLoS ONE* at the end of August, Wageningen professor Marten Scheffer, a specialist in research on tipping points, Leiden University neurologist Michel Ferrari and Twente University nanotechnologist Albert van den Berg claim that a migraine attack is preceded by a gradual increase in the sensitivity of neurons in the brain. This goes on until a point is reached when the slightest change creates a tipping point and the neurons fire, causing a migraine attack. The scientists still want to calculate precisely where this tipping point occurs.

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Scientific Panel on Food Security needed

Scientists involved in research on the world food supply from the perspective of different disciplines need to be better organized.

This was a frequently voiced sentiment at the conference on food security hosted by Wageningen UR between 29 September and 2 October in Noordwijkerhout in the Netherlands. Only fuller collaboration will put food security policy on a firmer scientific footing. Some participants proposed following the example of the IPCC on climate science.

At the Noordwijkerhout conference, 600 scientists from more than 65 countries could attend dozens of workshops and lectures. Martin van Ittersum, personal professor of Plant Production Systems at Wageningen University and his fellow professor Ken

Giller worked for one and a half years on setting up this First International Conference on Global Food Security. Van Ittersum: 'Normally conferences are gatherings of scientists from the same discipline. We wanted to get all the disciplines relevant to food security together. That meant I didn't know three quarters of the people at the conference. But that way you get a refreshingly new network, which shakes things up and generates new ideas.' In two years' time Columbia University and Cornell University will organize a follow-up conference in New York. Info: www.globalfoodsecurityconference.com, martin.vanittersum@wur.nl



PHOTO HOLLANDESE HOOGTE

Storing rice at a farmers' cooperative in Burkina Faso.

AQUACULTURE

More fish farming in Africa

The LEI and IMARES Wageningen UR are working with 10 Dutch companies from the fish farming sector, consultancy firm Larive and the Kenyan fisheries institute KMFRI on an integrated chain for farmed fish in East Africa. The demand for animal protein is growing faster than the supply. In order to exploit the market opportunities for farmed

fish, there is a need to raise production and improve efficiency, management and infrastructure. Agricultural Economics Institute the LEI is contributing socio-economic and market expertise to the project, while IMARES brings in technical knowledge of feeds, breeding and fish farming. Info: arie.vanduijn@wur.nl

CLIMATE



PHOTO HOLLANDE HOOGTE

Measuring city heat with your smartphone

Researchers at the Royal Netherlands Meteorological Institute (the KNMI) and Wageningen University have developed a method of tracking the temperature in a city using smartphones. It is very important for research on heat and health to get detailed data on the distribution of temperatures around urban areas. The batteries on mobile telephones have a temperature sensor designed to prevent damage from overheating when the battery is being charged. The free application OpenSignal, intended for measuring the strength of wireless networks, records these battery temperatures. These data can be used to calculate the air temperature using a simple heat transport model. The method has already been tested in eight megacities in Europe and North and South America.

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PLANT BREEDING



Potato breeding manual

Anyone wanting to cross-breed potatoes or to know where a potato variety comes from can now consult the Potato Breeding Manual that was published in September. This practical handbook for the potato chain came out of the course on potato breeding for growers, which is part of the BioImpuls research programme for improving organic potatoes. The book was written by staff at Wageningen UR Plant Breeding and the Louis Bolk Institute, and is available in both Dutch and English.

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FRUIT CULTIVATION

Suzuki fruit fly threatens soft fruit

Specimens of the destructive Suzuki fruit fly were found on fruit farms in the Dutch provinces of Gelderland and Zeeland in August. In North America and Southern Europe the fly has already caused damage to the tune of millions of euros.

The fly primarily threatens soft fruit such as raspberries, blackberries, strawberries, grapes, currants and cherries. The females lay their eggs in the ripening fruit, after which it rots as the larvae devour it. The *Drosophila suzukii* was first reported in the Netherlands in 2012. This prompted researchers at Applied Plant Research (PPO, part of Wageningen UR) and the Dutch fruit-growers' organization NFO to set up a national monitoring network at the start of this year. Traps were installed at about 80 locations in the Netherlands, and they are

monitored by PPO on a weekly basis. The fly is now widespread and is being found in larger numbers.

In order to ward off infestation, fruit-growers should not bring in fruit from elsewhere or leave overripe fruit on the bushes or on the ground, but remove fruit waste daily or destroy it immediately. Researchers are also trying to establish the sources of the infestation. The NFO hopes that a pesticide used in many European countries will be approved in the Netherlands as well.

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PHOTO CORBIS



The wolf is on its way

Thanks to the exodus from the European countryside and improved protection measures, the wolf is gaining ground. Alterra worked with 55 different parties to draw up a plan for protecting the wolf and its habitat and ensuring the peaceful cohabitation of people and this predator. TEXT MARION DE BOO ILLUSTRATIONS RHONALD BLOMMESTIJN AND SCHWANDT INFOGRAPHICS

The dark figures move too quickly to be seen / They are four-legged and they look really mean,' sang Dutch musician Drs. P in the nineteen seventies in a ballad set in the Russian forests. The wolf has gone west since then, advancing from Russia and eastern Poland at a speed of 100 kilometres per year and producing five new wolf packs every year. In November a Wolf Plan (see box) was published, written by Alterra Wageningen UR at the behest of the Dutch ministry of Economic Affairs, the Dutch provinces and the wildlife fund Faunafonds in an effort to ensure the return of this mythical predator goes smoothly. Alterra collaborated closely with the Wolves in the Netherlands platform, an alliance of various nature organizations. 'The ministry asked for a plan which had

broad public support,' says ecologist Geert Groot Bruinderink of Alterra. 'So we consulted 55 stakeholders from the touring association ANWB to the Mammals Association.' There were discussions between livestock holders, hunters and nature conservationists about issues such as the question of when a wolf can be labelled a 'problem wolf', what should happen in such cases, which preventive measures are effective and who should foot the bill.

QUITE A COMMOTION

About 150 years since the last one was shot in South Limburg, the wolf is once again nearing the Dutch border. In July a dead wolf was found by the side of the road near the Dutch village of Luttelgeest, causing quite a commotion. 'When I saw the photos I felt the adrenaline coursing through my veins,'

says ecologist Leo Linnartz of Wolves in the Netherlands. Only months later did it transpire that it was probably just an ill-advised prank. The 18 month-old she-wolf probably had not come to the Netherlands under her own steam but had been shot elsewhere, with the still fresh remains of a young Elbe beaver in her stomach.

'Nevertheless, it would seem to be just a matter of time before roaming wolves cross the border into the Netherlands,' says Linnartz. 'In August 2011, a creature that looked exactly like a wolf was photographed near Duiven and in the spring of 2013 there were reports of wolf sightings in the east of Drenthe, after which one was photographed just across the border near Meppel.' Wolves are already living in many parts of northern, central and southern Europe from Norway to Spain. There have been two >

‘Wolves have really adapted to coexisting with humans’

packs near Hamburg, about 200 kilometres from the Dutch border, since 2012. In the whole of Germany there are now 23 wolf packs, mainly in the eastern region of Lausitz, which has been benefitting from a boom in wolf tourism since the end of the nineteen nineties. In Romania wolves have even moved into the cities. Sheep and goat farmers keep their flocks there, behind electric fences and guarded by specially trained guard dogs. Wolves are very afraid of electric fences and teach their young to keep away from them too. This provides a way of preventing wolves getting used to food supplies that are not meant for them.

Linnartz thinks the wolves will come to the Netherlands of their own accord. ‘They need peace, space and food. In the Netherlands there are about 100,000 deer so there is a good chance of the wolf settling here and it may happen faster than we thought. The first to cross the border might well be a lone wolf. If it has a partner, there could be a pack here within five years.’ Large tracts of the northern and eastern Netherlands are suitable habitats for wolves, as are the Flevo polder, Brabant and Limburg. On the Veluwe moorlands alone there is room enough for at least five packs. The Netherlands probably has enough food and space to support between 10 and 20 wolf packs.

STRICTLY PROTECTED

The wolf is strictly protected by both the Bern Convention of 1979 and the European Habitats Directive. It is not just the wolf that is protected but also its habitat and any wolf-dog hybrids. Our attitude to wolves has changed somewhat in the course of history, explains Linnartz. ‘As wild hoofed animals disappeared from Europe and more and more domestic livestock was kept, the wolf came under fire with increasing ferocity. By about 1960 it was practically extinct in

Europe. And precisely around that time, our outlook on nature began to change.

Urbanization and the raised standard of living gave nature a new value to us as a place of recreation. And birds of prey and predators were all part of the picture. The wolf also happens to play a key role in a healthy ecosystem. All kinds of scavengers help to consume his prey and he ensures a better balance between the populations of the various kinds of hoofed animals.’ In Germany the wolf has always been seen as an indigenous species because it never completely disappeared from eastern Germany – there were always a few strays crossing the German-Polish border. After the fall of the Berlin wall (1989), eastern Germany adopted the West German nature conservation laws and the wolf was suddenly redefined not as an eagerly hunted pest but as a strictly protected species. ‘And because the east German plateau is increasingly thinly populated there are fewer and fewer conflicts between humans and wolves,’ says Linnartz. In the Middle Ages when rabies still raged in Europe, wolf attacks on humans were common. But in the course of the last century the problem of rabies has been eradicated. Foxes were inoculated en masse by scattering meat impregnated with vaccine in the woods, and it is quite feasible to do the same for wolves.

Wolves are generally timid and not dangerous to humans, as long as they do not become too familiar with them. Once a wolf has discovered that it is easy to find food around people, he becomes less timid and can become a ‘problem wolf’. According to Groot Bruinderink, in Germany the wolf has grown accustomed to humans remarkably fast. ‘They have really adapted to coexisting with humans. We hope the wolf will mainly hunt wild prey such as wild hoofed animals and perhaps moulting geese. But I saw an example in eastern Poland of wolves

taking a cow. So we do need to put preventive measures in place for livestock holders, as well as a system of compensation for damages.’

WOLF OFFICE

Groot Bruinderink thinks it is important to set up a central point where problems can be reported. ‘Farmers who lose a sheep, leisure seekers who think they have seen a wolf and drivers who run a wolf over at night should all be able to call on this service.’ The Wolf Office, its working title, will be a collaboration between experts in fields including ecology, damage assessment and communications. ‘We want to communicate that the wolf is on its way and is legally protected.’

In order to test these and other action points from the Wolf Plan in practice, a final meeting was held with hunters, livestock holders, nature conservationists and other concerned groups. Between them the participants determined who should do what and when, based on a set of protocols laid down in the Wolf Plan.

That the wolf deserves protection was not disputed by any of the participating organizations; their main aim was to get to understand the protocols and the rules and regulations on subsidies and compensation, in case their clients should suffer as a result of the coming of the wolf.

DAMAGE LIMITATION

According to Huub Dingsh of the sheep department of the Dutch Federation of Agriculture and Horticulture LTO Nederland, LTO respects the fact that the wolf is protected and has the right to live freely in the wild. ‘We cannot line up along the border to keep the wolf out. But that doesn’t mean you cannot fend off possible damage for a particular group of people. In order to increase public support for >

WOLVES IN WESTERN EUROPE IN 2013

Possible habitats in the Netherlands



The Netherlands

Germany

100 wolves

In 2000 there were adult wolves with young living in Germany again for the first time. Now their numbers have swelled to about 100 adult wolves.

In 1992, the wolf entered France from Italy. Now the total population is estimated at more than 200 wolves.

France

200 wolves

Italy

500-700 wolves

Since the nineteen nineties, the wolf has established itself again in northern Italy, having dwindled to a critically small population in the south. Now there are estimated to be 500 to 700 wolves in Italy.



'I would keep the fence around a sheep meadow deep in the woods electrified day and night'

THE HABITS OF THE WOLF

Diet

A wolf needs an average of 3 to 4 kilos of meat per day. Old, sick and weak animals or young and inexperienced ones are the easiest prey. The deer is the wolf's main prey in Germany. There are about 10,000 deer in the Netherlands.

Sheep/goats



Wolves prefer wild prey, but they will seize easily accessible sheep and goats as well.

Natural prey



Eland



Bison



Deer



Wild Boar

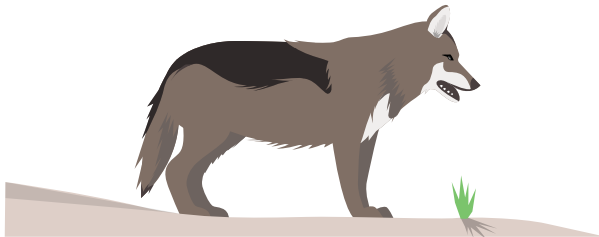


Rodents

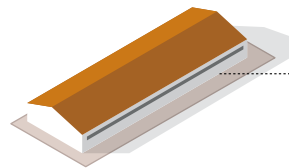
Humans



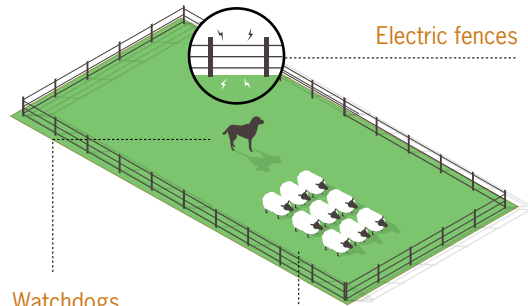
Humans are not among the wolf's normal prey. In fact wolves avoid contact with humans. But dangerous situations can arise if wolves are fed and get used to humans.



Protection for livestock



Keeping livestock in barns at night



Electric fences

Watchdogs

Preserving the herd structure of sheep and goats

Territory

Wolf territories (in central Europe) are about 200 km² in size. Packs usually consist of 2 to 10 animals.

At about two years old, wolves leave the pack and go roaming in search of their own habitat and an unrelated partner.

Wolves are strong swimmers. They can cover hundreds of kilometres, and rivers, motorways and heavily used areas are no obstacle to them.



the wolf, the Faunafonds will have to offer good compensation arrangements as well as contribute to the costs of preventive measures. Currently a Frisian farmer with 20 hectares only needs ditches to keep his stock in the meadows. Will he soon have to fence off all that land to keep out the wolf? The livestock farmers and the government do not yet see eye to eye on this.’

Electric fences work well to scare wolves off. Research is needed on what other preventive measures are effective in the Netherlands. Leo Linnartz: ‘Wolves only hunt at night in areas where they could come across people. In areas that are not very accessible to people they also sometimes hunt by day. For example, I would expect that wolves would hunt by day in the Oostvaardersplassen, just as they do in Yellowstone. So sheep in a built-up area only have to be kept behind electric fences by night, but with a sheep meadow deep in the woods where nobody comes I would keep I would keep the fence electrified day and night.’

The electric fence needs to hang low enough to prevent wolves creeping under it and the voltage needs to be high enough – higher than the voltage needed to keep sheep in. Then the wolves soon give up, and

teach their young to do so too.

As many as 5000 Dutch sheep are killed by dogs and occasionally by foxes every year. If the culprit is a fox, the farmer is out of luck but if it is a dog then the owner is liable. Damage done by a wolf in generally easy to spot. The wolf kills its victim instantly with a bite to the neck, and deep holes made by its fangs are visible. Beyond that, the animal is still unscathed. A dog that kills a sheep has much less power and bites it numerous times, leaving a lot of bruising and tearing out tufts of wool.

If the wolf becomes an attacker in future, the livestock farmer can initially call on the Faunafonds for help. ‘As long as the wolf is not permanently established in the Netherlands, you cannot expect livestock farmers to install far-reaching preventive measures,’ says Groot Bruinderink. ‘Together with the sector we should research which measures are cost-effective. Fencing off a kilometres-long, narrow dike with electrified wire to protect a handful of sheep is probably not cost-effective.’

LLAMA AS BODYGUARD

There are other possible preventive measures. Linnartz: ‘A researcher in America claims to have had good results using re-

cordings of howling wolves. That way you claim an area as the territory of a particular pack, as it were, and other packs will stay away. But after a while the wolves will realize that it’s fake. Livestock holders also make use of guard Llamas and guard donkeys. When a predator approaches, the sheep huddle together so as to feel safer but they don’t defend themselves and the wolf can just pick off its victim. Llamas, donkeys and horses respond differently by nature – they protect the herd, especially the young. They do that when they are in the same meadow as sheep too.’

If they are to survive for very long as a species in the Netherlands, wolves will need to be able to make contact with French, German and Belgian populations. They are unlikely to be very bothered by the barriers to this; they cross motorways, swim rivers and use bridges and tunnels. Recent developments have shown that in spite of road deaths, European populations are expanding fast. ‘The crucial thing for a healthy population is for populations to continue to be able to mix in future so that the gene pool doesn’t get too small,’ says Groot Bruinderink. ■

www.wageningenur.nl/wolves

ALTERRA DRAWS UP WOLF PLAN

The Wolf Plan which Alterra Wageningen UR presented in November divides the tasks in order to make sure the return of the predators goes smoothly. The ministry of Economic Affairs is adding the wolf, an internationally protected species, to the list under the Flora and Fauna law and is responsible for spreading information on its protected status. Illegal hunting of the wolf carries severe penalties. Feeding wolves is prohibited. The provinces are drawing up rules on how to deal with ‘problem wolves’. A government-funded Wolf Office will be respon-

sible for monitoring the advance of the wolf. Joint protection plans at population level will be drawn up together with neighbouring countries. The Faunafonds will keep livestock farmers informed about preventive measures, assess possible damage by wolves and offer compensation for losses incurred. The Wolf Plan emphasizes the importance of good communication to make clear that wolves are protected and also that there is nothing to be scared of. Wolves are scared of people and keep out of their way.

Fewer cows with

In collaboration with Wageningen UR, animal feed company Nutreco has developed a formula for concentrated feed which reduces the risk of milk fever. Result: healthy cows which are productive again soon after calving. TEXT AND PHOTOGRAPHY HANS WOLKERS

With their daily yield of 30 litres of milk, dairy cows are like top athletes. And after calving they can give twice that amount of milk. 'It is as if the cow runs a marathon every day,' says Javier Martín-Tereso, former PhD researcher at Wageningen University, part of Wageningen UR and now manager of ruminant research at Nutreco.

But the cows' daily marathon is not without consequences. It brings with it a risk of milk fever, an acute calcium deficiency. Calcium is an essential mineral and cows with a deficiency look tired, do not stand up and stop eating. Dairy cows need extra calcium because of their milk production, but gestating cows are not milked for the two months before calving, so in this period their calcium needs go down. After calving the cows produce so much milk that there is a massive spike in their calcium requirements. But by now the animals are no longer used to extracting calcium from their feed or their bones, so a deficiency develops. Most farmers face this problem, some more than others. It is estimated to cost about 200 euros per cow per year.

RUMEN-RESISTANT

As a researcher in the R&D department at Nutreco, Martín-Tereso came up with a possible solution: start the cow on a low-calcium diet three weeks before she calves. This will stimulate calcium absorption by the cow and

prepare her for the high calcium requirement after calving. 'Given that most feeds are full of this mineral, it was an obvious solution to add a calcium binder to the feed,' says the researcher.

The calcium binder of choice was phytate, a substance also used to prevent kidney stones in humans. Phytate binds calcium so that the intestines cannot absorb it. But in cows this substance is broken down in the rumen, so the researcher also thought up a way of making phytate rumen-resistant. His ideas were worth a patent and a PhD research project at Wageningen University. There, together with Nutreco, Martín-Tereso developed a new phytate-rich feed that reduces the risk of milk fever. The formula, CalFix, is now on sale in six countries.

SPECTACULAR DIP

Dutch cattle farmer Bert Mensink from Dedemsvaart was plagued by milk fever in the past. 'After calving the cows have much more difficulty starting up. The risks of infection are higher too, and the cows do not get pregnant as easily,' he says. Monitoring the recently calved cows for signs of milk fever was a lot of extra work as well. Mensink started using CalFix three years ago. 'It works perfectly. I saw a spectacular dip in the number of cows with milk fever,' he says. 'It went down from 50 percent to almost zero. The benefits of that far outweigh the slightly higher feed costs.' ■



milk fever



**‘The benefits
far outweigh the
slightly higher
feed costs’**

A full-page photograph of a man in a dark suit, white shirt, and red tie standing on a modern office balcony. The balcony has a glass railing and a large glass wall behind him, revealing multiple floors of an office building with desks and computers. The man is looking directly at the camera with a slight smile. The text 'Proud of Wageningen' is overlaid on the left side of the image.

‘Proud of Wageningen’

'Make choices and stay on course!'

Aalt Dijkhuizen will be stepping down next spring after 12 years as chair of the executive board of Wageningen UR. 'Our model of fundamental and applied research is now an example to others. The collaboration in the golden triangle is our great strength.'

TEXT JAN BRAAKMAN PHOTOGRAPHY TESSA POSTHUMA DE BOER

The thing I am proudest of is the way staff, students, alumni and many others both within and beyond our domain are proud of Wageningen UR once more. That generates energy and opens doors. Young people are coming to us again.' In his office on the top floor of the Atlas building, looking out over the still-growing campus, Aalt Dijkhuizen looks back on the last 12 years. He is proud. Of the growing student numbers, the facilities on campus, and the farmers who have become world market players. But, as he has decided in consultation with others, after 12 years it is time to move on from Wageningen. 'Otherwise I will start to seem like part of the furniture.' One of the main tasks facing Dijkhuizen when he took on the Wageningen job was to bring to fruition the collaboration between the applied science DLO institutes and the more fundamental research-oriented university. The two branches of Wageningen UR had been merged under Dijkhuizen's predecessor Cees Veerman. 'In the first few years I spent a lot of time establishing the structure of the organization, streamlining procedures to save money, introducing a transparent management model with clearly defined responsibilities, and establishing monthly financial reporting so as to stay responsive. And I focused on professionalizing our internal and external communication, and strengthening our image in the outside world.' Dijkhuizen is convinced that both the university and the institutes have emerged from these processes stronger. 'Our model of fundamental and applied research is now an example to others. The so-called golden triangle of government, research and the business world is our strength.'

But you do still have some concerns about the DLO institutes.

'Because the product boards are being disbanded, their contribution to the funding of research is set to disappear as well. Public funding is dwindling at a rate we cannot keep up with by getting more commercial assignments. We shall need to

increase our efforts there or we won't have work for everybody.'

By contrast, the university is going from strength to strength.

'When I started we were worried about the university. Enrolment of Dutch students had gone down to less than 500. Young people didn't believe in Wageningen or our domain anymore. We had been through a series of crises: dioxin, BSE, foot & mouth disease, swine fever. It was as we'd been cursed with the seven plagues.

'The shoe is on the other foot now. We are the fastest growing university in the Netherlands. Enrolment is now three times



PHOTO HOLLANDE HOOGTE

LOEK HERMANS,
*chair of Greenport Holland and
mouthpiece of the Horticulture &
Propagation materials top sector*

'Aalt Dijkhuizen was a pioneer of what we call the golden triangle: the collaboration between the business world, research and government bodies. It is his achievement that this triangle is now the model for the cabinet's top sector approach. Not just a little bit of contact here and there; no, we really need each other on a systematic basis. He also stuck his neck out by making clear that we can and must solve the world food supply problem technologically and not with organic farming alone. I very much agree with him. To quote Gerard Reve: It hasn't gone unnoticed.'

what it was at our lowest point: almost 1500 first-year students plus another 1000 Master's students coming from other universities, including applied science ones, and from abroad. Now our biggest concern is how to cope with this growth.'

What is behind this development?

'Originally the food and agriculture sector tended to function in isolation but now our domain has come onto the political agenda, both nationally and internationally. When food prices went up in 2007 and 2008, there was talk everywhere about the food supply. And that is our core business. Our concern is that in 30 years' time we shall need to feed 9 billion people, while at the same time we must conserve nature and the environment as much as possible.

'And in this regard we do not look exclusively at the countryside. Who would have dreamed 12 years ago that we would be working with Amsterdam on urban developments in the fields of food, waste flows, energy, and water management?

'It is not like the old days when our only contact was with the former ministry of Agriculture. We now have strong links with our own ministry of Economic Affairs but also with numerous other ministries, with provinces, with the royal family and with the business world. I have been abroad many times, as well, to establish new links or to reinforce old ones. We made sure we did not become isolated.'

Is that an achievement of Aalt Dijkhuizen's?

'No, it is an achievement of all of us because this is something you do together. But when you are the one who carries the can, you do have to take the lead, set the course and stick to it. My contribution has been to keep a close eye on things internally, and externally to get out and about a lot. We were helped enormously, too, by the Wageningen Ambassadors: the prominent alumni who stuck their necks out for us 10 years ago during a difficult period. We could quite easily have been wiped off the map five years later. The Ambassadors are very important to us; they help get



**‘Nothing is more fatal
to an organization than
making choices but not
acting on them’**

- 1977 MSc Agricultural Economics (cum laude), Wageningen University
- 1983 PhD Economics of Animal Diseases, Utrecht University
- 1977–1984 assistant professor of Agricultural Economics, Utrecht University
- 1984–1992 associate professor of Agricultural Economics, Wageningen University
- 1992–1998 special professor of Animal Health Economics, Wageningen University
- 1998–2002 managing director Business Group Agri Northern Europe, Nutreco
- 2002–2014 chair of Executive Board of Wageningen UR

things going and they ring up if they notice something going wrong. That keeps us on our toes. Together with them we have also set up a successful large donors campaign so as to raise funds for breakthrough research on how to feed those 9 billion people. An approach that has long been commonplace in America but that is still in its infancy over here.'

You have had to make strategic choices.

'Our domain seems limited but in reality it is too broad to be able to focus on everything. There is food, agriculture, water, the living environment, biodiversity, sustainability, the market, policy, animal diseases, and food safety... a vast range of subjects. There is a danger of becoming scattered, of doing something about everything but not enough about any one thing. We have clarified our strategy by establishing measurable objectives. I sometimes see colleagues



PHOTO HOLLANDESE HOOGTE

CHRIS BUIJINK,
ex-secretary general of the
Dutch ministry of Economic Affairs

'Wageningen has a good reputation internationally. Aalt Dijkhuizen has contributed a great deal to strengthening its position there. I noticed that on many foreign visits. It is not for nothing that the University of California, Davis invited me to their commencement ceremony. It wasn't that they were so keen to hear me speak, but because they wanted to underline the importance of the Netherlands and Wageningen for agri and food worldwide.'

from universities and research institutes come in with strategy documents of 70 to 80 pages. And I think: how will you get that implemented?'

This is sometimes experienced as a top-down approach, though.

'I don't see it that way at all: suggestions for the substance of our work are generated bottom-up. If you want a clear strategy you have to make choices and then, by definition, you won't be able to please everybody. But to make progress it is essential to make those choices and to implement them. I have invested a lot of energy in that. Because nothing is more fatal to a strategy and the development of an organization than making choices but not acting on them. 'All this meant we were ready when in 2005/2006 the cabinet decided to use the natural gas revenues to stimulate the knowledge economy. Of the first 200 million in research funding, we got 60 to 70 percent. If we had still been busy putting our house in order at that point we would have missed the boat. The way DLO institutes and the university joined forces helped to make us more visible to the outside world. Our name, our brand is stronger.'

Where lies the strength of the Wageningen brand?

'What makes our organization is the individual staff member. Good research and teaching are crucial; otherwise it is all just hot air. But you need to showcase what you are doing together as well. Six thousand separate researchers spread around the whole world have a lot less impact than you can have when you join forces and profile yourselves clearly. That adds to your appeal and attracts people to work with you. The buildings and facilities are all part of the picture too. In 2004 Thailand's minister of Agriculture came on a visit to see Food Valley. Then I cracked a joke that we would have to drive around twice to make a bit of an impression. But now it is quite a sight when you drive into Wageningen. The construction sector is in the doldrums in the Netherlands, but not here on campus. And Food Valley is now an established concept.'



BERNARD WIENTJES,
chair of the Confederation of
Netherlands Industry and Employers
(VNO-NCW)

'Aalt Dijkhuizen and Wageningen UR are a unique combination. He 'sells' his university and his research institutes like a real entrepreneur: always standing up for his knowledge institutions, always present at home and abroad whenever it is in the interests of his organization! Partly thanks to the efforts of Aalt Dijkhuizen, Wageningen has become synonymous with innovation all over the world. On many missions I could see that the 'Wageningen' brand is one of the strongest Dutch brands.'

You have been more outward-looking, but the outside world takes more notice of Wageningen too. Wageningen UR gets accused of being too much at the beck and call of industry.

'We do get labelled that way. There is a diehard group of opponents of the whole food and agri complex and they are preoccupied with that idea. But we are completely open. At the university absolutely all results are published and at DLO, certainly everything that is funded with public money. But the scientific yardstick is what counts in the end. If our research was poor quality we would not have been world number one for scientific achievements in our domain in the respected National Taiwan University Ranking this year. I have never known a case of one of our researchers getting into a tight corner because a company wanted to influence the results. Never.'



PHOTO GUY ACKERMANS

Aalt Dijkhuizen accompanies Queen Máxima at the opening of the Academic Year at Wageningen University in September 2013.

‘There hasn’t been a single day when I went to work reluctantly.’

As board chair you shared the responsibility not just for the successes but also for a number of things that did not work out.

‘You will make no mistakes if you don’t do anything. I do not run away from the things that didn’t work out and I am not ashamed of them either. There are no decisions – seen with hindsight – which I would not have taken, or would have taken differently, given what we knew at the time. In the case of the intended merger of the Animal Sciences Group with the Animal Health Service (GD), I think we didn’t talk it through enough beforehand with all the key people at the GD. The failed collaboration with Van Hall Larenstein applied sciences university was more complicated, but there was no switch we could have flicked to make it all work out fine.’

In 2007 you were faced with bowel cancer.

How did you cope with that?

‘While I was ill I focused all my energy on the things I could do something about, like my physical fitness and strength of mind. I got a lot of help and support from my family, friends and colleagues, right through the organization. That helped me enormously but there are still moments when you are totally on your own. After one year I was lying in the scanner for a checkup. It went through my mind that this would be decisive: am I going left or right? Those are lonely moments. You get them sometimes in management too. Then you’ve had advice from everyone but you have to take the decision: left or right. The difference is: in the scanner you have no control over the outcome; it is decided for you.’

You never gave up hope?

‘Never. I am a stayer and an optimist. If I had given up hope, who was supposed to have hope for me? And luckily the healing process went extremely well and I am not suffering from any aftereffects. I worked on as much as I could while I was undergoing chemotherapy too. In all those 12 years there hasn’t been a single day when I went to work reluctantly.’ ■

Following the trail to the spawning grounds

Researchers from IMARES are discovering the secret life of the river lamprey. In order to reproduce, this small creature wages just as heroic a battle as the salmon.

TEXT RIK NIJLAND PHOTOGRAPHY FOTONATURA

The river lamprey wins no beauty contests and in evolutionary terms it is a primitive creature. That doesn't stop researcher Erwin Winter of IMARES Wageningen UR from expressing his admiration for 'his' lampreys, who brave the sluiceways at Delfzijl in the northern Netherlands to swim from the sea into fresh inland waters to their final destination: the Gasterense Diepje. In this tributary of the Drenthse Aa river, which is no more than a couple of kilometres long, the river lampreys spawn and die. And this is the only place they do so; in no other streams in the area. Seven years ago Erwin Winter and his colleague Ben Griffioen were asked by Peter Paul Schollemma of the Hunze and Aa rivers water board to study the distribution and habits of the river lamprey. It is a protected species and yet precious little is known about it. 'At that time the Gasterense Diepje was the only known spawning ground in the Netherlands,' says Winter. 'By now more locations have been discovered, in the Roer and the Dommel for example.' The researcher thinks the lamprey is often overlooked. The larvae spend their first four years embedded in the mud; only when they have reached the size of a long, fat earthworm do they swim out to sea undetected, being

too small to get stuck in nets or traps. On their return from the sea during the winter months they are about 40 centimetres long but the season for eel fishing with traps is over then. 'For these reasons they tend to stay under the radar' says Winter.

TRANSMITTER

Little by little, though, the researchers are getting a more complete picture of the river lamprey. Every year Winter and Griffioen go back to Drenthe to monitor the population of roughly 10,000 larvae. They would like to know more about the population dynamics, the annual growth and the lamprey's habitat use. The results of this research can be used in making a good management plan for the conservation of this protected species. It has also been established how the lampreys make their way to this precise spot. The migration of salmon up rushing mountain streams may seem adventurous, but the river lamprey is quite a toughie too. In order to find out how this 'migrating fish' makes its journey, 50 river lampreys were equipped with a small transmitter in their stomachs. Detectors which registered these lampreys as they passed were then hung in the water at 20 different locations between the sluiceways at Delfzijl and the spawning grounds, as well as in other



streams such as the Hunze.

‘The river lamprey instinctively swims upstream to the higher reaches of streams to spawn there,’ says Winter. ‘In canals they get put on the wrong track: often there is no current, or it is suddenly very strong because locks are opened. Once in a while it is even going in the wrong direction. Many lampreys get confused by this and start swimming up and down or turn around.’

SCENT TRAIL

But the current is not their only guide. In contrast to the salmon, the river lamprey does

not return to its birthplace but the adult follows a scent trail: a pheromone given off by the larvae which is carried towards the sea by the current. By following that trail, the lamprey knows it is on its way to a suitable habitat for spawning – a river bed with pebbles or stones, and which is attractive for the larvae – with enough fine sludge to dig themselves into. The best navigators all end up in the Gasterense Diepje, ignoring the Hunze, where they detect no pheromone traces.

River lampreys enter the Netherlands through other sluiceways and along the big

ivers too, but where they are heading for remains a bit of a mystery. ‘Very few of them get as far as Belgium or Germany,’ says Winter. In December the IMARES researchers hope to get a glimpse of what is going on, once again in the north of the country. In collaboration with the Wadden Fund and four water boards, they are going to attach transmitters to river lampreys near Lauwersoog. ‘They come in there but we have no idea where they spawn. Or perhaps they go back with their business unfinished.’ ■

Info: www.wageningenur.nl/riverlamprey



BLOODSUCKER

The river lamprey (*Lampetra fluviatilis*) may have gills but it is not a fish, nor even a related species. It belongs to the class of cyclostomes, jawless eel-like creatures with a smooth, scale-free skin. River lampreys live for four years as blind larvae in the beds of streams and rivers. Once they reach adulthood they trek to the sea, to return to fresh water after a couple of years. As larvae, the river lampreys live off algae and bacteria, while the adult animals clamp themselves onto fish with their sharp sucker mouths and rasping tongues and suck up blood and bits of flesh.

**‘River lampreys
tend to stay
under the radar’**



Vigorous to the last



**How can we age healthily?
Sport and extra protein help,
shows research from the
Human Nutrition department.
As for the effects of vitamin
supplements and omega 3 fatty
acids, the jury is still out.**

TEXT ASTRID SMIT PHOTOGRAPHY HOLLANDSE HOOGTE

We are getting older with every generation. In 1950 the average life expectancy was around 70 years, it is now around 80 and one third of the children being born now are expected to live to be 100 or more. These projections were published by the Dutch Interdisciplinary Demographic Institute at the end of September. Good prospects for the Dutch, then. At least, they are good if old age is accompanied by vitality and wellbeing: not shuffling after a Zimmer frame but jogging through the park or going Nordic walking along the beach.

But how can we make sure it goes that way? What elixir of life do we need? Of course it is partly a matter of having the right genes and a generous helping of good luck. But lifestyle and nutrition can also do their bit, and those are things you have some influence over. The department of Human Nutrition at Wageningen University, part of Wageningen UR, has been trying to determine systematically which nutrients help to keep us vital, protect our bones from becoming fragile and keep our minds sharp.

Michael Tieland has given away some clues over recent years. He does research on how loss of muscle mass and strength – sarcopenia – can be prevented or slowed by the right nutrition. ‘From the age of 30 you lose 0.5 percent of your muscle mass every year, and double that between the age of 65 and 70. We don’t know why yet,’ says Tieland. ‘The striking thing is that even fit elderly people who get a lot of exercise lose muscle mass.’

In his doctoral research, which he completed this summer, Tieland tested whether fragile seniors – pensioners who need support and are often unable to live alone – function better physically if they consume extra protein with one of their meals for six months. This appeared to be the case: they found it easier to get in and out of a chair, their balance was better and they walked ➤

faster than the seniors in the placebo group who did not get extra protein. But their muscle mass did not actually increase.

In a second experiment Tieland tested the effect of extra protein in combination with strength training. These test subjects exercised twice a week on special apparatus. And this did have a clear effect on their muscle mass, which increased by as much as 1.3 kilos in 24 weeks. Their muscle strength increased too: both the group receiving extra protein and the placebo group (who did the strength training as well) gained 40 percent more muscular strength. 'So you can achieve a big effect in just a short time,' says Tieland. 'Now we want to find out how we can improve muscle mass in the long term.'

TWENTY RESEARCHERS

Human Nutrition first ventured into the territory of nutrition and health 25 years ago by appointing a professor in the subject – Wija van Staveren – and several PhD students and postdocs. Now at least 20 researchers are working on the topic, among them Lisette de Groot, who succeeded Van Staveren in 2006 as professor of Nutrition and Ageing. The European epidemiological Seneca study launched by Human Nutrition and other European nutrition scientists in 1988 still provides key pointers in this field, says De Groot. 'In that study we analysed the health and nutritional status of 2600 European seniors.' One of the findings was that three quarters of the test subjects felt fit and got enough to eat. Nevertheless, 70 percent of them had one or more chronic disease (such as diabetes or arthritis), 40 percent of them experienced difficulties carrying out routine daily activities (such as shopping or walking upstairs), and osteoporosis, or slow bone loss, was present in 6 percent of the men and 18 percent of the women. At least 10 percent of the seniors also had memory problems. 'It was striking, too, that 40 percent of the Seneca seniors had too little vitamin D in their blood and 25 percent had too little vitamin B12,' says De Groot. These are factors which other studies have linked with suboptimal functioning of the brain, more brittle bones and declining muscle mass and strength.

MENTAL PERFORMANCE

'Partly because of the results of the Seneca study,' says De Groot, 'we have decided to focus on themes such as osteoporosis, cognitive decline and loss of muscle mass and strength. These are symptoms of aging which you can do something about through nutrition –

'The striking thing is that even elderly people who get a lot of exercise lose muscle mass.'

at least, that is what we expect.'

Human Nutrition is now testing this hypothesis by means of intervention studies: experiments on the effect of certain nutrients under controlled conditions. Among the studies, Ondine van de Rest's PhD research examined to what extent omega 3 fatty acids from fish can aid the ageing brain. The hypothesis was that it could slow memory loss and reduce depression. This link has been found by various epidemiological studies such as the Seneca one, and by a few experimental studies. Van de Rest conducted several experiments with a view to gaining greater clarity on this point. She looked at the extent to which taking capsules with high or low doses of fish oil had an effect on the mental performance of Dutch seniors, she examined the correlation between the amount of fish consumed by elderly American men and their cognitive performance, and she studied the link between symptoms of depression and fish intake. Sadly, none of the studies brought out a clear significant difference.

Van de Rest: 'That was disappointing. When I started on my research, almost everyone was convinced that omega 3 fatty acids had a positive effect on the brain. Perhaps the problem is with the setup of my experiment. I studied relatively healthy elderly people. Perhaps they were 'too healthy' to be able to quantify a difference.'

AGEING BRAIN

The research on omega 3 fatty acids is now on hold, in anticipation of the approval of research proposals. But the search for a link between nutrition and cognition goes on. Two PhD students are currently studying how much of a role vitamins can play in counteracting



NOT ENOUGH VITAMIN D AND B12

It is not entirely clear why a large proportion of elderly people have low levels of vitamin D and vitamin B12. 'A vitamin B12 shortage could arise because old people suffer more often from gastritis, an inflammation of the lining of the stomach,' says Professor Lisette de Groot. The inflammation of the stomach changes the pH, reducing the availability of B12, which is usually bound to protein in food. 'We don't know why older people suffer from gastritis more often, but the use of medicines could play a role. There is a suspicion that the elderly suffer from more inflammatory diseases in general, without noticing it themselves.'

A shortage of vitamin D occurs for other reasons. We get about one third of our vitamin D from our food, and the other 70 percent is made by the skin with the help of sunlight. But the aging skin makes four times less vitamin D than the youthful skin. 'That is why even healthy old people can still develop a shortage of vitamin D,' says De Groot.

deterioration in the ageing brain. 'The brain is full of vitamin D receptors, proteins which can bind themselves to vitamin D. They are not there for nothing. Epidemiological research shows that people with normal levels of vitamin D perform better cognitively than those with a low vitamin D status. Vitamin B12 and folic acid play an important role in the brain as well, according to epidemiological research,' says Van de Rest, now a senior researcher who supervises PhD students. The results of these studies are now being analysed so the conclusions are still unknown. But even if they prove disappointing, Van de Rest will not give up. 'Then we can look for the answers in the synergy between all these nutrients. Perhaps the combination of omega 3 fatty acids, vitamin B12 and vitamin D does slow down cognitive decline. This combination would also be a more accurate reflection of our everyday diet.' Human Nutrition is not only studying the effect of vitamin B12 and folic acid on the brain, but is also looking into their effect on osteoporosis, the gradual loss of calcium from the bones which takes place in old age.

MUSCLE MASS IS IMPORTANT

Michael Tieland's involvement in research on muscle mass did not stop once he got his doctorate. Increasing muscle mass is not just crucial for the mobility of the elderly, says Tieland, but also for the way the whole of the body functions. 'Most people do not realize that muscle mass is an important metabolic organ. Food reserves are stored in the muscles, and you can draw on these reserves in times of illness.' Tieland – now a postdoc and supervisor of PhD students – is now studying the extent to which vitamin D influences muscle function and mass. His own literature review – the last component of his PhD research – showed that seniors with a low vitamin D status functioned less well physically. 'Vitamin D is a hot item at the moment in the research on vitality among the elderly. Expectations are high, especially in relation to muscle mass,' says Tieland. 'It's very exciting.'

And so for the researchers at Human Nutrition, the search for the elixir of life for the elderly goes on. It is one gigantic puzzle, but eventually they will find out what the aging person needs in order to remain vital for as long as possible. And it will not necessarily be a packet of vitamin pills or high protein drinks. 'I think that the elderly already stay very fit by just following general nutritional guidelines, and the diet of many Dutch seniors does not meet those standards,' says De Groot. ■

www.wageningenur.nl/healthyaging

Electricity from waste gas

This summer, researchers at Wageningen University and Wetsus revealed how they can generate energy from CO₂. Since then, companies from around the world have been queuing up to collaborate with them.

TEXT RENÉ DIDDE ILLUSTRATIONS SCHWANDT INFOGRAPHICS

Generating electricity from waste gases: it sounds too good to be true. But it is possible, by making use of the huge difference in CO₂ concentration between flue gases from chimneys and the outside air. Making the carbon dioxide flow past electrodes with an aqueous layer causes protons and negatively charged ions to be produced. They pass through two selective membranes, after which an electrical current starts to flow.

The inventors of this process, researchers from the Environmental Technology section of Wageningen University, part of Wageningen UR, and from the water technology institute Wetsus in Leeuwarden, think it has huge potential. All the CO₂ from flue gases around the world represents a potential equivalent to 1.5 billion gigawatt-hours, around eight per cent of annual global electricity consumption.

BLUE ENERGY IN THE SKY

Using concentration differences to produce energy is not a new concept for the researchers. 'You could see this new phenomenon as a spin-off from blue energy,' says Cees Buisman, professor of Biological Recovery and Reuse Technology in Wageningen and scientific director of the water technology institute Wetsus in Leeuwarden. In blue energy, electricity is

generated by exploiting the difference in salt concentration between river water and seawater. A pilot plant for this is currently being built on the Afsluitdijk causeway. The new variant has a long way to go before it reaches that stage but this 'blue energy in the sky' has much greater potential. 'If we assume four to eight per cent CO₂ in flue gases and 0.04 per cent CO₂ in the air, we can profit from concentration differences of a factor of one to two hundred,' says Buisman. The salt concentrations of river water and seawater in blue energy differ by a factor of 60 at most.

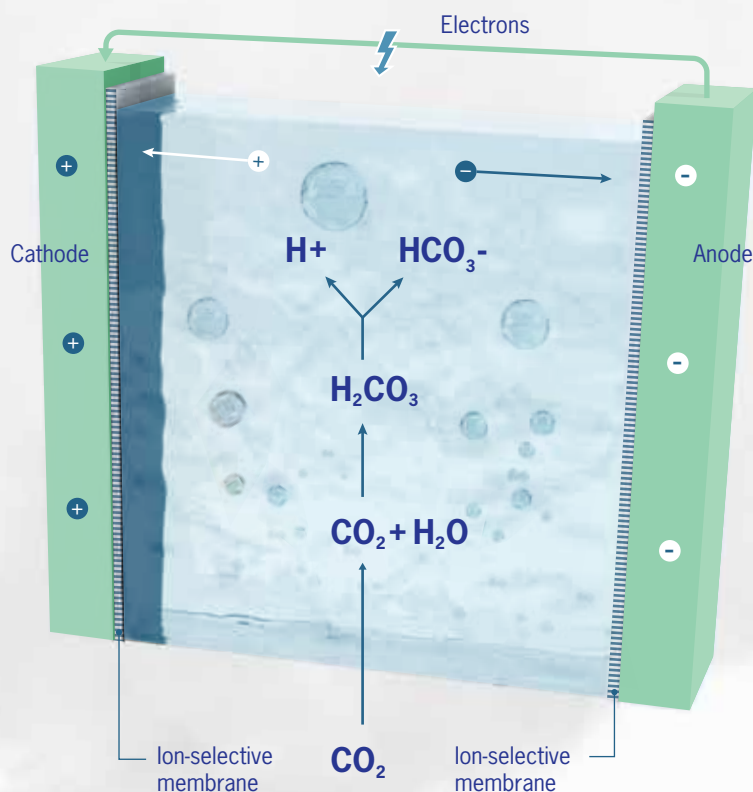
Just taking the CO₂ from the chimneys of all the coal-fired and gas-fired electricity power stations around world (which pump thousands and thousands of cubic metres of waste gases containing CO₂ into the air every second) can generate electricity worth 50 billion euros per year. 'And the more old-fashioned the technology, the more carbon dioxide is produced and the better that is for our invention,' laughs Buisman. He says it is not a problem that these forms of fossil energy will eventually have to make way for renewable energy. 'Instead of coal, electricity power stations will increasingly be burning biomass and CO₂ is released then too. The same applies to the production of biogas and the fermentation of sludge or vegetables, fruit and garden compost.'

The proof of principle was demonstrated by the first author, Bert Hamelers, a researcher at Wetsus, and four other authors, including Buisman, in a paper in the journal *Environmental Science and Technology Letters*, which came out at the end of July.

WATER AS INTERMEDIARY

Hamelers, who used to work at Wageningen University, used water as an intermediary for the energy generation. 'If the CO₂ in the flue gas is directed past electrodes with an aqueous layer, a simple reaction takes place that produces dihydrogen carbonate, H₂CO₃, which immediately splits into a proton (H⁺) and bicarbonate (HCO₃⁻),' explains Hamelers.

The protons pass selectively through a membrane towards carbon electrodes, where a surplus of positive charges results. The bicarbonate in turn goes through another selective membrane to other carbon electrodes, which leads to a surplus of negative charges. 'If you connect the electrodes, electrons move from the electrodes with a surplus of bicarbonate anions to the electrodes with a surplus of protons. So this generates an electrical current,' says Hamelers. That process gradually slows down until the electrodes are completely saturated. 'Then you can close the valve with the flue gases and open the valve with the outside

ENERGY FROM CO₂

‘The potential is enormous: 1.5 billion gigawatt hours’

air to start the process going in the opposite direction,’ explains the researcher. ‘The bi-carbonate then wants to go back through the membrane to the channel with the low CO₂ concentration. An electrical current flows again and the CO₂ escapes into the outside air.’ This means the invention is not a panacea for the climate problem.

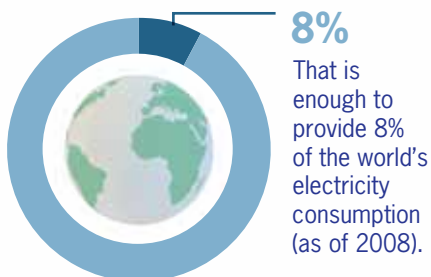
FURTHER DEVELOPMENT

‘It’s a continuous process of charging and discharging, like in a battery,’ says Hamelers. Since the publication, he has been approached by companies from all over the world eager to collaborate in the further development of the technology. He does not want to say too much: ‘Some are companies that have a lot of spare CO₂ going while others are companies that need a lot of electricity. And of course lots of technology companies are interested, such as membrane manufacturers.’

In the short term, Wetsus wants to form a cluster of companies that can develop the technology to a marketable stage, as is being done with blue energy. ‘You start in the lab, increasing reaction speeds and producing electricity in a test setup. Then eventually you try out a demonstration project in the chimney of a coal-fired power plant.’ ■


POTENTIAL

If all the CO₂ in the world that currently escapes into the air in flue gases were used, the theoretical potential would be 1,570 TWh per year.



Source: Hamelers e.a., *Environmental Science & technology*

Info: www.wageningenur.nl/co2emissions



OFF TO THE ANTARCTIC SEA ICE ON THE ICEBREAKER POLARSTERN

A freezer full of life

Four researchers from IMARES sailed on the icebreaker Polarstern to the sea ice of Antarctica. They fished under the ice and counted wildlife from the air. Jan Andries van Franeker talks about the cold, the krill and the charm of working in a magical environment.

TEXT ARNO VAN 'T HOOG **PHOTOGRAPHY** IMARES AND CORBIS **ILLUSTRATION** JENNY VAN DRIEL

Jan Andries van Franeker, project leader of the Antarctic research at IMARES Wageningen UR, just got back to Texel at the end of October after a ten-week absence. His main concern is to deal with his overflowing inbox and catch up on all the other work that has lain still during the WISKY expedition (Winter study on sea ice and key species), a field trip to study the ecology under the sea ice around Antarctica. The 120 metre-long German icebreaker Polarstern is equipped with all the latest conveniences and technology, but the possibilities for email and internet use on board are extremely limited. On Friday 9 August Van Franeker left Schiphol airport with three of his colleagues for Punta Arenas on the southernmost tip of Chile. The name of the hotel where they

stayed for a few nights before sailing says enough about their location: Finis Terrae, the end of the world. The winter made its presence felt, with icy winds, rain and snow drifts that hampered the work of loading the containers full of research equipment onto the ship. About 15,000 kilos of apparatus had travelled on ahead of the expedition. But a day or two later the sun suddenly came out and the containers could be unpacked after all.

HEAVY STORMS

The researchers wanted to spend their few days onshore setting up the research station and bird observations posts and getting various pieces of apparatus ready. They were aware that the ship's course to the pack ice of the Weddell Sea, 3000 kilometers to the

south-east, would pass straight through the notorious Drake Passage, a sea plagued by heavy storms and high waves. Conditions which usually make it impossible to carry out the work on board.

On the day of sailing, Wednesday 14 August, the plans were changed. So much pack ice had been reported on the route to the south that even a powerful icebreaker like the Polarstern, which is capable of ploughing through 1.5 metres of ice, would have trouble reaching the research area. So the course was changed from southward bound to due east, in the direction of the waters of the island of South Georgia 2000 kilometres away. A sediment trap put out last year would be collected here. The trap measures how much organic waste from sea life sinks to the bottom. The stop here was origi- ➤

nally planned for the return journey. 'The route is always changed on an expedition,' says Franeker. 'In fact the only things that were fixed from the start were the departure from Chile and the arrival in Cape Town on 16 October. Everything in between can change.'

The new route in the somewhat calmer seas gave the voyagers more time to get used to the ship's roll. For the first few days they had the wind diagonally behind them, which reduces the chances of seasickness. Van Franeker: 'Seasickness is just part of the deal for the first few days. On other expeditions in heavy weather I was totally out of it for the first two days. That's not nice but you know it will pass by itself. It wasn't too bad on this exhibition. At most I just felt a bit out of sorts for a while, and once I went to bed for an hour.'

ABOUT TURN

But even this ice-free route turned out not to be entirely hitch-free. En route to South Georgia the Polarstern suddenly had to do an about-turn in the direction of the Falkland islands, 1000 kilometres away. Although there was a ship's doctor for the 50 researchers and 50 crew, one of the crew caught an infection so serious that the captain did not want to go any further away from specialist medical help. As the islands came in sight the Polarstern's helicopter took the man to hospital and the ship continued on its way to South Georgia. From there it turned due south towards the research area: the sea ice of the Weddell Sea. The voyage through the Drake Passage brought winds of force 9 to 10 accompanied by a swell of six metres. Van Franeker: 'That wasn't too bad. I've known much worse in the past, so bad that equipment broke and one of our team fell and broke his ankle.'

The various research teams used the two weeks on the open sea to test their equipment, as well as to take measurements of the composition of the water and the sea life. IMARES's biggest contribution on this expedition was a special fishing net (SUIT) which was to be dragged under the ice. Practising on the open sea gave Michiel van Dorssen and the other team members, Fokje Schaafsma and Carmen David, the chance to go through the procedures once more. The ship's crew needed to get to know the SUIT too. The first test on 22 August went to plan. SUIT stands for Surface and Under Ice Trawl. It is a fishing net which scrapes a reinforced steel opening along the hard, raw underside of the sea ice. The floating frame of the SUIT measures four by two metres, with a fishing net behind it. The ship's towing cable is attached to the front left of the hulking construction, so it tends automatically to move to the right, away from the ship's wake. Under the ice, the frame scrapes a layer of ice off so the marine creatures that live there end up in the net. Most of the catch would consist of young krill (*Euphausia superba*), an Antarctic species of shrimp with an adult length of five to six centimetres. This shrimp is the hub of the food web and the food supply of birds, fish and marine mammals is largely dependent on it. 'In recent years it has become clear that sea ice in the winter is tremendously important for the survival of young krill. Algae and all sorts of microscopic organisms grow on the underside of the sea ice, and krill feeds on them.'

OBSERVATIONS UNDER THE ICE

The catch in the special trawl net gave the researchers an impression of the number of krill living under the ice. Divers from other teams observed under the ice to see exactly

where the young krill lived. 'They mostly saw the shrimps in rough corrugations and holes. Divers can survey them on a scale of a few square metres to see what sort of ice the krill prefer.'

The SUIT, on the other hand, takes samples from a much bigger surface area, says Franeker. 'Eventually we will have to translate the information from all these observations into an overall picture: what sort of ice do krill use, and what is the relation between the quality of the ice and the number of krill living there.'

This relation between sea ice and organisms is reflected in the expedition's acronym, WISKY: Winter study on sea ice and key species. Climate change and krill fisheries call for a better understanding of the ecology under the sea ice, says Van Franeker. Global warming could lead to fewer large masses of sea ice in the winter, or to ice with different characteristics and a smaller habitat for young krill. Meanwhile, krill fisheries are expanding fast: the shrimps are fished for food, omega 3 oil and fish feed. The Antarctic fisheries treaty requires, however, that commercial fisheries avoid disturbing the food supply of other species such as penguins and whales. Van Franeker: 'So knowledge of this ecosystem is very important, for deciding on quotas for example, or for adapting the quotas if the amount of sea ice is changed by climate change. We do have a broad understanding of the relation between krill and various predators. But the ecological calculation model for the sea around Antarctica is not quite right yet. If you count the number of predators in the area and the number of krill, you actually have to conclude that there is not enough food available. But that is not the case; we just don't yet know quite how the system works.'

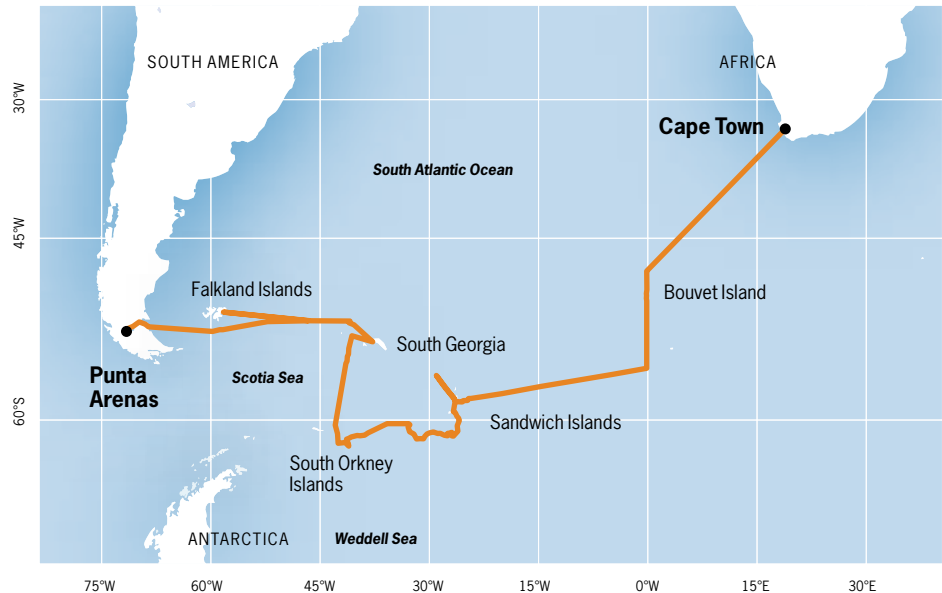
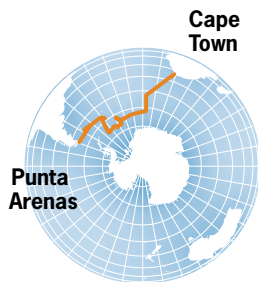
PERFORMING PENGUINS

A new kind of underwater camera was attached to the SUIT during this expedition. It produced beautiful footage of performing penguins under the ice. Many people imagine the South Pole resembles the lifelessness of their own freezers, says Van Franeker. 'But it is not a sterile freezer; it is a highly productive environment, even in the >

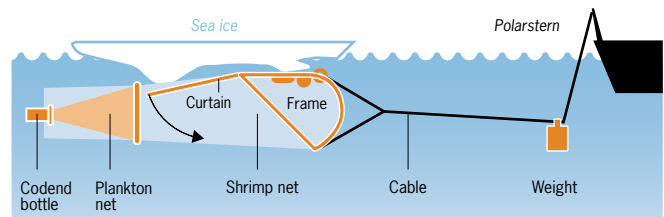
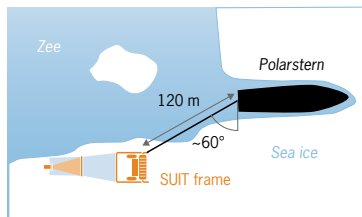
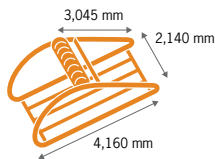
'The ecological calculation model for the sea around Antarctica is not quite right yet'

TO THE SEA ICE OF ANTARCTICA

The voyage of the Polarstern to the Antarctic began in Chile and ended two months later in South Africa. En route to South Georgia, the ship had to change course to the Falkland Islands to bring a sick crewman ashore.



SUIT frame



24 AUGUST 2013

‘Everything went swimmingly’

‘In the course of yesterday morning, our SUIT net went over-board for the first time so we could systematically check the work procedures and material in detail. In spite of our complicated methods of keeping the towing cable under the (here imaginary) ice, everything went just swimmingly.’



1 SEPTEMBER 2013

‘You want to share such beauty’

‘The first time I looked out of my cabin porthole I saw a beautiful sunrise in a small clear strip of sky between the horizon on the sea ice and a band of clouds. It took a while before I realized that I was looking at three rising suns. So I ran outside to take a photo, shivering from the cold. Because such beauty makes you want to share it.’





Antarctic krill (*Euphasia superba*), seen here under algae-covered ice, are the main zooplankton in the Antarctic food chain.

8 SEPTEMBER 2013

‘Didn’t see many penguins’

‘Under a clear blue sky we could fly about 90 kilometres south over the sea ice in the helicopter. There are not as many top predators in our research area as I had expected but we did count three common minke whales and 17 seals. Didn’t see many penguins.’



26 SEPTEMBER 2013

‘A terrifying under-ice world’

‘The SUIT frame is lowered into the water along the slipway at the stern of the Polarstern. Once it shoots beyond the choppy wake we can see what’s in front of us. A beautiful but at the same time terrifying under-ice world in which the SUIT must find its way by fits and starts!’



'The South Pole is not a sterile freezer; it is a highly productive environment'

winter. There are so many large animals to be seen, such as emperor penguins, albatrosses, seals and whales.' The researchers spent about 22 hours in the helicopter in order to count the animals present from the air. The count gave an impression of the diversity and numbers of predators that depend on the ice and the food supply produced underneath it. Van Franeker had intended to spend 40 hours in the air but the changeable polar weather did not allow that.

But in general the weather conditions on this expedition were not extreme, says Van Franeker. 'The temperature ranged from -5 to -20. With a hard wind that feels like -40. It makes a difference than we didn't go very far into the ice on this expedition, only about 400 metres. When there was a wind on the open sea it even felt quite spring-like at times.'

Surrounded by Antarctic sea ice you are in a magical setting, says Franeker. 'It is such a beautiful, mysterious world. So work

and pleasure go hand in hand there. On an expedition I work seven days a week, 14 to 16 hours a day. It varies from practical work to meetings and organizing all sorts of things. Because a lot of the work depends on the weather you constantly have to adjust your plans or change them completely. That takes up a lot of time too.'

After years of preparation the researchers wanted to get everything they could out of the expedition. 'Of course on board you have a lot of contact with fellow researchers from other countries. But apart from that I was mainly busy with research work. There is a video system on board but I didn't see a single film. A couple of times a week after a long day I would go and have a beer in the bar after 10 o'clock. And I also had time to finish a whole book, which is quite exceptional for me on an expedition.' Now they are home there is plenty to sort out in the months to come, what with analyzing the samples and describing the catches from the SUIT. And plans are

already being made for further expeditions in the direction of the South Pole in the Arctic summer of 2014-2015. The ICEFLUX research programme on which the four researchers work is part of a five-year collaboration between researchers from the Alfred Wegener Institute (AWI) in Bremerhaven and those at IMARES. The programme is led by former IMARES researcher Hauke Flores, who now works for the AWI.

The research in ICEFLUX revolves around the relation between ice and ecology: the ice surface is the basis of marine life around the South Pole. PhD researcher Fokje Schaafsma studied to what extent the Antarctic food web is influenced by the decrease in sea ice and the change in its structure. Her colleague Carmen David focusses largely on the biodiversity of algae, bacteria and molluscs under the ice: exactly which species live there and in what numbers. Van Franeker will return to the ice next year. He is an old hand now, having already made nine voyages in the region and countless other field trips. This experience puts the long absence this time in perspective. 'In the past I regularly did field research for which I was away for four to six months. An expedition of 10 weeks is seen as a relatively short absence at home.' ■

Info: www.wageningenur.nl/antarctica

NORTH POLE RESEARCH

The North Pole region is another important research area for IMARES Wageningen UR. There are regular expeditions from the Dutch Arctic Station on Spitsbergen. 'The Arctic research programme is all about sustainable development,' says Arctic programme manager Bas Bolman. 'The North Pole is changing, the ice is receding. That makes new forms of exploitation possible, such as new shipping routes and oil and gas drilling. The debate on these developments between governments, NGOs and companies must be fed with knowledge. All those parties are involved in the research too.'

Monitoring is a major component of the research, explains researcher Martine van den Heuvel-Greve. She is doing research on bio-indicators: the responses of a whole range of organisms to oil drilling and shipping. 'Physiological responses and levels of pollutants in seabed organisms such as worms and shellfish can tell you whether they are sensitive to disturbance by these activities.'

Bolman and Van den Heuvel-Greve were on Spitsbergen this summer and were joined by a camera crew from Dutch television programme Labyrint. The programme was broadcast in September.

More on the research on Spitsbergen in the next edition of *Wageningen World*.

Info: www.wageningenur.nl/arctic



Spitsbergen

WAGENINGEN UNIVERSITY LOOKS BACK ON 95 YEARS

From colonial to international



Even back in 1918, many Wageningen students left to work ‘abroad’ in the colonies. On the other hand, foreign students only started to show an interest in Wageningen as a place to study after the Second World War. These days, more than a quarter of all students are international students hailing from a wide range of countries. Part four in the series on 95 years of Wageningen University. TEXT RIK NIJLAND PHOTOGRAPHY BUREAU VOOR BEELD

Anyone returning to Wageningen after a long period of absence and lunching in the Forum will hardly be able to believe their eyes and ears. The restaurant buzzes with languages from all over the world, with English serving as the language of communication between nationalities. Another striking change is that more than half the students are women.

What an immense change from the rather formal, almost entirely male community 95 years ago, in 1918 when the agricultural college was granted university status. While there were two non-Dutch people in the celebration photo – Prince Hendrik and Professor Otto Pitsch, both German – it was still very much a white community. When the Sultan of Solo’s son came to study in the 1930s, he caused quite a stir in Wageningen.

Yet even then, many graduates went ‘abroad’; at the start of the twentieth century, most of the students at what was then the national agricultural, horticultural and forestry college were aiming for a career in the Dutch East Indies (now Indonesia). It seems this required specialized skills: when the public shooting club Transvaal wanted to become part of the private student society Ceres, one

student complained to the army commander. He wrote that this would mean only Ceres members would be able to make use of the ‘privilege of mastering the use of weaponry, a privilege that is particularly highly prized by those who will later be going to the East Indies, as the ability to shoot well can be invaluable to them.’ It is not clear what they would be shooting at – Sumatra was in a permanent state of unrest – although it is known his plea did not have the desired effect.

COLONIAL AGRICULTURE

In the period 1904 to 1918, 259 students graduated in Colonial Agriculture or Colonial Forestry in Wageningen whereas the remaining three programmes combined (Agriculture, Forestry and Horticulture) only produced 108 graduates during these 14 years. The colonial programmes remained popular after 1918, although they went through a dip during the economic crisis in the 1930s. Of the 924 graduates (about 20 of them women) between the wars, 325 had studied Colonial Agriculture (which split into Tropical Cultivation, Livestock Farming and Economics in 1935) and 180 Colonial Forestry.



The transfer of sovereignty to Indonesia in 1949 brought an end to this as a major destination for Wageningen graduates.

But it also meant an end to the contact with the practice of tropical farming and forestry. The prevailing global trend was away from colonial rule and towards what was known as ‘technical assistance’ for ‘underdeveloped countries’.

‘We Dutch,’ wrote De Vries, professor of Rural Economics for Overseas Territories in 1950, ‘must provide assistance in this area or else we will revert to the status of a minor, insignificant power.’ This gives the impression of wounded colonial pride but, as De Vries continues, ‘Wageningen [...] would be well-advised to keep as broad a perspective as possible and to consider the entire world as its field of operations.’

His advice did not go unheeded. Professor Coolhaas of Tropical Plant Breeding was particularly well attuned to the times. He and his staff soon developed a network of contacts

with other parts of the world. Students also increasingly acquired specialist know-how and went off to the tropics to obtain their practical experience, with the financial support of the Ministry of Agriculture. In 1953, Coolhaas opened a regional office in the Côte d’Ivoire.

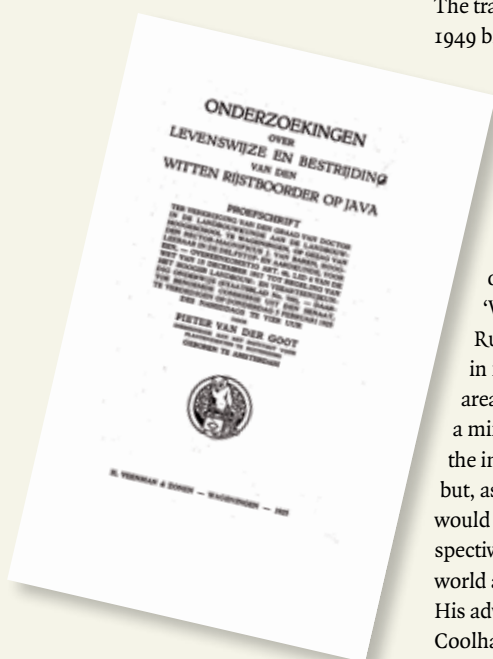
According to his successor, this gave the Dutch ‘tropical experience that was much more diverse than what they could get in Indonesia’. Certainly once new specialist areas emerged in the late 1950s, such as Tropical Land Development and Rural Sociology of the Non-western Regions, assistance was clearly not being restricted to technical aspects.

After the Second World War, there were sporadic enrolments of foreign students in Wageningen and there was a steady flow of students from Suriname. The university’s new appeal gradually paid off in terms of interest from other countries. The scholarships granted by the Ministry of Foreign Affairs as part of its development aid helped too. In 1953, Wageningen University started offering joint summer courses with the International Agricultural Centre for graduates from developing countries. From 1971, these courses evolved into highly oversubscribed MSc programmes lasting nearly two years.

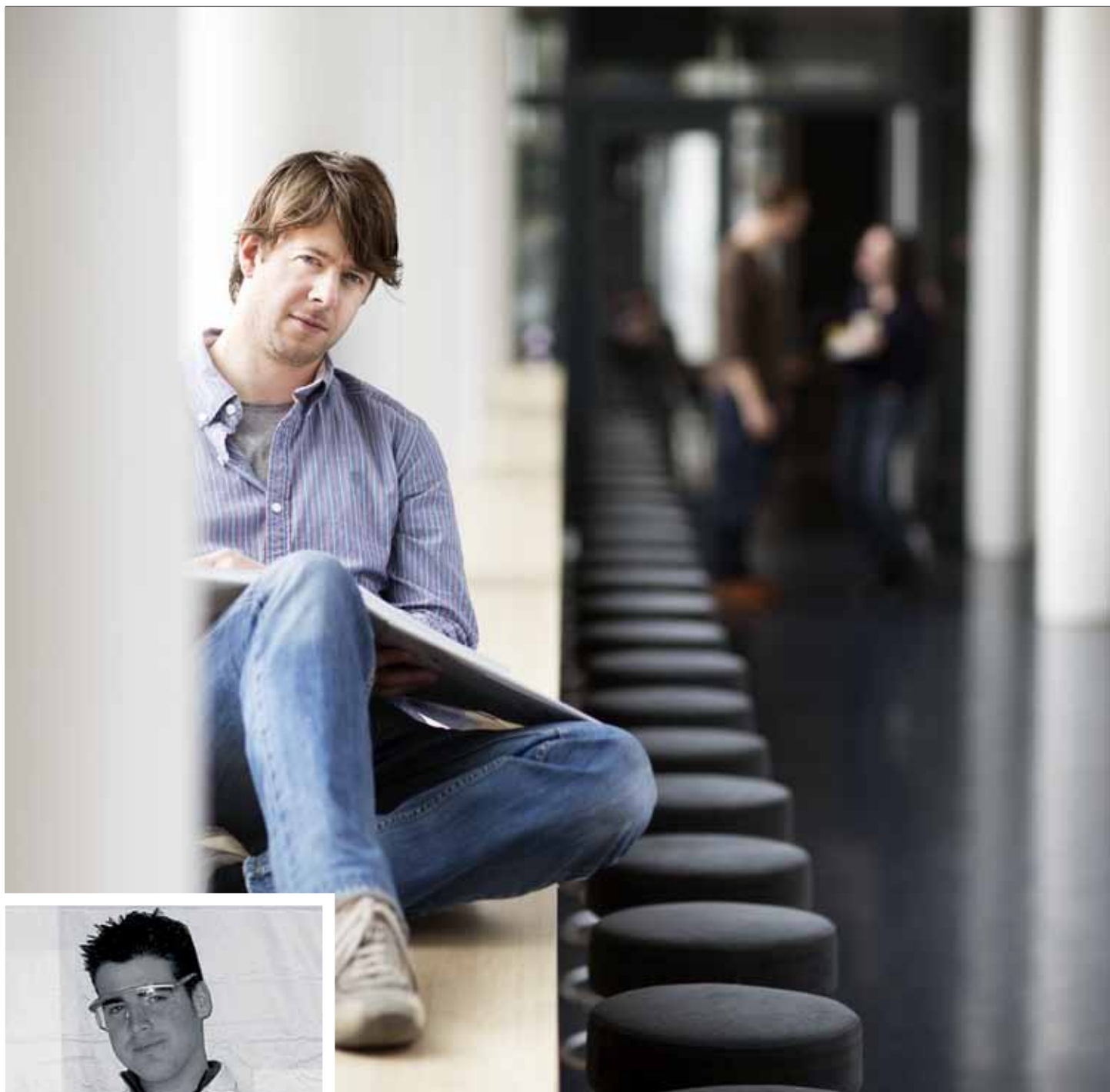
MORE INTERNATIONAL

In 1985 a commission headed by the then rector, Oosterlee, argued that the agricultural university should become more internationally oriented, with an English name, courses in English and English degree titles. This was not implemented until the year 2000, when Wageningen introduced the Bachelor-Master degree structure, in anticipation of a nationwide switch. Since then, teaching in the Master’s phase has been in English.

This has been a resounding success, thanks to the far-reaching integration of higher education within Europe as well as targeted recruitment of students via alumni in 25 countries. These days, more than a quarter of Wageningen’s 8000 students come from abroad, from 100 different countries. That number is still growing every year. In the space of 95 years, white colonial male talk has given way to multicultural dialogue. ■



Typical agricultural college students – formal, male – at work on a Plant Science practical, probably in the late nineteen twenties.



HARKE PERA

Age: 32

Studied: Molecular Sciences
2000–2009

Works: on an almost completed
PhD in Nanotechnology at
Wageningen University

‘Computer work
suits me far better
than lab work’

MOLECULAR SCIENTISTS 13 YEARS ON

Looking beyond brains and nanoparticles

Bart Lubbers is fascinated by biological processes in the brain; his fellow student Harke Pera aims at deconstructing complex systems. Both are currently putting the finishing touches to their PhD theses. And neither of them wants to continue in Academia.

TEXT ALEXANDRA BRANDERHORST PHOTOGRAPHY HARMEN DE JONG

Healthcare in the Netherlands is good. Sometimes there is even too much care. We need to focus on encouraging more self-reliance among patients. But it is hard to change the system, and small initiatives can be a big help towards that.' Bart Lubbers outlines the findings of the National ThinkTank with enthusiasm. Although this Wageningen alumnus is actually doing a doctorate in neurobiology, he and 24 other PhD students selected for their excellence spent three and a half months over the summer scrutinizing the Dutch health service. They interviewed patients, healthcare providers, civil servants and scientists, they made an analysis and they thought up options for providing sustainable, cost-effective healthcare. 'The work with the ThinkTank is a contrast with my PhD, which is a long-term trajectory in which you do a lot of lab work and research on your own. I wanted to break out of that and develop myself more broadly,' explains Lubbers. He thoroughly enjoyed the

interdisciplinary collaboration with others including researchers and students of anthropology, management, philosophy and medicine. 'As a student and during my PhD research I work with a lot of people with similar personalities: analytical, and with a very rational approach and similar knowledge. At the ThinkTank everyone has a different outlook and way of working. Some are more creative; others more analytical. You stimulate each other tremendously and that generates really great, feasible solutions which you wouldn't get from a group of similar types.'

INTEREST GROUP

Lubbers is not the only PhD student who feels the need to widen his horizons. Harke Pera, who started a degree in Molecular Sciences at Wageningen at the same time as Lubbers in 2000, knows the feeling. Two and a half years ago, as a PhD student, he joined the board of the PhD candidates Network of the Netherlands (PNN). 'The network pro-

motes the interests of PhD students and looks at how the PhD system could be improved. You get together with the Universities Association the VSNU, for example, and you meet the Secretary of State for Education.'

The biggest problem facing PhD students in the Netherlands is the relationship with the supervisor. 'Sometimes the only supervision you get is from a supervisor who has 30 students, is also a director of some institute of other and is often abroad. In reality PhD students often have to supervise each other,' says Pera. 'And how do you make sure PhD students stay motivated four years long? They can't do it by themselves. In the long run, research schools could play a bigger role there.' Pera was actively involved in the PNN for one and a half years, and found himself among likeminded people there. 'They were all people with experience of serving on boards, who felt the lack of social interaction during their PhD research.'



WHERE DO MOLECULAR SCIENTISTS END UP?

Between 1975 and 2011, there were 1543 graduates in Molecular Sciences. We know what roughly 40 percent of them are doing now. Of those who graduated less than 5 years ago, half have a place on a PhD programme and one fifth are working in research. 63 percent are working at a university and 21 percent in trade and industry.

Of those who graduated between 5 and 15 years ago, 36 percent have research jobs and 19 percent are working on their PhDs. 34 percent work in education, 30 percent at a university and 14 percent in the commercial service sector.

Of those who graduated more than 15 years ago, almost 40 percent are researchers and 15 percent are in management or director's jobs. One quarter work in trade and industry, 22 percent in the commercial service sector, 16 percent in universities and 12 percent in research institutes. *Source: KLV Wageningen Alumni Network*

Pera did a lot of board work as a student, first with the Wageningen student choir and orchestra WSKOV, where he played the flute and served as treasurer. In his fifth year he joined the board of the Wageningen Student Organization WSO, which was disbanded in 2011. 'It was a club with a lot of experience and there I learned how a team works and what makes organizations tick.'

When Pera left secondary school he was still quite an introvert, he says. 'That changed during my student years. In Wageningen I got the chance to show who I was more.'

UNDERSTANDING DISEASES

In those days, molecular sciences were the only logical option for secondary school students who wanted to combine chemistry, physics and biology, says Pera. 'Only Wageningen offered a degree course in which those three disciplines came together,' agrees fellow student Bart Lubbers. Because he was keen to do a PhD in neuroscience, Lubbers followed his Wageningen

degree with the research-based Master's in Behavioural & Cognitive Neuroscience in Groningen. 'I like understanding diseases and biological processes. During my studies in Wageningen too, I took a course in neurobiology and I also read the books of the British neuropsychologist Oliver Sacks. When part of the brain doesn't work you sometimes see very interesting behaviour.' The second Master's degree proved usefully complementary. 'In Wageningen I acquired a lot of basic knowledge and we did a load of practicals. In Groningen, alongside the subject knowledge, a lot of attention was also paid to writing and giving presentations.' Lubbers did an internship in the department of Molecular and Cellular Neurobiology at the VU University Amsterdam, where processes in the brain at the level of proteins are being studied. 'It is so fascinating how things work at molecular level and how proteins do the work in the cell. You get an idea of the relation between molecules and behaviour.'

CHOICE OF PROJECTS

After a successful internship Lubbers had a choice of five PhD projects in the department. 'A luxury that is rare nowadays,' he comments. He opted for research on addiction, looking at the role of proteins in nicotine addiction and their role in a relapse after stopping. A particular group of proteins knows as receptors help brain cells to pass on signals to each other. Lubbers studied which receptors are involved in a relapse and whether a relapse can be prevented by strengthening or weakening the signals they pass on. 'If we strengthen the signal transmission, there is less relapsing. The question is always whether you really can influence behaviour with the receptors you have identified. It is really great that it worked.' Lubbers expects that better and more individualized medicines against addiction can be developed in future. 'But environmental factors are very important too: things like whether someone has a job and somewhere to live.'

Harke Pera knew as a student that he would not go into research but wanted to go on to a management job. A PhD does not seem the

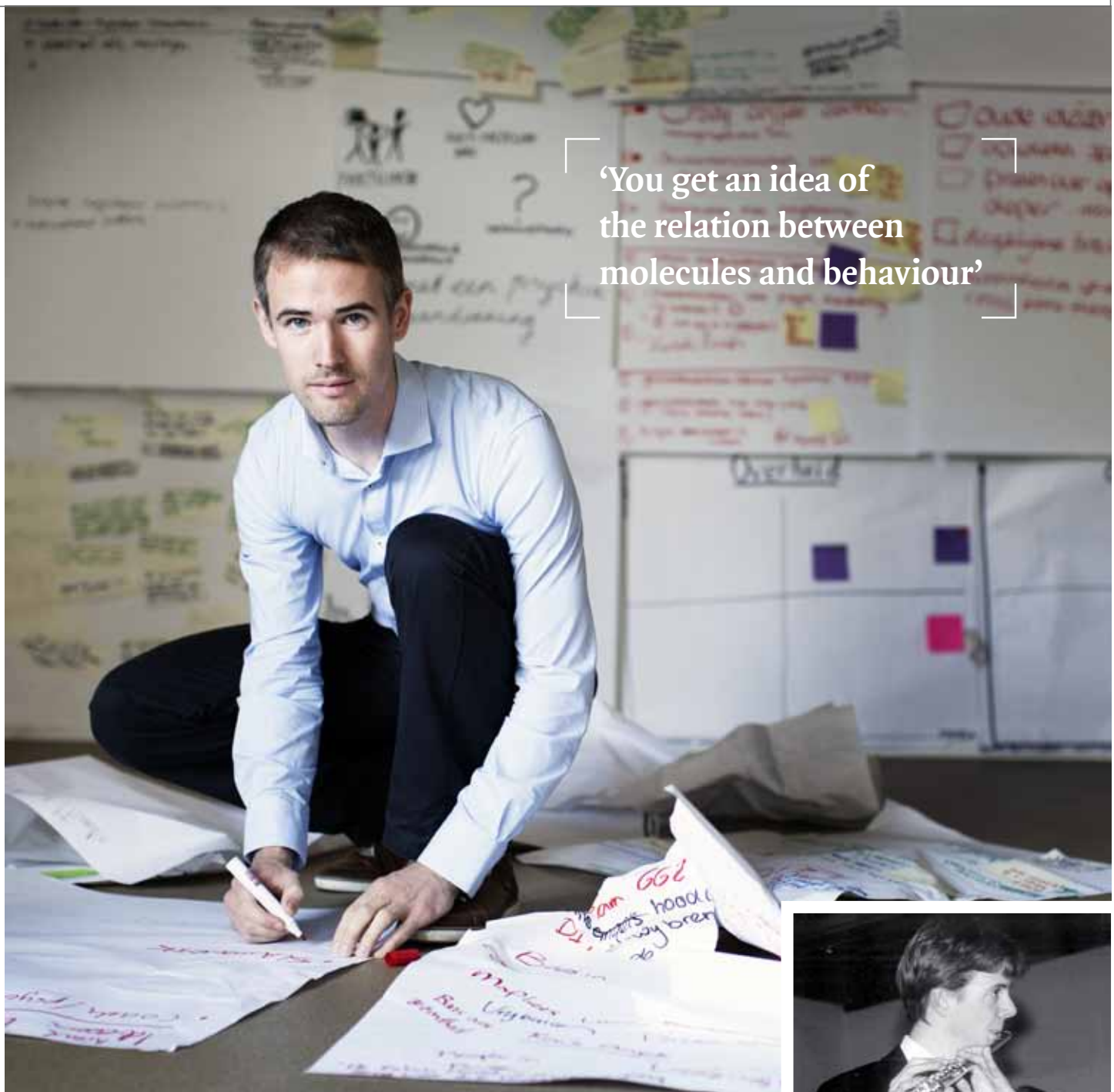
most logical step towards that goal. 'In the chemistry world a PhD is seen more as the completion of your studies. You prove you can set up a research study. In the business world you are certainly not overqualified with a PhD in Chemistry,' explains Pera. In the Wageningen department of Physical Chemistry and Colloid Science he found a research project with a biological side to it: an EU project on the dangers of nanoparticles for aquatic life and the environment. 'It is not known whether nanoparticles that penetrate a cell can cause damage to it. But if a particle cannot get into a cell, you don't have to worry about that.'

Pera examined the interaction of nanoparticles with cell membranes and investigated which characteristics of nanoparticles have a predictive value for whether they can penetrate through a membrane. Using this knowledge, when manufacturers create a product they can use nanoparticles that cannot get into cells.

The EU project ran for three years, so in the past year Pera has constructed a 'decent membrane model' to make it possible to study the interaction between a membrane and a particle on the computer. 'It got out of hand. I got into programming, which enabled me to identify precisely the physical constants that predict how a membrane will behave. Computer work suits me far better than lab work.' In the end, the computer model led to a publication with many new insights in membrane science. At present Pera is still working on his PhD thesis, and hopes to graduate in May. Meanwhile he is already looking for work, as a consultant for instance.

JOB-HUNTING

'Consultancy firms which focus on strategic problems in organizations, such as McKinsey, are looking for science graduates. They want people who can grasp large complex systems and can think analytically. Many of them are socially engaged companies and it's all about teamwork,' explains Pera. But a job in chemistry or the food industry remains an attractive option too. 'I would very much like to work somewhere in between senior management and research.'



‘You get an idea of
the relation between
molecules and behaviour’



So that you stay involved in research and can help think through the company's strategy as well.'

Just like Pera, Bart Lubbers hopes to get his PhD in the spring. His ambitions match those of his fellow student too: consultancy is an interesting option for him as well. 'What I'd like best is to combine research with organizational skills. For example,

I would like to do something in the collaboration between universities and biotechnology companies. I want to work with people too, or maybe even set up a small company,' says Lubbers, thinking aloud. His work for the National ThinkTank will stand him in good stead. 'Both the experience I gained and the enormous network I built up could open doors in future.' ■

BART LUBBERS

Age: 31

Studied: Molecular Sciences
2000–2006

Works: on an almost completed
PhD in Neurobiology at the VU
University Amsterdam

African business club is getting results

The situation is improving for tens of thousands of smallholders in East Africa thanks to the support from the Africa Agribusiness Academy – a Wageningen initiative. It is getting such good results that it is now being extended.

TEXT YVONNE DE HILSTER PHOTOGRAPHY HANS NIJHOFF, WAGENINGEN UR



I see farmers who are able to feed their families again in a region that has always suffered from food shortages. Our sales figures show me that food security has improved for 4000 households,' says Ngila Kimotho, director of Dryland Seeds Ltd in Kenya. For eight years now, he has been selling seed for beans, maize and sorghum, specially adapted to dry conditions and often developed in Kenya itself. 'Many farmers use the seed from previous harvests, partly because of a lack of money and partly from habit. Our demonstration fields, flyers and courses are gradually making them realize that if they use our seed material they will be able to increase yields and revenue.' Kimotho has been a member of the Africa Agribusiness Academy (AAA), a business platform for entrepreneurs in the agrofood sector, since 2011. The club was set up in 2010 on the initiative of Wageningen UR and the Wageningen Ambassadors – a platform of 45 Wageningen University graduates who wanted to build a bridge between Wageningen UR and the wider community. The AAA aims to improve food security by providing support to small businesses. Membership of the Academy gave Kimotho's company a boost, mainly because he got to meet a lot of new people and learnt how to draw up an

investment plan. 'I was able to bring in investors thanks to this assistance, which means I can now expand in Kenya and South Sudan.'

'Better quality seed, especially maize, would help 50,000 smallholders raise their income by 200 dollars a year in the space of three years, which will improve their food security and provide an incentive to cultivate more land,' adds Hans Nijhoff. Since August he has been project director for the Centre for Development Innovation, Wageningen UR, and stationed in Arusha, Tanzania.

EXCHANGING KNOW-HOW

The key idea in the Academy is that small and medium-sized agrofood businesses in Africa can exchange know-how and experiences, coach each other and come up with joint innovations, all with the support of a back office, which is now run by Nijhoff. The entrepreneurs meet up regularly for workshops and courses and to network. They also share information through a protected website. Piet Heemskerk, a Wageningen Ambassador and the driving force behind the AAA, says these SME entrepreneurs have huge amounts of energy and perseverance: 'We want to make sure that energy is put to good use, to help them



Small farmers in Africa at a central location where they prepare their good for sale in local supermarkets.

‘We want to help them become better entrepreneurs’

become better entrepreneurs with the help of role models.’

The pilot project for the AAA was made possible by the Ambassadors in combination with private sponsors and co-funding from the Dutch government. In the first two years, the Academy grew to 100 members in Tanzania, Kenya and Uganda. The network led to new operations, both joint activities with other members and with third parties. A study of the growth data is still in progress but Heemskerk is confident that between a quarter and half of the businesses have increased their sales. Eight of the twenty original member businesses have now found serious investors. Hundreds of farmers are benefiting as a consequence.

Encouraged by the results, a five-year plan has been

drawn up with a view to expansion. Calculations show the sum of eight million euros is needed for the support of members and the organization and to bring in outside expertise. Two million has already been raised from private individuals, foundations and companies – including the Rabobank Foundation and Nutreco – via the Food for Thought campaign. This amount has been matched by the Dutch government. Heemskerk says the AAA members themselves will be raising the other four million euros. ‘Via sponsoring, for example by wealthy Africans who want to do something for society, and through subscriptions and contributions to members’ activities.’

FARMERS BENEFIT TOO

In the end it is about the creation of a chain reaction, explains Nijhoff. ‘Pushing farmers or cooperatives onto the market doesn’t really work. But if someone who is currently buying maize from 5000 farmers is able to get funding for more storage space, processing and marketing thanks to a good investment plan, the farmers benefit too. After all, that businessman wants a full warehouse so he arranges contracts with farmers. That gives the farmers peace of mind and they can be sure of selling their maize at slightly more than the going market price.’

Another example comes from the Kenyan agricultural organization KENFAP Service Ltd (KSL). It reaches between 500,000 and 1 million farmers with its courses and advisory services. KSL sees opportunities through its membership of the AAA for contracting small farmers for the cultivation of high quality seed potatoes: it has recently become possible to import Dutch varieties. ‘These new seed potatoes are an attractive option for farmers throughout Kenya as they give higher yields and increase food security,’ says managing director Charles Gitau. ‘As a member you are encouraged to deliver quality.’

The members also pass on what they have learnt to other entrepreneurs who are not AAA members. Kimotho of Dryland Seeds has now advised a market gardener, a supplier and a food processing business on their business plans. This way, more and more offshoots of the AAA are springing up. Although there is still a need to be critical about new admissions to membership, says one of the donors, Pierre van Hedel, the Rabobank Foundation director. ‘Members must be able to generate business for each other that benefits small-scale farmers.’ ■

Info www.aa-academy.org

COMMEMORATION



PHOTO GUY ACKERMANS

Wageningen Walk of Fame opened

From now on, alumni, business relations, staff and students of Wageningen UR will be able to place their own commemorative tiles on Wageningen campus. This will make it possible to record an event or unusual achievement, an idea the 2012/2013 Student Council came up with. Wageningen UR's chairman of the board, Aalt Dijkhuizen, opened this Wageningen Walk of Fame – a tiled path between the Forum and Orion teaching buildings – on 25 October. Wageningen UR charges 100 euros for each tile placed, 25 euros of which will go to the Anne van den Ban Fund. The tile itself and the engraving have to be paid for by the applicant. Want to commemorate an exceptional event? See www.wageningenur.nl/walkoffame

WAGENINGEN UNIVERSITY

Webshop for university merchandise

There is a new webshop selling Wageningen University T-shirts, bags, stationery, USB sticks and sweaters. The University Shop's products can now be ordered online. These include the popular, warm Wageningen University sweater with hood. The sweater is available in different colours and has 'Wageningen University Est. MCMXVIII' printed on it. MCMXVIII means 1918, the year in which the university was founded. Info: www.wageningenur.nl/universityshop

REUNION

'Girls had to sit in front row'

The memory comes flooding back as soon as the 'class of 63' take their seats in the Forum lecture hall: in their day, girls always had to sit in the front row. 'Once we tried sitting at the back,' recalls Andy Bosch (Technical Domestic Science). 'But we got kicked out of the lecture immediately.' It is just one of the many changes between 1963, the year when the alumni reuniting on Friday 18 October started their degrees, and now. 'I have been amazed by the fantastic developments in the university and the impressive campus,' says Jan Nieuwenhuis (Land Development). Like many former Ceres members, Nieuwenhuis, a former KSV society member, still sees the people from his cohort every year. Huub van der Zel (Tropical Land Development) has not managed this as

he spent his entire working life abroad; like many of his contemporaries who also worked abroad for long or short periods. That is why Van der Zel was looking forward so much to the reunion. 'I'm very pleased to have met people in my year whom I haven't seen for a good 40 years.' The alumni had a full programme that included talks from four of their year on the subject of food security and a guided tour of Wageningen campus, the AlgaePARC or Het Depot art gallery. During the closing dinner in the Forum a number of the alumni arranged to meet up again. Wim Spreeuwenberg (Livestock Farming) looked back nostalgically at the freshers' party at KSV. 'Kennedy had just been murdered so we had piano music instead of a band. Nice and quiet and an intimate atmosphere; in fact, it was the best party I've ever been to.'



PHOTO GUY ACKERMANS

FUNDS

Digitizing historical publications

Wageningen UR's library wants to digitize historical scientific publications by leading academics such as professors Wellensiek and Ritzema Bos. In the past, such articles would not appear in scientific journals, being published instead in the *Communications from the Agricultural College* series. The Wageningen University Fund wants to give everyone access to these articles and has asked alumni to support the process of

digitization through donations. The cost of digitizing one volume is 25 euros. Between them alumni have donated 5128 euros. This project is part of the larger 'Wageningen Biography' project: the library will be creating an overview of all the official publications by the staff of Wageningen UR and its predecessors. For more information, see www.wageningenur.nl/annualgift

WAGENINGEN IN THE WORLD

Icy greetings from Canada!

'What's a Wageningen forestry specialist looking for above the tree line? Well ... ice!' says Joost van der Sanden in his email. He is posing with Wageningen World in this photo in Canada's Northwest Territories, about 300 km northeast of Yellowknife. Van der Sanden was carrying out measurements of ice there for a study on whether satellite radar images could be used to support the planning, construction and maintenance of ice roads. He studied Forestry from 1981 to 1987 in Wageningen and stayed on to work there until 1997. He then got a PhD in radar remote sensing in tropical forestry. He is now a senior researcher at the Canada Centre for Mapping and Earth Observation. *Are you reading this magazine a long way from Wageningen too? Email your photographic evidence to wageningen.world@wur.nl.*



JUBILEE ACTIVITIES

Well-attended alumni gatherings in Asia

All around the world, alumni gatherings were held during 2013 to celebrate Wageningen University's 95th anniversary. In China and Indonesia Wageningen alumni were inspired to organize follow-up activities.

The alumni gathering in the Chinese capital of Beijing on 27 September attracted more than 100 alumni from across China. The topic debated was food safety. Professor Tiny van Boekel argued for the integration of food security, food safety and food quality. This requires knowledge-intensive technology. But genuine innovation in food production can only be achieved with a multi- and interdisciplinary approach that adopts the perspective of the food chain. Of vital importance to any such approach is

cooperation with the business world, says Van Boekel.

After Atze Schaap of FrieslandCampina had explained the role of international dairy companies, Qu Futian, Vice-President of Nanjing Agricultural University, argued for cooperation between Chinese institutions and international institutes in the field of education and research. During a reception, the alumni reflected on the discussion and reminisced about their student days in Wageningen. Ideas were also hatched for future alumni activities in China.

In Indonesia, alumni felt similarly inspired to organize follow-up activities. Some seventy graduates were present at the gathering on green energy held in Jakarta on 11 October. The necessity of a green economy and the related dilemmas were outlined by Huub Löffler, Director of

Wageningen International. Idwan Suhardi, Advisor to Indonesia's Minister of Research and Technology and a board member of Indonesia's Innovation Council explained the complexity of introducing a green economy in Indonesia.

Next, alumna Aretha Aprilia, Director of the Centre for Sustainable Consumption and Production at Surya University spoke about waste water management. She stressed that social and technological developments must go hand in hand. Her contribution was followed by a lively debate. The audience then continued the discussion or caught up with each other during a festive buffet.

In October, November and December jubilee debates were also held in Belgium, Brazil, the US and Ghana.

See: www.wageningenur.nl/debateworldwide



Wageningen alumni got together in China and Indonesia (r).

PERSONALIA

In Indonesia, **Aretha Aprilia MSc**, WU Urban Environmental Management 2005, director of the Indonesia Centre on Sustainable Consumption and Production at Surya University, has been nominated for the Most Powerful Woman Award by the magazine *Her World*. 1 November 2013.

Maria Barbosa PhD, WU PhD 2003, director of AlgaePARC at Wageningen UR, has won a For Women in Science grant (€25,000); these grants enable talented female scientists to carry out research at the NIAS (Netherlands Institute for Advanced Study). 5 October 2013.



Maria Barbosa

Prof. Cees Buisman, WU Environmental Protection 1985, professor of Biological Recovery and Reuse Technology at Wageningen University, has been appointed Knight of the Order of the Netherlands Lion for his excep-

tional achievements in science. 30 September 2013.

Prof. Marcel Dicke, Leiden University Biology 1983, professor at the Laboratory of Entomology at Wageningen University, has won the 2013 Eureka prize for science communication. 1 October 2013.



Marcel Dicke (r) at the Eureka prize-giving ceremony.

Prof. Ewout Frankema, University of Groningen History 2001, professor of Rural and Environmental History at Wageningen University and Marlou van Waijenburg MSc, Utrecht University 2010, researcher in the Rural and Environmental History science group, have won the Arthur H. Cole Prize for the best paper in the *Journal of Economic History* (June 2012-June 2013). 1 October 2013.

Rob Gabriëlse MSc, WU Tropical Land Development 1984, has been appointed

ambassador to Azerbaijan, based in Baku. 1 February 2014.

Lieselotte Heederik, WU Rural Development Studies 2004, and Guido van Hofwegen, WU Tropical Land Use 2006, won the Tech Awards 2013 in the health category with their company Nazava Water Filters. 14 November 2013.

Kees van't Klooster PhD, WU Farming Technology 1981, has been appointed professor of Agriculture at the University for Development Studies in Tamale, Ghana. 25 September 2013.

George Lubbe MSc, WU Rural Economics 1970, chairman of the Wageningen Ambassadors, has received a Silver Medal from Wageningen University. 2 September 2013.



George Lubbe (r) receives a silver medal from chairman of the board Aalt Dijkhuizen.

RANKING

Eight alumni in Trouw newspaper's Sustainable 100

In 6th position: **Lucas Simons MSc**, WU Environmental Protection 1997, founder and owner of SCOPEinsight and NewForesight. In 13th position: **Sjoerd van de Wouw MSc**, WU Biology 1997, campaign manager for animal rights society Wakker Dier. In 14th position: **Prof. Klaas van Egmond**, WU Food Technology 1972, member of the board of Princess Irene's NatureCollege Foundation and faculty professor of Geosciences and professor holding an en-

dowed chair in Environmental Sciences at Utrecht University.

In 29th position: **Joost Oorthuizen PhD**, WU Tropical Land Development 1991, director of the Sustainable Trade Initiative.

In 64th position: **Prof. Louise Fresco**, WU Rural Sociology of the Non-Western Regions 1976, professor at the University of Amsterdam and honorary professor at Wageningen University.

In 86th position: **Prof. Rene Wijffels**, WU

Environmental Protection 1987, head of the centre for the Biobased Economy at Wageningen University and scientific director of the AlgaePARC research centre.

In 92nd position: **Arnold van Vliet PhD**, WU Biology 1996, associate professor (personal chair) in Environmental Systems Analysis at Wageningen University.

In 97th position: **Fred Wouters MSc**, WU Forestry 1981, director of the bird conservation society Vogelbescherming.

PERSONALIA

Hedwig te Molder PhD, WU PhD 1995, has been appointed professor holding a personal chair in Theoretical and Applied Aspects of Discourse Analysis at Wageningen University. 1 September 2013.

Bert Rikken MSc, WU Tropical Plant Breeding 1985, has been appointed by the Ministry of Economic Affairs as agricultural adviser, based in Nairobi, Kenya and with Kenya and Tanzania as his field of operations. 16 April 2013.

Henk Schols PhD, WU PhD 1995, has been appointed professor holding a personal chair at the Laboratory of Food Chemistry at Wageningen University. 1 September 2013.

Bert Tolkamp PhD, WU Zootechnics 1977, has received an Ig Nobel prize for research on when cows lie down. 13 September 2013.

Piet Verdonchot PhD, WU Biology 1978, fresh-water ecologist at Alterra Wageningen UR, has been appointed professor holding an endowed chair in Wetland Restoration Ecology at the University of Amsterdam. 22 August 2013.

Geert Wiegertjes PhD, WU Zootechnics 1988, has been appointed professor holding a personal chair in Fish Health and Immunology at Wageningen University. 1 September 2013.

IN MEMORIAM

G. André PhD, WU PhD 2011, passed away at the age of 54. 1 October 2013.

Ms P.J.W.M. Bakx MSc, WU Domestic and Consumer Studies 1992, passed away at the age of 53. 3 June 2013.

C. Been MSc, WU Biology 1984, has passed away. Date unknown.

Ms A.F. Bosma MSc, WU Domestic Science 1959, has passed away. Date unknown.

E.W. van Brussel PhD, WU Tropical Plant Breeding 1965, has passed away. Date unknown.

Prof. L.C.A. Corsten, WU Land Development 1951, passed away at the age of 89. 18 July 2013.

J. Dijkstra MSc, WU Horticulture 1964, passed away at the age of 75. 2 September 2013.

G. Frieling MSc, WU Agricultural Plant Breeding 1947, passed away at the age of 94. 18 July 2013.

A.M. Hartevelde MSc, WU Rural Economics 1967, passed away at the age of 79. 29 September 2013.

A.E.S. Hunkar MSc, WU Tropical Plant Breeding 1958, passed away at the age of 84. 25 July 2013.

J.J.G. Kliest MSc, WU Environmental Protection (Water Purification) 1983, passed away at the age of 57. 17 July 2013.

N. Knol MSc, WU Zootechnics 1957, passed away at the age of 88. 1 September 2013.

C.D. Konstapel MSc, WU Soil and Fertilization Sciences 1969, passed

away at the age of 69. 22 October 2013.

Prof. A. van Maaren, WU Tropical Forestry 1952, passed away at the age of 85. 4 October 2013.

H.M. Nollen MSc, WU Agricultural Plant Breeding 1963, passed away at the age of 79. 3 October 2013.

M.A. Ooms MSc, WU Tropical Forestry 1950, passed away at the age of 89. 3 September 2013.

A. Osinga PhD, WU Zootechnics 1962, passed away at the age of 77. 25 July 2013.

C.J. van der Post MSc, WU Horticulture 1955, passed away at the age of 85. 6 August 2013.

J. Reydon MSc, WU Tropical Rural Economics 1957, has passed away. Date unknown.

M.A. Saenz Choque MSc, WU Soil and Water Management 2002, has passed away. Date unknown.

C. Scheltema MSc, WU Dairy Science 1960, passed away at the age of 83. 8 August 2013.

L.D. Sparnaaij PhD, WU Tropical Plant Breeding 1951, passed away at the age of 86. 7 October 2013.

Ms E.E. Udong PhD, WU PhD 2011, passed away at the age of 57. 6 August 2013.

C.D. Viehoff MSc, WU Land Development 1948, passed away at the age of 95. 11 August 2013.

R.L.P. Wolff Schoemaker MSc, WU Tropical Plant Breeding 1963, passed away at the age of 77. 4 August 2013.

DE NIEUWE WILDERNIS

Wageningen filmmakers

Henk Meeuwsen, researcher at Alterra Wageningen UR, and Ruben Smit, ecologist and Wageningen UR alumnus, worked on the successful film *De Nieuwe Wildernis*, about the Oostvaardersplassen nature reserve. Henk Meeuwsen was the soundman and Ruben Smit the director and cameraman. The two men spent two years tracking the animals in

the reserve on foot. The result is a nature film unlike any that has been made before in the Netherlands. The film was released in Dutch cinemas on 26 September. Soundman Henk Meeuwsen also wrote a book about the experience, called *The Fart and other stories from The New Wilderness*.

Info: www.denieuwewildernis.nl



Ruben Smit



Henk Meeuwsen

PHOTO RUBEN SMIT



VWI IS COMMITTED TO LEADING LADIES

VWI, the women's network for Wageningen graduates facilitated by KLV, is almost 25 years old. It was once set up to promote the interests of female alumni, such as the promotion of women to higher positions at the university. And a quarter of a century later that is still necessary, thinks chair Wytse Dijkstra. Under the motto 'Grab Your Chance' the VWI therefore organised two debates with women and men this year about the subject. "Our goal is to realise equal opportunities for both women and men to reach the top, independent of individual choices."

Is the promotion of women still such a big problem?

"Yes! At Wageningen University not even one in ten of the professors are women, even though more than half of the Wageningen PhD students are women. There is enough talent! Clearly something is going wrong. That is why we want to place the subject high on the agenda."

What is going on?

"In 1989, we thought that things would turn out fine if we as women organised ourselves, encouraged each other, and exchanged experiences. Unfortunately this has not been enough. Last year we commissioned the *Wetenschapswinkel* to carry out a study and this revealed that a wide range of subconscious mechanisms play a role. For example, when a vacancy for a professor arises people still subconsciously search for somebody similar to the person who is leaving. That is mostly a man. And people usually look in their own networks, but here men are in the majority.

Initially, during the first few years after graduation women generally experience no problems. The problems only start when they see their male contemporaries gaining promotion. Or if they become pregnant and then suddenly receive comments about this - you'll want to work part-time now won't you? - whereas it would be far more encouraging if they were to hear: but you're coming back aren't you?"

These aren't exactly enormous eye openers, are they?

"No, not at all. These mainly indicate that it is a deeply rooted societal problem.

And anyway, we do not want to spend too much time on the causes because it is high time we did something about it! First of all we want to put the subject on everybody's agenda. We therefore organised two debates, 'Queens' Palace' in June and 'Kings' Castle' in October. The idea behind this is that as a King or Queen you occupy a role model position and therefore have a responsibility. Everyone can be a queen or king in her or his own way. So we invited mixed groups as 'Leading Ladies' and 'Leading Lords': young, old, ranging from still studying to professor or active in industry."

Illuminating for the participants?

"During the 'Queens' Palace' the 'Leading Ladies' gave their views. What are their experiences? How do they encourage others and what issues are they confronted with? Young people want to know: how did you achieve this? For them it

was an eye opener that the older generation had made clear choices with respect to their work and private lives. For example, various women had deliberately chosen not to have children so that they could make a career.

To some of the older generation it came as a surprise that after all these years the



How well is Wageningen doing? A few figures.

The Netherlands and Europe

The Monitor Vrouwelijke Hoogleraren 2012 reveals that the Netherlands with just 14.8% female professors belongs to the five lowest scoring European countries with only Belgium, Cyprus and Luxembourg scoring worse. At the top of the list are Romania (35%), Portugal (22%) and Hungary, Italy and Sweden (20%).

Wageningen University and other universities

Wageningen University even has the worst but one score in the Netherlands. Only Eindhoven University of Technology scores worse. However, they have realised a considerable increase since 2003, whereas Wageningen is the only university where the figures have fallen.

Leaking pipeline

On average across the Dutch universities the proportion of women strongly decreases with each step in the scientific career: from 53% graduates, via 45% PhDs, 33% assistant professors, 21% associate professors to 15% full professors: the 'leaking pipeline'.

Interestingly, between 2003 and 2011 the 'leakage' at the first career step showed a marked decline at Wageningen, whereas for other positions it has risen. The step from associate professor to full professor has actually become one-and-a-half times more difficult.

Source: Kansen voor vrouwelijk talent. Over barrières en carrières bij vrouwen aan Wageningen UR. Wetenschapswinkel Wageningen UR, December 2012 (publication in Dutch).

promotion of women to higher positions was still an issue. There was an example of a woman who refused a professorship she was offered because she could not see how she could combine that with a young family. At the time the university could also have said: how can we help you do that? Men are less focused on the subject, which is perhaps logical. You could see they felt a bit awkward: um, we also need to form an opinion about this. There is nothing wrong with that as it is a first step towards entering into genuine conversations with each other."

And now?

"On 17 January 2014 we are organising a third and closing debate: 'Queens & Kings

Get ToGetHer'. Rector magnificus Martin Kropff will be present at this. That will be an interactive and lively meeting that must provide energy and emphasise the need to do something about the gender balance at both a collective and individual level. In addition, it is a fantastic moment to open our jubilee year.

As VWI we continue to focus on what we want to achieve in ten, twenty or fifty years time as women within Wageningen UR. Our ideal is a fifty-fifty split, but at the very least it must be equally normal for women and men men to progress to the top. There is enough talent and quality out there!"

Further information: www.vwi-netwerk.nl

ACTIVITIES

Info: klv.nl/en (unless indicated otherwise)

12 December 2013

KLV & VWI - Navigating the academic jungle: challenges & solutions for work-family balance. With Dr. Kate O'Brien

18 December 2013

SKOV - Alternative food sources and food security

19 December 2013

KLV & StartLife - Wageningen Business Christmas cafe in Hotel de Wageningische Berg. Sponsor: Food Valley

15 January 2014

KLV & Wageningen Academy - Wereldlezing - Role of SME's in food security in Africa, inclusive business by African entrepreneurs

16 January 2014

KLV & StartLife - Wageningen Business Café

17 January 2014

VWI - New year gathering - Queens & Kings Get ToGetHer

20 February 2014

KLV & StartLife - Wageningen Business Café

20 March 2014

KLV & StartLife - Wageningen Business Café

YOUNG KLV

15 January

LinkedIn for students

20 January

CV writing course

22 January

Workshop - To do a PhD, a pleasure or burden

25 February

CV writing course

24 March

CV writing course

14 April

CV writing course

24 June

CV writing course

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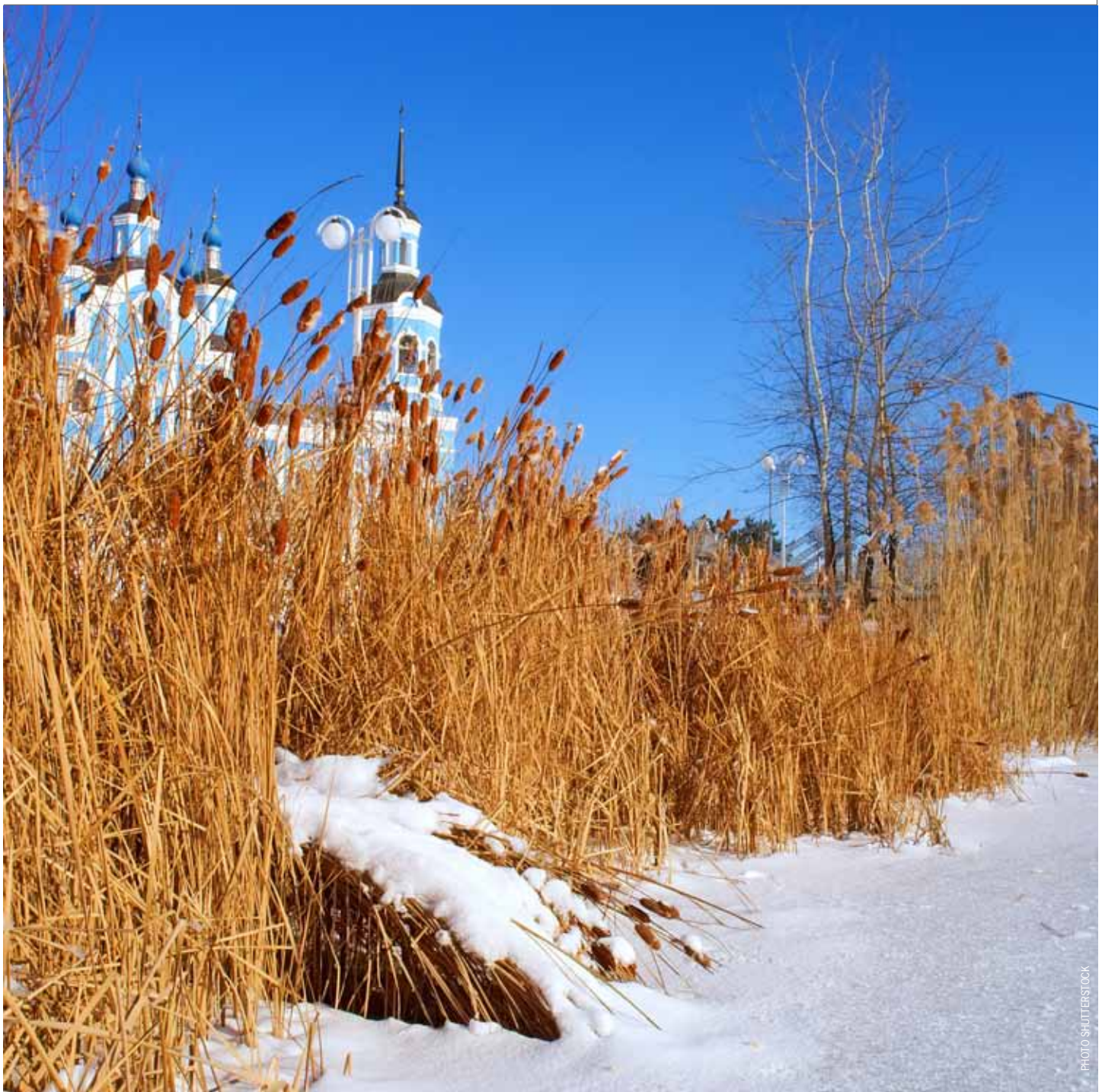


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Biofuel from Ukrainian reeds

'The Ukraine has 1.2 million hectares of wetland,' says Wolter Elbersen of Wageningen UR Food & Biobased Research. In the Pellets for Power project, he and colleagues at Alterra Wageningen UR studied the potential for economically viable and sustainable production of fuel from reeds, straw and switchgrass. Reed and switchgrass proved to be the most promising options. Reed offers one big advantage, in Elbersen's view: 'Under the right conditions, reed can be harvested sustainably, and not at the expense of farmland for food

production either.' The same goes for switchgrass, which can be grown on less fertile land, millions of hectares of which go unused in the Ukraine. 'Growing the reed on less fertile land does mean a slightly higher cost price, which makes it slightly less positive in terms of the greenhouse balance per unit. So you can grow biomass without competing with food production, but at a small cost. How do you weigh up those factors against each other?'

The first Ukrainian companies are already producing reed for local heat generation, and

it is expected that switchgrass production will follow in due course. 'Biomass can eventually offer the people of the Ukraine an affordable and sustainable alternative to expensive natural gas from Russia.'

The project was implemented in collaboration with Control Union from the Netherlands, Tuzetka from Belgium, Phytofuels Investments from the Ukraine, Poltava State Agrarian Academy and local farmers, supported by Agentschap NL. Info: www.switchgrass.nl, wolter.elbersen@wur.nl ■