

# MADE IN HOLLAND

# HORTICULTURE

and starting materials

Trouble-free seeds • Green and healthy • Setting trends in flowers and plants  
Greenhouses that think • Making world citizens healthier • Greenest university in the world



Pioneers in international business



# Welcome

What does an average business in the Dutch horticultural industry look like? We could not tell you. Because the companies that together make up the Dutch horticultural and starting materials industry are as varied as they are dynamic. From bulb producers to tree nurseries and seed refiners. The thing they all have in common is a natural drive to strike out in new directions. To produce more with less, to contribute to the health of mankind and the environment, and to make society as a whole a little bit more sustainable. They prefer to cooperate in these endeavours. Because the sector has a traditional conviction that two can achieve more economic advantage than one. And three or four can achieve even more. This is why so many specifically targeted joint ventures have been entered into. In partnership with a neighbour, or one of the prestigious 'green' research institutes of Wageningen University. In this publication you will see how Dutch companies are conquering the world with their innovations and how you can work with them in collaboration.

## MADE IN HOLLAND HORTICULTURE and starting materials

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### Under a red-blue sun

Who is afraid of red and blue? Not Rob Baan that's for sure. The owner of Koppert Cress grows his micro-vegetables (seedlings) under a mix of red and blue LEDs. Inside his energy-efficient greenhouses, under a red-blue sun, they are doing extremely well. Even better than under the real sun. According to Ferran Adrià, celebrated chef of amongst others the world-famous Spanish restaurant El Bulli, their flavour is unrivalled. "This combination of light colours produces the best possible taste", explains Baan. The method also consumes less energy and produces less light-pollution, which makes the seedlings taste even better! <http://benelux.koppertcress.com>

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Source: Incotec



Source: Koppert

## Enough safe food: with help of insects



There are still countries in the world where people are suffering from hunger and malnutrition. Providing enough (safe) food for everyone is the top 'millennium goal' of the United Nations. The Dutch horticultural industry is definitely playing its part in this regard. With innovative solutions to increase crop yields and to detect and prevent the spread of infestation and disease. In the past we used chemical pesticides and resistant plant varieties. Today there is a growing appreciation of how effective organic alternatives can be. Forty-five years ago cucumber grower Jan Koppert, allergic to pesticides and increasingly confronted by resistance problems, started using some small, useful creatures.

Predator mite against red spider mite, wasp against whitefly. The pollination of plants, a major undertaking for humans, is now left to a natural specialist, the bumble bee. Making tomatoes and capsicums look even prettier. Koppert climate-cells mimic the four seasons and bumble bees can be supplied throughout the entire year. There are also profits to be made underground using nutritious plant extracts (biostimulators) and beneficial fungi, not to mention bacteria that actually protect the roots. These are deployed in the full-soil cultivation of soya in Brazil. The family business has branches in 23 countries, the most recent of which opened in India in February 2013.



## More with less: better seeds

How can we make the best possible use of the space, water, energy and minerals available to us? So that all 7.7 billion people have proper nutrition? Or to put it another way, how can we produce more with less? The Dutch horticultural industry makes a big contribution in this regard. With robust starting materials and research into resistant plant varieties and sustainable cultivation methods. We are taking big steps towards a much more organically based economy and finding clever solutions for logistics and transport. For a real tour de force in seed technology go to the Dutch 'Seed-Valley'. To companies like INCOTEC that improve the quality of seed for growers and

cultivators. Seeds are examined internally and selected one by one for quality using X-rays. Inspecting the prothallium will tell you whether salad seeds can grow in warmer countries. Seeds can be given a tiny supply of nutrients in a thin coating, natural substances that stimulate among other things the root growth of the plant. The average increase in yield (measured in kilograms per hectare) for wheat seed coated in this way is 4.5 percent. Also new is ThermoSeed, blasted clean with hot, damp air to eradicate any sources of disease on the husk.





Source: Grüne Woche

Worth more together: at the trade fair

You achieve more in partnership. And you create more value. In all areas, from improving the company image and encouraging training and employment, to socially responsible business practices and expert knowledge of the market. The horticultural industry guarantees valuable products. Cooperation in the chain, from producer to consumer, further increases the market value of products. This is why they all work together. 'Quality grows in Holland'. In early 2013 the Netherlands was partner-country of the international Grüne Woche in Berlin. An absolute top event in farming and horticulture. The place to be for anyone who wants to bring their products and services to the attention of foreign

customers. As we do. Germany is the Netherlands' best customer with 19.4 billion Euro worth of goods accounting for 26 percent of our agricultural exports. 'Grüne Woche' attracted 450,000 visitors. Many German consumers come here to look and taste the Dutch tomatoes, vegetarian snacks and applesauce. In the busy hall of the trade fair (1.200 m²) the business community and knowledge partners were both represented. In the 'House of Taste' the joint agricultural and horticultural organisation LTO had visitors not only sampling Dutch products but also learning more about all the good things from Holland.

Tasty and good for you: safe alternatives

Vegetables and fruit are tasty and good for you, a healthy counterweight to our unhealthy fats and sugars. Those who eat enough vegetables and fruit reduce their risk of 'diseases of affluence' like diabetes, obesity or heart and vascular disease. Orchards, fields and other by-products of horticulture also make our environment greener. And that also makes us happier. But what if you are allergic to certain vegetables and fruit? Now there is an apple which people with a (mild) allergy to apples can safely sink their teeth into. The Santana variety, bred for its resistance to apple scab, turns out to be well-tolerated by people who are otherwise allergic to apples. Researchers at Wageningen

University & Research centre (WUR) are also looking for healthier crop varieties. For people with an intolerance to gluten for example, which is found in barley, rye and wheat. Researchers and plant breeders hope to make less harmful versions of these proteins. Wageningen UR works on new products in partnership with the business community. There are now foodstuffs available made with oats, a safe alternative for people with gluten sensitivity which comes from the gluten-free production line of the Dutch Oats Chain.



# From seed to table

*The Dutch horticultural industry has been sending its fresh cut flowers, vegetables and seeds all over the world since time immemorial. And due to ongoing innovation, the production processes are becoming increasingly efficient and sustainable.*

**3<sup>e</sup>** The Dutch horticultural industry is the **third largest exporter** of food-crop products in the world. A small country feeding a big world.

## Leading the way

Intelligent greenhouses that operate continuously, innovative and sustainable growlamps for greenhouse cultivation, recycling systems for waste and water, greenhouses that produce more energy than they consume; all are examples of **Dutch horticultural innovation** that are enriching the world today.

## The biggest in seed

The Dutch are the biggest exporters of seed in the world, exporting some **1.5 billion Euros** worth every year.

**10%**

The energy-producing greenhouse is in full development but the current generation of Dutch greenhouses already contributes 10% of Dutch energy needs using combined heat and power (CHP).

**15% to R&D**

Producers of starting materials invest an average 15% of their turnover in **Research & Development (R&D)** and thereby contribute to the Dutch knowledge infrastructure. This is more than is spent in many other knowledge-intensive industries, such as pharmaceuticals.

**4.6 billion kilos**

In this period the Netherlands exported **4.6 billion kilograms** of vegetables with a market value of **4.2 billion Euros**. Hardly anyone realises the Netherlands is the world's biggest producer of onions.

## Innovators

Among the top 25 European companies who invest the most in R&D are 4 Dutch companies from the horticultural industry: **RijkZwaan, Nunhems, Enza and KeyGene**.

## Setting the trend

The Netherlands is one of **the biggest exporters** of cut flowers, plants and trees worldwide. The Dutch horticultural industry has been leading the market and setting the trend in flowers, plants, bulbs and seed materials for many years now.



“The world demands more food and better health”

**Loek Hermans** is the figurehead of the Horticultural and Starting Materials Top Team. The former government minister has been chairman of Greenport Holland, an interest group for horticultural entrepreneurs, since 2011. One of the tasks of Greenport Holland is to represent the sector abroad and establish contacts between foreign and Dutch companies.

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# World champion for added value

Loek Hermans is bursting with enthusiasm when he talks about the Dutch horticultural and starting materials industry. The innovations from Holland are an incredible source of potential. They go far beyond the ‘bulbs, trees and seeds’ generally associated with the sector. Which is just as well because there are some huge challenges awaiting us. The level of ambition is still as high as it was before. “We have a lot to offer the world and can contribute to solving world problems.”

## What makes the Netherlands so good at horticulture?

“Cooperation! At multiple levels. The most important is probably the mutual cooperation among market gardeners and horticulturalists in general. They exchange a huge amount of information and results. Not just in the Netherlands but all over the world. Entrepreneurs see themselves as colleagues rather than competitors. This has allowed the level of expertise inside the sector to reach unknown heights. Infrastructural developments such as the grouping of companies in ‘Greenports’ (clusters of green horticulture) are also important in this regard. When it comes to sharing knowledge, entrepreneurs have already been successfully working in cooperation with the world-renowned Wageningen University & Research centre (WUR) for several decades. The Dutch understand that they are part of a greater whole. And that they have to advance together to make their mark in the world.”

## Speaking of that world, what does the Netherlands have to offer?

“A lot. Two billion people are hungry and one billion are overweight. These big trends have one thing in common: the need to do more with less. The world demands more food and better health. But space, water, energy and minerals are limited and scarce. The amount of land available for agriculture only continues to decline because of climate change (by 35 million football fields a year between 2000 and 2020). There is less and less drinking water per head of population and yet domestic consumption continues to increase. Eventually we will have to do ‘more with less’. And that is one of our specialties! Dutch market gardeners and nurserymen achieve the highest productivity per hectare. Using less plant protection products, water and minerals. They are leading the way in energy efficiency, sustainable

energy production and CO<sub>2</sub> reduction. Dutch plant breeders and propagators also provide the starting materials for crops that are resistant to disease and drought. With higher yields, better flavour and longer shelf-life. Using Dutch knowledge, products and production methods, farmers and market gardeners in developing countries get more out of their crops. So we can help foreign governments to realise the full potential of their crops. We are world champion in this regard.”

## World champion, that’s quite a claim ...

“The horticultural and starting materials industry is good for 12.5 billion Euros in domestic production, 17 billion Euros in exports and more than 450,000 jobs. Economist Michael Porter has good reason for regarding the horticultural industry as the sector in which the Netherlands has worldwide prominence, which is why the Dutch government refers to it as Top Sector. That means the government will free up more resources for its ongoing development.”

## What innovations will this lead to?

“Innovations in relation to health for example. The Dutch horticultural industry can make the world population healthier. Soon there will be horticultural products on the market that increase your vitality. Or help you to lose weight responsibly. This is important because food consumption and obesity are only set to increase. Food will therefore be scarcer. The challenge is to achieve the biggest possible harvest using as few resources as possible. Dutch seed companies supply the building blocks to meet that challenge. An innovative coating for wheat seed developed by a Dutch company produces a 4.5 percent increase in yields, for example. So yes, our knowledge of green frugality will only become more important as time goes by.”



## Best practises



### On time and sustainable transport

The Netherlands plays a primary role in the worldwide cultivation, trading and distribution of fresh vegetables and fruit. Everything produced in or imported into the Netherlands is further distributed from the southwest of the country. To keep this process up to speed and make it more sustainable, a whole range of companies and governments work in partnership on 'Fresh Corridor'. In coming years the parties behind Fresh Corridor want to encourage multi-modal transportation using so-called AGF containers. Inland shipping as an alternative to road transport is an essential part of this. The amount of traffic on the roads will only increase further with the development of Maasvlakte II. This is why the parties behind Fresh Corridor are developing transfer points for sea containers in various locations. Fresh products can be transported on from those points. The present fruit terminal in the Port of Rotterdam will be replaced by a modern Cool Port, a network of terminals and connections for carrying fresh products over water. [www.freshcorridor.nl](http://www.freshcorridor.nl)



### Profit in mushrooms

As well as being a tasty ingredient in numerous dishes, some mushrooms have a beneficial effect on the human body. *Agaricus blazei murill* contains important chemicals that help to keep our immune system in balance. These are beneficial to people with a food allergy or weakened resistance. Family business Scelta Mushrooms had been trading mushrooms for years when a scientist drew attention to the medicinal effects of the Blazei Murill. "We could see a profit in it", explains Jan Klerken jr. A scientific report by the European Food Safety Authority (AFSA) confirmed these effects. Since 2012 Scelta has been selling the mushroom as a food supplement to Dutch natural food chains and through web shops. Soon it will be found in the bread in German supermarkets because as well as making it healthier, Blazei Murill improves the taste of the bread. France and Belgium are also interested. The rest of the world is next. [www.sceltamushrooms.com](http://www.sceltamushrooms.com)

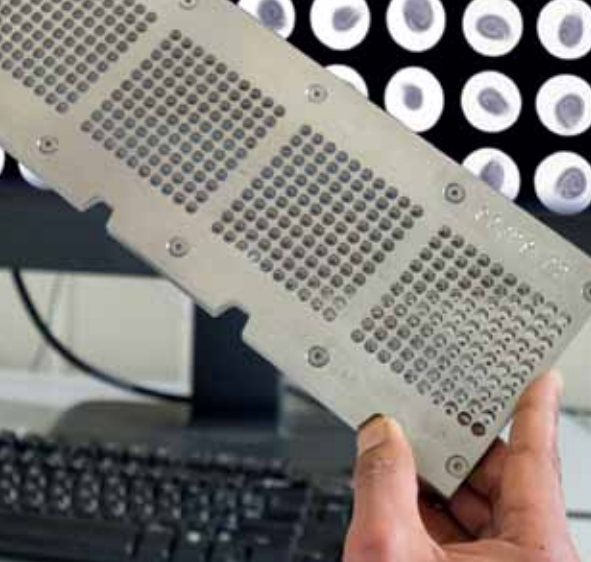
### Intelligent greenhouses

Gone are the days when greenhouses were simply glasshouses used to grow crops using a lot of heat. Greenhouse builder Van der Hoeven makes intelligent greenhouses all over the world that combine sustainability with a very clever economic yield. Van der Hoeven invented the ModulAIR greenhouse concept, whereby customers can have their greenhouse built according to the requirements of the plants, local climate regulation and local costs. The basic elements that growers can choose from are a pressurised greenhouse for uniform climate and fewer insects, drawing in outside air for dehumidifying and cooling purposes, and minimising the number of ventilation windows to maximise light and minimise insects. Greenhouse air can also be recycled to achieve higher CO<sub>2</sub> levels which are useful for growing, and greater energy efficiency can be achieved by more effective dehumidification. The system has already found its way to customers in France, Russia, Australia and North America. [www.vanderhoeven.nl](http://www.vanderhoeven.nl)



### Any time, any place

As far as PlantLab is concerned, a significant part of food production will shift to city centres, the greengrocer's cellar, restaurant kitchens and multi-floor, multi-layer vertical nurseries. Lettuce, herbs, tomatoes and many other fruits and vegetables will be harvested in fully automated Plant Production Units, where they will be grown under blue, red and invisible (infrared) LEDs-light instead of daylight. Food will be grown in the home and harvested when it is ready to eat - fresh, healthy and bursting with flavour. Using a unique combination of technologies, growing concepts and mathematical models, PlantLab is launching a crop-growing revolution. These genuine 'Plant Paradises' require no pesticides and 90 percent less water than traditional systems. The ultimate goal of PlantLab is to maximise yield and promote a world in which everyone's daily food needs can be met safely and securely, any time and any place. [www.plantlab.nl](http://www.plantlab.nl)



### Centre of the seed industry

Whereas the extraction of pure silicon led to the creation of Silicon Valley in California, the recipe for success of the Dutch Seed Valley is seed. There are more than twenty companies set up in the region between Enkhuizen and Warmenhuizen which specialise in the breeding, production and sale of seeds and other plant starting materials such as bulbs and cuttings. The companies in Seed Valley, just like their Californian counterparts, are engaged with high-value technology on a daily basis. Techniques are being developed to give seeds and other starting materials more germinating power, so they can be sown and planted to greater effect and are better protected against pathogenic organisms. Innovative and ingenious mechanisation, originating from Seed Valley, is used worldwide by seed companies. [www.seedvalley.nl](http://www.seedvalley.nl)



### Supplier with a plus

"We let people look in our kitchen", says Eric Moor, director of Sion Orchids. As a supplier of young orchids he seeks to reassure growers. For years his company developed special orchids for retail. When the flower and plant world was hit by the recession, Eric Moor took his company in a new direction. Sion would become the perfect supplier. "We literally ask growers what products they like - what shapes, what colours, and also what methods of delivery." Sion has literally opened up the doors to his nursery. The company also travels to Asia with a group of plant breeders about twice a year. Free of obligation. "It is not orders we are concerned with, but having that 'plus' after our name", according to Moor. Sion also stays informed about the current needs of growers. For special requirements Sion collaborates with specialised laboratories. "This makes two companies strong, without them competing against one another." [www.sion.eu](http://www.sion.eu)

### Making plants talk

Let the crop decide what is best for the plant and for profits. This is the ambitious goal of the Dutch company Priva (400 employees, 9 offices worldwide). Using ingenious software and sensors Priva TopCrop monitors both the condition of the crop and the business objectives of the horticultural entrepreneur. "The visible condition of a plant is a result of what it has been through in the past", according to Jorrit Budding, product manager for the technology company. "This is registered by Priva TopCrop. Growth, threat of disease and water intake are monitored and recorded continuously so that the grower gains new and unique insights. Growers can engage in a 'conversation' with their plants." On that basis the grower determines the growth and development of the plants by himself or through Priva TopCrop. [www.priva.nl](http://www.priva.nl)



### A quick diagnosis

Infectious diseases are the nightmare of every vegetable or fruit grower. The wrong microbe or fungus can wreak havoc and reduce the entire crop to green waste in no time. A financial blow to the grower and far from sustainable with respect to the environment. Rapid intervention helps everybody; the grower gets a bigger yield and the rest of the community gets less waste to process. Quick and accurate diagnoses are therefore more than welcome to the horticultural industry. This is the core business of NSure. In recent years NSure has refined the technology that enables entrepreneurs to detect quality problems in the chain at a very early stage. The advantage of the NSure technology is that it makes it possible to observe biological processes inside the fruit, vegetable or plant concerned. This means quality problems can be intercepted before they become visible on the outside. [www.nsure.eu](http://www.nsure.eu)







## Greenest university in the world

The middle of the Netherlands hosts a green power station. A place where knowledge and practice go hand in hand, which is respected all over the world. Wageningen University & Research centre (WUR) has been an ongoing source of innovation for the horticultural and starting materials industry for many years now. What is their secret? Ernst van den Ende, Managing Director of the Plant Sciences Group, explains. "There are no walls between fundamental and applied science here."



**Ernst van den Ende:** general manager Plant Sciences Group has been actively engaged in plant research at Wageningen for 27 years now. Van den Ende studied in Wageningen and graduated to the chair group Phytopathology.

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Can you grow only grow bulbs in sand? This question preoccupied bulb growers and researchers for decades. After all a 'yes' would mean an enormous expansion of growing area. Growers and scientists with the help of government decided to investigate the issue. It took fifteen years but then there was a revolutionary innovation for one of the Netherlands' most well known export products. By growing tulips, lilies or daffodils in special nets, bulbs growing on heavy clay soil can also be efficiently harvested. Since the arrival of 'net cultivation' the area under cultivation has increased enormously, as well as shifting to other regions in the country. "Typically Dutch", says Ernst van den Ende about this. He is Managing Director of the Plant Sciences Group of Wageningen University and Research (WUR). Van den Ende goes on: "On his own an entrepreneur or researcher would never have achieved this, but together, in an open research structure, you can spend fifteen years studying, testing and putting this innovation on the market."

### Typically Dutch

Van den Ende: "The agricultural sector in the Netherlands has long been in favour of partnership. People had to cooperate. There is not much farming land in our country. Farms were often adjacent to one another. This meant farmers often met and they had to work together to bring in a good harvest from the small piece of ground they were cultivating." This led to the formation of cooperatives and study clubs in which farmers bought tools in partnership or shared the latest information. "Thanks to the high level of organisation and the short lines of connection among agricultural entrepreneurs in the Netherlands, new knowledge can quickly be put into practice."

### Cashing in on knowledge

Today the ways in innovation comes into being are more diverse than ever. The WUR is a prime example in this regard. Van den Ende: "The time when our researchers simply 'scattered' their knowledge among entrepreneurs is far behind us. The whole process is increasingly one of interaction and exchange. Today the principal means of innovation is public-private cooperation and partnership (PPP)." This keeps the rate at which knowledge is converted into cash consistently high at the WUR. Van den Ende: "This 'knowledge valorisation' is one of the strong points of Wageningen. We are good at converting research into tangible products and valuable innovations." The more than 23 academic positions and 8 business units produce

a steady flow of patents, publications and successful innovations every year. Such as the energy-producing greenhouse. For years greenhouses were a major consumer of power. Until Dutch entrepreneurs realised that a greenhouse is really just a big solar collector that collects more energy than it needs in the summer. With help from the WUR researchers and government, he succeeded in developing the technology to store energy in the ground in the summer and release it for use in the winter. That technology is now so effective that the greenhouse is has become a net producer of energy.

### Focused on the world

It is precisely these innovations which have given Wageningen such an excellent reputation abroad. Van den Ende: "Our horticultural expertise is much in demand and there are people working and studying here from all over the world. I estimate about a hundred different nationalities." The name 'Wageningen' opens doors almost everywhere you go abroad, but in the Netherlands the WUR is one of the country's least known universities. "Generally speaking you could say that farming and horticulture are higher on the government agenda in other countries. In the Netherlands scarcity is not an issue." Foreign governments frequently apply to Wageningen for assistance. "In relation to food security for example, or health and nutrition. Our knowledge of more efficient production methods is also much in demand." To respond to all these requests, the University now has two locations abroad, one in China and one in Chile.

### Incubator of horticultural innovations

Nevertheless the Netherlands, with its unique knowledge infrastructure, remains the natural base for Wageningen. The Netherlands is an incubator of numerous horticultural innovations and it will continue to perform that function, according to Van den Ende. With hundreds of demand-driven research projects every year and innumerable patent applications, a huge amount of innovation is born in the heart of the Netherlands. "With regard to plant breeding we are making excellent progress in genomics, the study of hereditary characteristics at the molecular level, to improve plant varieties. A whole new world of possibilities is also opening up in relation to the coating of seeds." He concludes, with a touch of irony: "I think we have enough to keep us going, at least for the time being."





### Flourishing knowledge infrastructure

Dutch companies are among the best in the world in the production of starting materials: seeds and young plants. To maintain that position public-private partnerships (PPPs) are set up. Inside these partnerships companies, knowledge institutes and government all work together to encourage innovation and mutual coordination. The importance of the sector is undisputed. Every year the Netherlands exports about 1.5 billion Euros worth of starting materials. Almost 40 percent of world trade in seeds for horticulture and arable farming originates from the Netherlands, and for seed-potatoes it almost reaches 60 percent. To stay competitive at the global level the Top Sector Horticulture and Starting Materials has developed an optimal knowledge infrastructure. The training of knowledge workers and the continuity of research are basic points of departure in this regard. [www.topsectorTU.nl](http://www.topsectorTU.nl)



Source: genetwister

### Head start with knowledge

In agriculture knowledge provides not so much power as optimal yields. GeneTwister helps farming and market gardening businesses get a head start on their competitors by developing independent technologies for genomic breeding (breeding crops with the help of genetic characteristics) and green biotechnology. The company also has a biotechnology division. Indispensable considering the growth of information about potential biological markers and genetic (and gene expression) databases. One of the projects in which Gene Twister participates is 'Bacterial Wilt Tomato'. In partnership with the Dutch seed company Bejo Zaden and the Thai company East West Seeds, tomato plants resistant to Bacterial Wilt (a plant disease that causes widespread damage in the tropics) are being developed. [www.genetwister.nl](http://www.genetwister.nl)

### Solutions to social problems

The Top Sector Horticultural and Starting Materials is one of nine Dutch top sectors. The sector aims to be the world market leader in sustainable solutions to social problems, such as food shortages or even bad nutritional habits, by the year 2020. The Top Sector focuses on every field of knowledge, from fundamental strategy to applied research and valorisation. And chooses to carry out applied research focused on farming and horticulture. Every research project is guided by four central innovation themes: how to keep producing high-value food using less space, water and energy, food safety and security, ways in which horticultural products can contribute to healthy nutrition and a healthy living and working environment, and solutions that lead to efficient, profitable and sustainable horticultural chains. [www.topsectorTU.nl](http://www.topsectorTU.nl)



### Hidden powers of daffodils

If you thought the beauty of Dutch flowers was confined to their looks you would be mistaken. Daffodils, snowdrops and other bulbous plants contain the substance galantamine. This chemical has produced good results in the treatment of mild to moderate dementia. The universities of Leiden and Nijmegen are doing more research into the effects of this chemical, which is already used in several anti-dementia medicines. In the Netherlands more than a hundred fields have already been sown with daffodils for the production of such medicines. Further research into this and other methods of treatment is more than necessary. In the Netherlands alone there are currently more than 235,000 people suffering from Alzheimer's disease. That number is expected to double by 2050. [www.umcn.nl](http://www.umcn.nl)



Photo: istock

### Green genetic revolution

If it were up to KeyGene, a green genetic revolution would be rolled out in the years to come. This Wageningen company is one of the top players in the field of molecular genetics for the agricultural sector worldwide. KeyGene concentrates primarily on improving crops for (animal) food, fibres, fuel, ornamental flowers and enjoyment. The KeyGene green genetic revolution consists of investigating and using the natural genetic variation in vegetables and other crops. In this way the company delivers sustainable solutions to the worldwide demand for stable and good quality crop yields. KeyGene, with 135 personnel from all over the world, does both strategic and applied research, and it also has branches in the cities of Rockville (US) and Shanghai (China). [www.keygene.com](http://www.keygene.com)



Photo: Martijn van Dam fotografie

### Bridge between science and ICT

Modern scientific research generates a huge amount of data. Translating such 'big data' into useful information is a major challenge. Especially when it comes to converting data from the Next Generation Sequencing project (DNA sequencing) into useful knowledge for plant breeders. The Top Technological Institute for Green Genetics (TTI GG) is for that reason working in partnership with the Netherlands eScience Centre (NLeSC), which helps scientists to build a bridge between science and ICT. In the project 'Green eScience in the Virtual Lab for Plant Breeding' an infrastructure is being developed which will enable users to store, process, integrate and analyse large quantities of genetic data. This is an important contribution to maintaining the top position of Dutch plant breeders and knowledge institutes. [www.groenegenetica.nl](http://www.groenegenetica.nl)





## Sharing a healthy future

In 2050 there will be 9 billion people living on the planet. How can all these people be fed? The Dutch horticultural industry can play an important part in this regard, says Marco van Leeuwen of vegetable breeding company Rijk Zwaan. But there is no way world food supply can be secured without involving small farmers and market gardeners in Africa. Not by giving aid, but by encouraging local and international industry. In Tanzania the Afrisem subsidiary in partnership with East West Seeds for the first time developed several hybrid varieties of aubergine specifically for cultivation in Africa. “We choose not to be exclusive.”



**Marco van Leeuwen**, managing director Rijk Zwaan, De Lier. Rijk Zwaan is a globally operating vegetable breeding company that focuses on the development of high-value vegetable varieties for the professional market gardening sector. It is a family business employing more than two thousand people, less than half of them working in the Netherlands.



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“Breeding vegetable crops is our speciality”, says Marco van Leeuwen, managing director of Rijk Zwaan, responsible for commercial affairs. “We make crops resistant to disease and infestation, thereby contributing to a guaranteed harvest for farmers in East and West Africa. This helps them to provide for their own food security in their own country, and perhaps even to export food in the future. It has to happen in the developing regions themselves. Plant breeding will have to play a substantial role if we want to double world food production between now and 2050. By developing crops that produce higher yields per acre, that are resistant to drought, or even (in the opposite case) tolerant of large amounts of water.”

### First low-tech

“Our contribution is only part of the solution to the world food problem. In parts of Africa farmers first have to take the step from no-tech to low-tech. We have to introduce farmers in developing regions to the know-how we have in Northwest Europe such as more advanced growing techniques, the use of artificial fertiliser, water management and cultivation in tunnels and greenhouses. All of this has to be funded however. For a coordinated approach to the food problem all these elements have to be taken in hand. The UN can do this, but the Dutch Top Sector Horticultural and Starting Materials, in which government, knowledge institutes and businesses all work together, is also able to support projects. A good example here is the Sevia project in which East West Seeds, Rijk Zwaan, PPO and the government want to set up a number of testing stations in Tanzania.”

### Sharing knowledge

“In these stations we want to test varieties for all the local farmers and market gardeners, who we not only train in cultivation methods, irrigation, crop protection and the use of fertiliser, but also in the selling of harvested products. Our target group is small-scale businesses, not the large firms with European owners also found there. In the future other local and international industry should be created around such businesses, for example by other companies also involved in cultivation methods, tunnel and greenhouse cultivation, irrigation systems or trading. Or microcredit providers. At present money is needed, but as far as we are concerned there is nothing to stop these testing stations operating on a commercial basis in the

future. We make our expertise broadly available, so that everyone shares in a healthy future and small businesses are given a fair chance. With the Sevia project we choose not to be exclusive. On the contrary, I hope the knowledge will spread unchecked across the continent.”

### Developed by Africa

“Rijk Zwaan Afrisem develops plant varieties that are specially suitable for African farmers and market gardeners. I believe businesses have a key role to play in world food supply. Rijk Zwaan is a participant in the Amsterdam Initiative Against Malnutrition (AIM), a public-private partnership (PPP) under the direction of the Dutch Ministry of Foreign Affairs, in which not only multinationals such as DSM and Unilever take part, but also the University of Wageningen and Rabobank. AIM encourages more vegetable cultivation by families in several countries in Africa, as well as in Indonesia and Bangladesh. We also have good contact with the Food and Agricultural Organisation of the United Nations, who share our objective of developing small-scale food production in Africa.”

### Responsibility

“There is a huge expertise in the Netherlands on the subject of food supply. As a plant breeding company we have the knowledge and tools at our disposal to tackle and solve a number of the major challenges confronting the world. And we feel a responsibility to do something with our capability. By tackling problems such as malnutrition, poor nutrition and obesity with healthy vegetables. Or reducing the pressure on ecosystems by deploying new cultivation methods and continuing to supply sufficient quantities of healthy food to an expanding world population. These are the objectives we must seek to achieve in partnership with other companies, knowledge institutes and governments.”



Source: Van den Berg Roses



### The best possible climate

At first roses were planted in the ground, later on rock wool. Once they were in the (Dutch) open air, now they are in heated greenhouses. Van den Berg Roses has been cultivating roses in the best possible conditions since 1975. The best quality roses still come from the Netherlands according to Arie van den Berg, but since 2004 the family business has also been cultivating roses in Kenya, and since 2007 in China for the Asian market. In Africa roses grow without artificial light or heating and therefore at lower cost. Employees and their families are supported in Kenya with accommodation, transport, health care and education. [www.en.vandenbergroses.com](http://www.en.vandenbergroses.com)



Source: Van der Hoeven

### Greenhouses made to order

A typical Dutch scene? Take another look. This is Flowerdale in Tasmania on the other side of the world. Dutch greenhouses are everywhere, not just on farmland but in deserts, cities and mountainous terrain as well. Van der Hoeven Horticultural Projects build many different greenhouses for different circumstances and climates, ready for operation if necessary. This Dutch company has been doing all its own manufacturing and design for sixty years now, so that it can respond quickly to unexpected project requirements. If they have to, they can even build a greenhouse on top of a building as they did in the Canadian city of Vancouver (urban farming). [www.vanderhoeven.nl](http://www.vanderhoeven.nl)



Source: Svensson Global

### Growing close to Dutch horticulture




Maranque Plants, a Dutch company in Ethiopia. Here crops are grown and tended to under the shelter of 'Harmony' screens from Svensson Global. Over the last forty years this Swedish company has grown very close to Dutch horticulture. Innovative horticultural screens provide an ideal climate, save energy, keep insects away and protect from fire. During the day the screens in this greenhouse reflect sunlight to stop temperatures from rising too high. White strips see to optimal distribution of the light. Stored heat is used at night to maintain the temperature. This prevents the formation of dew. [www.svenssonglobal.com](http://www.svenssonglobal.com)






 **Geert Jan van der Kooij, FloraHolland, Aalsmeer, Nederland**

Van der Kooij worked for FloraHolland as Local Office Manager in Nairobi for four years. Since the summer of 2013 he has been looking for buyers on new markets and promoting the interests of international plant breeders. FloraHolland has given foreign members 'access to its clocks' since late 2008. Now there are 750 of them, 90 in Kenya (total membership 5.000). Many were previous suppliers for FloraHolland (5 locations since 1901), one of the world's biggest auction companies for flowers and plants.

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 [@FloraHolland](https://twitter.com/FloraHolland)

 **Inder Nain, Xpressions Flora Limited, Nairobi, Kenya**

Nain describes the climate in Kenya as 'air conditioned'. The conditions are ideal: average temperature at night 12 degrees, during the day 26 degrees. His company grows roses at an altitude of 2.000 metres in greenhouse at various locations below the equator. He went into ornamental plant cultivation in 2007 'as a good investment opportunity' and saw the company grow from 45 to 75 hectares at the end of 2013. This makes Xpressions Flora Limited an average-size rose cultivator. The average size of a large rose grower in Kenya is about 200 hectares.

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 [facebook.com/pages/Xpressions-Flora](https://facebook.com/pages/Xpressions-Flora)



# Kenyan roses 'under' the Dutch clock

The auction clocks of FloraHolland have been in operation for more than a century.

The methods of this cooperative without a profit motive have scarcely changed in all that time, except that today the cut flowers and plants auctioned at the five Dutch branches come from all over the world. Foreign plant breeders are full members involved in decisions about the future path of FloraHolland. "Members who like to meddle are valuable."

Inder Nain never dreamed he would become a rose grower. He was working in an entirely different sector in Kenya with a number of compatriots when he first came up with the idea. The fast-growing flowers in the African soil looked like a good investment opportunity. And so in 2007, Xpressions Flora Limited was formed. "We have expanded considerably, my prediction was correct", says Nain. "Even if it was a bumpy ride at times. The logistics and institutions in this country are not always helpful. Becoming a member of the FloraHolland cooperative took a lot of work off our hands."

## How did you make contact with one another?

**IN:** "Anyone involved in flowers soon gets to know the Dutch. Everything we do in this branch amounts to copying their ideas. FloraHolland offered us immediate access to the most developed flower and plant market in the world. The alternative was to set up a sales network of our own and see to our own transport. For us this was the easiest way, also considering that the cultivation of ornamental flowers was new to us."

## What does the Dutch cooperative have to offer foreign members?

**GK:** "They get the best possible market price at a low commission, just like our Dutch members. In exchange you become joint owner and join the conversation about the policy of the cooperative. About investments in our buildings in Aalsmeer and Naaldwijk for example, although that may seem far from home. Some international members on the other hand see us as no more than a commercial company. People like Inder are extremely valuable because they get involved with what we do and bring in a different perspective."

## What does FloraHolland learn from such partnership?

**IN:** "I am getting a little bit impatient. In choosing FloraHolland we also chose Europe as a market outlet. But we are increasingly being approached by buyers from emerging markets in Asia and Australia."  
**GK:** "We see that happening as well. We have offices in our most important production regions outside the Netherlands to ensure that flowers and plants arrive at the auction in the best

possible condition. But in the future they could also go directly from production location to end market through an internet auction. We are now adjusting the non-reversal payment system we use on the auction in the Netherlands for that purpose. And we always try to encourage more direct deals between plant breeders and buyers."

**IN:** "As far as I am concerned such developments can't happen soon enough. The Netherlands has a huge head start but there is a danger of losing sight of what is happening in the rest of the world."

## How does Holland stay at the top in the auction world?

**GK:** "We are the global turntable for flowers and plants and we work hard to keep it that way. By working in partnership with an auction in Japan for example, and by following developments in China and Brazil closely. In terms of scale the auctions there are not to be compared with the Dutch, but they show you that the world market for flowers is changing. This is something we want to keep track of. Also by listening to our international members."

## Inder, you are joint owner of a cooperative by the name of FloraHolland. Do you feel a little bit Dutch?

**IN:** "Not really. I still have Indian nationality. But I have been to the Netherlands often and I can work very well with Dutch people. I learn a lot from working in the highly developed Dutch system of distribution and auctions. In the meantime the cultivation of ornamental plants in Kenya is also becoming more professional."

**GK:** "We are constantly trying to get the arrival temperature of flowers at Nairobi Airport lowered for example. It used to be 18 degrees, now it is 14, using cooling systems and data loggers which accompany every consignment. This means we can guarantee a 'vase life' of seven days for our flowers."

**IN:** "The presence of FloraHolland here contributes to quality because customers are very demanding. And we can only take steps to improve the chain by working together. That includes things like improving working conditions and sustainability, as well more practical matters such as setting up transport through sea containers."





Source: NL Agency

### Doing business with the Dutch

The portal to doing business with the Netherlands. Here you will find information about Holland, markets, rules and regulations. The information centre will help you find interesting Dutch partners. [www.hollandtrade.com/business-information](http://www.hollandtrade.com/business-information)

### Dutch diplomatic missions and business support offices

These provide useful business leads and contacts through an international network. Staff will help you with your trade requests and introduce you to the various trade programmes. [www.minbuza.nl/en/services/trade-information/trade-information.html](http://www.minbuza.nl/en/services/trade-information/trade-information.html)

### Network of Agricultural Counsellors

Agricultural Counsellors serve as a liaison for international collaboration with Dutch top sectors. They are based at embassies and consulates.

### Network of Innovation Attachés

Innovation Attachés serve as a liaison for international collaboration with Dutch top sectors. They are based at embassies and consulates. [www.agentschapnl.nl/en/nost](http://www.agentschapnl.nl/en/nost)

### Netherlands Foreign Investment Agency

The NFIA is the first port of call for foreign companies wanting to establish their business in the Netherlands and take advantage of the Dutch business environment as a strategic base for doing business in Europe. [www.nfia.nl](http://www.nfia.nl)

### Dutch Top Sectors

These are the sectors in which the Netherlands excels globally and which represent a government priority: horticulture and starting materials, the agri-food sector, high-tech, energy, logistics, the creative industry, life sciences, chemicals and water. [www.government.nl/issues/entrepreneurship-and-innovation/investing-in-top-sectors](http://www.government.nl/issues/entrepreneurship-and-innovation/investing-in-top-sectors)

### Top Sector Horticultural and Starting Materials

The Top Sector Horticultural and Starting Materials comprises all vegetal chains in the horticulture complex and for starting materials, the overall vegetal horti and agro complex. The Top Sector thereby comprises the sectors for starting materials, production (greenhouse and outdoors) and the companies in processing, supply, trade and distribution. It is an expansive sector with sub-sectors that range from vegetables, fruit and trees to flowers and bulbs. The sector Starting Materials involves starting materials such as propagating material, seedlings and seed stock. [www.topsectorTU.nl](http://www.topsectorTU.nl)

### Greenport Holland

The Dutch cluster of horticulture comprises different companies and organisations, such as cultivation companies, auctions, business firms, exporters, horticultural suppliers, financial and consultation service providers. Greenport Holland is the name of this cluster of horticulture. The Dutch horticultural industry is concentrated into several hubs: six Greenports with several satellite areas connected to it. [www.greenportholland.com](http://www.greenportholland.com)

### Greenport Holland International

The Greenport Holland International (GHI) foundation is an independent organisation, with its roots in Greenport Holland. It is 'a horticultural partnership' of the Dutch horticultural industry, specialist institutions and the government. The mission of GHI is to expand the earning capacity of the Dutch horticultural industry by means of international, sustainable horticultural projects. [www.greenporthollandinternational.com](http://www.greenporthollandinternational.com)