

Farming for the future

The autonomous greenhouse

Greenhouse horticulture plays an important role in the supply of fresh and healthy products. Autonomous greenhouses focus on the digitalisation of horticultural production, from providing decision-support systems for growers to the fully automated control of production systems for seeds, young plants to ready-to-use products. This state-of-the-art greenhouse can also contribute to the production of fresh food using fewer resources (water, energy). Dutch greenhouse horticulture plays a key pioneering role in these applications.



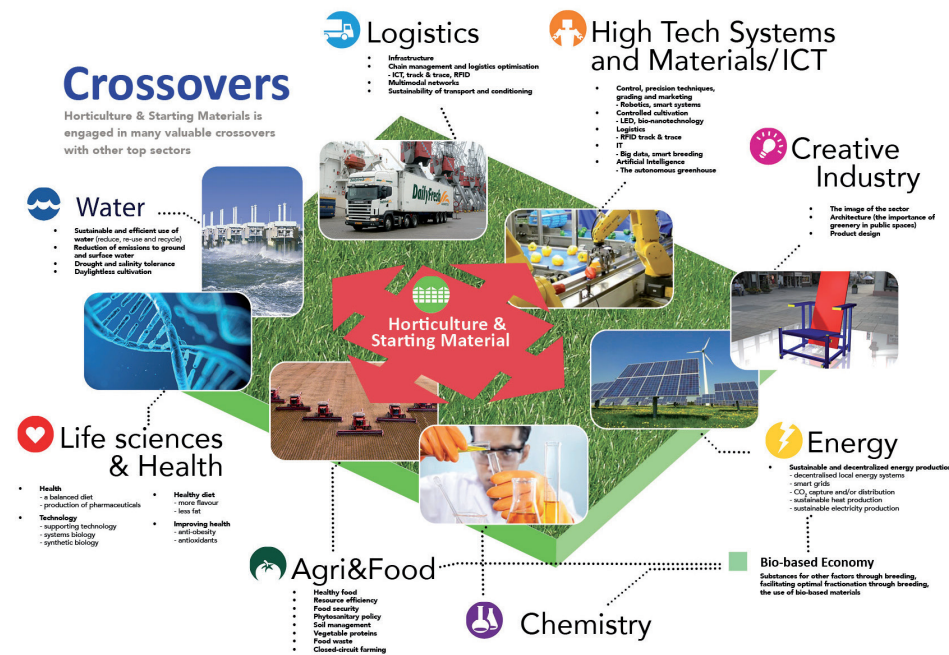
Trees as service providers

Trees and plants are instrumental in the solution of climate problems. They contribute to heat reduction, air purification and water management – not only on a global scale but also at municipal level. Wageningen University & Research was commissioned by Stichting De Groene Stad, among others, to identify which species of trees and plants excel in the provision of the above services. Tree nurseries are already offering these products as 'green as a service'.



Resilient plants

In order to keep providing the global population with a sufficient amount of safe and healthy food, both now and in the future, it is important to develop new plant varieties that are more resistant to pests and diseases and changing climate conditions. Radboud University Nijmegen and Wageningen University & Research are jointly conducting research with breeding companies into the development of tomato plants that are capable of producing tomatoes at high temperatures.



Knowing that the most fertile breeding ground for innovation is at the interface between different top sectors, Horticulture & Starting Materials is seeking cooperation with other top sectors in crossover projects. The top sectors Horticulture & Starting Materials, Agri & Food and Water & Maritime have drawn up a joint agenda in which they join forces to invest in the development of knowledge and innovation. This will enable the top sectors to make a major contribution to solving societal issues, both in the Nether

Topteam T&U is composed of:

Jaap Bond, figurehead

Anneke van de Kamp, representative for SMEs (Rijk Zwaan)

Ernst van den Ende, representative for research institutes (Wageningen U&R) Marije Beens, representative for the central government (Ministry of Agriculture, Nature and Food Quality)

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World-class solutions for global challenges



Top sector with top marks

The Dutch Horticulture & Starting Materials sector is among the best in the world today in all fields, whether this concerns entrepreneurship, a capacity for innovation, the level of knowledge or craftsmanship. The corporate community, research institutes and the government join forces to ensure that this top sector will remain among the highest-ranking in the world.

The economic opportunities and prospects for Horticulture & Starting Materials are good. The ideology of the Top Sectors Policy (backing the winners) provides the sector with possibilities to genuinely realise prospective opportunities.

It is driven by global societal challenges such as population growth and ageing, climate change, economic and social inequality, and urbanisation. Horticulture & Starting Materials offers solutions that contribute to food security, safety and quality as well as health, the sensible use of raw materials and the protection of our environment and biodiversity. Our goal is to be a global market leader in the provision of solutions to societal challenges and to contribute to the earning power of the sector.

T&U chain production value: €27.9 billion



Added value: €21.1 billion



Number of business enterprises in primary horticulture: 23,700



Share in global floriculture trade (export): 52%



The world's largest exporter of vegetable seeds and fresh vegetables

Export value: €24.5 billion
Import value: €11.5 billion



R&D expenditure in NL: €765 million

Share in total agricultural production value: 40%

Employment: over 300,000 persons



Expanding our leading position

There are ten Top Sectors in which the Netherlands is strong internationally. Horticulture & Starting Materials is one of them, thanks to the internationally operating and innovative companies operating in this sector. Our growth will be achieved primarily internationally from a strong home base: the Netherlands.

Horticulture & Starting Materials comprises all plant-based chains in the horticultural complex and, with regard to starting materials, the entire plant-based horticultural and agricultural complex. It is a broad sector with sub-sectors ranging from vegetables, fruits and trees to flowers and bulbs. The starting materials sector provides propagation materials such as seed potatoes, planting materials and seeds.

We are further expanding our position and focusing on:

- Research and innovation
- Human Capital
- Internationalisation

The mission-driven Top Sectors and Innovation Policy sets out the Netherlands' goals and missions for a number of major societal themes. The Horticulture & Starting Materials Top Sector focuses on the development of knowledge, ranging from fundamental strategic to applied research, and on the valorisation of knowledge. This is based on four missions:

- Circular agriculture: by 2030, the agricultural and horticultural sectors will be using substantially fewer raw materials and consumables. As much value as possible is extracted from all residual flows and finished products.
- Climate-neutral agriculture and food production: by 2050, the sector will operate in a climate-neutral manner. The emission of greenhouse gases is compensated for by additional sequestration of CO2 in the soil and in nature. The sector will no longer be using fossil raw materials and will be a supplier of renewable energy.

- Climate-proof rural and urban areas: by 2050, both rural and urban areas in the Netherlands will have become more climate-proof and water-robust.
- Valued, healthy and safe food: by 2030, the sector will produce healthy, safe and sustainable food. The food production system will be robust and green products will make a valuable contribution to its environment.

These missions are supported by cross-cutting topics such as Artificial Intelligence, robotisation and seed technology.

The Horticulture & Starting Materials Top Sector integrates a network of economic clusters and regions where the various horticultural chains, services and research institutes involved join forces to create a strong competitive position.



Responding to future challenges

People's work is changing. If we intend to stay up-to-date and even ahead ongoing development is needed. Human Capital is about lifelong learning: learning in order to obtain a diploma, learning on the job and learning with a view to innovation. This takes place in the Dutch top sectors through so-called learning communities, in which companies and educational and research institutes join forces. This cooperation ensures coherence between the innovations developed at companies, the research conducted by research institutes, the training of students and the retraining of workers. We connect work, education and innovation to facilitate the circulation of knowledge and improve the effectiveness of training and further education.

The continuity of the Horticulture & Starting Materials sector is strongly linked to adequate staffing throughout the chain. In the **Human Capital Agenda (HCA)**, the educational sector and the business community are shaping the future of Dutch vocational education in order to better train students for professions in response to the demands on the labour market.

The HCA improves the connection between education and the business community by:

- Working to improve the image of the sector
- Attracting national and international talent
- Strengthening the availability of knowledge on new topics such as digitalisation
- The exchange of knowledge between the educational, research and business communities

Internationally, the Top Sector focuses on the development and application of horticultural solutions for societal problems. The sector has the knowledge to produce more with less. And to do this in a better way. The business community, research institutes and the government all join forces in the Top Sector to make concrete contributions to solving problems related to malnutrition, climate change, energy and green surroundings: from seed companies to greenhouse builders, and from vegetable growers to technology providers. The Top Sector involves the business community, educational and research institutes and information-providing organisations through initiatives such as trade and innovation missions, market information, network meetings and the development of tools for optimal use by SMEs.

Due to the growing global population and increased purchasing power, the market for even higher-quality horticultural products with higher prices is increasing. Developments in terms of knowledge are following on another rapidly and international competition, with new and large players, is increasing

