

Smart, green multi-modal transport systems

Horticultural products are living things. Immediately after harvest, senescence is underway and the journey from producer to consumer needs first class infrastructure including controlled temperature freight systems and cool stores. In the EU 22% of all traffic movements is related to agricultural products⁸. Transport needs radical transitions to multi-modal (cold) supply chains, including long distance boat - and railway transport.



High Tech

The majority of modern horticulture production is done in large scale enterprises focused on high volume output requiring a large amount of capital investments, large areas of land under cultivation, sophisticated methods of production and a high degree of expertise. High value horticultural crops make robotics feasible and provide optimal plant control. It also provides challenging work for young highly educated people.



⁸Eurostat, 2015.

Valuable food & health ingredients

Some horticultural crops are grown for their health benefits alone, they are called nutraceuticals. Their development has put products from horticulture in the same market as pharmaceuticals. Horticulture also provides a very wide variety of interesting plant resources to replace (synthetic) ingredients and components to be used in new applications, also from non-food crops. They offer new market opportunities for the sector.



Growing economic value

Horticulture is a growing economic powerhouse. It provides basic necessities, employment, increased incomes and enhanced well-being for populations worldwide. Horticulture gets hardly and income support from CAP and is a vital competitive sector. Horticulture needs recognition of its growing economic value, not only for food crops, but also for non-food sectors. Horticulture is and can stay front runner for agricultural research at large.



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EU Societal Challenges & Horticultural Solutions



Topsector Horticulture & Starting Materials in cooperation with EU horticultural regions

What is Horticulture all about?

Horticulture encompasses a wide range of **high value crops** such as fresh vegetables, fruits, nuts and edible fungi, plants and grasses for urban parks and domestic gardens, flowers and bulbs, and nutraceutical components derived from plants.



At a global level the value of all **fruit and vegetables** traded is more than double the value of all cereals traded¹. The production value in the EU of fruit and vegetables was € 47 billion in 2015², with a growth rate of 2,4% per year for EU-15³ between 1995 and 2015⁴. The retail value of fruit and vegetables was € 120 billion (2015). This is almost ten times the growth rate of arable crops in the same period (0,25% per year). Fruit and vegetables are produced by 3.4 million holdings across the EU, roughly a quarter of all EU farms⁵.



Ornamental horticulture includes products that range from ornamental plants, bulbs, grasses, nursery stock to cut flowers. Ornamental horticulture has a significant economic value in developed countries. The production value in the EU was € 18 billion and the retail value € 48 billion (2013)⁶.

¹Harvesting the Sun. A profile of World Horticulture. ISHS, February 2012.

²Simpler rules and more support for fruit and vegetable producers, European Commission, 13 March 2017.

³EU-15: Belgium, Germany, Denmark, Finland, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Austria, Sweden and United Kingdom.

⁴Eurostat, calculated as compounded interest.

⁵Eurostat, 2015.

⁶Effects of increased VAT rates for ornamentals, LEI Wageningen, 2015

Genetic basics

Horticultural plants start as seeds, cuttings, tubers or bulbs. Breeding and selection of the most desired plants makes sure that they are robust and most suited to the environment and specific production methods. For plant breeding activities, there is a rather high economic impact found for other than major arable crops, i.e. vegetables and fruits⁷. Europe has a strong position worldwide in this high value breeding market.



Health and wellbeing

Horticulture provides vital food for humanity bringing both health and nutritional benefits. It is well established that healthy diets improve the learning capacity of children and the productivity of workers. There is also a wide variety of positive effects from lifestyle horticulture on urban climate, i.e. improved air quality and reduction of 'heat islands', and wellbeing of humans, i.e. reduced stress, improved learning and accelerated healing processes.



⁷The economic, social and environmental value of plant breeding in the European Union. An ex post evaluation and ex ante assessment. HFFA Research GmbH. Berlin, February 2016.

Sustainable production

Fresh water and fertilizer resources are limited. Consequently, it is vital to develop systems that optimize the use of water and other critical inputs that are used in food production. In a controlled environment with irrigation or recirculation a further decrease in inputs is possible. Horticulture is a front runner in the development of such growing systems. There is also a transition needed to 'green chemicals' for biocontrol of plant diseases.



Clean and efficient energy

A part of the production of horticulture takes place in highly controlled greenhouses and tunnels. For such growing environments energy costs accounts for approximately 25% of the production costs throughout Europe. Horticulture is a front runner in the use of renewable energy, i.e. solar, geothermal and (industrial) waste heat, and horticulture can be part of smart energy grids.

