

# Industrial production system and robotics

## Wageningen UR Greenhouse Horticulture

Industrial production techniques offer the international glasshouse sector new ways to enhance performance in terms of both quality and quantity with a minimal input of labour. Working in close cooperation with our industrial partners, Wageningen UR Greenhouse Horticulture develops new robotics concepts and supports their optimisation. In this way we offer a significant impulse to innovation within the greenhouse horticulture sector.

### Every plant is different

Robotisation offers greenhouse horticulture both cost savings and a positive impact on working conditions. However, developing robotics for this sector involves far more than, for example, the design of robots for the car industry. On any given car model, parts always look the same and are constantly in the same place. The situation is very different for leaves and fruit. A logical solution is to write software that enables a robot to make searches. But we have found other approaches...

### The plant adapts itself

A strategic choice of cultivation system makes it possible to control the plants in such a way that parts such as the fruit are always found in the same position. This reduces the time required for a harvesting robot to find the fruit. The use of grading or sorting actions is another way to significantly increase the synchronicity and uniformity of a crop. All plants in a crop can then be harvested simultaneously, rather than selectively per plant.



### Expertise

Wageningen UR Greenhouse Horticulture has all the required physiological and technical know how to develop, test and introduce robotics in practice. We test prototypes, often in cooperation with glasshouse companies, and offer a platform for the exchange of knowledge and experience in order to optimise innovation within the greenhouse sector.

### The company adapts too

The increases in scale within greenhouse horticulture and the rising demands of the market mean that crop control alone is insufficient. A company's logistical processes also have to be adapted. The larger an enterprise becomes, the more staff and logistical automation it employs, the greater the rewards are to be achieved from integrated organisation and control. With this in mind, more and more new production systems are developed in which crops, logistics and controllability are inextricably interwoven. Wageningen UR Greenhouse Horticulture has the requisite managerial, technical and cultivation knowledge at its disposal, enabling us - in collaboration with our industrial partners - to design and implement these new production systems.

### Products and services

In addition to developing new concepts for industrial production systems, Wageningen UR Greenhouse Horticulture also offers a range of valuable products and services. We develop complete (robot)vision systems, including even the user-interface. Testing laboratories and test robots are available for fast prototyping. Finally, project management and support are provided as mechatronics are introduced in the sector.

#### For more information:

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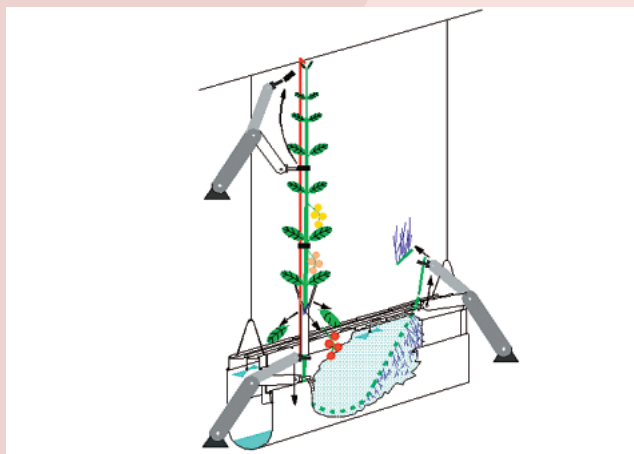


### Mobile cultivation systems

Mobile systems open many a door for automation. But to enter in means meeting various high requirements in terms of systematic and effective planning. In partnership with the sector, Wageningen UR Greenhouse Horticulture researches the options for labour savings and space utilisation. We develop the necessary sensors – for tracking crop development, for example – and take care of system design and analysis related to both logistics and cultivation.

Project examples:

- Mobysant (mobile chrysanthemum cultivation)
- Phase-dependant rose cultivation
- Mobile growsystem for cutting-Anthurium



### Harvest mechanisation

Mechanisation or robotisation of the harvest can yield significant labour savings in addition to increasing the quality and uniformity of products. Wageningen UR Greenhouse Horticulture is working with our mechanical engineering, automation and growing partners to create the best possible equipment. Moreover, we develop the cultivation modifications that are required for the application of mechanisation.

Project examples:

- Synchronic rose bushes
- Rose harvesting robot
- Vital-plant: root sprinkled tomato
- Tomation: tomato leaf picking

### Sorting and packing machines

Sorting and packing a product increases its value. Wageningen UR is an expert in the field of machinevision, mechatronica and logistics. Mechanical engineers and growers are offered first class support in the development and application of innovative machinery.

Project examples:

- Gerbera processing
- Quality inspection of Freesia, Alstroemeria and Orchids

