

AI TEAMS BEAT TOMATO GROWERS AT SUSTAINABLE PRODUCTION

AI teams that regulate the greenhouse remotely now produce more efficiently than traditional horticulturists. This was demonstrated during the second edition of the Autonomous Greenhouse Challenge.

'All the AI teams performed better than the control horticulturists,' says Silke Hemming, a researcher at Wageningen Plant Research and co-organizer of the challenge. The winner, Team AuTomatoes, not only got the highest yield but did so using the least water and energy. Their Artificial Intelligence (AI) strategy was considered the best by the jury. Five AI teams have been cultivating cherry tomatoes in their own designated greenhouse compartment of WUR Greenhouse Horticulture in Bleijswijk over the last six months. They made their own management decisions remotely, using sensors and the technology available in the greenhouse. Greenhouse staff were available on location to tend to the crops and maintain the sensors and installations.

COVID-19

The performance of artificial intelligence has improved dramatically since the first edition, the jury noted on 8 June. All the AI teams achieved high yields, and the flavour and quality of the tomatoes were excellent. The winning team stood out for its sparing and sustainable use of the available resources. Team AuTomatoes consists of researchers, engineers, con-

sultants and students at TU Delft, Van der Hoeven Horticultural Projects, Key-Gene and Hogendoorn Growth Management.

Storing and analysing data was a big challenge for all the teams. They had to rely entirely on digital images, and, unlike the control horticulturists, were not able to take a stroll through the greenhouse. However, halfway through the challenge, the control group was no longer able to visit the greenhouse either, due to the Covid-19 measures. So they too were forced to base their decisions on data, video footage and phone conversations with the chief horticulturist from WUR.

OBSTACLES

'This challenge has shown that you really can grow vegetables remotely,' Hemming says. 'In times of COVID-19, this opens up many possibilities. All decisions can be made autonomously from a distance.' But there are some obstacles for an autonomous greenhouse too. Objective data is needed on aspects of crop production. Lack of data is often a problem, and there is room for improvement in the interpretation of the data. 'And there is a need for further research into how humans and robots collaborate,' says Hemming. Only then will there truly be an autonomous greenhouse where the decisions are taken by the computer. Skilled workers are still needed in the greenhouse to maintain crops and technology. There is still a long way to go before their jobs are taken over by robots. **AS**

