



Tulips from Wageningen

Early last century, plant physiologist Blaauw taught tulip farmers in the Netherlands how to set their flower bulbs' built-in clocks. As a result, Dutch tulips flower at the right moment all over the world. Growth regulation is still an important topic in Wageningen research, but now with the aim of making bulbs climate-proof.

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The very first speculative bubble in the world was the 'tulip mania' which broke out soon after tulips were first imported into the Netherlands. At its peak in 1637, speculators were paying as much for a bag of tulip bulbs as for a row of houses on an Amsterdam canal. Today, although a tulip bulb is no longer worth its weight in gold, almost half the Dutch flower bulb fields are full of tulips. Thanks to Wageningen research of nearly 100 years ago, the Netherlands can export tulips to all

the corners of the globe all year round. This most commonly grown Dutch flower bulb is sensitive to temperature fluctuations, however, and therefore to climate change. So scientists are working on how to keep the tulip flowering in the future. 'So that we can all go on enjoying these spring flowers, we are studying how their development and growth adapts to changing climatic conditions,' says Wageningen's 'bulb professor' Richard Immink. With this work, he is following in the footsteps of professor of Plant

Physiology Anton Hendrik Blaauw, who started studying growth regulation in tulips in 1918.

Tulips originate from the mountains of Turkey, where they flower abundantly in the relatively short springs between the cold winters and hot summers. In the early 20th century, bulb farmers discovered that they could bring forward the flowering time by a few months by first cooling the flower bulbs and then putting them in a warm greenhouse. Blaauw refined that system and also



discovered that you could delay flowering by six months if you reversed the order, first warming up the bulbs and then cooling them. And that makes them suitable for export to the southern hemisphere, where they arrive by ship in the southern spring. The plant physiologist taught the bulb farmers to use temperature control to set the flower bulbs' in-built clocks precisely. By doing this, he laid the foundations for the global export of tulip bulbs. In 2016, the Netherlands exported 1.2 billion euros-

worth of flower bulbs, with the tulip in the lead by a distance.

'With microscopic research, Blaauw established that heat causes the new bud in the heart of the bulb to be formed before the old flower dies. We have followed up his research using modern molecular techniques, and we have discovered that a bulb decides to start flowering weeks before there is anything to show for it in the bulb's growth tip,' explains Immink. His research can make it possible for tulips to form good quality

flowers in spite of the mild winters and early springs we get these days. 'We are learning more about the growth process. Growers can use this information to identify the optimal storage conditions for flowering on demand. We will also soon be able to see which tulips are genetically best able to cope with the warmer weather. Using these specimens, breeders will be able to develop beautiful, climate-proof tulip varieties.' ■

www.wur.eu/weather-proof-tulip