Greenport greenhouse as a source of inspiration

The Greenport greenhouse in Venlo is a benchmark in greenhouse cultivation. Tomato grower, Joep Raemakers, achieves 10 percent higher productivity and a savings of 35 percent in energy costs with this semi-closed greenhouse. The nearby Health Centre, and the Mytyl School can also rack up large energy savings by using the surplus heat from the Greenport greenhouse.

Raemakers is the driving force. Without him there would be no Greenport greenhouse. How did it all begin? He emphasizes that he is first and foremost a tomato grower. He is not a philanthropic institution but is interested in making a business profit just like every other entrepreneur. The initiative for the Greenport greenhouse was derived from his drive to be an expert in his field. 'For years the productivity increased about 5 to 8 percent per year, but the last few years the growth in productivity tapered off. We had reached the limit. Every year you have a number of days in which there is too little light, there is too much heat or there is either too little or too much damp.' What can you do about that? The tomato grower concluded: 'You have to be able to de-humidify, to cool and to dampen.'

Joep Raemakers briefs the consultation group in his semi-closed greenhouse.

In this way, Raemakers came up with the semi-closed greenhouse, which made de-humidifying and cooling possible, with an additional misting installation and assimilation lighting. This had one disadvantage: more heat in the greenhouse. But he figured out a solution for that too: heat storage in underground water at a depth of 90 metres and pumping it to the surface when needed. He was prepared to supply the surplus heat to his neighbours: a Health Centre and the Mytyl School.

In this way, Raemakers linked his own interest to that of others. His aim was to increase production by 20 percent and to halve his energy bill. He was prepared to share the energy savings with his neighbours at the same time. With this energy saving, he addressed a community goal: reduction of the greenhouse gas, CO_2.

>> Never seen before

Raemakers saw that his idea carried little risk. 'The techniques had been available for some time in the functional building sphere. The only thing was they had never been applied in horticulture before.' Not everyone shared Raemaker's confidence. For example, his neighbours with whom he wanted to share his energy surplus. To be dependent on a tomato grower for your energy requirements had no precedent. What would happen if the tomato grower went bankrupt? The neighbours were reluctant.
It was a good thing that Raemakers had chosen a crucial first partner for this process: the technical installation firm Thissen who was responsible for the energy supply for the whole Health Centre Group. Together with Thissen, Raemakers did the calculations for the entire project and they came to the conclusion that energy supplied from a horticultural business was quite a feasible option. With Thissen's encouragement, the Health Centre agreed. In the end, the grower won over all the institutions and partners involved (Vermeulen *et al.*, 2010). Obstacles are never insurmountable: 'You only need to take the time to achieve what you set out to do.'

>> Support for cultivation

As a result of his determination, Raemakers has succeeded in getting a whole network of organisations and enthusiastic people to stand behind him. He received a subsidy from SenterNovem to build the greenhouse and, as well as that, a subsidy from the then Ministry of Agriculture for three years of support by researchers from Wageningen UR. They assist him with cultivation issues, because cultivation in a semi-closed greenhouse requires a different method of growing than in traditional greenhouses. Data is continually collected and monitored from the greenhouse, like plant temperature measurement. A permanent supervisor, Wouter Verkerke, comes by every week to discuss the data and to hear about possible problems. Verkerke knows his way around the research world and knows which researcher to consult for each cultivation problem they come across. The other activities whereby the supervisor assists are just as important. Raemakers: 'In projects like this, it's all about working well together with all parties, so that you form a team. Wouter and I spend a lot of time on motivating people so that everyone is heading for the same goal.'

>> Shining example

Up until now, this has been successful. All the parties who took part at the beginning are still involved (Verkerke and Vermeulen, 2008). This can be attributed to the approach taken by the project (Raaphorst *et al.*, 2010). Priority has been given to transfer of knowledge within the sector. To this end, the website www.greenportkas.nl offers detailed information about what is happening in the greenhouse. On a restricted page, the consultation group can continuously access the data. This group is comprised of pioneering greenhouse growers from the region, and from various crop sectors. They consider and discuss the results. There are regular visits by other growers in the whole country who take over ideas and parts of the greenhouse design. Two growers from the consultation group – a strawberry grower and a chamomile cultivator – both want to get going with a similar project. Every business that is in some way connected to this initiative is proud to be associated with the environmentally friendly aspects of this greenhouse. The Horticultural Trade Board does as well. In its New Year's speech, the greenhouse cultivation sector was praised for the socially responsible action of providing heating for the Health sector. In this way, the project is a shining example of how an innovative idea in the field can become a source of inspiration for the entire sector.

>> Developments continue

In the meantime, the innovative ideas continue to develop. Raemakers is not prepared to publicize all his ideas, but the concept of a new type of glass is already public. A test is about to be set up using double-glazing to reduce energy consumption without compromising the amount of light that passes through it. In this way, the project is the centre point of new developments which in the end are beneficial to the entire greenhouse horticultural sector.

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