



Case study Agro Care

Location
Philips Lighting

Rilland, the Netherlands
Philips LED GreenPower interlighting and
Philips GreenPower Plus 1000W (SON-T)



PHILIPS
sense and simplicity



“Adding LED interlighting to SON-T top lighting makes for a flexible lighting system that allows excellent control of the crop and this is a major advantage for the efficiency of light absorption”



Background

‘No limits, no nonsense’ is the motto of Agro Care, the company at which Nic van Roosmalen is operational director of the locations in Rilland. At Agro Care they are always on the look-out for new production methods that creates ultimate quality tomatoes as environmentally friendly as possible. Over the past few years Agro Care has been conducting a far-reaching professionalization of its operations, which led to them being named ‘2010 Agricultural Entrepreneur of North Holland Province’. So it is no wonder that van Roosmalen had been fascinated by the potential of LEDs. ‘LED lamps consume less energy than the SON-T lamps that are generally used in greenhouse horticulture. In addition, LEDs enable the tomato plants to absorb far more micromoles of light than they would usually get in the winter months. Adding LED interlighting to SON-T top lighting makes for a flexible lighting system that allows excellent control of the crop. ‘This is a major advantage for the efficiency of light absorption,’ says van Roosmalen.

The challenge

Van Roosmalen is an innovative, enterprising grower who is constantly looking to improve his business processes. In addition to his work in Rilland he has been taking part in the interlighting tests for tomatoes at the Improvement Centre/GreenQ in Bleiswijk. During a test at the Improvement Centre/GreenQ with interlighting in 2011 it was shown that adding 1 micromole of LED light in the form of interlighting was 1.4 times more effective than adding 1 micromole of SON-T light above the crop. Promising, however both van Roosmalen and the plant physiologists at Philips expect that a great deal more can be achieved with the hybrid lighting solution (the combination of SON-T above the crop and LEDs between it). Philips and Agro Care paired up again to conduct testing at Agro Care’s own greenhouse in Rilland. They have approximately 25 hectares of tomatoes, divided between three greenhouses. Over two-thirds of those 25 hectares use artificial lighting, while the remaining one-third does not. Van Roosmalen says: ‘The ultimate aim of the test is to achieve more efficient use of a micromole of light by the plant, resulting in increased production. We expect that these LEDs will be able to do this.’

The same level of production with reduced energy consumption



Facts

Grower

Agro Care

Sector

Vegetable production greenhouse

Crop

Various vine tomatoes, including Pomo Dolce

Location

Rilland, Zeeland Province, the Netherlands

Solution

Philips LED GreenPower interlighting and Philips GreenPower Plus 1000W (SON-T)

Results

Same level of production with reduced energy consumption

The solution

When the tomatoes were analyzed during the initial tests (in the 2010-2011 cultivation season) they were found to receive about 62.5 micromoles from SON-T and 55 micromoles from LED. Three rows were fitted with half of the SON-T luminaires, supplemented by interlighting up to a total of 117.5 micromoles/m²/s, with the middle row being the experimental one. The aim was to achieve the same level of production but with a considerable reduction in energy consumption. Van Roosmalen says: 'The two outer rows of the three could give incorrect test results because they might also be receiving light from the double amount of SON-T next to them, whereas the middle row received the combination of SON-T and LEDs. During the current cultivation season the entire SON-T installation was upgraded to 159 micromoles and we added light in the LED section. We hope that by doing this we will get approximately four kilos extra per square meter, with lower energy input per kilo of tomatoes.' The knowledge acquired at the Improvement Centre and the experience of the

professionals at Philips are certainly useful here. 'There are remarkable positive differences,' says van Roosmalen. 'In the course of the test, which is almost finished, we have found that we arrive at a factor of 1.38 for our tomato variety in our greenhouse.'

Benefits

Van Roosmalen is very enthusiastic about both the first and second seasons. 'The test has not quite finished yet, but we can already see that the results are very satisfying. In terms of morphology the differences compared to the crop that had no interlighting are clearly visible. The leaves in the experimental rows were narrower, somewhat curlier and slightly bluer. It seemed as though the plants were growing slightly less vegetatively, though that is difficult to ascertain precisely. The production was excellent, in fact considerably better than expected. And energy consumption is lower. A winning combination for the future of tomato cultivation. I'm certain that with more testing we will develop an even better light recipe customised to my specific circumstances.'



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