LEDS AND SON-T IN HYBRID LIGHTING AS BASIS FOR YEAR-ROUND TOMATO PRODUCTION

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Vegetables and fruit that are trusted by the consumer in terms of safety and health are the future. Additionally, the products must have a constant quality and be available throughout the year. This can be achieved in a production system in which the LED lighting among the crops is combined with HPS above the crops. The first application in practice was recently realised.

LEDs are in, and after years of research the application of the LED technology is also increasing in agricultural systems such as greenhouses. Peter Klapwijk of GreenQ and Koos de Wit of Philips Lighting discussed whether the use of LED lighting in tomato cultivation is ready in practice.

Commercial growers face a huge challenge in anticipating new market developments. Consumer demands are currently more important than the production possibilities; the supermarkets dominate the market in Europe; production is becoming high-tech, and family businesses are being transformed into professionally operated organisations.

Anticipating trends

Only companies that know how to address these developments will survive. Peter Klapwijk painted a picture of the tomato company of the future in which the limited availability of production tools such as water, energy and fertiliser forces the grower into increasingly efficient production systems. The design of such a company should incorporate the local climate conditions with a special focus on the ratio between temperature and light. In tomato production, however, light is a limiting factor in many locations worldwide. In the low-light period of the year, the light sum is often less than 400 J/(cm^2 day), while a high production requires at least 1700 J/(cm^2.day).

An ideal combination

LEDs can be an important tool in situations that require extra light to produce a product of constant quality throughout the year. Philips Lighting is performing broad research into LED lighting in greenhouse horticulture. "LEDs are especially used in the cultivation of plants in climate cells," Koos de Wit explained. "For applications in the production of vegetable and ornamental crops we performed experiments with LED lighting. These achieved good results with a higher production and reduced energy consumption."

Although LEDs currently require a higher investment than traditional lighting, the Philips Lighting consultant already sees some good opportunities: "By placing HPS-lamps above and LED lighting between the tomato plants you can combine the best of both light sources, namely the wide spectrum and heat of SON-T and the high photosynthesis efficiency of LEDs." The first tomato company in the Netherlands installed a system with such a combination on three hectares this autumn.

Partner in this HortiSeminar: Philips Lighting