

A man wearing glasses and a dark patterned sweater is standing in a large greenhouse. He is holding a black tray filled with green seedlings. The greenhouse has a metal frame and a glass roof. Several long, rectangular LED light fixtures are mounted on the ceiling, emitting a purple glow. The background shows rows of plants and the structural elements of the greenhouse.

PHILIPS



Horticulture
LED Solutions

Case study
Beijing Vegetable
Research Centre
Beijing, China

Philips GreenPower LED toplighting

Growing strong and steady seedlings

High yields using half the energy



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The challenge was to grow a reliable supply of **vegetable seedlings under artificial light**. **Philips supplementary LED lighting is an excellent solution for greenhouses....** supported by a professional service team”

Guo Yongliang, Technician, Vegetable Research Center



Background

Founded in 1958, the Beijing Vegetable Research Center (BVRC) (hereafter the Center) is an agricultural research institute affiliated with the municipality of Beijing. The Center has advanced research facilities and technological capabilities; it is one of the top-ranked development centers in the industry and a leading Chinese professional vegetable research institute. In 1995, the Center was officially recognized as a National Vegetable Engineering Research Center by the Chinese Ministry of Science and Technology. Based in Beijing yet serving the whole country, the Center strives to be the vanguard of world vegetable technology, promoting the improvement of the Chinese vegetable industry. Research areas include germplasm, vegetable genetics and breeding, as well as cultivation, post-harvest processing, and product quality inspection. The Center is focused on innovation, so it constantly tests advanced technologies and their applications.

The challenge

The Center is a PC greenhouse complex has about 2,000 m² of space, used primarily for cultivating vegetable seedlings. The greenhouse was originally illuminated with natural daylight, but as heavy smog increased in Beijing, the amount of natural light hours decreased. Lower light levels caused vegetable seedlings to either grow more slowly or more quickly, meaning the Center could not guarantee a consistent supply of standard seedlings. At first the Center used high pressure sodium (HPS) lights for supplementary lighting, but they consumed a great deal of power and produced a lot of heat, so the growers could not use them for extended periods. They also produced a low level of effective light. In 2013, the Center began a cooperation with Philips Horticulture LED Solutions and found their LED products to be excellent and reliable performers. Philips team of horticultural specialists and application engineers provided a great deal of useful follow-up support. Based on this experience, the Center decided to use Philips GreenPower LED toplighting solution in their seedling greenhouse.

The solution

In 2013, the Center implemented a revolutionary full LED stereoscopic grow lighting system in its new glass greenhouse for tomato production. It combined Philips GreenPower LED toplighting on the greenhouse ceiling and Philips GreenPower LED interlighting between the tomato plants. After several years of experience with this system, the Center has amassed a rich body of experience in supplementary LED lighting applications.

The Philips GreenPower LED toplighting solution is used for supplementary grow lights in the Center's greenhouse, as an alternative to traditional HPS grow lights. When the Center chose LED toplighting for its seedling greenhouse, the Philips team provided a scientific lighting design. It specified a light intensity that was suitable for maintaining consistent seedling production with a high level of uniformity. The lighting products were professionally installed by Beijing QYD Technology Co., Ltd., a Chinese partner of Philips Horticulture LED Solutions and put into official use at the end of 2015.

Benefits

For winter vegetable production, supplementary lighting has become standard for greenhouses, and a key necessity for growers in China experiencing a rise in heavy smog. Philips LED lighting can completely replace the use of HPS lighting. LEDs last 5 times longer than HPS lights so growers do not have to worry about their affordability after the purchase. The Vegetable Research Center is the first to make large-scale use of supplementary LED lighting for vegetable seedling cultivation. The Philips Horticulture LED Solutions specialists maintain active communication with the experts at the Center to ensure a steady supply of high-yield seedlings. The LED solution produces significantly less heat and uses 50% less energy compared to HPS lights. The LED toplighting solution provides extensive light recipes for greenhouse applications. "Philips supplementary LED lighting is an excellent solution for greenhouses based on scientific principles, supported by a professional service team," says Guo Yongliang, Technician, Vegetable Research Center.



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Facts

Horticulturalist/grower

Beijing Vegetable Research Center at Beijing Academy of Agriculture and Forestry Sciences

Segment

Intensive vegetable seedling cultivation

Crop

Vegetables

Location

Beijing, China

Solution

Philips GreenPower LED toplighting

Philips LED Horti Partner

Beijing QYD Technology Co., Ltd.

Results

Supplementary lighting promotes plant photosynthesis to ensure the proper environment for cultivating seedlings.



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