

Get the LED Out

Members of the recent “Sustainability Initiative” get the inside scoop on LEDs from Marc Grootsholten, director of the “Improvement Centre,” a Dutch greenhouse facility that leases 10,000 sq. ft. of production blocks to researchers, manufacturers and breeders to test new products. In this case, Philips, the giant Dutch electronics conglomerate, is testing supplemental LED (light-emitting diode) lights in a greenhouse tomato crop to see how they (hopefully) improve yield.

As a replacement or supplement to high-pressure sodium greenhouse lighting, LEDs have been considered and tested for several years. Now, Philips and at least one other manufacturer, Lemnis, are bringing LEDs to production greenhouses, primarily over high-value, high-density young plants and in multi-layer production settings; or in the situation pictured, a “hybrid solution” using both LEDs and HPS to maximize fruit production. Putting LEDs down inside the crop canopy and using overhead HPS lights, researchers hope to get 80 kg (175 lbs) of tomatoes per square meter; 60 to 65 kg (132 to 143 lbs) is typical.

Note that the individual LEDs are both blue and red; researchers are working to find the right ratio or “recipe” of the two colors to maximize production on various crops.

Lower energy consumption is one benefit of LEDs (Lemnis says their LEDs are 30% more efficient than HPS lights). Another is the ability to “tune” the light wavelengths emitted by mixing and matching blue and red bulbs. Some think that LEDs also run cooler than HPS lights, and they do, but they still give off considerable heat. They need either a large heat sink or water cooling to run efficiently. That’s part of the technology with which researchers are still experimenting.

Also, there is not yet a direct replacement for the typical HPS or metal halide HID light. That’s at least five years out, say the experts from Philips and Lemnis.

—Chris Beytes



Photo: Chris Beytes