

LEDs Offer an Energy-Smart Option for the Greenhouse

We are in the midst of an LED revolution. Light emitting diodes, LEDs, are small bulbs that operate with electrons in a semiconductor material. They're extremely useful: small, easy to operate and produce an impressive amount of light for their size.

While they offer countless functions in homes and industry, they've made a particularly monumental impact on indoor and greenhouse agriculture. As our society shifts away from energy-intensive and older technologies, the LED has the ability to change the landscape of horticulture.

EARLY LED ADOPTERS IN THE CANNABIS SPACE

Today, cannabis growers are among the most likely to have explored LED options. Technology has made LEDs easier to use and install, with all kinds of unique features such as dimming and spectral tuning.

These capabilities, unavailable in high pressure sodium (HPS) lights, allow growers to have greater control over their crops. Part of the reason cannabis growers favor LEDs is because of the adjustability, as LEDs are able to encourage terpene development, potency and flowering in cannabis plants.

GREENHOUSE POTENTIAL

Indoor growing facilities remain the most common space to find LED lighting technology, yet there is potential for LEDs to be useful for the conventional greenhouse as well. LED technology goes far beyond growing cannabis, and represents a valuable tool for growing vegetables and other plants.

There are two primary routes to incorporate LEDs into greenhouses:

Seedling stage: Already, LEDs have proven their potential to improve quality at the very beginning of a crop's lifespan, as seedlings are particularly vulnerable to inclement weather and dramatic changes in temperature or light. As a result, some growers may prefer to bring young plants indoors and then, later, transfer them to the greenhouse once roots are more established.

LEDs are able to closely replicate natural sunlight. They allow for seedlings to be grown in a more stable environment, without sacrificing the necessary light spectrum that would be otherwise delivered by the sun. Therefore, young plants start stronger and are more likely to be resilient as they mature.

Shorter growing seasons: Secondly, greenhouses in the northernmost latitudes may also benefit from LED lighting technology. In the past, fresh foods like tomatoes, cucumbers and leafy greens were harder to come by — or were extremely

costly — in these places. Shorter growing seasons and daylight made growing anything quite the challenge. Nevertheless, demand has persisted and grown, and growers have long sought easier ways to bring these crops to these northern and southern climates.

Growing these typically summertime vegetables requires energy and time. When the greenhouse is located in a colder climate, energy costs can easily rise. Greenhouse growers are increasingly turning to LEDs to mitigate these energy costs and provide more full-spectrum light when the days begin to shorten. Inevitably, LED lighting technology will become the best choice to reduce energy costs while not sacrificing a harvest, particularly in places where the growing season is short.

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MAINSTAYS FOR THE FUTURE

Moving forward, LEDs will undoubtedly become a necessary technology for homes, businesses and elsewhere. Just as technologies such as solar energy and the electric car altered our mainstream consciousness, LEDs have made a similar impact. In 2016, Goldman Sachs called the LED industry "one of the fastest technology shifts in human history." The statistics accurately reflect this statement: in 2009, there were approximately 400,000 installations of LED lights. By 2014, this number leapt to an impressive 78 million. The present day sees LEDs as nearly ubiquitous across the U.S. and elsewhere; as prices continue to drop, LEDs are more accessible than ever.

Investing in LED means saving time and money in the long-run; LEDs use less energy, last longer, and offer uniformity and adjustability where HPS can't. Furthermore, as more horticulturalists prioritize environmentally friendly options, LEDs are the best option to reduce an individual carbon footprint. Our population is going to continue growing: it's more important now than ever to secure our food resources. LEDs exist at the convergence of functionality, efficiency and ease — simply, they make sense for the future. [gpn](#)



Andrew Myers — a member of GPN's 40 Under 40 Class of 2018 — is CEO of ProGrowTech, a manufacturer of LEDs for horticulture use, helping growers increase energy efficiency, yield and profitability. Go to www.progrowtech.com to learn more.