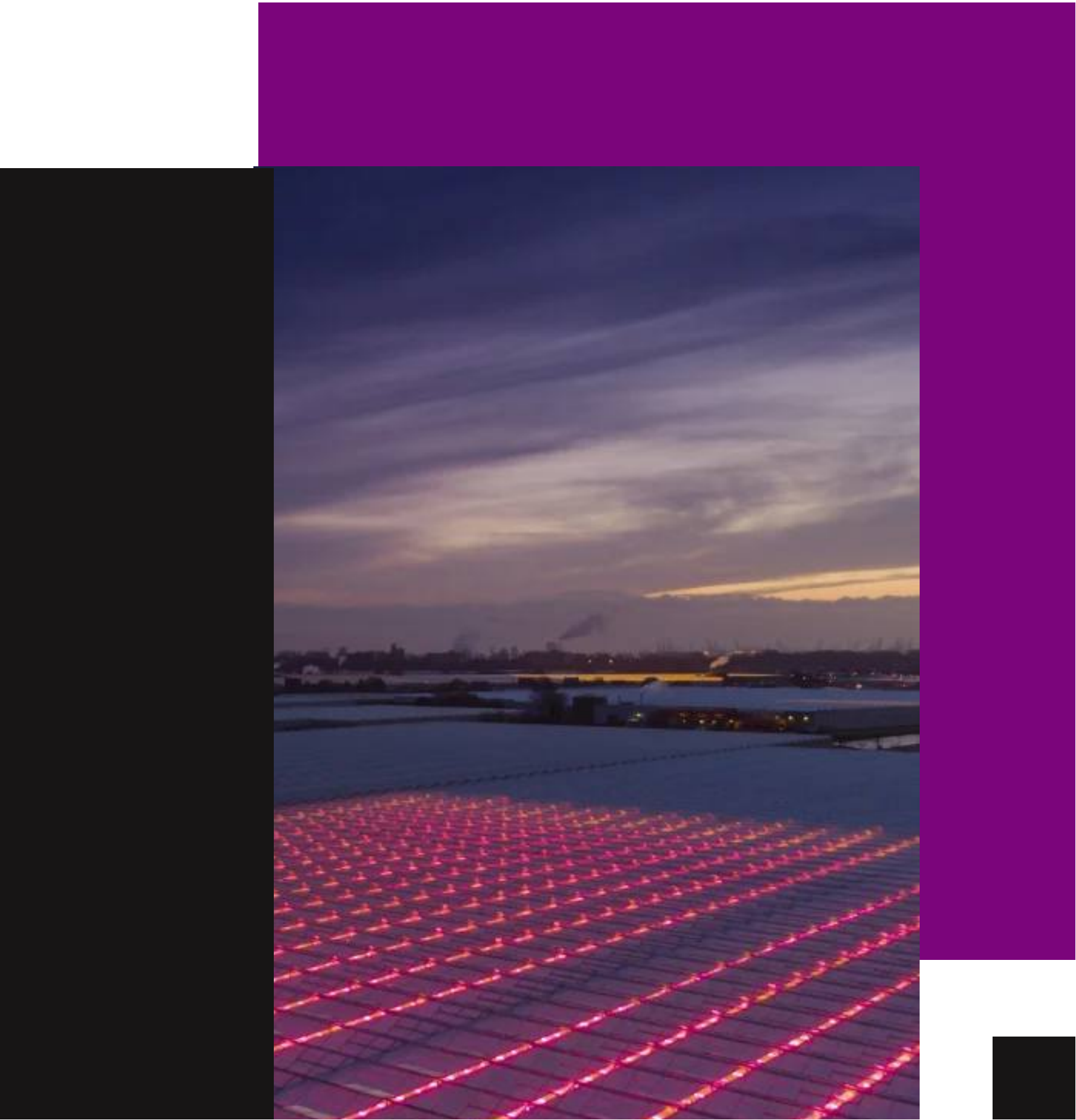




Lighting for horticulture

OUR COMMITMENT IS TO THE PLANTS

SAVITY 
lighting



Index

03	Overview	10	Market Needs
04	Plant Physiology	11	Lighting Solutions
05	Light Quality	12	Our Methodology
06	Amount Of Light	13	Our Commitment
07	Power Supply	14	R&D
08	Energy Availability	15	About Us
09	Stages Of Growth		

Overview

With the exponential population growth recorded globally, especially since the beginning of this century, and the gradual disappearance of rural populations due to natural aging and the influx of new generations to large urban centers, mainly coastal ones, now more than ever, measures are needed to combat the scarcity of natural resources and increase productive capacity in an increasingly natural and sustainable way.

The use of artificial lighting in horticultural production systems appears to be the only viable solution to achieve these objectives, reducing food production cycles, the amount of resources used, and widespread waste, while ensuring better quality and greater availability.



Plant physiology

PHOTOSYNTHESIS

Plants depend on several environmental factors for their development, namely water, soil, environmental conditions, and light.

In fact, light is the key factor, as it represents about 95% of the energy received by plants, mainly through the process of photosynthesis.

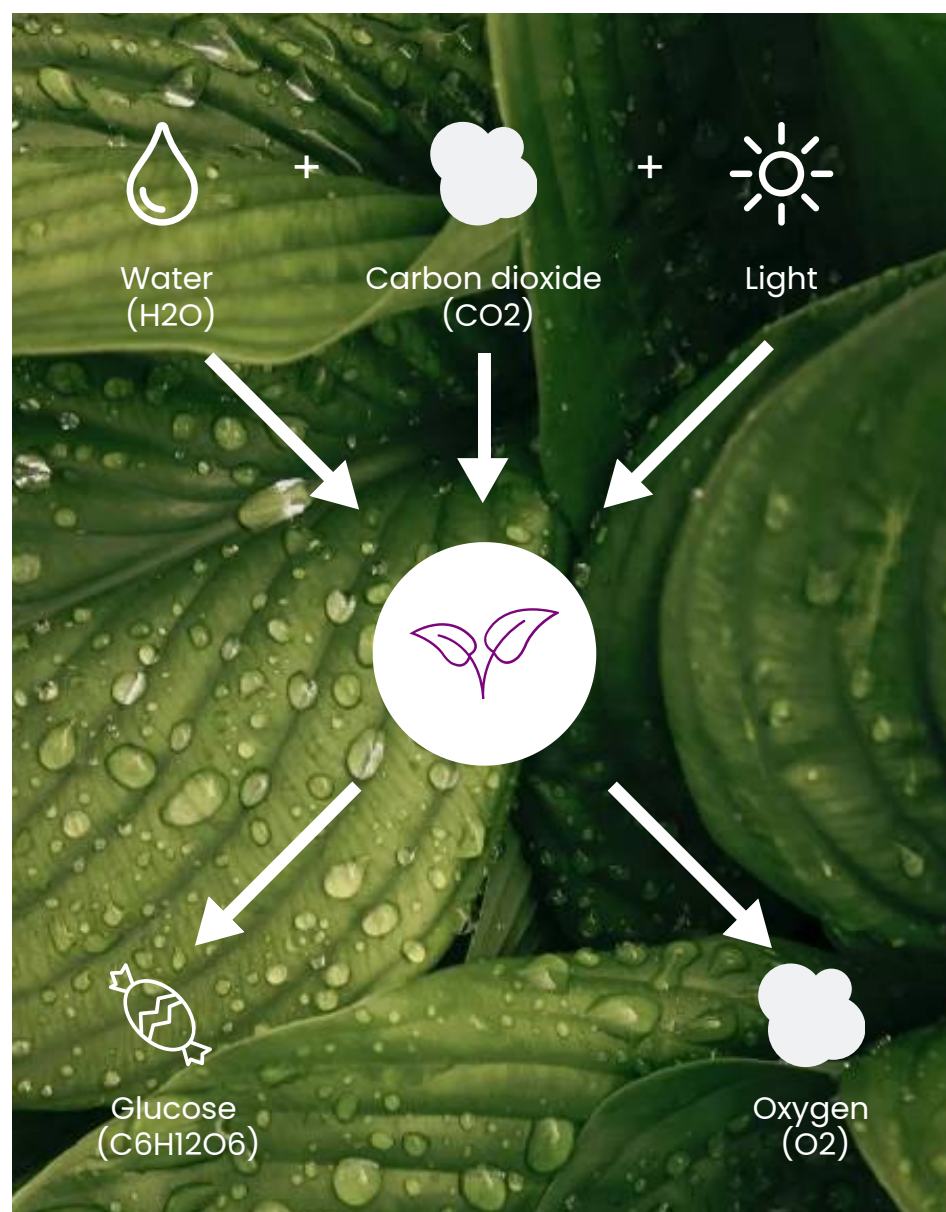
What is photosynthesis?

Photosynthesis is a chemical process that occurs in plants with chlorophyll and, thanks to solar energy, allows an inorganic substrate to be transformed into an energy-rich organic substrate.

Glucose is vital for plant growth, as it provides energy and raw materials for development, respiration, and the formation of new tissues.

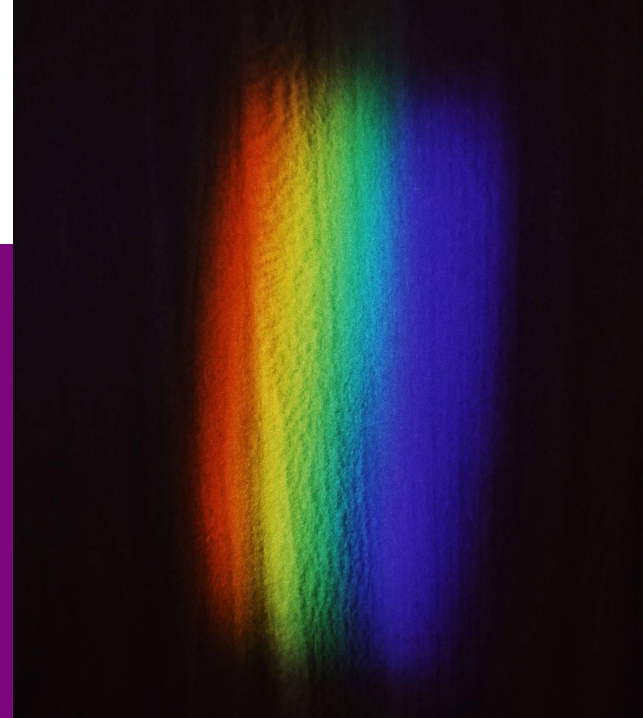
Carbon dioxide is important for plants because they use it to produce food through photosynthesis, which helps them grow and stay healthy.

Oxygen is a byproduct of photosynthesis, released by plants as they produce food from sunlight, water, and carbon dioxide. This oxygen is essential for life on Earth.



Light quality

SPECTRAL DISTRIBUTION



Light quality is important for plant growth, as different colors of light affect their development. Blue light promotes leaf and stem growth, while red light aids in flowering and photosynthesis. Good light quality contributes to healthy and vigorous plant growth.

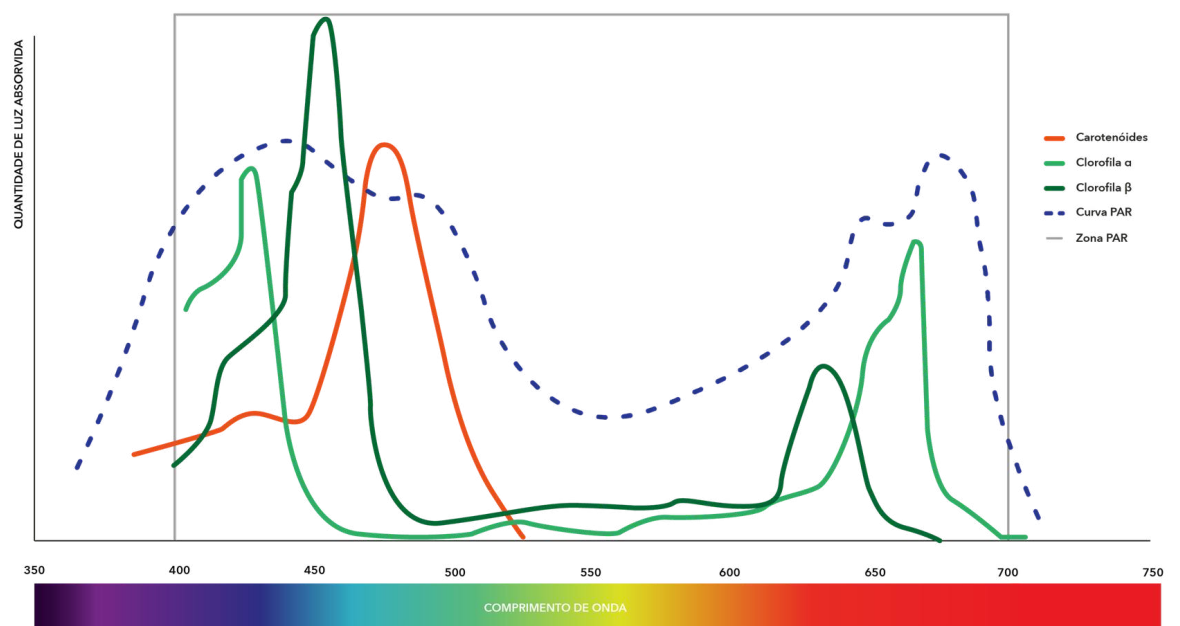
Natural absorption spectrum

Plants use sunlight as an energy source primarily in the visible range of 400 to 700 nm, called Photosynthetically Active Radiation (PAR). They do not absorb all this light equally. Instead, they absorb light best in two regions: blue light (400 to 500 nm) and red light (600 to 700 nm). These wavelengths correspond to the absorption peaks of chlorophyll a and chlorophyll b, which are the most important for photosynthesis.

Chlorophyll α
430–660 nm

Carotenoids
470 nm

Chlorophyll β
450–640 nm



Spectral efficiency

Plants can absorb some light in the 500–600 nm range using pigments like carotenoids, but this light is used less efficiently than the light absorbed by chlorophyll. Furthermore, not all absorbed light is used for sugar production—some wavelengths help control plant growth and other processes. For this reason, plants need a well-balanced light spectrum that matches their type, growth stage, and purpose. Light quality is better when the spectrum closely matches what plants naturally absorb.

Amount of light

SPECTRAL POWER

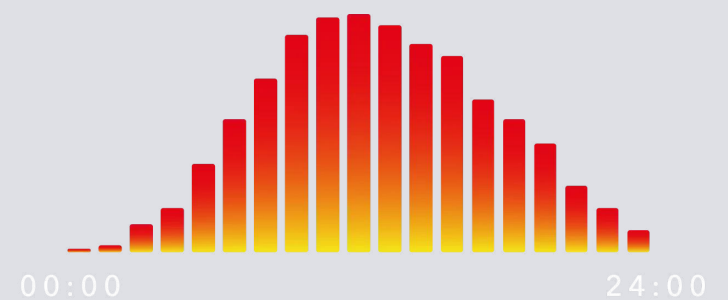


Light is important for plants because it gives them the energy they need to grow. With enough light, they produce food and become strong. With too little light, they grow more slowly.

The main fundamental factors for plant growth are DLI (*Daily Light Integral*), photoperiod, and circadian rhythm.

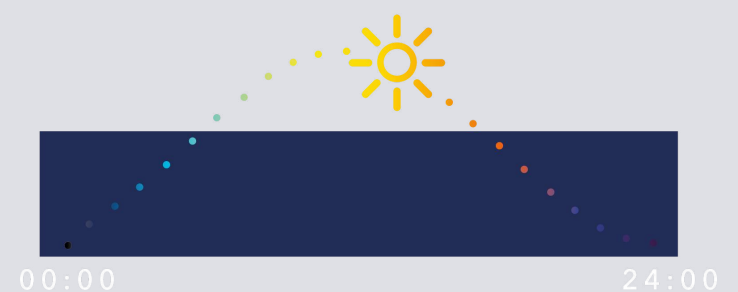
DLI

All plants need a certain amount of light daily to grow. This amount varies depending on the type of plant and is quantified by DLI, measured in $\text{mol}/\text{m}^2/\text{day}$.



Photoperiod

Photoperiod is the number of hours of daylight a plant receives per day. It helps plants control the amount of energy they absorb and plays an important role in regulating growth and flowering.



Circadian rhythm

The circadian rhythm is the plant's internal 24-hour biological clock. It controls the timing of many processes in the plant, especially photosynthesis.



Power supply

ARTIFICIAL LIGHTING

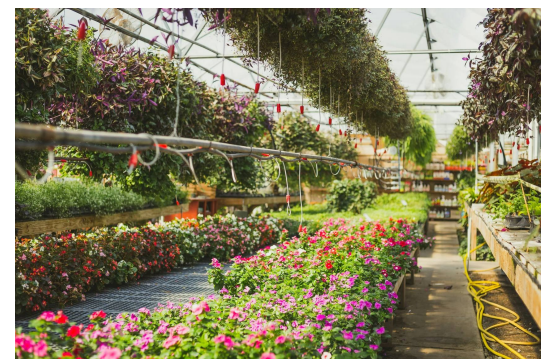


Solar energy is essential for plant growth. When it is lacking, artificial light helps plants grow well and ensures good harvests.

Artificial light can be used to supplement natural sunlight, replace it completely when natural light is insufficient or absent, and to control the photoperiod, allowing for precise regulation of plant growth and development.

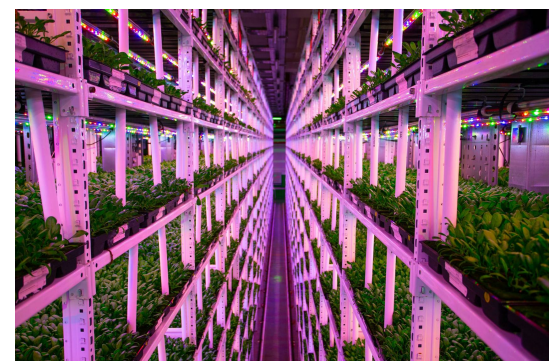
Supplementary lighting

By supplementing natural light, it increases the amount of available energy, promoting plant growth. This is the typical situation found in greenhouses.



Integrated lighting

It allows the supply of energy necessary for plant growth in a completely artificial way, in the total absence of sunlight.



Photoperiodic illumination

Complete control over light periods and, consequently, plant growth cycles.

Energy availability

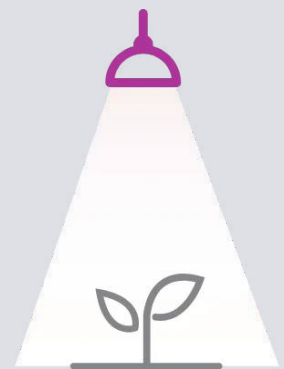
SYSTEM INSTALLATION



In horticultural lighting, different types of installations are used depending on the crop, the cultivation system, and the production objectives.

Top lighting

This is the most traditional approach, with lights installed above the plant canopy to supplement or replace sunlight. It provides uniform illumination and is widely used in greenhouses and indoor growing facilities.



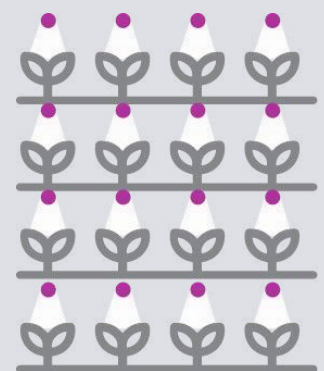
Interior lighting

This method involves positioning the lights within the canopy of the plants, between the rows or layers of plants. This helps the light reach the lower leaves, improving photosynthesis and increasing productivity, especially in tall or dense crops such as tomatoes and cucumbers.



Vertical lighting

This method uses overlapping growing layers with lights positioned close to each level. It saves space and allows precise control of light intensity and color, making it ideal for urban agriculture and growing leafy vegetables.



Stages of growth

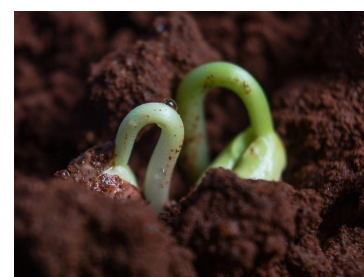
FROM SEED TO FLOWER



Plants go through several distinct growth stages, each with specific needs.

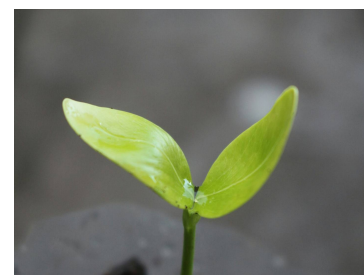
Germination

The process begins when the seed absorbs water and starts to germinate, requiring moisture and warmth.



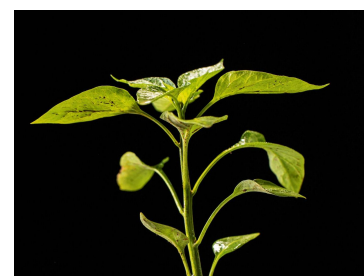
Seedling

where the young plant develops its first leaves and needs soft light and stable conditions.



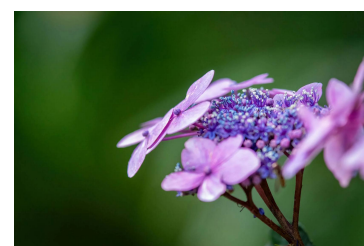
Vegetative

During this period, the plant focuses on stem and leaf growth. Adequate light, nutrients, and space are essential at this stage to ensure a healthy structure and vigorous growth.



Flowering

When energy is directed towards the production of flowers (and eventually fruits or seeds), the quality and duration of light during this phase play a fundamental role in determining production and quality.



Market needs

OUR STRATEGY



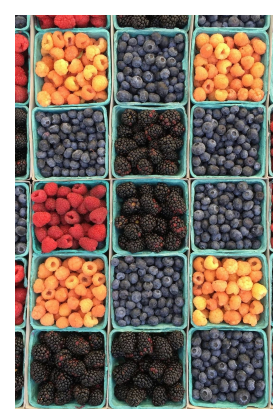
Aware of the market in which it operates, SAVITY Lighting seeks to plan, design, and provide solutions that meet your real needs.

For growers seeking to meet the energy needs of plants, maximize growth efficiency, and achieve consistent year-round production regardless of natural environmental conditions, horticultural lighting is the ideal solution.

SAVITY Lighting provides a rapid return on investment for small, medium, and large production units. Furthermore, the company offers comprehensive technological support and works closely with leading research centers, continuously improving its products and services through innovation and scientific research.

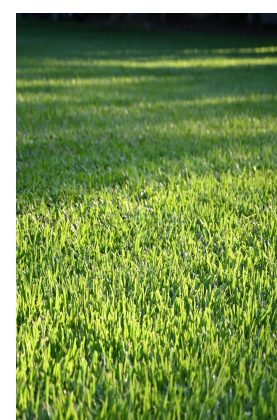
Market segments

With a deep understanding of the technical requirements and specific characteristics of each type of crop—and recognizing the increasingly vital role that LED technology plays in improving crop performance and business profitability — we are committed to providing expert guidance and tailoring our studies and equipment to the specific needs of each project.



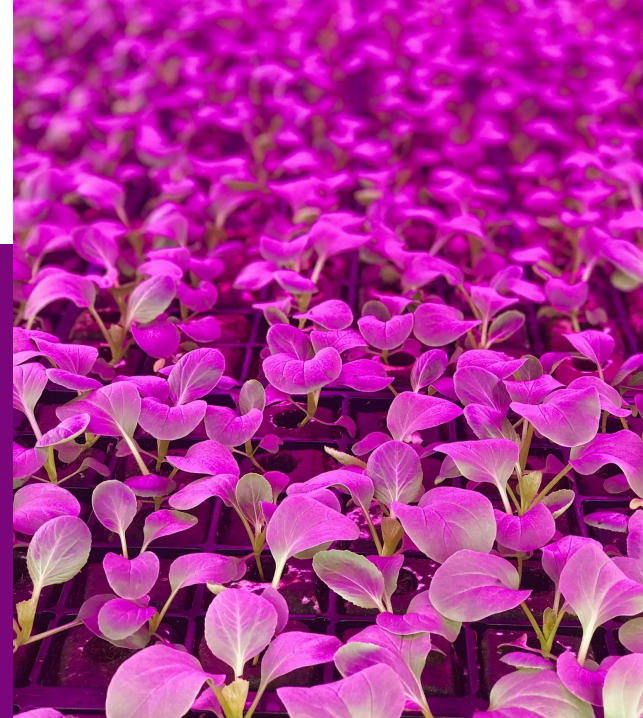
These are the main markets we focus on.

- ✓ Horticulture
- ✓ Florist
- ✓ Medical cannabis
- ✓ Natural grass



Lighting solutions

WHAT WE PROPOSE



LED lighting is important in horticulture because it provides efficient and precise light, tailored to the needs of plants. By adjusting the color and intensity of the light, LEDs increase crop productivity and quality, allow for year-round cultivation, and reduce energy consumption and heat generation.

Our LED solutions support modern horticulture by providing plants with the exact light they need to thrive. They offer ideal light for each stage of growth, from germination to flowering, resulting in healthier plants, faster growth, and higher yields.

They are energy efficient and produce little heat, which reduces energy consumption and promotes sustainable cultivation. Overall, our LEDs help growers achieve better results while reducing their environmental impact.

Lighting systems

SAVITY Lighting has developed a line of high-performance LEDs designed to meet the needs of all major market segments, installation types, and installation conditions.



PROGROW T2

Management systems

SAVITY Lighting offers customers complete control over their LED systems with an easy-to-use management solution. After installation and testing, customers receive comprehensive training so they can operate the system independently. SAVITY Lighting also provides ongoing technical support whenever needed.



Our Methodology

CUSTOMIZED SOLUTIONS



SAVITY Lighting always works closely with its clients to identify their needs and find suitable solutions that meet their expectations.

After identifying the project requirements and establishing the necessary technical and regulatory milestones, the respective specifications are generated and duly validated by the client. These will serve as the basis for the technical and economic study of the proposed solution and, once approved, for its development and implementation. This entire process is carried out in close collaboration with the client.

Methodology

1. Needs Assessment

Identifying the project's needs and requirements, in accordance with the client's wishes or the project's objectives/purposes.



4. Defining the solution

A study of the equipment and solutions that will be part of the proposal to meet the client's needs, based on the characteristics of the proposed project.



5. Solution approval

Analysis and correction/approval by the client of the presented technical proposal, followed by the preparation of the respective proposal and economic study.



2. Regulatory framework

To seek appropriate solutions that meet the identified needs and comply with technical and regulatory requirements.



3. Design specifications

The document provides guidance, references, and technical details for each proposed piece of equipment. It also explains current requirements and compliance, as well as the expected project outcomes.



6. Project Implementation

Production and installation of the equipment specified in the approved solution. Commissioning of the system and carrying out all necessary lighting tests and adjustments for the completion of the works.



Our commitment

PLANT-CENTERED CONCEPT



Light plays a fundamental role in plant development, fulfilling almost all of their physiological and morphological needs. Our main objective is to guarantee the appropriate lighting conditions for their growth, tailored to each plant type, always prioritizing quality, sustainability, and, of course, profitability.

Plants are the central element of our entire research and development process in this area.

Cost reduction

LED lighting reduces costs by significantly decreasing energy consumption, minimizing maintenance through longer lifespan, and providing targeted light spectra that maximize efficiency. Intelligent control systems further optimize usage, ensuring high crop performance with lower operating costs.



Increase the num. of production cycles.

Whether used as a supplement or as the sole source of light, artificial lighting can ensure the necessary conditions for healthy plant growth throughout the year and increase the number of production cycles compared to what is normal under natural lighting conditions.



Production efficiency

The intensity and color of light significantly affect plant growth. Light can be adjusted according to the type of plant and production goals. These conditions also impact product quality, including nutrients and shelf life.



Environmental impact

LED lighting has several advantages over traditional lighting technologies. It consumes less energy due to much higher levels of energy and spectral efficiency, produces less heat, reducing the thermal load on the system, and has a much longer lifespan.



R&D

MUCH MORE THAN LIGHTING

Innovation is the guiding principle for any challenge we face, based on environmental sustainability and social responsibility.

Research and development (R&D) improves lighting systems, driving innovation, efficiency, and sustainability. This enables reliable and energy-saving solutions, as well as supporting smarter lighting for areas such as horticulture, healthcare, and industry, ensuring better solutions for the future.

Internal and third-party collaboration

In addition to our internal R&D capabilities, we actively collaborate with trusted third-party partners—including research institutions, technology providers, and industry experts—to strengthen innovation and expand the reach and performance of our lighting solutions.

R&D Projects



INOVOlive

The INOVOlive project focuses on developing LED lighting solutions for table olive production. Its aim is to accelerate fermentation, reduce the salt content in olives preserved in brine, and explore ways to add value to the brine.



T-LAMP

To strengthen research and innovation to improve the efficiency of artificial lighting, while ensuring optimal growth of natural grass in football stadiums for high-level competitions.



About us

INNOVATION IN LED LIGHTING



Founded in February 2020 and located in Águeda, Portugal, SAVITY is a technological innovation company dedicated to the research, design, development, and production of high-performance lighting systems based on cutting-edge LED technology. Operating exclusively in the professional market, we cover a wide range of application areas, always respecting the highest quality standards and technical requirements.

SAVITY has a professional and multidisciplinary team with over twenty years of experience in the lighting sector, especially in LED technology. This accumulated experience allows us to develop solutions focused on people's well-being, environmental sustainability, and business sustainability.

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