



## Humidity for Cannabis

An indepth look at humidity control for maximizing the quality and yield of medicinal cannabis.

### Overview

The use of medicinal plants in healthcare has a longstanding tradition, leading to the development of plant-based medicines through extensive global studies. Cannabis has recently gained traction in the healthcare field, especially in North America, due to its recognized ability to enhance the body's immune response and interact with gut-related cells, effectively blocking inflammation-causing bacteria and compounds in the intestines.

In healthcare applications, the primary objective is to extract key medicinal compounds such as cannabidiol (CBD) and delta-9-tetrahydrocannabinol (THC). To maximize the yield of these compounds, stringent control over air quality, sun exposure, temperature, air circulation, and relative humidity is crucial in the growth, processing, and storage facilities. Maintaining optimal conditions ensures the production of high-quality cannabis-based medicines for healthcare purposes.



Humidity control is essential in cannabis cultivation to maintain optimal plant health and maximize yields.



High humidity levels in cultivation environments can promote the growth of mold, mildew, and other fungal pathogens, leading to crop losses.

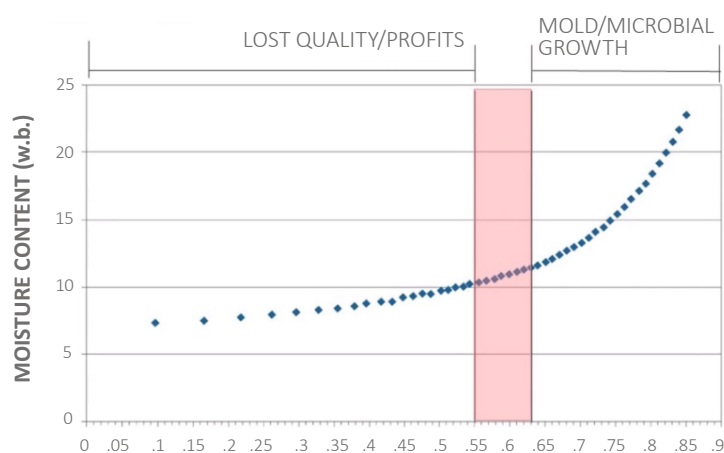
## Benefits of Humidification

Maintaining optimal humidity in greenhouses is crucial for robust plant growth. Proper ventilation and humidification techniques, such as misting or fogging, provide the necessary moisture for seedling development.

Efficient cooling mechanisms like shade cloths or evaporative systems mitigate excessive heat stress. Insufficient humidity below 30% RH stunts growth and photosynthesis, reducing crop productivity. Adequate moisture is essential for transpiration, nutrient uptake, and cell integrity. Excessively high humidity fosters diseases, mold, and fungal infections, causing significant crop losses. It leads to physiological disorders like edema, blister-like lesions, necrotic tissue, and soft growth. Prolonged exposure impedes mineral absorption, causing nutrient deficiencies and compromised health.

Meticulous monitoring of humidity throughout plant growth stages is necessary. Different phases require specific humidity ranges for optimal physiological processes. By maintaining these

conditions, operators create an ideal environment for thriving plants and maximum yield potential.



## Strategies to Control Humidity in Cannabis Grow Rooms

Condair has the technology and experience to control humidity in cannabis grow rooms throughout each stage of cultivation.

We offer a complete portfolio of sensors, humidistats, and controls to ensure precise, convenient, and advanced monitoring and controlling for your application.



Different stages of cannabis growth, such as vegetative growth and flowering, often require specific humidity levels to support their distinct physiological processes.

## 5 Stages of Cannabis Growth

Cannabis is a valuable plant that has come to be primarily cultivated indoors due to its high sensitivity. Each stage of cannabis growth requires a specific setup to achieve optimum growth and obtain high-quality yields.



### 1. Germination

The germination stage can take from two hours to two weeks. It requires a relative humidity level between 65-70% RH and temperature between 70°-77°F (21°-24°C).



### 2. Seedling

The seedling stage takes two to three weeks. At this stage, the required relative humidity level is between 65-70%, and the required temperature is between 70°-77°F (21°-24°C), the same as in the germination stage.



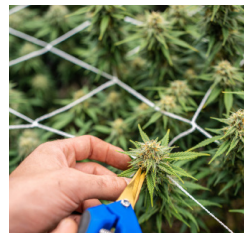
### 3. Vegetative

The vegetative stage takes three to eight weeks to complete and requires 50% RH. The temperature is consistent with the Germination and Seedling stages, but sunlight exposure must be limited to 12 hours per day, and fluorescent light exposure must be limited to 18 hours per day.



### 4. Flowering

At the flowering stage, the relative humidity must be reduced to 40-50%.



### 5. Harvesting

When harvesting cannabis, it's essential to maintain a relative humidity of 50%. The ideal temperature is between 68°-77°F (20°-25°C).



Insufficient humidity can cause stress to cannabis plants, affecting their growth, transpiration, and nutrient uptake.

## Suggested Technology

Calculating the set point can be difficult for cannabis applications as there are so many factors to be considered. These factors include the air temperature, velocity, the type of lighting (natural or fluorescent), number of hours, as well as what stage of cultivation the plant is currently in.

For these types of situations, precise control is paramount. Condair offers affordable and precise solutions to suit your load requirement.

### Try our Product Selector Tool



#### EL Series

Our electrode steam humidifier provides pure steam to your duct or space. The touchscreen control panel offers an intuitive interface for selecting setpoints, monitoring the humidifier, and accessing diagnostic reporting.

It seamlessly integrates with Building Management Systems (BMS) and features disposable cylinder technology for easy replacement.




#### GS Series

Our gas steam humidifiers are versatile, high-quality, and easy to maintain. The GS Series integrates with your BMS and features a user-friendly touch screen control panel for operational control and diagnostic reports.

With a wide load handling range, from 50 lb/h to 600 lb/h, it can effectively humidify spaces when paired with our in-duct distribution systems.







Proper ventilation, combined with effective humidification techniques, helps create a well-circulated and humidified environment that promotes healthy cannabis plant development.

## RS Series

Our resistive steam series includes the patented 'Scale Management System' for efficient scale prevention.

The RS model connects to duct systems or offers a Direct Room System for precise control. The touchscreen control panel displays machine status and allows for easy setpoint adjustment and troubleshooting.



## US Series

Our ultrasonic humidification system offers precise in-space control, optimizing cost and energy consumption.

The standard US Series model includes a stainless-steel water tank, UV water treatment, MERV 12 Air intake filter, and antimicrobial/antistatic internal component for enhanced performance.



## ML Series

The ML Series offers advanced technology for precise humidity control in growing rooms, ensuring optimal conditions for cannabis plants. Adjust humidity levels easily using the ML System control screen or your BMS.

This scalable high-pressure system supports future expansion of additional zones if system capacity allows.



Humidity must be controlled during every stage of cultivation to ensure consistent medicinal and therapeutic effects for the end user.



## Conclusion

In conclusion, humidity control is a crucial aspect of cannabis cultivation. It is challenging to achieve optimal levels without advanced technology and monitoring systems. Maintaining a humidity level that is either too high or too low has adverse effects on plant growth and development.

Condair offers a variety of solutions to precisely control humidity in cannabis grow rooms, including the EL, GS, RS, US, and ML series. These systems are versatile, easy to maintain, and can integrate with building management systems. By choosing the right technology and monitoring tools, cannabis growers can achieve optimal humidity levels, thereby ensuring the highest quality yields and minimizing the risk of disease outbreaks and other issues.

## Return on Humidification

- Increases germination and yield by 15-20%
- Improves plant quality, uniformity, and growth
- Energy savings with reduced mechanical cooling
- Improves microclimates and control
- Protect from freezing and heat shock
- Eliminates the spread of disease
- Increase general productivity of greenhouses

## About Condair

Condair Group, founded in 1948 and based in Switzerland, is the global leader in humidification, dehumidification and evaporative cooling. Supported by science, we engineer individual, holistic solutions that customers can trust through the entire lifecycle. With optimal humidity, we increase productivity and create healthier built environments.

Condair Group has production sites in Europe, North America and China, its own sales and service organizations in 22 countries, and representatives in 50 locations worldwide. You can rely on our comprehensive portfolio of innovative technologies for air humidification, dehumidification and evaporative cooling for the entire lifecycle of each product.