CONVIRON®

ARGUS® CONTROLS

CANNABIS: HUMIDITY MANAGEMENT

Controlling humidity for indoor cannabis growth can be a delicate balancing act

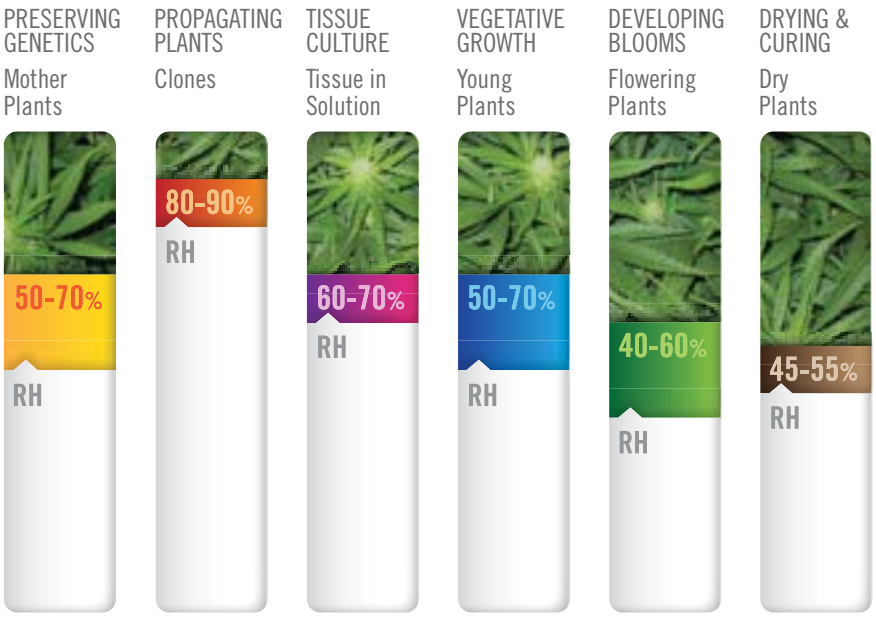
If you talk to any experienced cannabis grower, they will tell you the management of humidity is one of the most important factors in producing a quality crop. A well-monitored dehumidification strategy can result in a winning payload of healthy buds and minimize unnecessary problems (like powdery mildew) that can lead to crop loss and time wasted.

IMPORTANCE OF HUMIDITY CONTROL

Humidity, to a certain extent, determines how much water your plants will consume. The dryer the air, the more they will consume. When they are young, cannabis plants prefer higher humidity levels that tend to promote faster growth. Their leaves will pull water directly from the air to grow foliage while the plant develops its root system. As the plant matures, however, a lower humidity level should be established to prevent formation of mildew or mold.

Relative humidity (RH) is a measure of the amount of moisture in the air compared to what the air can sustain at a given temperature. Cannabis growers typically develop strategies to manage relative humidity at each stage of growth (see graph on right).

Temperature and relative humidity are closely interrelated. If the temperature is too hot and dry there is potential for the air to extract moisture out of the



RH = Relative Humidity

Growers typically develop strategies to manage humidity levels for each stage of plant growth

PROPAGATING PLANTS

The clone is the most vulnerable stage of the cannabis plant's development, requiring high humidity and consistent temperatures to prevent excessive drying of young roots during propagation. Young clones are entirely reliant on high humidity to get water through their leaves from the air.

VEGETATIVE

Once the young cannabis plants have properly rooted, the humidity can be lowered, and temperatures slightly increased to boost metabolic activity in both the plants and the soil. In addition, high light intensities and longer daylight cycles are applied to establish desired plant mass and root base prior to blooming.

FLOWERING

Once flowering is triggered by shortening the light cycle and reducing temperature, flowers start to develop resins containing THC and CBD. During this stage, humidity should be kept low to prevent mold, mildew and other diseases from forming on the buds.

DRYING BUDS

High ventilation, low humidity, and slightly lower temperature are required during the drying stage to reduce the water content of cannabis buds, remove unwanted pigment and chlorophyll, and prevent mold formation.

plant resulting in slower growth. Cool and humid conditions, on the other hand, can cause mold or fungus as well as slow growth. Controlling both temperature and RH at the same time is imperative to achieving optimum growing results.

AIR MOVEMENT

Continuous air movement over and around your plants prevents stratification and CO_2 depletion, reduces odor, and increases transpiration and stomata function. In terms of humidity, circulating air keeps the cannabis leaves dry enabling the plant to pull in more nutrients and to absorb more water at the roots. Effective air circulation also helps in preventing humid microclimates and wet spots from forming on the plants, reducing the chance of mold, bud rot or white powdery mildew.

DEHUMIDIFICATION STRATEGIES

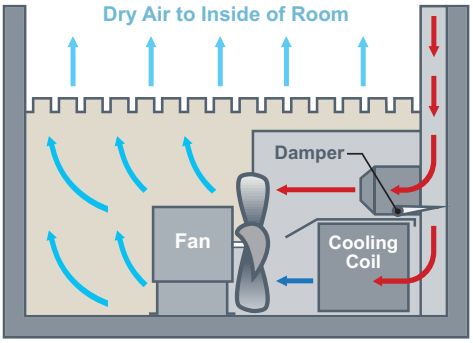
For cannabis production, growing environments are typically dehumidified by the air conditioning system.

MECHANICAL / REFRIGERATION

A given volume of air can hold progressively less water vapor as its temperature decreases. By manipulating the temperature of the air, it is possible to reduce the humidity relative to the dew point. This can be achieved with the refrigeration system using bypass dampers or separate coils.

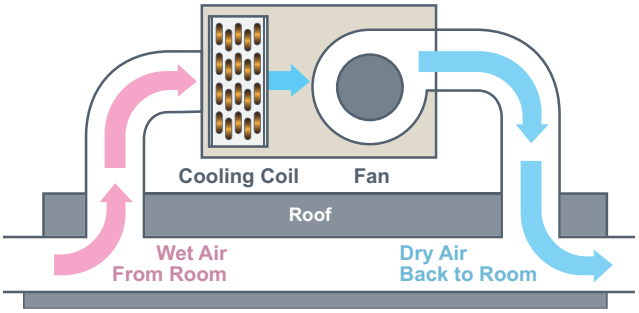
Bypass damper dehumidification

In a typical refrigeration system for a controlled growth environment, water vapor is removed from the circulating air by temporarily chilling it to below the dew point, thus condensing some of the water vapor. To do this, a bypass damper is used to re-route the air around the main cooling coil allowing the coil to be run at a much cooler temperature, which causes the moisture in the air that is passing through the coil to condense and drain off. Bypass dehumidification is easily designed into the overall refrigeration system by the manufacturer of a controlled growing environment, but it is not an option that can be retrofitted into an installed system. For existing grow rooms, externally mounted systems are more appropriate.



Separate coil dehumidification

A separate coil dehumidifier is mounted externally in the growth room or chamber. It draws air from the growth area through a cooled coil to remove the moisture by condensation, and returns the dryer air to the growth area. This method of mechanical dehumidification is especially attractive for retrofits or spaces being converted for cannabis production.



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