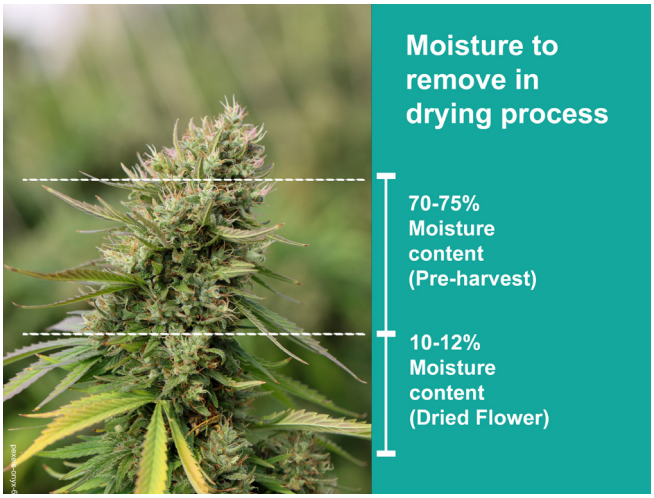
Guide to Optimal Cannabis Drying

INTRODUCTION

The main goal during the cannabis drying and curing process is to maximize the value of the crop as it becomes ready for sale. When cannabis is harvested its moisture content is 75-85% by weight. The target moisture level of dried flower is 10-12%.

The objective is to smoothly remove excess moisture without compromising the aesthetic qualities of the flower, or promoting the unnecessary degradation of trichomes, which are the near microscopic structures that contain the majority of the flower's phytocannabinoid content, including THC, and terpene content.



The goal in drying cannabis is to remove 70-75% of moisture leaving 10-12% moisture content in the dried flower.

HANG DRY VS. RACK DRY

You can obtain good results using either method as long as optimal temperatures and relative humidity (RH) levels are maintained with even airflow over the drying product.

HANG DRYING

Many cultivators are drawn to the relatively low up-front cost of setting up a hang drying system. Installing hangers or a wire system is straightforward and inexpensive. Hang drying also allows cultivators to turn over their rooms quicker as plants can be hung as a whole wet branch, and the trimming can occur once the plant is dried.



Microscopic trichome structures contain the majority of flower phytocannabinoids.



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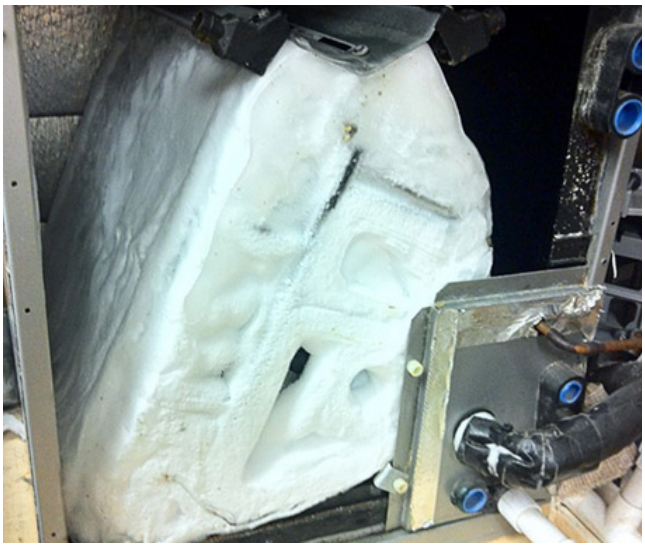
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RACK DRYING

Rack drying requires the plants to be wet trimmed and then the trimmed buds are placed on stainless steel trays on racks for the drying process. Rack drying gives cultivators more control over uniformed airflow and allows for more product to be dried in a smaller space. Rack drying systems are a significant up-front investment and are usually made for efficiency and quality control reasons.

TEMPERATURES ARE VERY IMPORTANT

The key to successful cannabis drying is a low temperature process. Drying at lower temperatures facilitates a more controlled moisture removal process that helps to ensure even drying throughout the flower while minimizing trichome degradation. Many independent studies have confirmed that the optimal temperature for cannabis drying is 55-65°F with RH levels between 50% and 60%. These environmental conditions provide a strategic controlled moisture removal process that allows the flower to evenly dry with minimal loss or degradation to trichomes.



An example of a frozen evaporator coil inside an HVACD unit

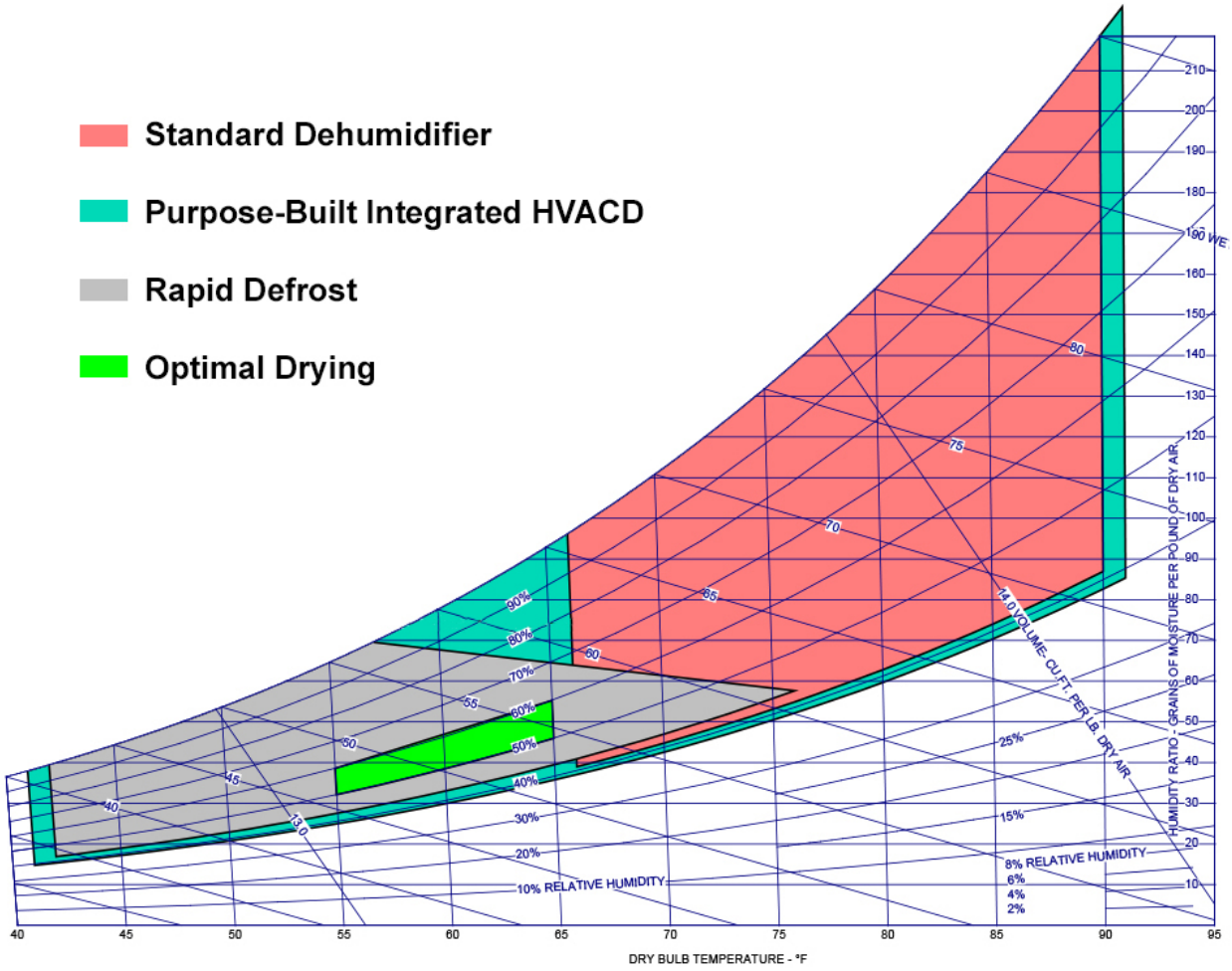


Figure 1 - The relative effectiveness of standard dehumidifiers, purpose-built integrated HVACD and rapid defrost dehumidifiers can be seen across a psychrometric chart.

SPECIALTY LOW-TEMP HVACD SYSTEM REQUIRED

Optimal dry room conditions of 55-65°F and 50-60% RH are nearly impossible for standard HVAC systems or standard dehumidifiers to achieve because the associated dewpoints are too low. These systems will quickly build ice on their evaporator coils at conditions below 65°F and will require a lengthy defrost cycle to resume operation. This reality forces many cultivators to dry at slightly higher temperatures which accelerates trichome degradation and diminishes the value of the final product. Desert Aire manufacturers an integrated HVACD system specifically designed for efficient operation at the lower temperatures required for optimal cannabis flower drying. This system is called DriCure™ by Desert Aire. The DriCure™ system features a low temperature optimized evaporator coil that is equipped with a near instantaneous hot gas defrost feature. This innovative approach allows DriCure™ units to effectively and smoothly remove moisture at far lower temperatures than competitive units. When a standard air conditioner or dehumidifier operates in these temperature ranges their coils will ice up within a few hours and the system will need to thaw which can take up to 90 minutes before regaining operation. It is important to note that during the defrost, no moisture removal will be achieved.

ABILITY TO CONTROL TEMPERATURE AND HUMIDITY IN ONE INTEGRATED UNIT

Many cultivation facilities try to assist their struggling HVAC systems by adding supplemental dehumidifiers, which are often hung from the ceiling. This strategy does help reduce the moisture load, but only if the temperatures are above 65°F, otherwise the dehumidifiers will quickly freeze up. There are not currently any independent dehumidifiers available with a rapid defrost option.

It is also important to understand that independent dehumidifiers do not have the ability to remove moisture without adding heat back into the space. The more they dehumidify the more heat is added. In order to maintain the target low temperatures needed for dry rooms the air conditioning system must turn on to address the added heat from the dehumidifiers. The air conditioning system is supplying cold air at a high relative humidity, and the dehumidifiers are supplying hot air at a low relative humidity.

Conversely, an integrated system like DriCure™ from Desert Aire cools and dehumidifies the air in one integrated process. The advantage is tighter control and more efficient operation especially at low temperatures.

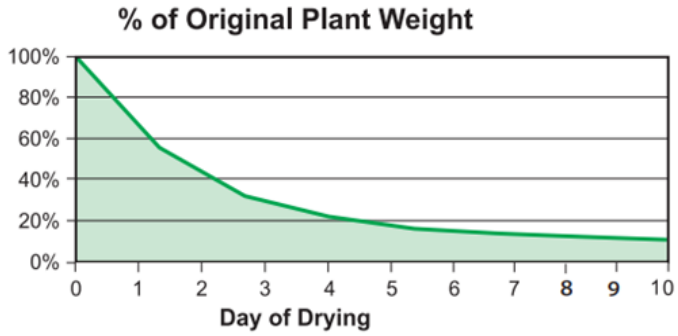


Figure 2 - The cannabis drying process should take 7 to 10 days to complete.

AIRFLOW CONSIDERATIONS

Proper airflow is important for the successful drying of cannabis. The airflow should be evenly distributed in a uniform manner throughout the room. Ideally the supply and return for the HVACD system should be located on opposite walls allowing the system to pull the conditioned air through the drying product. Duct work and diffusers should be used to achieve a low velocity airflow with a target of 1-2 feet per second. The consistent, gentle airflow evenly distributed throughout the room helps promote a drying environment that minimizes the degradation to trichomes.

THE DRYING TIMELINE

The cannabis drying process should take 7-10 days to complete. During the first 24-48 hours 40-50% of the moisture will be removed which will greatly stabilize the product and reduce the risk for microbial growth. Over the next 5-7 days the tempera-

Day	Temp °F	RH
Day 1	64	60%
Day 2	63	60%
Day 3	62	60%
Day 4	61	60%
Day 5	60	59%
Day 6	59	58%
Day 7	58	57%
Day 8	57	56%
Day 9	56	55%
Day 10	55	55%

Figure 3 - An example of a 10-day drying program

ture and humidity levels should be gently reduced to encourage even, smooth drying of all of the buds.

PROGRAMMABLE DRY DOWN SCHEDULING

Attempting to dry cannabis too quickly can result in over drying of the outer layers creating a crust that traps internal moisture. In addition, drying too quickly can accelerate the degradation of trichomes, reducing overall potency and profitability. Purpose built dry room equipment should have the ability to program in gradually decreasing setpoints to achieve optimal results.

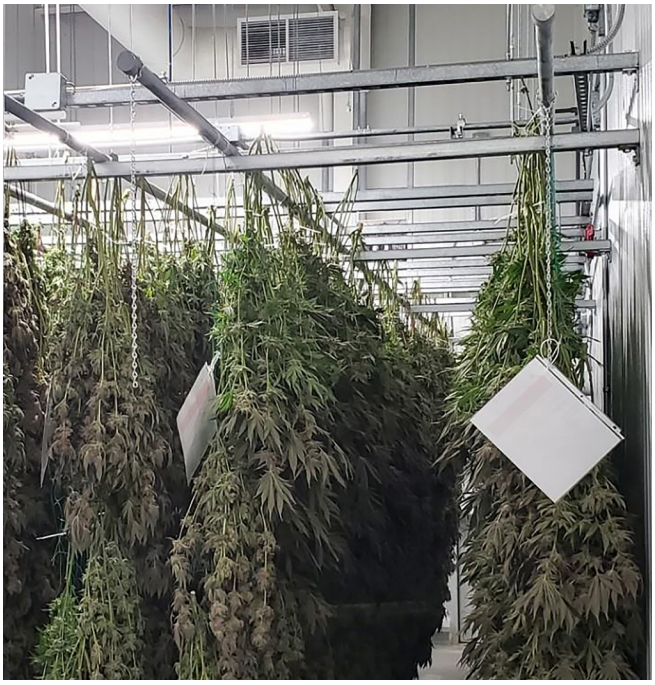
The drying and curing phase of cultivation has a dramatic impact on the overall quality of the final product. The most successful cannabis producers are constantly striving to improve both quality and consistency. This means establishing and committing to repeatable best practices throughout the cultivation process. The ability to pre program a dynamic day by day dry down plan is the best way to ensure optimal drying every time in every dry room at every facility.



Post-harvest drying cannabis is crucial to the profile of terpenes, taste and smell.



DriCure™ provides drying room solutions that regulate humidity and temperature levels as harvested plants dry over 7 to 14 days.



It is important to remove 40%-50% of the product's wet weight in the first 24 to 48 hours of drying.

OPTIMIZING SOLUTIONS THROUGH SUPERIOR DEHUMIDIFICATION TECHNOLOGY

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