



Lift and Grow presents

# Streamlining Harvest Processes

A Process Improvement White Paper For Growers



**Lift and Grow**

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# Introduction

Many of today's cannabis harvest processes were inherited from the era of home-based black market growing. Yet, as growers are under heavy pressure to reduce operating costs, these outdated harvest methods are causing serious difficulties in today's industry.

While other parts of the cannabis industry have grown exponentially sophisticated with legalization, very little energy has gone into developing best practices for harvesting cannabis.

## **An overdependence on outdated harvest methods has led to three identifiable problems for commercial growers:**

1. Operational Inefficiencies
2. Excessive Risk with Ladder Work
3. Degradation of Flower Quality

Put bluntly, antiquated cannabis harvest methods become financial liabilities when recreated at scale in commercial grow facilities. Therefore, experts must assess, revise, and rebuild harvest processes to meet the competitive demands of the modern cannabis industry.

## **The following solutions offer practical ways to fix problems caused by outdated harvest methods:**

1. Harvest Process Improvement
2. Proper Training for Harvest Team
3. Automation & Machine Help

**Lift and Grow put this research together to help cannabis growers eliminate unnecessary financial risks when harvesting cannabis.**

**This white paper explores how improving processes, training employees, and using the right technology help streamline cannabis harvests for increased profitability.**



# Problem 1: Operational Inefficiencies

When large operations consistently repeat small operational inefficiencies with cannabis harvests, they become costly. This notion is worse within large multi-state operators (MSOs) with many cultivation facilities across the nation.

Importantly, operational inefficiencies that seemed insignificant during the days of the black market are glaringly noticeable on a larger scale. To illustrate, packing a drying room wall-to-wall with lines might not be an inconvenience for a small, hobbyist grower. However, crawling beneath drying lines to check flowers in the back row is a significant problem in commercial-sized operators.

As cultivation facilities increase in size, small operational inefficiencies only grow increasingly problematic.

## BUCKET BRIGADES & LINE-DRYING

Bucket brigades and line-drying are two outdated harvest practices wreaking havoc on commercial producers in the regulated industry.

With bucket brigades, team members hand-carry small quantities of individual plants from flower room to dry room. Next, harvest team members pass fresh cannabis from person to person until it finally reaches the drying room. At this point, an employee hands plant material to another standing on a ladder, who finally hangs the plant on a line to dry.

Line-drying cannabis is the most common counterpart for the bucket brigade method. Strings or wires are stretched across the length of the drying room and attached to walls with screws, nails, or hooks. Finally, fresh cannabis plant material is hung on the lines to dry.

## FINANCIAL CONCERNS WITH OPERATIONAL INEFFICIENCIES

The time each employee takes to climb a ladder or wait for a load of flowers increases their time "on the clock." With so many employees getting paid to accomplish such a simple task, harvest bucket brigades are one of the most inefficient labor uses in the entire cannabis industry.

According to the job website Glassdoor, Cultivation Technicians make between \$15.00-\$17.00 per hour in key adult-use markets like Colorado. When you have a team of ten Cultivation Technicians working a bucket brigade, it can cost nearly \$200 per hour or \$1,600 per day.

**To reduce labor expenses and increase profits,  
cannabis growers need more efficient ways to harvest their crops.**





## Problem 2: Excessive Risk with Ladder Work

Outdated harvest practices also pose safety risks becoming increasingly unacceptable in the regulated industry. As seen with operational inefficiencies, liabilities only increase when dangerous acts frequently occur within commercial cannabis harvests.

While black market growers might have happily risked their own safety to hang branches in the furthest reaches of a drying room, there is severe financial risk in expecting employees to do the same in the industry today.

### SAFETY ISSUES WITH LADDER WORK

Ladder work is a critical component of the bucket brigade and line-drying method for harvesting cannabis. Yet, working from a ladder is one of the most dangerous tasks possible for any employee in any industry.

The [\*Centers for Disease Control \(CDC\) and Prevention website\*](#) presents some startling statistics regarding the inherent dangers of ladder work:

- There are over 100 fatalities each year resulting from ladder work
- 15,000 people are injured and miss one day of work each year because of ladder-related accidents
- 34,000 ladder injuries are treated in emergency rooms every year

Due to the dangerous nature of ladder work, the [\*CDC actually recommends\*](#) that businesses look for alternative ways to complete tasks without the need for ladders.



## LADDER WORK AND LINE-DRYING

The end of every bucket brigade harvest operation includes a team member on a ladder tasked with hanging fresh plants on lines.

The process of transferring cannabis from the bucket brigade to drying lines is quite dangerous. To illustrate, [Lift and Grow clients](#) report having to place some of their tallest employees on 12 ft. ladders to reach the upper lines of a drying room. Needless to say, if one of these employees were to fall from 12 ft. on a ladder, it would be an extremely serious injury.

## ECONOMIC IMPACT OF LADDER WORK

Several ways using ladder work for harvesting cannabis can negatively impact your bottom line include:

- **Worker's Comp Insurance:** because cultivation is "agricultural" work, you should expect to pay the equivalent of 8-9% of each garden employees' salary for worker's comp expenses. These rates can increase if you have accidents in the grow room year after year.
- **Wages for Injured Workers:** if an employee is injured while conducting harvest-related tasks, you are responsible for paying their salary during the period they cannot work. If a Cultivation Technician misses 90 days of work, it can cost you up to \$10,000.
- **OSHA Ladder Training:** if you opt to stick with the bucket brigade and line-drying harvest system, you must pay for OSHA ladder training. These programs cost approximately \$80 per team member.

**Commercial growers need to find new ways to harvest cannabis that don't require dangerous ladder work to ensure employee safety.**





## Problem 3: Degradation of Flower Quality

The bucket brigade and line-drying approach for harvests also take their toll on the overall quality of cannabis flowers. Whether it be overhandling flowers during cannabis cultivation or restricting airflow by over-packing a drying room with plant material, such common errors can quickly degrade the value of your post-harvest crop.

While bucket brigades might have worked for hobbyist gardens, the method lacks the built-in quality control measures required to protect flowers on a commercial scale.

### FLOWERS DAMAGED DURING HARVEST

The quality of cannabis flowers degrades every time an employee touches them during harvest. With the bucket brigade, as many as ten people might come into contact with a single flower before it is finally hung to dry.

Fresh flowers are commonly stacked on top of one another in bins during the bucket brigade harvest process. In the worst cases, the compounded weight of the harvest in a container can smash the delicate cannabis flowers.



There are several ways that too much handling can degrade fresh cannabis flowers:

- Damaged trichomes
- Diminished terpene profile
- Lost THC and CBD (and other cannabinoids)
- Tips break off prized cannabis buds

In cases where fresh flowers get damaged during harvest, it can have a lasting negative effect on overall bag appeal. When cola buds get smashed, and flowers smell like hay, you simply can't charge top dollar for your product. This notion is particularly troubling for craft growers who pride themselves on high-quality, boutique flowers.

### **FLOWERS DAMAGED WHEN DRYING**

Cannabis flowers can also be damaged or destroyed while line-drying. With traditional line-drying processes, the goal is to pack as much fresh plant material into a drying room as possible. During the hustle and bustle of harvest, it's easy to overlook the environmental conditions of a drying room or the structural integrity of drying lines.

When plants are packed too tightly on drying lines, it can wreak havoc on the environmental equilibrium of your drying room. When air cannot move freely between branches, extreme humidity levels can lead to an outbreak of botrytis or "bud rot."

Drying-line systems often fail under the weight of massive commercial harvests. In these scenarios, large amounts of fresh cannabis fall to the ground when strings break or nails come loose from the wall. The more damage inflicted on flowers, the less money they are worth in the open market.

### **FINANCIAL CONSEQUENCES OF DAMAGED FLOWERS**

Whatever the cause, blemished cannabis flowers can significantly impact your bottom line. Damaged flowers must be sold at lower price points or processed into extracts. In the worst cases, crops contaminated with botrytis are a sunk cost.

On average, indoor cannabis flowers fetch \$1,300 per lb. in established adult-use markets such as Oregon. However, growers can still demand prices up to \$2,300 per lb. for certain boutique, top-shelf genetics.





Yet, no matter how beautiful your flowers might be, when damaged with mishandling and mold, their value drops dramatically in the *open market*:

- Average value of indoor flowers: **\$1,300/lb.**
- Average value of B-grade or damaged flowers: **\$500/lb.**
- Average value of shake or trim: **\$200/lb.**
- Average value of moldy flowers: **\$0/lb.**

Notably, Dave Alport, Founder/CEO of *Bridge City Collective*, tells us, “the price of indoor flowers can vary drastically on the wholesale market. But regardless of price pressure, increasing margins by minimizing overhead costs and reducing waste is smart for every business.”

**To protect the integrity of their crops, commercial growers need methods for harvest and drying that don't harm cannabis flowers.**





## Solution 1: Harvest Process Improvement

Process improvement is a great place to start streamlining your cannabis harvest operations.

Process improvement is the conceptual framework you will follow to audit your current harvest practices for inefficiencies and then develop more fluid techniques. The goal of process improvement with cannabis harvests is to create streamlined methods that are scalable across your operation.

When a company has achieved scalability with harvest, they have the appropriate processes to retain quality flower output while sustaining growth.

### ASSESSING INEFFICIENCIES IN CANNABIS HARVEST

First and foremost, process improvement is a means for cannabis companies to revise their harvest practices for efficiency. According to the study [Continuous Process Improvement](#), “Analyzing work processes is necessary to discover where improvements can be made, and to discover areas where tradition is not serving the best interests of the organization.”

Looking at the bucket brigade and line drying harvest method, there is perhaps no better example of “tradition not serving the best interests” of commercial cannabis growers. For a careful audit of your harvest methods, it’s best to look for problematic activities that increase labor costs, decrease safety, and jeopardize flower quality.



Important *questions you might ask* when looking for problems in your cannabis harvest operation include:

- How can I use fewer resources to achieve similar or better results with my harvests?
- Is it possible to create less waste during harvest? What is being wasted and why?
- Can I eliminate steps that cause defects in cannabis flowers? What defects are surfacing in the cannabis flowers?
- Is it possible to eliminate harvest steps that don't add value to my grow operation?

By using pointed questions to audit your harvest operation for weaknesses, you will uncover actions to follow for rectifying inefficiencies.

### **IMPLEMENTING NEW METHODS FOR CANNABIS HARVEST**

At this point in the process improvement phase, you create new harvest methods that fix the problems of the bucket brigade and line drying method. To achieve scalability, you should ensure that you can replicate these new harvests processes in each of your cultivation facilities.

Methods you could employ to increase the efficiency of your cannabis harvest operation include (in reference to the above questions):

- You can use fewer resources during harvest by cross-training employees to handle multiple jobs. If the option is available in your area, consider hiring a labor company to assist during harvest time, cleanup, defoliating, or populating rooms.
- It is possible to waste less cannabis by using new drying rack systems which help stop botrytis' spread.
- You can better protect cannabis flowers by utilizing carts that lessen human contact with plant material during harvest.
- It is possible to eliminate the need for ladder work during harvest using commercial lift systems. Through the use of lifts, you can achieve consistent density and plants, which is far more difficult and expensive when working off of ladders.

Replacing steps from the bucket brigade and line drying system with new efficient methods lets you lay the foundation for scalability in your harvest processes.

**Process improvement offers a way to critically assess your current harvest system and implement more efficient methods.**





## Solution 2: Proper Training for Harvest Team

Proper employee training is required to enact improved harvest methods within your operation. Once you have developed new harvest processes, you must consider how each team member will accomplish them during harvest.

It is up to your management department to delegate specific harvest tasks to particular team members. Not only must these harvest-related assignments account for new processes and technologies, but you must also be able to recreate them at scale.

### STANDARD OPERATING PROCEDURES (SOPS)

Before you can train employees on improved harvest processes, you must systematize the new methods with standard operating procedures (SOPs).

Merriam-Webster defines ***standard operating procedures*** as "established or prescribed methods to be followed routinely for the performance of designated operations or designated situations." Essentially, SOPs are the structure within which employees enact your new harvest processes. SOPs also help ensure employees follow the rules of your cannabis business.

SOPs have long played a vital role in the cannabis industry for compliance and security. According to Tony Gallo, CEO of Sapphire Risk Advisory Group, "Without established SOPs and training, your business risks being unsafe and unprofitable due to theft, injury, and inefficiency."



Important issues to consider when developing SOPs for your harvest operation include:

- Workplace safety
- Task delegation
- Handling fresh cannabis
- Hanging wet cannabis plants
- Checking flowers for botrytis and other common problems

Well-written SOPs ensure that harvest-related work gets done efficiently and safely.

### **HARVEST TEAM TRAINING INITIATIVES**

While SOPs provide a roadmap for implementing improved harvest methods, training will ensure new processes are learned and followed by employees.

Harvest training should become a part of your standard onboarding process for new Cultivation Technicians. Gallo from Sapphire Risk Advisory Group again tells us effective employee training “improves accountability, which thereby reduces internal losses.”

Using harvest SOPs as a frame of reference, you should reinforce the need for efficiency and safety in the workplace. Proper training further illuminates the potential financial losses of damaged cannabis flowers.

Types of employee training resources for harvest may include:

- Videos instructions
- Dedicated harvest training personnel
- 3<sup>rd</sup> party training companies
- Ongoing training and consistent oversight

In the end, well-trained employees will consistently save you money on harvest-related labor expenses.

**Proper training for harvest teams is how process improvement measures come to life within your organization. While SOPs offer a roadmap for process improvement, training ensures these concepts are learned, followed, and respected.**





## Solution 3: Automation & Machine Help

Increased automation during harvest is an excellent way to avoid inefficient operations and damaged flowers while increasing workplace safety.

Because it dramatically lessens your dependency on human labor, machine help is perhaps the best way to eliminate the bucket brigade and line-drying method. While we always recommend that you revise your procedures for efficiency, simply adding the right tool like the Lift and Grow H2P Drying System can positively impact your bottom line.

### THE LIFT AND GROW H2P DRYING SYSTEM

We explicitly designed the Lift and Grow H2P Drying system to modernize harvest processes for commercial growers. This fully-integrated cannabis drying system utilizes carts for transporting fresh flowers from the grow room to the drying room. Once in the drying room, fresh plant material is effortlessly raised to the ceiling with a commercial lift machine.

Key points of the Lift and Grow H2P Drying System include:

- Integrates with new build-outs
- Quickly installed with retrofits
- Lifts hang bars or the entire cart
- Easily broken down and stored
- Scalable for commercial production
- Seamlessly fits most drying rooms

The H2P Drying system is the most direct way to streamline your cannabis harvest processes.

**The Lift and Grow H2P Drying system is the perfect complement to harvest process improvement and proper training of harvest teams. When used alone or in conjunction with these other practices, the H2P Drying System will make your harvest operation more efficient and profitable.**





# Using the Lift and Grow H2P Drying System to Solve Key Problems for Harvesting Cannabis

When recreated at scale in commercial grow facilities, outdated harvest methods like the bucket brigade and line-drying system become financial liabilities. In designing the H2P Drying System, Lift and Grow has carefully considered ways that growers can assess, revise, and rebuild harvest operations to meet the demands of today's highly competitive marketplace.

Ways that the Lift and Grow H2P drying system will help solve core problems for harvesting cannabis include:

## **PROBLEM 1: OPERATIONAL INEFFICIENCIES**

- The H2P Drying System rectifies operational inefficiencies with the bucket brigade system by reducing the need for human labor during harvest by 50%.
- Because our drying systems are professionally engineered for harvesting cannabis, ***Lift and Grow clients report*** that our machines reduce harvest time by up to 40%



## Using the Lift and Grow H2P Drying System to Solve Key Problems for Harvesting Cannabis

- When the H2P Drying System is combined with efficient processes and well-crafted SOPs, you have the perfect recipe for achieving scalability with cannabis harvest methods.

### **PROBLEM 2: EXCESSIVE RISK WITH LADDER WORK**

- The H2P Drying System greatly improves safety in commercial cannabis gardens by eliminating the need for ladder work in the drying room during harvest. With the Lift and Grow system, you can simply press a button to raise and lower fresh plants from the floor to the ceiling.
- By eradicating ladder work during the drying stage, you will lower labor-related expenses such as worker's comp insurance, wages for injured workers, and OSHA ladder training.

### **PROBLEM 3: DEGRADATION OF FLOWER QUALITY**

- The H2P Drying system protects the quality of your cannabis crop by fully integrating with both your harvest processes and drying facilities.
- With the H2P Drying System, employees only need to touch fresh flowers a single time during harvest. Once plants are harvested and situated on hang bars, commercial lift systems do the remainder of the work to raise flowers to the ceiling.
- The H2P Drying System protects cannabis flowers while drying at a commercial scale. The hang bars and lift components create enough space between plants to protect against botrytis outbreaks. Because it was designed specifically for cannabis harvests, there is no chance of the H2P Drying System failing and dropping flowers to the ground.





# LIFT AND GROW

## About Lift and Grow

Since entering the industry in 2018, Lift and Grow has worked tirelessly to help growers minimize laborious light lifting and time-consuming harvest-related tasks. By lending insight into these often overlooked elements of commercial cannabis production, we help cultivators cut costs while earning more significant profits.

With decades of experience with commercial lift systems, Lift and Grow brings both professionalism and confidence to the cannabis industry. Because we have a fresh perspective on factors like harvest operations, the team at Lift and Grow can spot logistical inefficiencies where others might not.

Our mission at Lift and Grow is to eliminate unnecessary gardening tasks, so you can do what you do best: care for your plants. While clients regularly trust us to consult on their cultivation methods, we always respect your experience and knowledge. In the end, our goal is not to tell you how to operate but rather work within your processes to improve efficiency.

