

---

# Seed To Sale Tracking For Commercial Marijuana

## An Overview of Inventory Control

---

National Marijuana Initiative - March 2017



Source: METRC.COM

---

# Seed To Sale Tracking for Commercial Marijuana

The phrase “Seed To Sale,” referring to tracking legalized marijuana, is a popular term when discussing regulatory control in the commercial marijuana industry. However, the concept portrayed by the phrase is not accurate and can be misleading. Marijuana tracking systems have benefits in their use; however, they do not guarantee the absolute accountability of all marijuana grown commercially.

## Seed to Sale


The implication of the phrase is that every portion of a marijuana plant can be tracked with 100 percent accountability through its life cycle to final point of sale. Much like thinking that a kernel of corn can be tracked from planting, to harvest and subsequent inclusion in a can on the grocery shelf, then tracked back to the mother stalk. While both are possible, in reality neither scenario is likely.

A more practical way to view the system is as an inventory tracking process with two goals. The first is to assist businesses in meeting state regulatory and compliance requirements. The second is to provide businesses with a platform to enhance their accountability for marijuana.

Radio Frequency Identification (RFID) tags and bar codes are the most prevalent tracking tools. RFIDs are a time saving tool for growers. RFID technology allows the grower to rapidly and accurately account for the number of tagged plants in a facility. The tags also assist with the quick identification of a specific plant record to document any changes to that plant.



Source: METRC.COM

Killa Kush Plush	Net Wt. 3.5 gm
THC - 13.85%	CBD - .09%
Recreational Must be 21 years old to buy No For Resale Keep out of reach of children	 (10) ABC123 (21) 0001

Bar code tags serve a similar purpose, but are more commonly associated with packaging at the final point of sale to the consumer. Bar codes quickly account for the sale, the removal of an amount of marijuana from the business's inventory, and assist with any daily sales reconciliation required by the state.

## The Process

A tracking number is assigned to a seedling in the very beginning of its life. Each plant receives its own unique RFID tag and number. The tracking number serves as a “birth



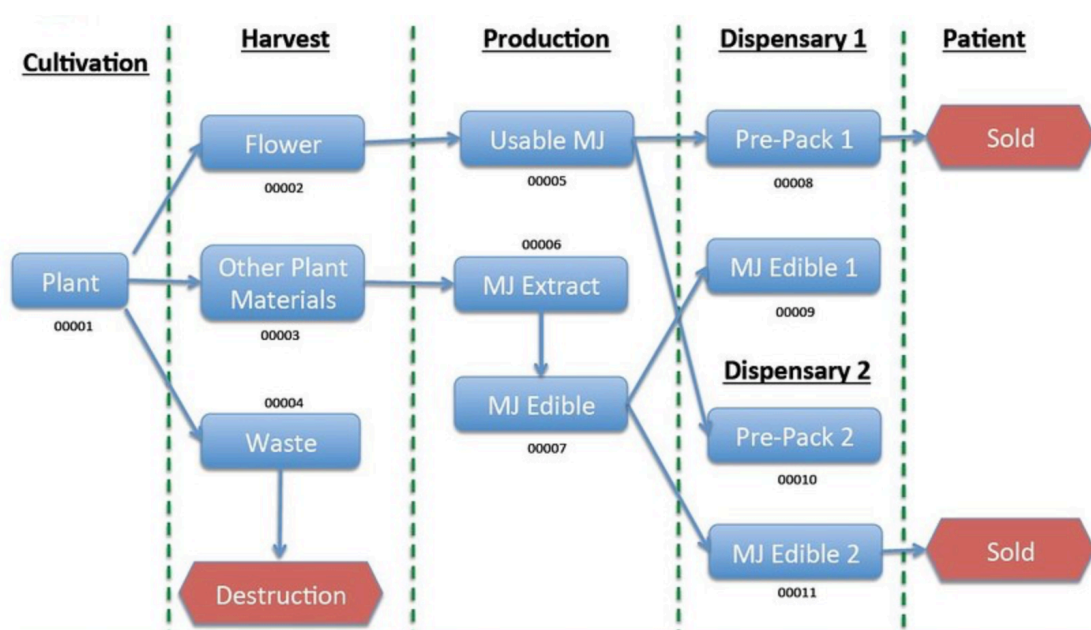
certificate” for the plant in the tracking system. The number is used to monitor the plant’s life cycle and provide historical records until such time the plant is removed from an active inventory.

All changes in the life cycle are monitored. As the plant matures, is fertilized, or is trimmed, the plant record is updated to document the

activity or change. This life record stays with the plant until it is harvested and processed for final point of sale. The plant’s record also documents the reported waste from harvest, trimming, loss of weight from drying, and results from laboratory testing for potency or toxins.

This same number is also used if the plant is moved between facilities or is used to produce another product such as a concentrate or edible. The new marijuana product receives its own unique tracking number that links its origins back to the original plant used in the process.

### The Marijuana Tracking Cycle



Source: <http://www.marketwatch.com/story/tracking-the-marijuana-business-from-seed-to-sale-2015-05-04>

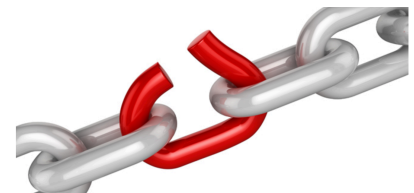
## Inventory Tracking Systems:

### Positives:

- Provides the marijuana industry with greater accountability in managing inventory, while meeting state regulatory requirements
- It creates a statutory compliance audit trail that is used by both businesses and state regulatory offices
- Assists the state regulatory offices in detecting potential fraud, diversion, or abnormal business practices

### Negatives:

- Its weakest links are that it requires:
  - 100 percent compliance
  - 100 percent integrity
  - 100 percent of the time
  - From 100 percent of the people involved in the process
- It relies on self reporting from the business to populate the database
- It is not a loss prevention tool and theft can occur
  - The greatest risk for theft is right after harvest



## Internal Loss:

Any business engaged in the sale of a high demand commodity runs the risk of loss by internal theft and the marijuana industry is no different. Marijuana offers unique enticements for loss or diversion (away from its lawful intended purpose) through unlawful use, sale, and distribution. Marijuana tracking systems can help reduce this risk, but not eliminate it.

In 2015, U.S. employers in traditional retail markets assessed that:

- Loss due to internal theft represented 35 - 43 percent of yearly business volume. <sup>1,2</sup>
- The average loss to internal theft was assessed at \$734 per investigation. <sup>3</sup>



Source: <https://www.linkedin.com/pulse/where-retail-shrink-2016-tonv-d-onofrio>



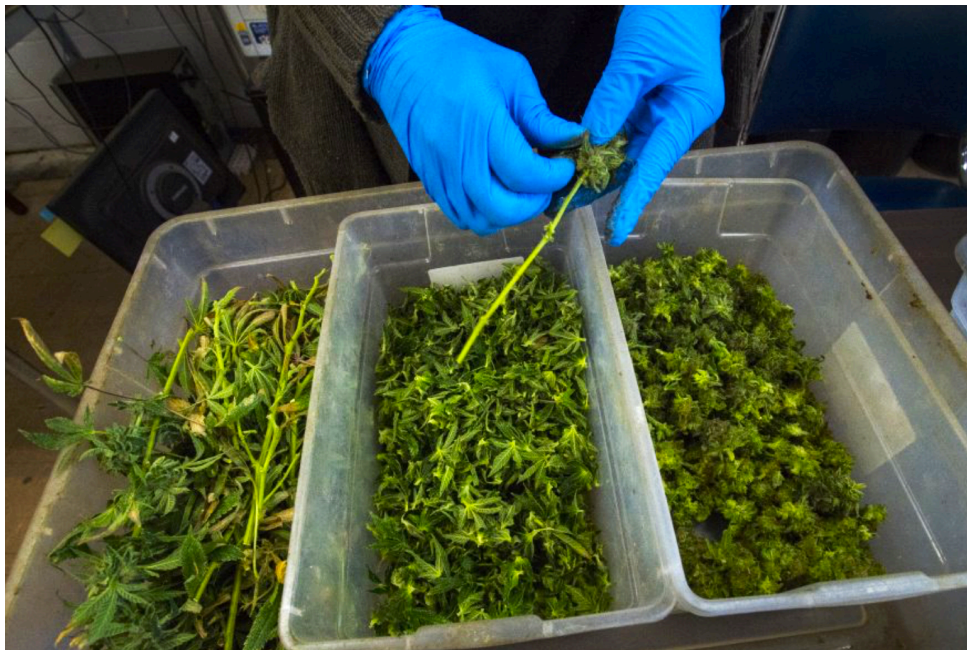
---

With the introduction of marijuana to the retail and medical markets in some states, loss or diversion is understandably a major concern. Not only from a profit margin consideration but as a responsible business model seeking to stay within the confines of current state laws.

### Harvest & Processing:

As noted previously, the greatest at risk period for theft is right after harvest. At harvest the stalk of the plant is cut just above the rootball. The intact stalk, complete with flowers, leaves and stems is weighed as a single unit to establish the initial “wet weight” recorded in the tracking system.

Next a worker begins to dissect the plant to separate the usable portions (trimmings and flowers) from the unusable parts such as the stalk, stems and branches. These unusable parts are tracked as “waste” and are slated for destruction.



Source: [gazette.com](http://gazette.com) - “Brothers wrestle with regulation, watchful eyes of state to grow medical marijuana” - 08-29-16

Once separated, the waste, flowers, and trimmings are each weighed and those values are recorded in the system. The combined values of these parts should be relatively close to the initial wet weight of the harvested plant if processing occurs immediately after the stalk is cut. Any delay in processing allows for weight loss as the plant material begins to dehydrate.

The waste is required to be disposed of by first rendering the plant material unusable and unrecognizable. This commonly means the waste is ground up as compost while being blended with another biodegradable substance such as paper, cardboard or even the dirt from the rootball. Once completed, the waste mixture is ready for disposal.

Diversion at this point can occur by simply removing a quantity of marijuana flowers and reassigning that change in plant weight from flowers to waste. Once the three values are recorded and reasonably consistent with the original wet weight value, the stolen marijuana can now be diverted.

---

## The Drying Phase:

Once separated and weighed, the usable marijuana is placed on a rack to dry. The original RFID tag is also attached to the rack as part of the tracking process.



As the marijuana is drying on an open rack, it is possible for an employee to remove individual flowers in small quantities. Small losses from numerous drying trays over time would be difficult to detect.

Once dried and before packaging, the end “dry weight” is taken and recorded in the system.

This dry weight is expected to be less than the wet weight recorded after processing when harvested. The presumption is that any difference in the weights is attributed to

dehydration. Small to moderate amounts of raw product could be lost or diverted under the assumption that the missing weight was a normal consequence the of the drying process.

In states where marijuana has been legalized there are industry requirements for security. These can include inventory tracking systems, security cameras, background checks, and daily inventory reconciliations. These measures are intended to help curtail loss and increase accountability. While these efforts can help reduce the risk for loss in any retail setting, they do little to stop the individual who is committed to stealing.

## Data Quality Assurance:

A common critique of inventory tracking systems is that data in the system for a business is self-reported by that entity. This includes information on harvest, timings, and plant material discarded for destruction. The potential exists for diversion associated to misinformation.

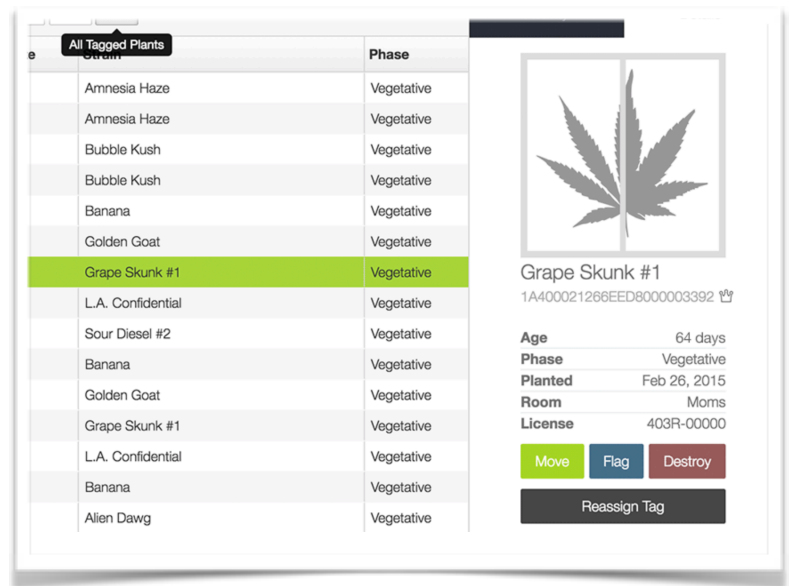
However, according to officials in Colorado, the tracking system actually can help identify anomalies in recorded data for a business, such as excessive reported losses, inconsistent harvest levels, and marijuana reported as being destroyed. Identification of these types of discrepancies is a byproduct of the extended use of the tracking system by the marijuana businesses.

Colorado has a tracking system that the marijuana industry is required to use. The state maintains administrative control for all accounts and can view all business activity reported into the system. Business owners only have limited administrative control over their accounts and are not able to view records for other businesses.

In the course of normal business activity, the system develops a baseline view of how a business operates. Data such as loss rates, harvest averages, and plant transfers all create a historical records on how that business functions. To identify discrepancies, that information is compared to a business's own records and to those of other marijuana businesses of similar size or volume.

Business data in the system becomes more detailed with continued use. As such, any deviation of baseline information can be rapidly identified. In Colorado, a significant number of administrative investigations originate from discrepancies found in the inventory tracking system. 4

The use of video surveillance has proven to be a valuable companion to tracking system data, especially in cases where an abnormally large amount of marijuana is reported as being destroyed or lost due to infestation of insects or mold. Using tracking system records, investigators are able to identify variations in data entered into the system. Investigators are then able to review the video at the business for that event to ensure the claim is consistent with observed business activity. For example, a large scale loss would be accompanied by video footage of a harvest and open destruction of plant material. In Colorado, this investigative approach has been successful in reducing the number of excessive loss claims from businesses. 5



Source: flowhub.co

---

## **Summary:**

Seed to sale is a generic phrase that implies total accountability of commercial marijuana; this is not accurate. Inventory tracking systems are using technology to ensure compliance to state regulatory requirements while enhancing the accountability of marijuana businesses.

Inventory tracking systems should not be thought of as providing 100 percent traceability of all marijuana during its life cycle, nor as an answer to loss prevention issues. The process has limitations that can be exploited, resulting in the diversion of marijuana, at varying levels, by agents of a marijuana related business.

In contrast, the same system has proven benefits for marijuana business. These include time savings for employees, better inventory management, and compliance with state regulations. Additionally, the state regulatory office is able to detect business practices inconsistent with established norms or potentially contrary to law. In Colorado, combining tracking system data with business surveillance video has proven to be an effective investigative tool for reducing excessive loss claims.

It is anticipated that as the marijuana industry continues to engage in business, states will continue to identify gaps in the process that will require changes in regulation or statute.

## **Disclaimer:**

Any reference to a specific product, manufacturer, entity or business should not be construed as an open endorsement. Photographs or data from any source are offered for demonstrative purposes only.

## **Footnotes**

- 1 - Fortune.com "U.S. retail workers are No. 1...in employee theft" (January 26, 2015)
- 2 - Losspreventionmedia.com – "Shedding Light on Retail Theft Statistics" (December 13, 2016)
- 3 - Hayesinternational.com – Annual "Retail Theft Survey" (June 2016)
- 4 - Colorado Marijuana Enforcement Division
- 5 - Ibid

## **The National Marijuana Initiative**

The National Marijuana Initiative (NMI) is a specific project of the High Intensity Drug Trafficking Area (HIDTA) program. In support of National Drug Control Strategy objectives, the NMI enhances information sharing, enforcement, treatment and prevention activities by educating and advising policy makers on research findings, law and issues of interest to public policy.

To learn more about the NMI, visit the website at <https://hidtanmi.org>