



INDUSTRIAL HEMP SAMPLER TRAINING

Training Module 2: Pre-Harvest Sampling

Updated May 2021

Agriculture.Mo.Gov

Overview

- **Before Sample Collection**
- **Sampling**
- **After Sample Collection**
- **Duplicate Samples**

Sampling Protocol

Certified Industrial Hemp Sampler

Once a person's application is approved by the Missouri Department of Agriculture and a certification number (29_CSXXXX) has been received, that person is authorized to collect compliance samples for Registered Producers who hire them. All compliance samples must be collected in accordance with the Missouri Department of Agriculture Sampling Protocol.

Hemp Program Rules

- Applications
- Registered I
- Permit Hold
- Certified Sa
- Frequently
- Additional R

List of Certified Samplers 	Certified Industrial Hemp Samplers are not employees, contractors, or representatives of the Missouri Department of Agriculture.
Compliance Sampling	All industrial hemp lots must be sampled within fifteen (15) days prior to harvest by a Certified Industrial Hemp Sampler  in accordance with the Sampling Protocol 
Forms	Sampling Log  Chain of Custody Form 
Transport	When transporting industrial hemp samples in Missouri, the

Full details available in the *Sampling Protocol*

- Available online on MDA website, Certified Sampler tab
- <https://agriculture.mo.gov/plants/industrial-hemp/sampling-protocol.pdf>



INDUSTRIAL HEMP SAMPLER TRAINING MODULE 2

BEFORE SAMPLE COLLECTION



Equipment & Supplies

- **Garden pruners, shears, or similar tool**
 - Cleaned before/after each sample to prevent contamination
- **Cleaning wipes**
- **Disposable gloves**
 - New pair per sample



Equipment & Supplies

- **New, unused collection bag(s)**
 - Free of THC-containing material
 - Paper, plastic, etc. are permitted
- **Tamper-evident tape**
- **Writing utensil (non-erasable)**
- **GPS unit**
 - Many phones have required capabilities



Lot Evaluation: Boundaries

- Review the growing area
 - *Identify boundaries of the lot*
 - Producers are instructed to make sure lots are physically separated



<https://www.pexels.com/photo/bird-s-eye-view-of-river-in-middle-of-green-fields-1483880/>



<https://pixabay.com/photos/crop-landscape-agricultural-2387552/>

Lot Evaluation: Performance

- **Review the growing area**
 - Evaluate crop performance to ensure relative uniformity within the lot



<https://pixabay.com/photos/crop-landscape-agricultural-2387552/>

Did the crop perform similarly across the growing area?
Does this look like the same variety throughout?
Are there any 'problem areas'?



Pest Damage

<https://www.growingproduce.com/crop-protection/field-scouting-guide-colorado-potato-beetle/>



Standing water

<https://ipcm.wisc.edu/blog/2014/06/flooding-effects-on-corn/>



Low spots, fungal/diseases

<http://www.knowledgebank.irri.org/step-by-step-production/growth/pests-and-diseases>



Borders

https://www.canr.msu.edu/news/irrigation_water_management_and_soybean_diseases

Small problem area?

Avoid sampling from those plants



<https://www.canr.msu.edu/news/2018-michigan-forage-variety-test-report-now-available>



<http://bulletin.ipm.illinois.edu/?p=3780>



https://www.washingtonpost.com/local/maryland-news/east-coasts-first-outdoor-commercial-cannabis-harvest-underway/2019/10/07/80fff718-e52c-11e9-a331-2df12d56a80b_story.html

Larger problem areas?

Question of same variety?

Lot Evaluation

- **Large problem area? Not uniform?**
 - Discuss further separation of lots with the producer - *it is up to them*
 - If they choose to separate, they will need to update their *Planting Report* accordingly and resubmit immediately (before testing)
 - **Make notes in your CIHS Sampling Log**



<http://bulletin.ipm.illinois.edu/?p=3780>

Lot Evaluation: GPS

- **Record GPS coordinates**
 - On *Chain of Custody* Form
 - Should verify or be close to the GPS location on the producer's *Planting Report*
 - Many phones have GPS capabilities
 - “Drop a pin”



INDUSTRIAL HEMP SAMPLER TRAINING MODULE 2

SAMPLING



Composite Samples

Each sample is actually a *composite* sample, comprised of several “cuttings” from multiple plants within the lot to create a *representative* sample



How Many Plants/Cuttings?

- Quantity of cuttings that comprise a sample is determined by the **lot size**
 - Lot size is available on *Planting Report* provided by the Registered Producer
 - Some CIHS require a copy of the Planting Report upon initial contact/hire to properly plan and charge for their sampling services

How Many Plants/Cuttings?

Example:

1.53-acre lot = 9 cuttings;

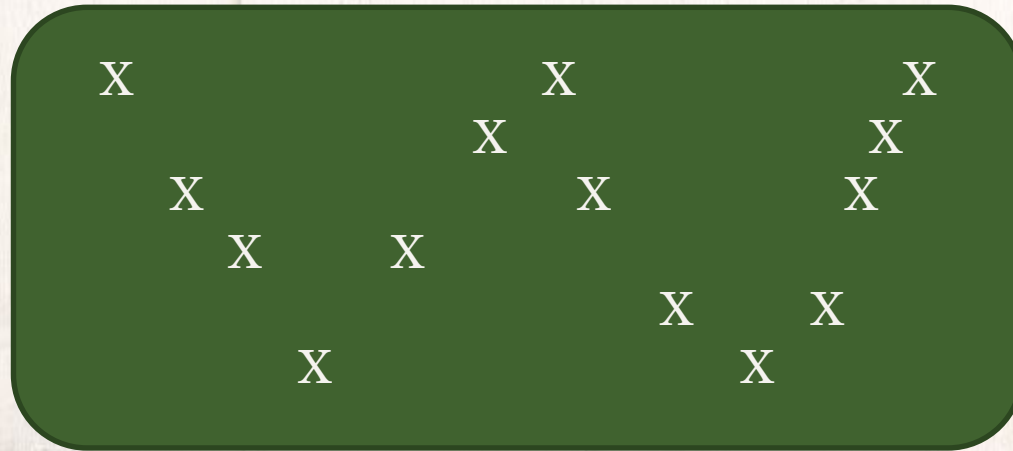
1 cutting each from 9
different plants

More cuttings may be
taken if desired, but not
less

Size of Lot	Minimum Quantity	Size of Lot	Minimum Quantity
<1000 sq. ft.	4	10 - 14.99 acres	35
<0.99 acre	6	15 - 19.99 acres	40
1 - 1.99 acres	9	20 - 24.99 acres	45
2 - 2.99 acres	12	25 - 29.99 acres	50
3 - 3.99 acres	15	30 - 39.99 acres	55
4 - 4.99 acres	18	40 - 49.99 acres	60
5 - 5.99 acres	21	50 - 59.99 acres	65
6 - 6.99 acres	24	60 - 69.99 acres	70
7 - 7.99 acres	27	70 - 74.99 acres	75
8 - 8.99 acres	30	75+ acres	1 per acre
9 - 9.99 acres	33	Ex: 89 acres = 89 cuttings	

Selecting the Plants

- Select plants across the entire area that create an approximate overall pattern of “W” or “Z”



Avoid Outliers



- **Avoid** plants in small problem areas, and within 10 feet of borders, when possible
- Select plants that are representative of the crop; “aim for the average”

Selecting the Cutting

- At each selected plant:
 - Choose any branch that is in the **top one-third (1/3)** of the above-ground plant material

For some plants, only the central stem may meet this requirement



Selecting the Cutting

- And from that branch, take a cutting from the apical end (tip) of that branch, that is



Reference: US dollar bill is 6.1 inches

5 – 8 inches
(12.7 – 20.3 cm)



Cutting Collection

- As you collect cuttings from plants across the lot, place them directly into your collection bag

Do not manipulate the cuttings in any way

Use additional bags as needed



No Commingling

- Cuttings from separate lots *shall not be commingled*, including lots of the same variety
 - Pre-label collection bags to avoid accidental commingling



INDUSTRIAL HEMP SAMPLER TRAINING MODULE 2

AFTER COLLECTION



Sealing of Bags

- The Certified Sampler shall **seal** all collection bags with tape
 - “True” tamper-evident tape (like pictured on the right) is highly preferred but not required
 - CIHS may use duct tape, shipping tape, etc. if signatures are included (next slide)



https://www.uline.com/Grp_224/Security-Tape

Sealing of Bags

- Regardless of type of tape, both parties must sign or initial over the edge of the tape on each bag
 1. Certified Sampler
 2. Registered producer or their authorized representative
- Signatures may smear depending on type of tape; be careful!



Chain of Custody

- **Every bag** must have a *Chain of Custody* form completed and attached
 - Certified Sampler responsible for completing & attaching
 - More information available in later training sections

Other “After Sampling”

- More information is available in later training sections regarding:
 - Laboratories
 - Delivery/transport
 - Recordkeeping
 - Chain of Custody form & Sampling Log
 - Remediation



INDUSTRIAL HEMP SAMPLER TRAINING MODULE 2

DUPLICATE SAMPLES



Duplicate Samples – WHY?

- *OPTIONAL* duplicate ‘back up’ sample may be utilized if the first sample is:
 - Deemed unusable by the lab
 - Lost in transit



Cannot be utilized for retesting if the first sample is “hot”



Duplicate Samples – HOW?

If requested by the producer, CIHS will create a duplicate ‘back up’ sample by:

- *Repeating* the sample collection; or
- *Splitting* the plant material already collected
 - Randomly select ~50% cuttings & place into new bag - do not take just from the top!



Duplicate Samples – WHERE RETAINED?

- Retained ‘back up’ sample:
 - Must also have a *Chain of Custody* form attached
 - Immediately place the sealed bag into climate-controlled storage that prolongs the quality of the sample
 - May be retained by the Registered Producer or a key participant of the registration
 - ***Cannot be retained by the CIHS anymore***



QUESTIONS?

hempprogram@mda.mo.gov

573-522-0351

Agriculture.Mo.Gov