



**The following document includes a summary of relevant regulatory requirements, and also provides examples and recommendations based on program staff research and experience, and shared findings from industry stakeholders including state Extension staff and Missouri producers. This document is not a legal interpretation of the law.**

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Concepts included in this document are:

- Regulatory Requirements
  - Understanding the Origin Certificate Of Analysis (COA)
  - THC Ratios
  - Other Origin Documentation – Bill of Lading & Seed Labels
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### **REGULATORY REQUIREMENTS**

*Registered Producers must maintain origin documentation for each variety produced.* Origin documentation should include a Certificate of Analysis from the supplier, but could also include an invoice, bill of lading, seed label, or other evidence. It is recommended to keep records of compliance claims and other related elements that led to your decision to select the variety.

Industrial hemp crops produced in Missouri must meet the **0.3% Total THC** requirement to be considered compliant.

The Missouri Department of Agriculture Industrial Hemp Program does not require use of Certified seed, and does not have a list of approved or recommended varieties. A Registered Producer may purchase seed or propagules from:

- A Missouri Agricultural Hemp Propagule and Seed Permit holder;
- A supplier from a state or territory with an approved industrial hemp program, appropriately licensed as the respective state requires; or
- A supplier [approved by USDA for international importation](#)

### **UNDERSTANDING THE ORIGIN CERTIFICATE OF ANALYSIS (COA)**

Your potential supplier should have a Certificate of Analysis (COA) readily available for your review, and lack of availability should be concern; even for varieties that “should never go hot.” On the other hand, simply having a COA may not tell you the whole story. This section outlines some points to consider when evaluating the origin COA as provided by a supplier. For technical information related to Certificates of Analysis, please review *GS2103: Certificate of Analysis Guide*.

#### **Pass vs. Fail; Total THC vs. Delta-9 THC**

*The COA has a “pass” on it! Closed case, right?* Not quite. Through the 2021 growing season, there will be a variety of methods used across states and territories to determine what a “pass” is and what a “fail” is, including basing the determination from Total THC or Delta-9 THC only. For many years to come, you may be reviewing COAs for crops that were produced under different regulations, so a simple “pass” may be misleading.

Bottom line is to know your state’s requirements. *Industrial hemp crops produced in Missouri must meet the **0.3% Total THC** requirement to be considered compliant.* Total THC includes both Delta-9 THC and THCa.



### Type of Material

*What type of material is tested?* Most laboratories test more than just pre-harvest compliance samples. As a result, they may include notes for the type of material tested. For pre-harvest compliance samples, you often see categories such as ‘flower’ or ‘floral’. Although not common, some suppliers have posted COAs from samples that included only leaf material, the actual seeds, or even a finished product like a tincture in order to provide “evidence” that their variety is under 0.3%. Be an informed shopper, and watch for this detail.

### Location of Production

*What is the customer address on the COA?* While an address on a COA is not necessarily where the crop was grown, it may prompt a talking point with your supplier about the location or climate in which the parent plant(s) were produced. Plants perform differently in different climates, and industrial hemp is no exception. A crop grown in an arid Colorado climate will almost certainly not perform the same in hot, humid Missouri summers. This concept should also be considered if you are referencing another state’s production data or approved variety list.

### Date of Sampling/Test

*What date is listed on the COA?* Production styles and maturity times vary widely, but the date listed on the COA provided may be an indicator of the type of production and the stage of growth in which the plant was sampled.

One example is a COA that shows a January testing date. This may indicate the crop was produced indoors and therefore in a controlled environment. If you plan to produce indoors, this test date is not necessarily a cause for concern. However, if you plan to produce outdoors, this variety may perform differently outdoors and may produce a significantly different cannabinoid result.

Another example is a July testing date for a photoperiodic variety. This could be a concern because the COA may be for a preliminary (non-compliance) sample, or for a crop that was not grown out to maturity. While you may be planning to replicate a similar scenario and harvesting early, it is important to understand the cannabinoid potential of the variety if allowed to continue maturing.

## **THC RATIOS**

Suppliers may provide a figure (referred to here as a THC Ratio) in addition to, or sometimes in lieu of, a Certificate of Analysis for that variety. *THC ratios alone are not origin documentation.*

*What is a THC Ratio?* Some suppliers advertise varieties based on the ratio of a particular cannabinoid to THC. For example, a variety may be listed as 30:1. This means for every 1 unit of THC, that particular variety has 30 units of CBD (or whatever cannabinoid is referenced). Therefore, a crop that has 0.25% THC, should expect about 7.5% CBD.

*Why are THC Ratios used?* For suppliers that are selling products into different states with different regulations, a one-size-fits-all claim such as “produces 12+% CBD” may be inaccurate for a majority of producers. Ratios help navigate this variability by allowing producers to apply the ratio to their state’s THC compliance requirements, and forecast what their harvest may yield. Ratios are likely to be relatively consistent, even with many factors including cultivation practices, climate, and stage of maturity at harvest playing a large role in your final numbers.



*Is there a downside?* Yes. There are currently no industry standards for calculating or advertising ratios. First, consider what type of THC was utilized to calculate the ratio. More often than not, Delta-9 THC only (as opposed to Total THC) is used. Further, there are no standards for the reliability or repeatability of ratios. You cannot be certain if a ratio was calculated on one small test plot, or over multiple years and large acreage. Although THC ratios are helpful tools, they should not be used in absence of reviewing a compliance COA and other information.

**OTHER ORIGIN DOCUMENTATION**

*What is a bill of lading?* A bill of lading is a document provided when your goods (usually seed or clones in this instance) are shipped from the supplier to the producer. It should list supplier information, carrier information, producer/destination information, and what is included in the shipment itself. Ideally, specific quantities and varieties of the viable industrial hemp in transit are listed. A bill of lading or sales invoice can be used as origin documentation.

*What is a seed label?* A seed label is a standardized collection of information attached to a seed packet or bag. An example of a seed label is shown on the right. The format will vary, but the information listed should be similar. Information that must be present on a seed label by law, includes purity (percentages of hemp seed, other crop or weed seed, inert matter), germination rate, date of germination test, variety, lot number, and supplier name. *Cannabinoid-related figures should not be present.*

FINE TEXTURED GRASSES	ORIGIN	GERMINATION
③ 30% 'Challenger'	Oregon	⑤ 85%
④ Kentucky bluegrass 37.20% 'Unique'	Oregon	87%
Kentucky bluegrass 31.75% 'Brittany'	Oregon	95%
creeping red fescue		
<b>OTHER INGREDIENTS:</b>	⑦ 0.00% Crop Seed	
	⑧ 0.05% Weed Seed	
	⑨ No Noxious Weeds	
	⑩ 1.00% Inert Matter	
⑥ Tested: 7-19-98		① Super Seed Co. ② Lot: 231-1

<https://ag.umass.edu/turf/fact-sheets/understanding-turfgrass-seed-label>

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Please contact the program for questions about this document or regulatory topics at [hempprogram@mda.mo.gov](mailto:hempprogram@mda.mo.gov).

For production or other non-regulatory questions, please contact your local Extension staff:

Lincoln University Hemp Institute: <https://bluetigerportal.lincolnu.edu/web/hemp-institute/home>

University of Missouri Extension – Industrial Hemp: <https://extension2.missouri.edu/programs/industrial-hemp>