

Hot Hemp

During the hearing for 2023 House Bill 2168 on Wednesday, March 15, 2023, it was asked how frequently the Kansas Department of Agriculture (KDA) finds “hot hemp” (hemp exceeding 0.3% delta -9 THC concentration).

For background, the delta -9 THC concentration limit for what is considered hemp is limited to not exceeding 0.3% by the Commercial Industrial Hemp Act, K.S.A. 2-3901 *et seq.* and federal law¹. Where in Kansas before a crop may be harvested, it is required to be tested for compliance to the delta -9 THC concentration limit. Since the USDA has established required parameters for compliance sampling and testing under their Final Rule², states and tribal nations under USDA accepted plans have adopted these parameters (what crop is sampled, where the crop is sampled, how much of the crop is sampled, how the sample is tested, etc.). The parameters may be found by accessing the link below.

USDA Hemp Rulemaking Documents: <https://www.ams.usda.gov/rules-regulations/hemp/rulemaking-documents>

Since 2019 where Kansas has been operating a hemp program, it has collected and tested compliance samples from hemp crops being grown by its licensed producers and issued corresponding compliance reports. Below in Table 1 is a summary of the compliance reports issued by the Department by year.

Table 1- Hemp THC compliance reports issued to licensed hemp producer by year

Compliance Reports	2019		2020		2021		2022		2023 ⁴	
	n	% Total	n	% Total	n	% Total	n	% Total	n	% Total
PASS ($\leq 0.3\%$ THC)	150	94%	196	79%	131	97%	95	98%	6	46%
FAIL ($> 0.3\%$ THC)	9	6%	52	21%	4	3%	2	2%	7	54%
Totals	159	100%	248	100%	135	100%	97	100%	13	100%

There are still question about what makes a hemp crop go hot, it’s important to understand the topic is still being studied. Peer reviewed research has pointed to genetics, not weather or environmental stressors that make a hemp crop non-compliant³. Additionally, many argue the type of hemp (fiber, grain, seed vs CBD) being produced contributes to its like hood of testing hot. This information is anecdotal and not necessarily scientifically verified at this time.

¹7 USC 1639o(1)

²7 CFR 990

³Lawrence B. Smart, Jacob A. Toth, George M. Stack, Luis A. Monserrate, Christine D. Smart, Breeding of Hemp (*Cannabis sativa*), Plant Breeding Reviews, 10.1002/9781119874157, (239-288), (2022).

⁴Hemp tests as of March 17, 2023

95% Confidence Testing

It is important to understand how performance-based sampling is defined in the United States Department of Agriculture - Agriculture Marketing Service's Final Rule on Domestic Hemp Production¹. The Final Rule says:

"A performance-based approach would simply set a performance objective (e.g., reliability of 95 percent) and allow the States and Indian Tribes considerable freedom in how to achieve that reliability objective with their sampling methodology... States and Tribes may adopt a performance-based method that meets the requirements in paragraphs (a)(2)(iii)(A) and (B) of this section.

(A) The alternative method must be part of the State or Tribe's hemp plan and is subject to USDA approval.

*(B) The alternative method must have the potential to ensure, at a confidence level of 95 percent, that the cannabis plant species *Cannabis sativa* L. that will be subject to the alternative method will not test above the acceptable hemp THC level. The alternative method may consider one or more of the following factors:*

- (1) Seed certification process or process that identifies varieties that have consistently demonstrated to result in compliant hemp plants in that State or territory of the Indian Tribe;*
- (2) Whether the producer is conducting research on hemp;*
- (3) Whether a producer has consistently produced compliant hemp plants over an extended period of time; and*
- (4) Factors similar to those in this paragraph (a)(2)(iii)(B).*

What is meant by this 95% Confidence Interval?

The Final Rule says, *"Sampling protocols must be sufficient at a confidence level of 95 percent that no more than one percent of the plants in each lot would exceed the acceptable hemp THC level and ensure that a representative sample is collected that represents a homogeneous composition of the lot."*

Even though KDA is unsure how USDA determines the acceptance of a performance-based sampling plan, the USDA says: *"Due to the very specific nature of this requirement, USDA recommends States and Tribes desiring to use Performance-based Sampling protocols use the exact language from the Final Rule in their State or Tribal Plan and ensure that their Performance-based Sampling protocols will meet this threshold."*

Examples of performance-based sampling plans, as accepted by USDA, exist, however, uncertainty regarding these plans meeting the confidence level of 95 percent is questionable due to the lack of statistically significant information provided within these plans. For reference, attached is Colorado's Performance Based Sampling Plan as accepted by USDA. Even though these uncertainties exist and a lack of statistically significant information is available, KDA is comfortable with the addition of the performance-based sampling and would work to incorporate a performance-based sampling protocol into the Kansas plan and seek USDA approval for that plan if charged to do so.