



# *The Connecticut Agricultural Experiment Station*

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*Putting Science to Work for Society  
Protecting Agriculture, Public Health, and the Environment*

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## **Delta-9 THC testing for Hemp under CT Public Act 19-3**

**August 27, 2019**

The lab may dry the sample prior to extraction both to convert THCA to delta-9 THC and provide a dry weight basis for the analysis. The analysis must be done using either of the following methods:

- a. Gas chromatography with flame ionization detection (GC-FID), which also converts THCA to THC during analysis. Our analysis produces one test result and it will be total delta-9 THC.
- b. High performance liquid chromatography (HPLC) and calculate delta-9 THC separately from THCA using the formula below.

Labs processing wet samples will need to calculate a dry weight separately and apply that measurement to the test result to convert to dry weight basis. Labs processing wet samples must use a technique capable of measuring both THCA and delta-9 THC and use the formula below to convert THCA to delta-9 THC. While other metabolites of THC exist, only include THCA in the calculations. Delta-8 THC is not part of the calculation, only delta-9 THC.

Formula to use:

Total theoretical tetrahydrocannabinol or THC content is the maximum amount of possible delta-9 tetrahydrocannabinol in a hemp crop if total conversion were to occur and will be determined by the following calculation:

the sum of the concentration of delta-9 tetrahydrocannabinol and its precursor, tetrahydrocannabinol-A, multiplied by 0.8777 on a dry weight basis and reported to two significant figures:

$$\text{Total theoretical THC} = ([\text{delta-9 THC}] + ([\text{THC-A}] * 0.877))$$

Labs must indicate the method of testing on the Certificate of Analysis ("COA"). The COA must also include a statement whether or not the sample has a delta-9 THC concentration greater than 0.3% on a dry weight basis.

The reporting limit is defined as 0.3% delta-9 THC. This includes a measurement uncertainty determined by the laboratory. As an example, if the measurement uncertainty is 30%, the reporting limit will be 0.39% THC and all samples below 0.39% will be reported as <0.3%

- a. Results below the reporting limit are reported as <0.3% with a result status of "pass"
- b. Results above 0.3% will be quantitated and reported with a result status of "fail"

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