

**Industrial Hemp Farming & Common Questions for Texas—Part 1.
First, Texas Legislative Approval is Required.**

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March 11, 2019

*(Texas A&M AgriLife resources for hemp in Texas will be posted initially at
<https://lubbock.tamu.edu/programs/crops/hemp> as we await the development of a systemwide hemp
webpage.)*

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Despite what you may have heard, industrial hemp is still not legal in Texas to plant, grow, and harvest. As mandated in the 2018 Farm Bill, which removed industrial hemp from the list of controlled substances, states may now develop a plan, using USDA guidelines, to regulate and develop industrial hemp production. For some states, this may be relatively easy. But Texas has laws that still ban all industrial hemp as illegal.

Even the Texas Hemp Industries Association, <https://www.facebook.com/TexasHIA>, in January cautioned: “ATTENTION! To plant and grow hemp in Texas without a license is ILLEGAL! There are no programs to issue licenses at this time” (emphasis theirs). TXHIA explains “...while the 2018 Farm Bill takes the federal Drug Enforcement Agency (DEA) out of the business of regulating hemp and hemp products, state governments continue to exercise jurisdiction over hemp, and the federal Food and Drug Administration (FDA) continues its jurisdiction over ingestible and body care products.”

Reversing this ban will require action by the Texas Legislature and the governor’s signature. Once there is legislative approval, then the Texas Department of Agriculture would be directed to develop regulatory guidelines for licensing, approval, field inspection, reporting and testing requirements in Texas. These must then be approved by the U.S. Secretary of Agriculture.

There were several industrial hemp bills filed in the Texas House and Senate at the beginning of the 2019 legislative session. Now a “better” bill, SB 1240, filed by state Sen. Charles Perry, Lubbock, on Feb. 27, 2019, improves alignment with requirements in USDA’s 1946 Agricultural Marketing Act. It appears the bill also addresses topics such as defining licensing fees, reporting, etc. Texas Dept. of Agriculture Commissioner Sid Miller supports passage of SB 1240. It is also endorsed by Texas Farm Bureau. A summary of the bill is found at <https://senate.texas.gov/members/d28/press/en/p20190227a.pdf>. You can read the full bill by typing ‘hemp’ in the search box at <https://capitol.texas.gov/>

Here is a series of common questions and comments about industrial hemp:

What is industrial hemp and how does it compare to narcotic/psychoactive marijuana?

Industrial hemp and marijuana are the same plant species. Both are *Cannabis sativa* but with apparent distinct subspecies for industrial hemp (subsp. *sativa*) and marijuana (subsp. *indica*), which reflect exclusive characteristics. *C. sativa* subsp. *indica* is undesirable for fiber quality. The buds (all female) of indica lines, which produce psychoactive tetrahydrocannabinol (THC), are used as a drug. Industrial hemp has low levels of THC and higher levels of cannabidiol (CBD), which has popularity as an oil. Regulatory definitions state that to be approved as industrial hemp, THC levels must not exceed 0.3%. This THC level has no measurable or noticeable narcotic effect. In contrast, narcotic *Cannabis* has been bred to have high levels of THC, often above 10%. The fiber of *Cannabis sativa* subsp. *sativa* has many uses including textiles, plastics that are biodegradable, insulation, clothing, food and feed. In addition, the literature reports that subsp. *sativa* and subsp. *indica* are different in appearance, although I don't find a description of these visual differences.

Misconceptions are common among the public—industrial hemp and marijuana are not interchangeable. Example: A Texas television news anchor jokes with a reporter about hemp being a “high” earner for farmers. Advocates of marijuana may be hopeful that if industrial hemp legislation passes in Texas it might help pave the way for legalization of narcotic *Cannabis*.

Has industrial hemp been grown in Texas before?

Yes. Dr. Larry Redmon, associate department head for AgriLife Extension and AgriLife hemp program leader, Texas A&M Dept. of Soil and Crop Sciences, notes industrial hemp has been grown in most U.S. states, including Texas, at one time or another. Hemp was eventually overshadowed in part by cotton. In the 1930s, there was initial hemp production in South Texas. But companies with a vested interest in new petroleum-based synthetics, leaders in paper, lumber and fiber industries opposed industrial hemp for economic reasons. Though the Texas Rangers and Texas Dept. of Agriculture inspected and approved the production, in 1937 the Texas governor banned the crop. Ironically, just five years later due to wartime needs, production was resumed in the Lower Rio Grande Valley for a limited time until the ban resumed after World War II.

Is industrial hemp adapted to Texas?

To date no Texas A&M AgriLife program has researched industrial hemp due to its continuing illegal status in Texas. AgriLife will coordinate a limited research plan on industrial hemp as early as 2020 if the state ban is lifted. The first objective will be to identify which approved varieties ($\leq 0.3\%$ THC) perform best in regional adaptation and production of biomass/fiber, seed and maybe oil yield under different Texas environments.



Industrial hemp seed head. A. Collins, Penn St. Univ.

Literature suggests industrial hemp grows best on soils with pH 6-7, possibly up to 7.5. It is not suitable for heavy clay soils or soils that do not drain well. Indications from other U.S. regions suggest industrial hemp is ideally suited where annual rainfall is at least 25 inches, which could be made up by irrigation. In contrast, others suggest that industrial hemp is a drought-tolerant crop that could perform well in drier regions of Texas like San Angelo, Lubbock, Vernon and Amarillo. Some semi-arid dryland industrial hemp in Colorado is grown without irrigation, but data on yield is scarce.

Industrial hemp may be agronomically productive in drier regions, but it remains to be seen if productivity under dry conditions will be competitive with areas receiving more rainfall. Will industrial hemp offer enough of an advantage relative to other crops, or provide a significant rotational benefit? Some research and production information suggests industrial hemp may require significantly less irrigation than cotton, but again data is needed to assess levels of rainfall + irrigation, the level of production achieved, and the economics in a specific region. Due to high input and labor costs to grow industrial hemp for CBD oil, those limited acres would be grown only with either adequate irrigation or rainfall.

What is the current and potential market for industrial hemp in Texas?

This is not an easy question to answer. In Texas there is no current or potential market I am aware of for fiber. Not that there couldn't be, there just isn't right now. A grain market, albeit much smaller, could be initiated more readily. Finally, a market for CBD oil would likely be the smallest (and highly labor intensive), but a future grower would need to identify a buyer. Companies that market CBD oil here would need to arrange for Texas production. If you are going to grow, I recommend an enforceable legal production contract to ensure both market and price.

You can read projections about CBD oil being worth \$50 or more per ounce. Thus, you hear of inflated per-acre potential value, which could be 100X or more above your current cropping. Production of CBD oil does require many times more effort and expense (see section below on seed). But these high values are a poor choice to base economics on. Prices will drop to a fraction of that once more production is available. There are many entities positioning themselves to be involved in the industrial hemp market. The state of Kentucky alone has received 109 applications as of January 2019 from businesses (not growers, they are separate) for licensing to work with industrial hemp and its products. That is up over 40 companies since 2018. Kentucky Dept. of Agriculture has approved over 1,030 grower permits for a potential 42,000+ acres in 2019 (though some will likely not be planted if the past is an indication).

Regarding the market for CBD oil, in the U.S. if 1 million people used CBD oil daily (and at current prices that might be cost prohibitive), then acreage in the tens of thousands would potentially be more than enough to meet that demand. The medical community will need to demonstrate that CBD oil is effective for that acreage to be sustained. Hemp industry observers in Colorado think CBD oil may be the best market opportunity as otherwise China dominates much of the fiber and seed market. The oil market, however, represents the smallest potential acreage for production.

Hemp grain production is straightforward and can reportedly be handled with existing conventional equipment. Fiber production represents a different challenge. This is like hauling hay to a distant location. As seller—or buyer—you may be unable to justify the transportation cost. One hemp industry colleague suggests that hemp biomass production and processing

may not be feasible if the fiber must be transported more than 30 miles. Numerous Texas farmers may be interested in growing a few acres of industrial hemp to see how it does. I would assume you will have no market for a few acres unless you are growing for oil.

Regarding potential acreage for industrial hemp in Texas and nationally, only fiber production would have a large impact on farming systems, including the substantial opportunity to rotate crops. An established hemp fiber industry might entail several hundred thousand acres. Production for seed and CBD oil would be a fraction of fiber acres.

If industrial hemp becomes legal in Texas, where will Texas farmers get seed?

This question has two answers. For fiber and grain production, yes, farmers plant seed to raise their crop. At this point, I am not sure about seed sources. Seed production is occurring in other states, but one must be certain that it is a certified variety that produces little or no THC. But if a seed dealer is in Kentucky, for example, they are not obligated to sell elsewhere if it might represent competition to their developing hemp industry. But remember, beyond see-how-it-grows observations, a concern equal to procuring seed, what market can you lock in before you plant?

And the other half of the answer. Industrial hemp production for CBD oil is a completely different matter. In the past it was likely only on limited acres, perhaps as few 1 acre to as many as 20 acres. To grow industrial hemp for oil you most likely *transplant cloned seedlings*, which you hope are all females—or grow ‘feminized’ seed, which produces only female flowers. In Kentucky where tobacco is transplanted, it is less an issue to establish a stand. Many farmers there have the equipment and know what to do. They even handle the whole plants for drying like they do tobacco. But farmers must have access to enough clones to plant up to about 1,500 per acre. Furthermore, high labor costs begin with transplanting, which later must be scouted to remove any male plants. Otherwise, the pollen from even a few male plants per acre could fertilize the females. The result would be greatly reduced CBD content, hence little market value. I equate the labor, associated with scouting the fields and likely hand harvesting, to establishing and maintaining a few acres of wine grapes.

Under proposed legislation, who will be allowed to grow industrial hemp in Texas?

A licensing program would be established by Texas Dept. of Agriculture. As Sen. Perry notes, Senate Bill 1240 in its current form “requires a farmer to go through a background check, obtain a license and have a third party test their crop (within 20 days of harvest) to ensure that THC levels stay very, very low. Anyone who abuses the system could have their crop destroyed and lose their license.” Also, any individual convicted of a felony within the past 10 years involving a controlled substance would be ineligible for licensing.

No one may legally produce industrial hemp in Texas without a license. SB 1240 outlines several potential nonrefundable fees (most capped at \$100) that might be involved in producing industrial hemp, regardless of acreage size. These include application, annual renewal, change of plan, field inspection and required THC testing. Field inspections are random. If third party testing reveals THC levels >0.3%, then the crop must be destroyed.

Will industrial hemp be eligible for crop insurance?

Several articles I have read imply industrial hemp will be insurable. It is not clear if this is already occurring in Kentucky. Like other crops, a program for federal crop insurance would have to be developed (possibly on a state-by-state basis). The 2018 Farm Bill does mention adding industrial hemp to an insurance program of some kind, but it refers to the 1946 Agricultural Marketing Act. As of 2018, though, Penn State University notes, "Industrial hemp is not currently insurable under any policy, including the Whole Farm Revenue Protection (WFRP) program that insures the revenue of your entire farm operation. Industrial hemp cannot be covered under the Noninsured Assistance Program (NAP) administered by the USDA Farm Service Agency either. These programs may change in the future, but at present there are no insurance-based tools for mitigating the risk of growing industrial hemp."

Normally, specialty and new crops are not automatically eligible for insurance. Typically, the USDA Risk Management Agency must establish and research feasibility, perhaps conduct a pilot program, etc. before proposing a program, which then may require a yield history of three years for individualized insurance.

What could derail passage of a state law authorizing industrial hemp production in Texas?

TDA Commissioner Sid Miller is concerned those who want legalization of marijuana in Texas might try to append legalization marijuana to industrial hemp legislation. If that occurs, he believes it kills the bill. What might be less certain is if advocates of medical marijuana try to amend the bill. This might make a legislator's decision on passage less clear cut.

Also, Texas law enforcement might raise objections to industrial hemp unless assured that they can visually identify non-narcotic industrial hemp vs. marijuana (with training this is possible as noted above for *sativa* vs. *indica* subspecies). Furthermore, the 2018 Farm Bill notes that submission of a plan to the U.S. Secretary of Agriculture for approval shall be done "in consultation with the Governor and chief law enforcement officer of the State." This would be a potential point of objection on the part of Texas law enforcement.

What resources are available for learning about how to grow industrial hemp where legally approved?

Though many states' agricultural programs are working on research, few comprehensive production resources are yet available. There is no production information in Texas. Consult these sources for further information:

- The University of Kentucky leads American institutions in industrial hemp research. Access their research and extension information at <https://hemp.ca.uky.edu/>. Note the link on the main page to "An Introduction to Industrial Hemp and Hemp Agronomy" (2018).
- Penn State University has published "Industrial Hemp Production," updated July 2018. Read, print or download at <https://extension.psu.edu/industrial-hemp-production> (Focus is on seed and fiber production only.)
- The Hemp Industries Association, <http://thehia.org> published a document "Industrial Hemp Production and Economics Guide." I do not currently find it on their website. Much of the information is from Canada.
- The publications of Farm Journal, see <http://www.agweb.com>

Keep in mind that these resources represent production conditions different from Texas, so some of the information may not be applicable.

March 11, 2019 (slightly revised July 17, 2019)

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