Texas A&M AgriLife "Texas Row Crops Newsletter"

Submitted by
Dr. Calvin Trostle, Extension Agronomy, TAMU Dept. of Soil & Crop Sciences, Lubbock, (806) 746-6101, ctrostle@ag.tamu.edu
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(Disclaimer: The Texas A&M University System and System agencies, including Texas A&M AgriLife Extension Service and its employees, do not advocate for or against the passage of legislation in Texas which would legalize industrial hemp production. Furthermore, Texas A&M AgriLife does not endorse possible future legal industrial hemp production as a viable agricultural production system in Texas relative to any other crop.)

Industrial Hemp—Texas Legislative Action is Required for Future Production

Despite what you may have heard, industrial hemp it 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 federally controlled substances, states may now develop a plan using USDA guideline to regulate and develop industrial hemp production. For some states, this may be relatively easy. But Texas has laws that currently 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 issues 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, 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 better 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 are a series of 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 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, but I don't find a description of these visual differences.

Misconceptions are common among the public—industrial hemp and marijuana are not interchangeable. A Texas television news anchor jokes with a reporter about industrial 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 Extension, 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 due to propaganda created by companies with a vested interest in new petroleum-based synthetics, leaders in paper, lumber, and fiber industries opposed industrial hemp for personal 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 revisited in the Lower Rio Grande Valley.

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. Texas A&M AgriLife might initiate a limited research plan on industrial hemp as early as 2020 only if the state ban is lifted. The primary future objective would be to identify which approved varieties (≤0.3% THC) perform best in regional adaptation and production of biomass/fiber, seed, and oil yield under different Texas environments.

Literature suggests industrial hemp grows best on soils with pH 6.0 to 7.0, possibly up to 7.5. It is not suitable for heavy clay soils or soils that do not drain well. Indications

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

from other U.S. regions suggest that industrial hemp is ideally suited where annual rainfall is at least 25 inches (which could be made up by irrigation). In contrast, others state that industrial hemp is a drought-tolerant crop that could perform well in drier regions of the state.

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 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 particular region.

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. There might be a small market for seed and CBD oil, 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 in the future, I recommend an enforceable legal production contract to ensure both market and price.

You can read online 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 your economics on. It 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 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, I estimate that if 1 million people used a 6-ounce bottle of CBD oil per month, then about 20,000-25,000 acres of production nationally would fulfill that demand, if it develops. The medical community will need to demonstrate that CBD oil is effective for that to be sustained. Hemp industry observers in Colorado think that 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 seed 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 establish fiber hemp industry might entail several hundred thousand acres. Production for seed and CBD oil would be a small fraction of fiber acres.

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

This is partially a trick question. 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 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?

The trick question? Industrial hemp production for CBD oil is a completely different matter. It is likely only on limited acres, perhaps a few to as many as 20 acres. To grow industrial hemp for oil, *you transplant cloned seedlings*—which you hope are all females—into the field. 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. But farmers must have access to enough clones to plant several thousand per acre. Furthermore, high labor costs begin with transplanting which later must be scouted to remove all male plants. Otherwise, the pollen from even a few male plants per acre could fertilize all females. The result would be greatly reduced CBD content hence little market value. I equate the labor, associated with scouting the fields and essentially hand harvesting, to establishing and maintaining a few acres of wine grapes.

Under proposed legislation who would 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.

At a minimum in the future 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 would be 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, though, that this is already occurring in Kentucky. Like other crops, a program would have to be developed (possibly on 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, USDA Risk Management Agency must establish and research feasibility, perhaps conduct a pilot program, etc. before proposing a program—which then in turn may require a yield history of three years for individualized insurance.

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

Commissioner Sid Miller, TDA, is concerned that those who want legalization of marijuana in Texas might try to append legalization 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 for 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.)
- 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 in the guide appears to come from Canada.
- The publications of Farm Journal, see http://www.agweb.com

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