

STATUS OF INDUSTRIAL HEMP PRODUCTION IN TENNESSEE IN 2015

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Introduction

For the first time in over 60 years, industrial hemp (*Cannabis sativa* L.) will be produced in Tennessee during 2015 as a result of the enactments of the Agricultural Act of 2014 (United States 2014 Farm Bill) and the State of Tennessee Public Article 916.

Industrial hemp is used to produce grain and fiber. It is also the same species as marijuana, but industrial hemp does not cause psychoactive effects. Because of its close association with marijuana, industrial hemp production will be highly regulated. Industrial hemp producers must first register with the Tennessee Department of Agriculture (TDA), and upon approval, must produce the crop under the oversight of TDA. Violation of rules and regulations could result in criminal charges. Therefore, it is imperative that those interested in producing industrial hemp thoroughly educate themselves in all related regulatory and agricultural issues.

This publication is meant to provide introductory information and a current update on the status of industrial hemp production in Tennessee. While it may eventually become a viable, profitable crop in Tennessee, its absence in the United States for the last 50 years and lack of markets and processing infrastructure make industrial hemp essentially a new crop in the United States. As such, there are no recommended production practices for Tennessee. It is important to realize that legislation permitting industrial hemp production is very recent and controversial. New developments will occur regularly as the growing season approaches. Therefore, much of the information in this publication will likely be outdated soon. It is the responsibility

of those interested in growing industrial hemp, and in their best interest, to be diligent in monitoring the regulatory and production requirements of industrial hemp in Tennessee.

History of Industrial Hemp Production in the United States

Industrial hemp was produced in the United States from 1645 until 1958. However, hemp production markedly declined following the Civil War as cheaper imported jute and abaca displaced most domestic hemp. Later, producers were required to register with the federal government following the Marijuana Tax Act of 1937, which was legislation intended to restrict production of marijuana in the United States. During World War II, jute and abaca imports were disrupted, and hemp production in the United States briefly increased due to the implementation of an emergency program where the U.S. Department of Agriculture Commodity Credit Corporation contracted with War Hemp Industries Inc. to produce hemp as a domestic substitute. After the war, industrial hemp production significantly decreased with the last reported commercial industrial hemp crop in the United States being produced in Wisconsin in 1958. The Controlled Substance Act of 1970 categorized any product containing delta-9 tetrahydrocannabinol (THC) as a Schedule I drug, and the cultivation of all *Cannabis sativa*, including industrial hemp, became strictly regulated by the federal government.

Industrial Hemp vs. Marijuana

Marijuana

Marijuana is federally defined as “all parts of the plant *Cannabis sativa* L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds or resin. Such term does not include the mature stalks of such plant, fiber produced from such stalks, oil, or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture, or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination.” 21 USC 802(d) (16)

Marijuana typically contains 3-15 percent THC on a dry weight basis. THC is the primary psychoactive cannabinoid, or chemical constituent, in marijuana. Marijuana plant parts, usually the flowers, buds, and leaves, are prepared or processed in such a way as to allow the user of marijuana to inhale, ingest, or absorb THC into his or her body to achieve a psychoactive state of mind, or high. Antecedent information suggests that similar methods of intake of cannabinoids, namely cannabidiol (CBD) and THC, taken individually or in combination, may treat some medical conditions. Because CBD is not psychoactive — and therefore does not produce a high — yet is believed to impart therapeutic benefits, there is particular interest in this cannabinoid for medical application. However, there is insufficient data to fully understand the short- and long-term effects of CBD, THC, and other cannabinoids on the patient or the disease or disorder when these cannabinoids are administered alone or in combination.

In Tennessee, cultivation and possession of marijuana is prohibited, and

both recreational and medicinal uses of marijuana are illegal.

Industrial Hemp

Industrial hemp is federally defined in the Agricultural Act of 2014 “as the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3% on a dry weight basis.”

Industrial hemp is regarded primarily as an agricultural crop produced for its fiber and grain. Hemp fiber is used to make textiles, building materials, animal bedding, mulch, paper, industrial products, and biofuels. Hemp grain, or seed, is used in food and feed products, and oil from the seed is used to make body care products and industrial products, including paints, solvents, and lubricants. Although there is a legal gray area in existing legislation that could may allow CBD production and extraction under the guise of industrial hemp, federal law prohibits production of *Cannabis* sp. for the production and marketing of cannabinoids. By definition, there is not enough THC in industrial hemp to produce any psychoactive effect.

Selection and breeding efforts have produced varieties of industrial hemp with comparatively high fiber and grain yields and quality. When these varieties are coupled with production practices from hemp-producing countries, optimum fiber and grain yields and quality are possible. Ideally, industrial hemp is densely populated, and the resulting individual plants are relatively tall with a singular main stalk, minimal branching, and flowers in the top of the plant. However, it is impossible to accurately and definitely differentiate industrial hemp and marijuana by visual inspection alone. Instead, industrial hemp and marijuana can only be definitely differentiated by chemical analysis to determine THC concentration.

Current Situation

United States

The Agricultural Act of 2014 authorizes industrial hemp production according to the provisions and constraints stated in Section 7606, Legitimacy of Industrial Hemp Research. In summary, “an institute of higher education or a State department of agriculture may grow or cultivate industrial hemp if the industrial hemp is grown or cultivated for purposes of research conducted under an agricultural pilot program or academic research, and the growing or cultivating of industrial hemp is allowed under the laws of the State in which such institution of higher education or State department of agriculture is located and such research occurs.” The term “agricultural pilot program” means a pilot program to study the growth, cultivation, or marketing of industrial hemp. Section 7606 in its entirety can be found at thomas.loc.gov/cgi-bin/cpquery?%26dbname=cp113%26r_n=hr333.113%26sel=TOC_834691.

Tennessee

To meet the provisions stated in Section 7606, the State of Tennessee 108th General Assembly and the governor of Tennessee enacted Public Article 916. Effective July 1, 2014, Public Article 916 removes industrial hemp from the definition of marijuana in the criminal code and permits the cultivation of industrial hemp in Tennessee under the oversight, licensing, rules and regulation of the Tennessee Department of Agriculture. Complete rules can be found at www.tn.gov/agriculture/regulatory/industrialhemp.shtml.

Industrial Hemp Production in Tennessee in 2015

Federal and Tennessee laws explicitly state that industrial hemp is to be produced for the purpose of research under agricultural pilot programs or academic research, yet at this time the research guidelines are very obscure at best. There are currently no detailed research protocols, requirements, methods and specified data to be collected. As a result, the term “research” can be very loosely interpreted at this point, and so many interested in industrial hemp production have no research objectives in mind. Furthermore, policymakers seem to believe that the research requirement of industrial hemp production set forth in federal and Tennessee law is met if industrial hemp yield or return from each production site is reported at the end of the season. Existing laws do not prevent industrial hemp grain and fiber from being sold for profit as long as producers follow federal and state law, follow the rules set forth by the Tennessee Department of Agriculture, and do not violate rules and agreements set forth by industrial hemp variety developers and owners regarding seed piracy.

Industrial hemp grain currently has significantly more profit potential than fiber production. Current projected returns from industrial hemp grain are more comparable to traditional row crops, such as corn, rather than higher value crops such as tobacco, fruits and vegetables. Because industrial hemp was historically grown as a fiber crop in the United States, information on industrial hemp grain production in the United States is very limited. Furthermore, there are no industrial hemp varieties specifically developed or identified for various regions of the United States. It is yet to be determined if existing varieties from Canada, France, China and other countries are suited to the climate in Tennessee. However, universities are beginning to conduct research on varieties and agronomic practices for industrial hemp production in the United States.

This is a reason for hope that industrial hemp could become a legitimate crop in the United States. Yields, quality and consistency of today's predominant crops have increased drastically since their introduction; therefore, it stands to reason that the potential of industrial hemp in the United States is essentially unrealized, and as these research and applied processes of introduction, development, improvement, and refinement continue, industrial hemp yields and quality will only increase. Likewise, if industrial hemp grain and fiber products are proven to be economically viable and sustainable, industrial hemp will again resume its status as an established crop in United States agriculture.

Economic outlook

A study published by the University of Kentucky in 2013 titled "Economic Considerations for Growing Industrial Hemp: Implications for Kentucky's Farmers and Agricultural Economy" suggests that net returns from hemp grain production could compete with corn and soybean net returns under the upper range of hemp seed yield and price levels, whereas hemp fiber production did not appear profitable relative to other crops at the assumed range of fiber prices and yields. The study also noted that the emergence of new producers from other states and nations could easily result in oversupply and price volatility.

Despite the lack of widely available markets, there may be limited profitable opportunities for some Tennessee industrial hemp producers in 2015. These opportunities range from marketing homemade or small-batch industrial hemp products at markets or specialty stores to partnering with entrepreneurs who have either developed or identified and established a market for industrial hemp grain or fiber. Currently, these opportunities are relatively small in scale and not widely advertised or available.

Requirements for Industrial Hemp Production in Tennessee in 2015

Application, Memorandum of Understanding, and License and Acreage Fees

Before one may legally produce industrial hemp in Tennessee in 2015, one must apply for an Industrial Hemp License and sign a Memorandum of Understanding with TDA. The completed application and signed paperwork must be submitted by April 1, 2015. In addition to the signed Application for Industrial Hemp License, the applicant must include the payment of the license fee equal to \$250 + \$2 per acre for the total acreage of growing area(s) identified in the application and other required documents. The application, instructions for completion, and checklist specifying other requirements are found at www.tn.gov/agriculture/regulatory/hemplicense.pdf. The Memorandum of Understanding is located at www.tn.gov/agriculture/regulatory/hempmou.pdf. All Industrial Hemp Licenses are valid for one calendar year from the date in which they are issued.

Industrial Hemp Seed Order Requirements

Industrial hemp seed to be planted in Tennessee in 2015 must be certified seed ordered through the TDA. The applicant must specify the TDA-approved cultivated variety to be sown, the source and amount of certified seed to be used, and the number of acres of industrial hemp to be planted.

Site of Industrial Hemp Cultivation

A statement that the applicant is the owner of the growing area where industrial

hemp is to be cultivated or a statement signed by the owner of the industrial hemp site indicating that the landowner has consented to industrial hemp cultivation on the growing area must be submitted with the completed application for Industrial Hemp License and signed Memorandum of Understanding. Additionally, Global Positioning System (GPS) coordinates in decimal degrees from the center point of the industrial hemp growing area as well as a map showing the location of the growing area with its address or legal description, must be submitted.

Other Responsibilities and Understandings for Industrial Hemp Production

Applicants who are approved to produce industrial hemp in Tennessee in 2015 and who receive Industrial Hemp Licenses are participants in an agricultural pilot program who are required to generate research data to be shared with program participants and other interested parties. Participants must also permit any institution of higher education in Tennessee to access those sites registered by the pilot producer with TDA for production of industrial hemp. It is also imperative that the pilot producer regularly refer to the TDA website, and maintain open and frequent communication with TDA to ensure compliance.

THC Testing Fees

All licensed pilot producers of industrial hemp are subject to sampling of their industrial hemp crop to verify that the THC concentration does not exceed 0.3 percent on a dry weight basis. Each licensed pilot producer of industrial hemp must pay the costs of THC laboratory analysis, projected to be approximately \$200 per sample. Furthermore, each licensed pilot

producer of industrial hemp must pay a charge of \$35 per hour per inspector for actual drive time, mileage, inspection and sampling time.

Other Associated Costs

Like other established crops in Tennessee, industrial hemp grows best when sound management practices are followed. These practices include planting at the proper seeding depth and density in a prepared seedbed consisting of fertile, well-drained productive soils with abundant organic matter, and amending these soils with lime and fertilizer to optimize industrial hemp yield and quality. Failure to implement sound crop management practices by planting industrial hemp too shallow or deep, in improperly prepared seedbeds or poor soils, or failing to amend the soil with lime or fertilizer will result in reduced yields and quality.

Seedbed preparation and uniform seed placement requires specialized equipment, such as a tractor, tillage equipment, and seed drill or planter, and these have costs associated with ownership/rental and operation. Furthermore, soil amendments and fertilizers have associated purchase and application costs. Finally, harvesting industrial hemp for grain requires specialized equipment, including a combine and wagon or truck for grain transport. If harvesting industrial hemp for fiber, either a mower or other specialized equipment is required or enough workers to manually harvest the crop is required. Either method has significant associated costs. It is imperative that potential industrial hemp producers understand that in addition to license fees, seed costs and THC testing fees, industrial hemp production costs may be significant. In the absence of a firm market for selling industrial hemp grain,

fiber or products, significant financial losses can result.

Industrial Hemp Processing

Industrial hemp plants are prohibited from being moved across state lines. Industrial hemp produced in Tennessee must be processed in Tennessee.

Deadline

The deadline for applying for an Industrial Hemp License and thereby being allowed to produce industrial hemp in Tennessee in 2015 is April 1, 2015. Applications and all related fees and other requirements as specified on the application checklist found on the TDA website that are not complete on or before April 1, 2015, will be denied.

Sources and suggested reading

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