

HEMP BENCHMARKS®

U.S. Wholesale Hemp Price Benchmarks

June 2019

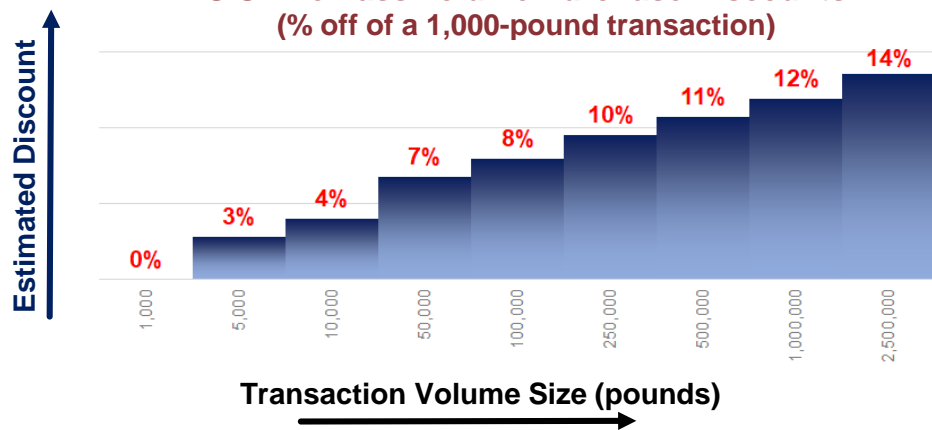
U.S. Region Products	Units	Assessed Price	Low	High
Biomass (0 – 25k pounds)	\$/ %CBD / pound	\$4.02	\$3.00	\$5.87
Biomass (25k – 100k pounds)	\$/ %CBD / pound	\$3.61	\$3.00	\$4.00
Biomass (100k – 1M pounds)	\$/ %CBD / pound	\$3.57	\$3.20	\$4.00
Biomass (1,000,000+ pounds)	\$/ %CBD / pound	\$3.52	\$3.00	\$3.88
Dry Flower (Bulk)	\$/ pound	\$349	\$70	\$700
Clones	\$ each	\$5.42	\$2.50	\$8.00
Industrial Seeds	\$/ pound	\$2.68	\$1.19	\$3.96
CBD Seeds (Non-Feminized)	\$/ pound	\$3,611	\$2,500	\$7,500
CBD Seeds (Feminized)	\$/ pound	\$24,491	\$18,000	\$32,000
Crude Hemp Oil	\$/ kilo	\$2,066	\$1,350	\$4,500
Refined Hemp Oil	\$/ kilo	\$5,628	\$2,500	\$10,300
CBD Isolate	\$/ kilo	\$4,811	\$3,600	\$6,600

Commodity market participants benefit from increased price transparency.

Hemp Benchmarks® is an independent Price Reporting Agency (PRA). Our goal is to bring price transparency to wholesale hemp markets in order to allow businesses to operate with confidence and efficiency.

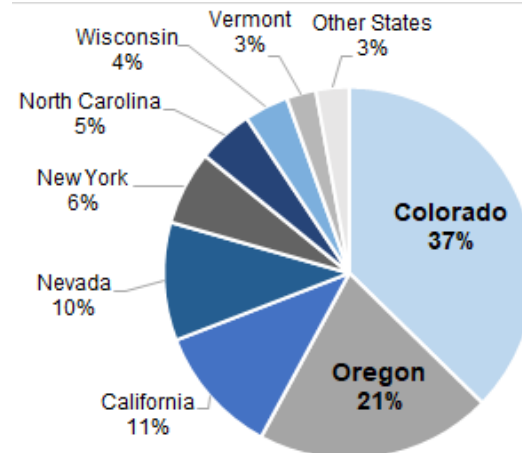
We do not have physical or financial exposure to the commodities that we assess, and therefore do not profit from liquidity, volumes or price movement, avoiding the potential for any perception of conflicts of interest that could arise for marketplaces and exchanges.

U.S. Biomass Volume Purchase Discounts (% off of a 1,000-pound transaction)



Source: Hemp Benchmarks

Location of U.S. Transactions



Source: Hemp Benchmarks

U.S. Price Commentary

Wholesale prices in June showed more up and down movement versus May, when the only observed price increase was in Industrial Seeds.

U.S. Biomass volume purchase discounts have declined for larger transactions. Hemp Benchmarks® data shows that last month 100,000-pound purchases received approximately an 11.2% price discount, while this month the discount declined to 7.6%.

The hemp oil and CBD Isolate products were the few products that saw large decreases in pricing.

U.S. Month-on-Month Price Changes by Product

Product	Units	May 2019	June 2019	MoM \$Chg	MoM %Chg
Biomass (0 – 25k pounds)	\$ / %CBD / pound	\$4.05	\$4.02	(\$0.03)	-0.7%
Biomass (25k – 100k pounds)	\$ / %CBD / pound	\$3.70	\$3.61	(\$0.09)	-2.4%
Biomass (100k – 1M pounds)	\$ / %CBD / pound	\$3.59	\$3.57	(\$0.02)	-0.6%
Biomass (1,000,000+ pounds)	\$ / %CBD / pound	\$3.42	\$3.52	\$0.10	2.9%
Dry Flower (Bulk)	\$ / pound	\$320	\$349	\$29	9.1%
Clones	\$ each	\$5.70	\$5.42	(\$0.28)	-4.9%
Industrial Seeds	\$ / pound	\$2.39	\$2.68	\$0.29	12.1%
CBD Seeds (Non-Feminized)	\$ / pound	\$3,833	\$3,611	(\$222)	-5.8%
CBD Seeds (Feminized)	\$ / pound	\$23,716	\$24,491	\$775	3.3%
Crude Hemp Oil	\$ / kilo	\$2,409	\$2,066	(\$343)	-14.2%
Refined Hemp Oil	\$ / kilo	\$6,599	\$5,628	(\$971)	-14.7%
CBD Isolate	\$ / kilo	\$5,552	\$4,811	(\$741)	-13.3%

Source: Hemp Benchmarks®

As reported last month, feedback from our Price Contributor Network suggests several possible factors exerting downward pressure on prices, including an increased understanding of and appreciation for expected quality versus actual quality, and increased processing and extraction capacity easing some of the bottlenecks in the supply chain.

Become a Member of our Price Contributor Network

Join us in our mission to promote price transparency and receive exclusive content and analysis made available only to members.

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The 2019 Season Takes Place Against a Backdrop of Dramatic Change

The ripple effect from the federal legalization of industrial hemp, following passage of the 2018 Farm Bill, continues to be felt across the U.S. as more states submit their hemp program plans to the federal government.

At least eight states have approved or have started commercial hemp and hemp pilot programs this year, with more expected to come online.

The newness of legal hemp is also creating some unexpected issues that need to be addressed. As the time for planting this year's crops arrives, federal, state, and local governments - not to mention the industry itself - are scrambling to keep up with a rapidly-changing agricultural, financial, political, and regulatory landscape.

Significant Acreage Still to be Planted

It is clear that 2019 will be another record-setting year for hemp production in the U.S., given early reports on the amount of acreage licensed for cultivation. The size and number of farms in states with existing commercial licensing programs is expanding, while new commercial and research-oriented hemp programs have been established in several states.

Last year, 23 states allowed licensed hemp production under Research Pilot Programs authorized by the 2014 Farm Bill. But

this season, following the passage of the 2018 Farm Bill, 43 states have approved the cultivation and processing of hemp for commercial or research purposes.

Hemp cultivation is still prohibited in Georgia, Idaho, New Hampshire, Ohio, Mississippi, and South Dakota. However, each of these states except New Hampshire and South Dakota are in the process of finalizing enabling legislation or regulations.

Seven states - Alaska, Florida, Iowa, Louisiana, Missouri, Texas, and Wyoming - have passed enabling legislation that should allow for licensed cultivation for the 2020 season.

Eight states - Alabama, Connecticut, Delaware, Indiana, Kansas, Maryland, Michigan, and New Jersey - are allowing Research Pilot Programs under the 2014 Farm Bill. Such programs permit limited hemp cultivation, usually in affiliation with state universities or agriculture departments.

29 states, under the auspices of the 2018 Farm Bill, have passed the requisite legislation and regulations allowing licensed commercial cultivation and processing of hemp for the 2019 season. We anticipate that all 50 states will have approved either full commercial hemp cultivation and processing or some form of a continuing research program by 2020.

According to Vote Hemp, acreage licensed for industrial hemp production that was actually cultivated totaled 78,176 acres in 2018, more than three times the amount of acreage farmed in 2017. Based on our survey, 22 states from which we were able

to source licensing and acreage information alone approved 377,652 acres of outdoor cultivation and 3,000 acres of indoor or greenhouse production of hemp in 2019. Four states - Colorado, Kentucky, Montana, and Oregon - account for more than 60% of the licensed acreage. Assuming that 70% of licensed acreage is actually cultivated, as Vote Hemp did in their cultivated acreage calculation for last year, we are projecting that hemp cultivation will once again more than triple year-over-year.

While the amount of acreage licensed for hemp cultivation this year is up significantly from 2018, farmers are facing several potential complications at nearly every step of the production process, from obtaining seeds, to rearing a crop, processing it, and bringing it to market.

Weather Issues

As is always the case in agricultural endeavors, weather will have a significant impact on the amount of acreage planted and farmed, as well as on the yield and quality of the crops brought in. Reports from the field indicate some of the newly-licensed acreage has not yet been planted due to unseasonably cold and wet conditions this spring and early summer.

One Oregon-based cultivator estimated that around two-thirds of the state's hemp crop is anywhere from two weeks to a month behind its planting schedule.

The Maine and Vermont Departments of Agriculture both reported that planting was delayed and impacted by unseasonably cold and wet weather.

Some farmers in Wisconsin have also reportedly delayed hemp planting due to local weather conditions.

In Illinois, according to the Chicago Tribune, record-breaking rains across the state have created too-wet conditions for many standard crops to be planted. As a result, farmers there are, "relying on hemp much more than they wanted to," during the state's first year of legal commercial cultivation.

Some farmers have coped by germinating their seeds in greenhouses to avoid the bad weather before transplanting outdoors. But inclement conditions can present difficulties throughout the growing season, as we saw last summer when significant hemp production was lost to Hurricane Florence and flooding in the Southeastern states.

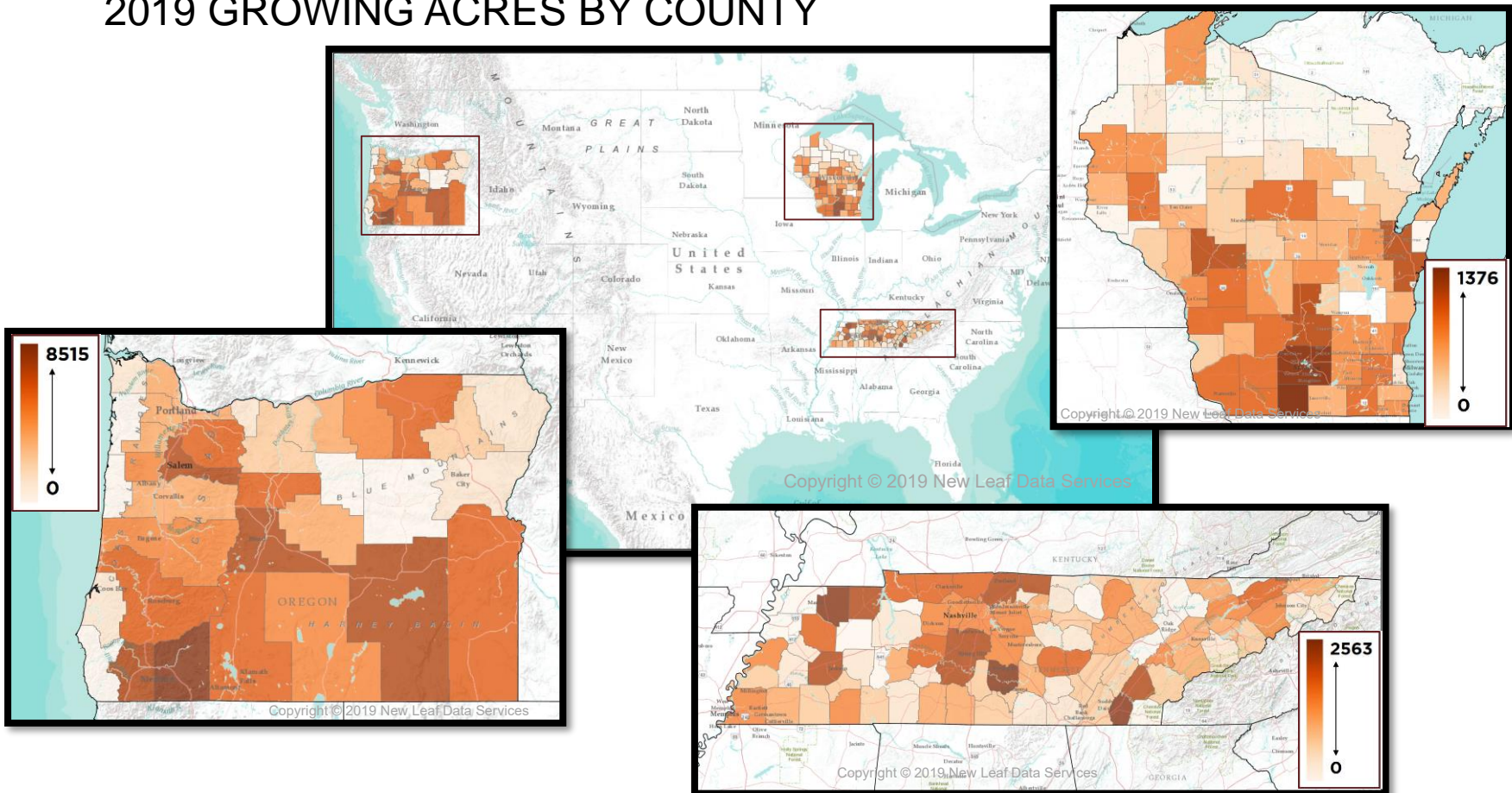
Additionally, one East Coast grower believes that wet weather may create headaches for many farmers, especially those new to hemp, if such conditions persist as the harvest approaches. "I would expect a fair amount of crop loss from improper handling of material in a moist environment," he told Hemp Benchmarks. "Mold is a secondary issue; it's how the material is handled that causes the mold."

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2019 GROWING ACRES BY COUNTY



Sources: Oregon Department of Agriculture, Tennessee Department of Agriculture, Wisconsin Department of Agriculture, Hemp Benchmarks

Establishing Metrics

Even prior to facing the elements, the quality of seeds and clones can present significant issues for some growers. Hemp is such a new commodity in the U.S. that its seed still does not have its own unit of measurement, or even an accepted name for such a unit. Recently, Oregon State University established the Global Hemp Innovation Center, which is working to resolve such issues in order to standardize American hemp for both the domestic and global markets.

“If you look at a lot of financial markets, they’re all saying, ‘People are investing in this, and we have no idea what to divide it by,’” Jay Noller, who will serve as the center’s director and lead researcher, told the Associated Press.

The center also plans to offer certification for hemp seed to ensure the product purchased by farmers is both legal and legitimate.

In the absence of such certifications, however, growers are put in the unenviable position of having to take seed sellers and brokers at their word in an essentially unregulated market. The AP report notes that risks for farmers include purchasing seeds that will grow into plants that test “hot,” or have THC levels above industrial hemp’s 0.3% limit. Germination rates have also been an issue for some growers, even with seeds sourced from the most reputable seed companies.

Additionally, a report from Hemp Industry Daily notes that other risks include obtaining seeds that do not live up to advertised CBD

levels and seeds that claim to be completely feminized when they are not.

The former case will likely result in farmers not being able to sell their biomass for as much as anticipated, as wholesale prices are usually tied to the percentage of CBD contained in the plant material. The same goes in the latter case, as male plants could pollinate all or portions of a grower’s field or greenhouse, resulting in seedy flower with low cannabinoid levels.

Possible Harvest Season Bottlenecks

There are also concerns about ensuring that all the hemp harvested this year can be successfully processed.

With hemp biomass production increasing dramatically, producers say that there has not been enough investment in processing and extraction facilities in certain areas of the country. On the other hand, in some major producing states - such as Colorado, Kentucky, Montana, and North Carolina - a number of well-capitalized companies have built out large-scale CBD extraction facilities.

One Colorado company even has two portable, industrial-scale processing units - dubbed “Monsters” - that can be taken to hemp harvesting sites. The units can reportedly process the equivalent of 50 acres of harvested plant material per day into an estimated six barrels of crude hemp oil. A standard barrel of oil holds 42 U.S. gallons, which equates to 159 liters.

There are also complaints from farmers that some companies that manufacture and sell processing equipment are not offering enough education and support for their devices. Some of these firms, said one hemp producer, are not “living up to expectations of what they said they would do at the time of sale.”

Given the fact that best practices for the hemp sector are themselves still being developed, honed, and adjusted for larger scales, it will likely take some time for processing equipment and other mechanized solutions for cultivation and harvesting to fully meet the needs of the industry.

Too Much Inventory?

Finally, even if a hemp crop is propagated, planted, harvested, and processed successfully, the novelty of the industrial hemp industry has some growers unsure of whether they will be able to sell their production as they try to gauge supply and demand in the new market.

In Oregon’s skyrocketing hemp market, one of the largest in the nation, concerns about the possibility of oversupply are causing some farmers to hesitate in making decisions on how much hemp should be planted this season. Despite rising consumer demand for CBD and other hemp-derived products, one hemp grower in the Pacific Northwest says that retailers are still working through last year’s inventory, “and they’re not going to buy any more.”

Regulatory Changes

The hemp industry has received a boost from the federal government over the past several weeks on a variety of regulatory issues, though significant uncertainty remains on numerous fronts.

There were several important changes regarding personal and commercial interstate transportation of hemp and hemp-derived products since our May report.

In late May the Transportation Safety Administration (TSA) changed its policy and now allows passengers to bring hemp-derived CBD oils on flights.

Around the same time, the U.S. Department of Agriculture (USDA) released a legal opinion on interstate transport. According to the Department, since hemp is no longer a Controlled Substance, “After the USDA publishes regulations implementing the new hemp production provisions of the 2018 Farm Bill ... states and Indian tribes may not prohibit the interstate transportation or shipment of hemp lawfully produced.”

This opinion comes after several controversial and high-profile cases of hemp shipments being stopped and seized by local police in Idaho and Oklahoma earlier this year.

The U.S. Postal Service (USPS) also revised its policies in June and now says hemp products are legal to mail, with certain

requirements. The guidelines were published in the USPS Postal Bulletin. “With this revision,” the publication notes, “the Postal Service intends to provide mailing standards that sufficiently address the current environment with regard to the domestic commercial transportation of cannabis-based products as well as those changes anticipated from the full implementation of the 2018 Farm Bill.”

Consequently, hemp and hemp-based products can now be mailed legally if the mailer abides by all federal, state, and local laws. Entities mailing such products must retain records showing compliance with those laws, including laboratory test results, licenses, and any other necessary documentation.

USDA - FDA Disconnect?

An ongoing issue for the national hemp sector is the need for both the USDA and the U.S. Food and Drug Administration (FDA) to act decisively in clarifying rules and regulations for the industry. A lack of action since federal hemp legalization has kept many companies on the sidelines and unwilling to commit their financial resources towards hemp and hemp-derived products.

One of the biggest controversies is whether CBD can be used as a food and beverage supplement. The official position of the FDA is that, “it is currently illegal to put into interstate commerce a food to which CBD has been added, or to market CBD as, or in, a dietary supplement.” This is due to CBD’s status as an active ingredient in an FDA-approved prescription drug. Yet, the FDA has shown little

appetite for enforcing its repeated declarations that it is illegal to add CBD to foods or market it as a supplement, allowing the commercial production, distribution, and sale of products containing hemp-derived CBD to proliferate nationwide.

Last month, the FDA held a public hearing in Maryland in order to “obtain scientific data and information” on how best to regulate CBD and cannabis-derived compounds. It was also a chance for hemp sector stakeholders to express how they believe their newly-legal industry should be governed. The FDA is now extending its acceptance of electronic or written comments on the issue an additional two weeks, until July 16.

The USDA, meanwhile, has fast-tracked its rulemaking process for hemp farmers looking to increase production under the provisions of the 2018 Farm Bill. According to a recent note in the Federal Register, “This action will initiate a new part 990 establishing rules and regulations for the domestic production of hemp. This action is required to implement provisions of the Agriculture Improvement Act of 2018 (Farm Bill).”

Typically, such new rules would take around 18 months to implement, following a notice and comment period by the USDA. But the agency reportedly intends to issue an Interim Final Rule (IFR) this August in order to ensure there is a regulatory hemp program in place in time for the 2020 growing season.

Jessica Wasserman, a partner in the International, Government Relations, and Cannabis Law practice groups at Greenspoon Marder, says that once the IFR is published, hemp growers will

be able to proceed under USDA rules until state plans are in place.

She said the issuance of this IFR shows the importance that federal officials have attached to implementing hemp legalization on a national level. “IFRs are relatively rare,” she told Hemp Benchmarks. “It does show that there is strong interest, as we all know, in the (agriculture) community for this to move forward.”

Wasserman also pointed out the growing division between hemp-growing policies, which are controlled by the USDA, and the manufacture and marketing of CBD products, which falls under the jurisdiction of the FDA.

“The disconnect there ... is getting greater,” she said. “USDA is moving forward, (but) FDA is slow-walking even more. Their statements have become more cautious rather than less. So I would say they are slowing down and USDA is speeding up, which is problematic.”

Public Opinion

A growing number of Americans, meanwhile, say they not only have some familiarity with CBD oils, but also believe that CBD is beneficial. A Gallup Poll released in mid-June reported that nearly four in 10 Americans think CBD oils should be available as over-the-counter products for adults, while another 21% say people should be able to purchase CBD oils with a doctor’s prescription.

Assessment Methodology

Hemp Benchmarks® provides validated, standardized wholesale price benchmarks and market intelligence.

Each benchmark is independently calculated using a simple average of observed or reported transaction prices. Statistical outliers are eliminated. When price observations are more scarce, bid-ask midpoints may be added to the pool of data points, and in some circumstances prior transactions can also be included, in reverse chronological order. In all cases we seek statistically valid assessments based on the standard errors of the pools of observed or reported transaction prices.

Other analyses of the data may include multiple regression and other techniques to explore trending or to separate joint effects.

Along with information from news services, hemp companies, and sources in the field, a number of state departments of agriculture (DOA) have been assisting Hemp Benchmarks as we compile monthly figures on hemp cultivation and production.

States that have Legalized Commercial Hemp Production

Arizona

Arizona launched its hemp program on June 1, overseen by the state's DOA. Earlier this month the head of Arizona's hemp program told the Associated Press that around 200 applications, mostly from growers and processors, were filed soon after the program's official start, with those numbers rising daily as the month progresses. The DOA also told the wire service it does not know how many acres will be planted in Arizona this year.

Arkansas

According to a local media report, the Arkansas DOA has:

- Licensed more than 3,200 acres in 42 counties
- Licensed 101 hemp farmers to grow the plant
- Issued 18 CBD processor licenses

California

State lawmakers passed Senate Bill 1409 in 2018, legalizing the commercial production of industrial hemp, with growers required to register with the California Department of Food and Agriculture (CDFA), as well as county agriculture commissioners. According to an analysis by Canna Law Blog, however, numerous questions remain as to how legal commercial hemp cultivation will actually go into effect in California, while many of the state's counties have imposed restrictions or moratoriums on such activity. Despite being technically legal at the state level, it appears that commercial hemp production in California may be quite limited this year, if it occurs at all.

Colorado

According to the Colorado DOA, as of June there are:

- 80,000 acres registered, with the DOA expecting that 60% will be cultivated
- 2,554 registered growers
- Majority of the registered acres are for CBD production

Hawaii

The Aloha State's DOA says it will have its hemp cultivation data ready in July, after it completes its quarterly licensing issuance.

Illinois

According to the Illinois DOA, to date:

- 18,000 acres have been approved for cultivation
- 777 total hemp grower applications have been submitted, with 515 approved
- 212 total hemp processor applications have been submitted, with 106 approved

Kentucky

The Kentucky DOA reported that there are:

- More than 50,000 acres permitted for cultivation
- Currently 1,047 licensed growers
- More than 120 licensed processors

Maine

According to the Maine DOA, there are:

- Roughly 3,000 acres permitted for cultivation
- 162 licensed growers

Maine officials anticipate 90% to 95% of licensed cultivation is for CBD production. The start of the growing season has been significantly delayed by unseasonably cold temperatures and heavy rains.

Massachusetts

According to the Massachusetts DOA, there are:

- 730 acres permitted for outdoor cultivation
- 147,000 square feet of licensed indoor production capacity (3.4 acres)
- 102 growing licenses

The DOA reports that the entirety of hemp production capacity licensed in the state is for the purpose of CBD production.

Minnesota

According to the Minnesota DOA, there are:

- 7,667 acres licensed for outdoor cultivation
- 681,077 square feet of licensed indoor production capacity (15.6 acres)
- 477 total accepted applicants; 314 growers and 163 processors
- Around 7,000 acres and 750,000 indoor square feet are expected to be planted this season
- 5,000 acres for CBD, 2,000 acres for grain, and about 500 acres for fiber are expected to be planted this season

Montana

The Montana DOA is currently projecting:

- More than 42,000 acres will be licensed for hemp production across the state this season, up from 22,000 acres last year

Nebraska

In May, Governor Pete Ricketts signed Legislative Bill 657, which allows for the cultivation and processing of hemp and hemp products in Nebraska. Nebraska's DOA must now submit a state regulatory plan to the USDA, explaining Nebraska's planned hemp maintenance and land procedures by no later than the end of the year. The state announced that prospective hemp growers have a deadline of June 28 to submit their license applications.

Nevada

According to the Nevada DOA, there are:

- 10,030 acres licensed for cultivation
- 179 approved applicants

New Mexico

According to the New Mexico DOA, to date there are:

- 5,448 acres licensed for outdoor production
- 6,196,647 square feet licensed for indoor production (142.3 acres)
- 269 registered applicants

The DOA is continuing to receive and process additional applications.

New York

As of our publication deadline, the New York DOA has not responded to our Freedom of Information Act (FOIA) request. However, officials at the DOA confirmed that interest in hemp has exploded across the state after the passage of the 2018 Farm Bill and the DOA is still processing a large volume of applications for licensed growers and their plots or facilities.

North Carolina

According to the North Carolina DOA, there are currently:

- 13,166 acres licensed for cultivation
- 1,106 accepted licenses

The DOA estimates that approximately 50% of the permitted acres will be planted, with 90% or more of the acreage planted for the purpose of CBD production.

North Dakota

According to the North Dakota DOA, there are:

- 3,212 acres licensed for cultivation
- 56 licenses issued

The DOA currently assumes that 100% of the licensed acres will be planted, with 293 acres of CBD cultivars and 2,919 acres of grain/fiber varieties

Oklahoma

According to the Oklahoma DOA, there are:

- 9,606 acres licensed for cultivation
- 225 active growers

Oregon

According to the Oregon DOA, there are:

- 51,600 acres licensed for cultivation, up from 11,514 acres last year
- 8,561,325 square feet of licensed greenhouse production capacity (196.5 acres)

- 4,455 licensed grow sites
- 1,579 licensed growers

Pennsylvania

The application period for cultivators closed May 1, with 319 applicants approved, 10 times as many as last year. The amount of acreage permitted is unavailable at this time. However, acreage caps - previously set at 100 acres - have been lifted; acreage will no longer be restricted under the new program.

Rhode Island

As of May 31, five growers have been licensed by the Rhode Island DOA. There is no available data at this point on the amount of acreage that has been permitted for cultivation.

South Carolina

According to the South Carolina DOA, there are currently:

- 3,300 acres licensed for cultivation
- 113 licensed growers

The estimated acreage changes every day, as South Carolina does not have a cap on acreage.

The majority of the licensed acreage is for CBD, with only a few growers focusing on fiber and grain.

Tennessee

According to the Tennessee DOA, there are:

- 37,432 acres licensed for outdoor cultivation
- 115,144,316 square feet (2,643 acres) of licensed indoor production capacity
- 4,730 licenses for outdoor production
- 1,674 licenses for indoor production
- 6,404 total licenses
- 2,694 distinct license holders

Utah

In Utah, hemp can be cultivated by producers who are licensed by the DOA, who may also sell registered products in the state. Utah DOA requires a request to be submitted under the state's Government Records Access and Management Act (GRAMA) in order to access data on hemp licensing in the state. As a result, we have at this time been unable to obtain specific data on the amount of acreage licensed. The DOA website currently lists 156 registered growers and 16 pages of registered products.

Vermont

As of May 29, the Vermont DOA:

- Expects more than 7,000 acres to be licensed, more than doubling last year's 3,292 acres
- Has registered 570 growers, with an additional 70 applications received since June 11
- Has registered 158 processors

Due to unseasonably cold and wet weather, planting has been delayed in some areas. Some farmers are registering additional acres to replace previously registered plots that are too wet to plant.

Virginia

Amendments to the Virginia Industrial Hemp Law became effective on March 21, 2019. The law eliminated the requirement that hemp be grown for research purposes and permits the commercial production of industrial hemp. According to news reports, there are:

- 7,000 acres licensed for cultivation, up from 135 last year
- More than 700 licensed growers

Washington

According to the Washington DOA, there are currently:

- 6,500 acres licensed for cultivation, or with a pending application for a license
- 85 licensed growers, with many applications still to be processed

In 2018, 140 acres of hemp was cultivated in Washington by a single entity, the Confederated Tribes of the Colville Reservation.

West Virginia

According to the West Virginia DOA, there are:

- 2,531 acres licensed for cultivation, up from 155 acres last year
- 158 licenses issued, three times as many as last year

Wisconsin

According to the Wisconsin DOA, in the state's second official hemp growing season:

- 16,100 acres are currently registered as 2019 growing locations
- About 151 acres of hemp have been reported as planted in Wisconsin as of mid-June

- 2,228 hemp license applications have been received
 1. 1,490 applications for grower licenses
 2. 738 applications for processor licenses
- 1,939 hemp license applications have been issued
 1. 1,314 grower licenses
 2. 625 processor licenses
- 1,866 hemp license applications have been issued with a 2019 annual registration
 1. 1,240 grower licenses
 2. 552 processor licenses
- 157 hemp license applications are pending. These licensees have until July 5, 2019 to turn in their licensing materials and/or payment.
 1. 99 are applications for grower licenses
 2. 58 are applications for processor licenses
- 132 hemp license applications have been denied, revoked, suspended, or withdrawn
 1. 77 were grower applications (about 70 were withdrawn by the applicant or were duplicate applications)
 2. 55 were processor applications (about 50 were withdrawn by the applicant or were duplicate applications)

States with Research Pilot Programs Under the 2014 Farm Bill (limited cultivation in affiliation with state university or agriculture department)

Alabama

Starting in May, Alabama farmers broke ground as part of the state's first industrial hemp research pilot program. AL.com reports that Alabama approved 180 applications for growing hemp this season, but that only 152 of those approved paid their license fees. The state must also approve any cultivars imported into Alabama, primarily to ensure legal THC levels. Such a regulatory practice is also being undertaken in other states, such as Wisconsin.

Connecticut

Governor Ned Lamont signed the state's new hemp research pilot program into law in May. As of mid-June the Connecticut DOA had reportedly approved 35 hemp growing licenses, with another 24 applications under review. According to the Connecticut DOA, 130 acres have been approved for hemp production.

Delaware

The Delaware DOA established the 2019 Delaware Hemp Research Pilot Program, which allows authorized growers to work with Delaware State University to research multiple aspects of hemp production. As of May 6, nine licenses had been issued, with each license limited to no more than 10 acres.

Indiana

Indiana is still operating under a Research Pilot Program until the State passes administrative rules required by the enabling legislation, Senate Bill 516. SB 516 requires the state Seed Commissioner to submit Indiana's regulatory scheme to the USDA for approval by December 31, 2019 to ensure that Indiana farmers can grow hemp commercially in 2020.

Kansas

In April 2018, Governor Laura Kelly signed Senate Bill 263, which authorized a Hemp Research Pilot Program under the 2014 Farm Bill. The state DOA recently reported that 370 farms filed applications to take part in the first season of legal hemp production in Kansas as part of the state's hemp research program.

Maryland

House Bill 698, which became effective January 2018, allows farmers contracting with the Maryland DOA or designated universities to grow industrial hemp for research purposes. As of May 6, 38 growers had been licensed under the Maryland Research Pilot Program, with nine additional applications pending.

Michigan

In April, Governor Gretchen Whitmer and the Michigan Department of Agriculture and Rural Development (MDARD) announced the launch of the state's Industrial Hemp Ag Pilot Program for the 2019 season, utilizing the guidelines of the 2014 Farm Bill. "Michigan's pilot program allows our farmers to explore the production and processing of hemp to determine whether or not this is a financially viable crop for them," MDARD Director Gary McDowell said in a statement. "It also helps pave the way for Michigan growers as we move toward a permanent licensing program next year to identify and expand value-added hemp processing and new market prospects."

New Jersey

Governor Phil Murphy signed a bill late last year that created an industrial hemp pilot program in the state, in which farmers collaborated with higher education institutions on hemp research. Governor Murphy is now deciding whether to sign into law a measure approved by the New Jersey Legislature in June that would promote and regulate hemp farming and manufacturing in the state.

States with Legislation Approved for Cultivation in 2020

Alaska

Alaska passed a law in 2018 authorizing the creation of a state program to study industrial hemp cultivation and marketing under the 2014 Farm Bill. The Alaska Department of Natural Resources (DNR), which is a part of the Alaska Division of Agriculture, has regulatory authority over industrial hemp.

On May 31, 2019, DNR issued proposed industrial hemp rules, with a public comment period open until July 3, but it is still unclear when the DNR will begin issuing registrations for growers, processors, or retailers. "Without the regulations in place and absent the opportunity to register, producing, or marketing industrial hemp ... is still illegal," said Rob Carter, the manager of the state's Plant Materials Center during a House Community and Regional Affairs Committee hearing.

Florida

A bill that would create rules and regulations for hemp cultivation in Florida has been approved by state lawmakers and was signed into law by Governor Ron DeSantis on June 25. Meanwhile, Florida's DOA released the first draft of proposed regulations for a state hemp program in mid-June. In a news report, Agriculture Commissioner Nikki Fried predicted that Florida growers could cultivate as much as 100,000 to 200,000 acres of hemp in the future.

Iowa

On May 13, Governor Kim Reynolds signed into law the Iowa Hemp Act, which legalized the cultivation of hemp on up to 40 acres. However, the Iowa DOA reported that hemp cannot be legally grown in 2019 pending the legislature adopting the provisions of the 2018 Farm Bill and the state DOA submitting a plan to the USDA.

Louisiana

Governor John Bel Edwards signed a measure that legalized both industrial hemp production and regulated CBD sales in early June, following months of legislative debate on the issue of the legality of CBD products. Louisiana retailers seeking to sell CBD products can now apply through the state's Office of Alcohol and Tobacco Control. Louisiana officials must also present a regulatory plan for its industrial hemp program to the federal government by November 1. Officials expect hemp cultivation will commence in 2020.

Missouri

On June 24, Lieutenant Governor Mike Kehoe signed Senate Bill 133, repealing a previous industrial hemp pilot program and removing acreage restrictions on cultivation, bringing Missouri's statutes in line with the 2018 Farm Bill. Under SB 133, Missouri universities can start cultivating and researching hemp this year to collect data on the crop before farmers begin planting next year. To date, no licenses have been granted and no acres planted, according to the Missouri DOA.

Texas

The Lone Star State now has an industrial hemp program. Earlier in June, Governor Greg Abbott signed a measure that legalizes the growing and processing of hemp in the state. The bill allows hemp to be processed into finished products. It also allows the sale of hemp-derived CBD, but it does not allow the processing or sale of smokable hemp in the state.

According to the DOA website, Texas expects its hemp growing application process to begin in time for the 2020 season.

Wyoming

From the Wyoming DOA: "The Wyoming Department of Agriculture was tasked by the 2019 Wyoming State Legislature to develop and implement a Hemp Growing/Processing program. In order to do that we have to submit a state plan to the United States Department of Agriculture for regulatory authority. That plan has been developed and submitted but we have not heard from USDA as of yet. So therefore, Wyoming does not have any licensed growers or processors and no legal hemp is being grown at this time."

States without Legal Hemp Regulations or with Regulations Pending

Georgia

In May, Governor Brian Kemp signed into law a hemp cultivation measure. Once the state government creates regulations, news reports say that CBD could be manufactured locally by licensed hemp farmers.

Idaho

Currently, Idaho is the only Western state to prohibit the cultivation of hemp. In March the House of Representatives passed a bill allowing for the commercial production of hemp; however, the bill still needs to be approved by the Senate and the Governor.

Mississippi

Cultivation of hemp is still prohibited in Mississippi. However, in February the legislature passed House Bill 1547, which authorized the formation of the Hemp Cultivation Task Force to examine issues surrounding the cultivation of hemp in Mississippi. The Task Force has a deadline of early December for reporting their findings to the legislature.

New Hampshire

New Hampshire has not authorized the production of hemp in the state, but officials are consulting with farmers about whether they would be interested in hemp production.

Ohio

Although it is not currently legal to grow hemp in Ohio, the Senate approved Senate Bill 57 in late March. The measure would allow for the production of hemp by growers licensed by the Ohio DOA. SB 57 still needs to be approved by the House and the Governor.

South Dakota

Cultivation of hemp remains prohibited in South Dakota. Governor Kristi Noem recently vetoed a bill to legalize industrial hemp this year, saying the state was not yet ready for it. Accordingly, hemp and CBD are still illegal in South Dakota.

PRODUCT DEFINITIONS

BIOMASS

Dried hemp plant materials including the stalks and leaves that may include flowers/buds and/or seeds that have been harvested. Free of mold, grit, minimal (< 0.1%) non-hemp organic matter, and at least 80% dry. An industry-wide acceptable moisture content is necessary to establish uniform pricing for hemp biomass. Any hemp biomass material that is above the standard moisture content will result in decreased value and an adjusted sale price to reflect a lower volume of the end product to account for further water evaporation. Biomass can also be milled, ground or pressed into pellets.

DRIED CBD FLOWER

Dry flower is the dried flower and bud fraction of a hemp plant that has been removed from the stalks and contains minimal stems. Flower is suitable for smoking and for use in pre-rolled joints.

HURD (Decorticated)

Hemp stalks are stripped of the outer bark/shell/skin of the stalk using a decorticator, ranging from hand-cranked to automated electric processing. The removal of the hard outer bark/shell/skin of the hemp stalk exposes the fiber core of the plant which is then readily usable for production.

HURD (Non-Decorticated)

Hemp stalks with the outer bark/shell/skin intact. The hemp stalks may or may not have gone through a retting process that allows microbes and moisture to break down the stalk, making the fiber easier to remove.

CLONES

A clone refers to a plant that is an exact reproduction of an original parent plant, known as a mother plant, through asexual propagation. A clone is made by taking a stem cutting (or tissue culture) from a mother plant and placing the cutting into media to facilitate root growth. Once the roots begin to grow, the clone is transplanted into a field or cultivation facility.

INDUSTRIAL SEEDS

Industrial hemp seeds comprise a broad range of hemp cultivars used to grow hemp biomass, hemp seed and grain for food oils and food products, and fiber for woven and non-woven applications.

CBD SEEDS (Non-Feminized)

Hemp plants that are pollinated naturally or with traditional breeding techniques produce both male or female seeds. These are known as regular, or non-feminized, seeds and generally result in an even split between the two sexes.

CBD SEEDS (Feminized)

Feminized seeds are seeds that have been modified to produce almost 100% female plants. There are a few techniques that can produce reliably feminized seeds. Feminized hemp seeds can be genetically modified to produce only female plants by eliminating the X chromosome. A non-genetic technique is to stress a healthy female plant by interrupting its light cycle during flowering. Another common and controlled method is to spray female plants with a colloidal silver or silver thiosulphate solution.

CRUDE HEMP OIL

Crude hemp oil is extracted from the hemp plant and contains all of the cannabinoids, terpenes and other plant compounds found in the biomass. Processors use a number of different methods to extract crude oil from hemp. Supercritical CO2 extraction uses pressurized carbon dioxide (CO2) to pull CBD (and other phytochemicals) from the plant. Solvent extraction uses ethanol or hydrocarbons, such as butane or propane, to process hemp biomass into crude oil. Other processes use olive oil or water as a solvent.

Crude hemp oil is often "winterized." Crude oil is winterized to remove organic plant compounds, such as lipids, waxes and chlorophyll, that increases the potency of the oil and creates a more transparent distillate.

REFINED HEMP OIL

Crude hemp oil is further refined through distillation to produce refined hemp oil, which includes full spectrum oil and broad spectrum oil.

CBD full spectrum oil distillate is refined hemp oil extract that contains all the compounds found naturally occurring in the plant, including all the cannabinoids, terpenes and essential oils.

CBD broad spectrum oil distillate is refined hemp oil extract that includes all the compounds found naturally in the plant, except broad spectrum oil has been processed to remove all or substantially all of the THC.

CBD ISOLATE

CBD isolate is the purest form of CBD, which is produced by removing all other compounds found in the plant including terpene, flavonoids, plant parts and other cannabinoids. CBD isolate comes in a granular or powder form and is odorless and tasteless. The end product contains 0% THC and is made up of 96% to 99.9% CBD.