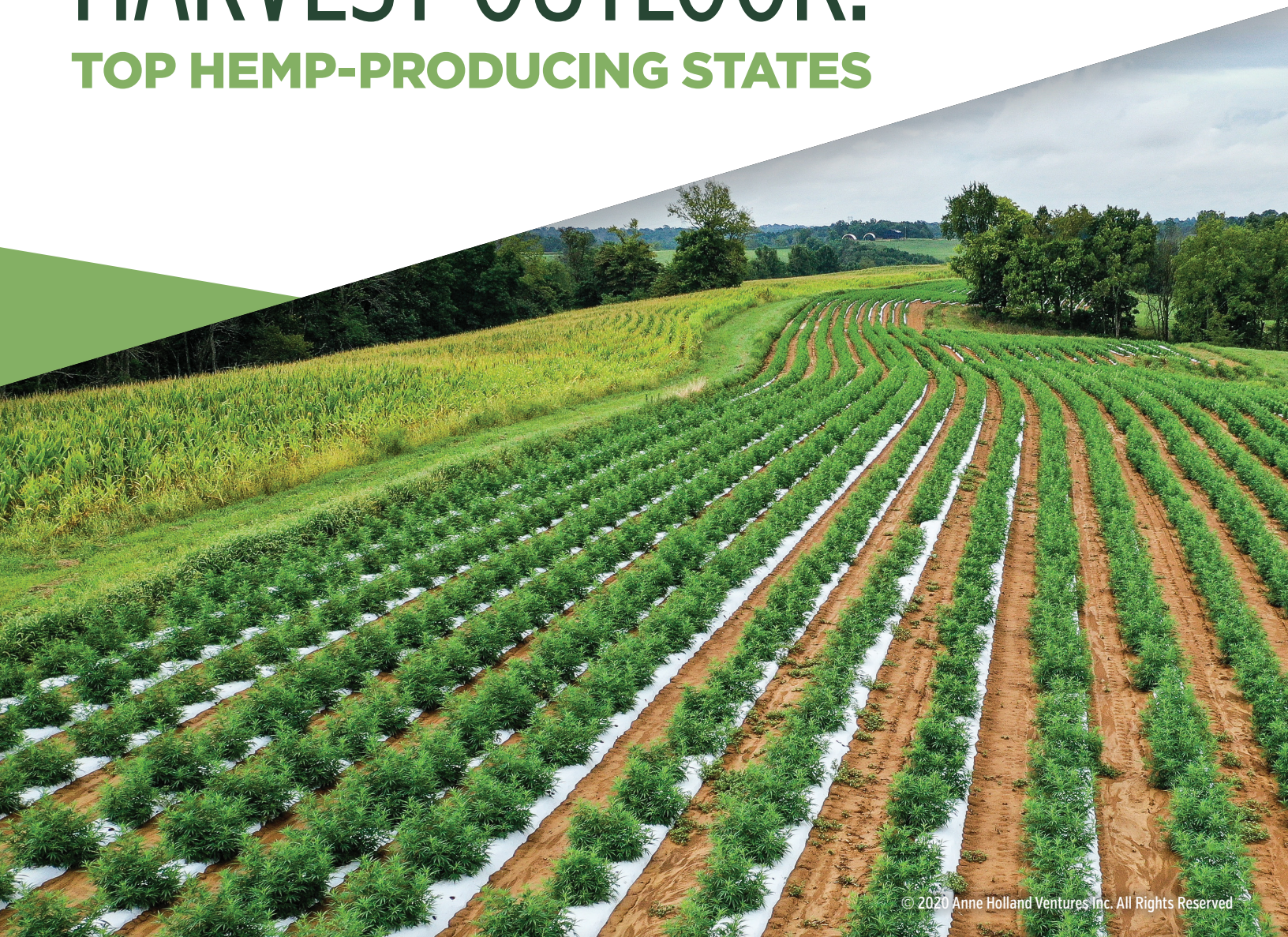


2020 US HEMP HARVEST OUTLOOK: TOP HEMP-PRODUCING STATES



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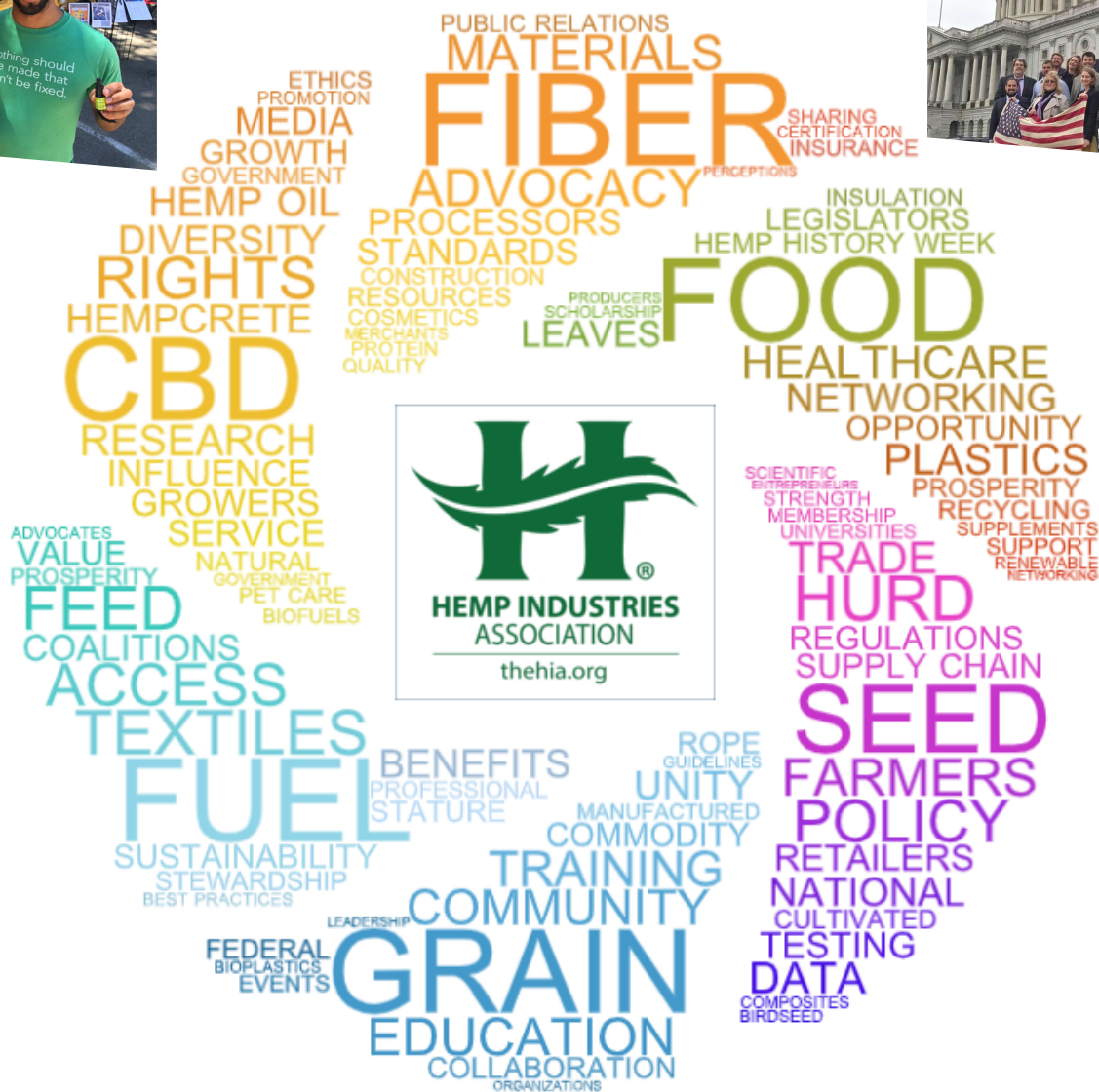
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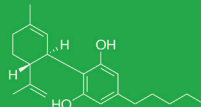
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FROM THE EDITOR



Laura Drotleff
Hemp Industry Daily

Welcome to the 2020 U.S. Hemp Harvest Outlook: Top Hemp-Producing States, produced by the research team at *Hemp Industry Daily*.

The U.S. hemp industry has seen its share of struggles and growing pains since *Hemp Industry Daily* produced its first Cultivation Snapshot in 2019. But the market also witnessed a year full of changes and forward progress.

After the 2018 Farm Bill made hemp a legal commodity and took the plant off the list of controlled substances in the United States, the market took off. People rushed into the hemp scene—but many of them were inexperienced and hadn't planted anything before.

States licensed a combined 511,442 acres of production across 34 states in 2019, more than quadruple the number of acres licensed from 2018, according to industry advocacy group Vote Hemp. Of that licensed total, farmers ultimately planted roughly 230,000 acres and likely harvested closer to 115,000 acres.

Several factors can be blamed for the large number of planted acres not being harvested, including:

- A lack of pesticides to keep insects and disease at bay.
- The labor-intensive nature of planting, maintaining and harvesting the crop.
- Farmers failing to have harvesting, drying and storage plans.

Of the plants that were brought in, many were not stored correctly, leading to additional losses.

Even with all of those obstacles, the nascent hemp market still experienced overproduction. Growers who didn't sell their crops before planting or who had processor contracts fall through ended up trying to unload their hemp harvest in fire sales at the end of the season or processed it enough to store through the winter to sell later, hoping for higher prices.

That brings us to the 2020 season. Because of regulatory uncertainty, a vast oversupply in 2019 and the coronavirus pandemic, licensed hemp acreage decreased year-over-year for the first time since the 2014 Farm Bill established a national hemp pilot program.

As a result of reduced production, the list of the top 10 U.S. states looks a bit different than 2019, with five new states making their debut. But there are also more states producing hemp in 2020 than ever before.

Hemp Industry Daily contacted each state's agriculture department to find out how many indoor and outdoor acres, growers and processors were licensed for the 2020 planting season.

The top 10 hemp states by licensed acreage this year, in order:

- | | |
|---------------|-------------------|
| 1. Colorado | 6. Oregon |
| 2. Arizona | 7. Illinois |
| 3. California | 8. North Carolina |
| 4. Kentucky | 9. Florida |
| 5. New York | 10. Michigan |

Some states' numbers have evolved and fluctuated since our initial data collection because of ongoing licensing or later registration dates. And, of course, licensed acreage does not reflect actual planted acreage or the number of acres that will be harvested at the end of the season. However, this report provides a snapshot of where we started the 2020 crop year and a starting point for the harvest outlook.

As we went to press with this report, New York, which ran its 2020 season under the 2014 pilot research program, decided not to submit a production plan to the U.S. Department of Agriculture in protest of the federal agency's interim final rule, which the state agriculture department said remain too strict. Instead, New York hemp farmers will be left to apply to the USDA for production licenses after this crop year.

Could this be the beginning of a trend? The USDA already regulates growers from New Hampshire and Mississippi, the newest hemp state. Colorado also announced that its state hemp production plan was "under negotiation" with the USDA and will need to be amended.

We're tracking other states, as well. For example, it could be argued that Missouri should be listed among the top 10 states based on the 21,000 acres it licensed for production this year. However, the state also noted that growers reported a significantly smaller planned acreage, 3,892, which agriculture officials said is typically consistent with what growers plant.

Ohio, Louisiana and Texas passed hemp legislation in the past year and received USDA approval to proceed with their respective hemp plans, so these states—among others—are seeing marked interest and investments. These will also lead the rest of the country in navigating the agency's new interim final hemp production regulations.

One obvious difference from our cultivation report in 2019: We did not include state prices for flower or biomass. That's one of the victories we've seen for the industry. In only one year, the nascent hemp industry went from having no real reliable commodities index to gauge appropriate pricing to having three. Plus, the market continues to fluctuate, and what we capture in a report in August would no doubt change by harvest.

This report also enlisted the Hemp Industries Association to get information directly from their grower members in each of the top 10 states on the status of the 2020 season and how the coronavirus pandemic has affected their businesses. Please let us know how closely their experiences compare to yours—and how our outlook matches the landscape in your state.

Thanks in advance for your questions and feedback: laura.drotleff@hempindustrydaily.com.



Laura Drotleff
Hemp Industry Daily



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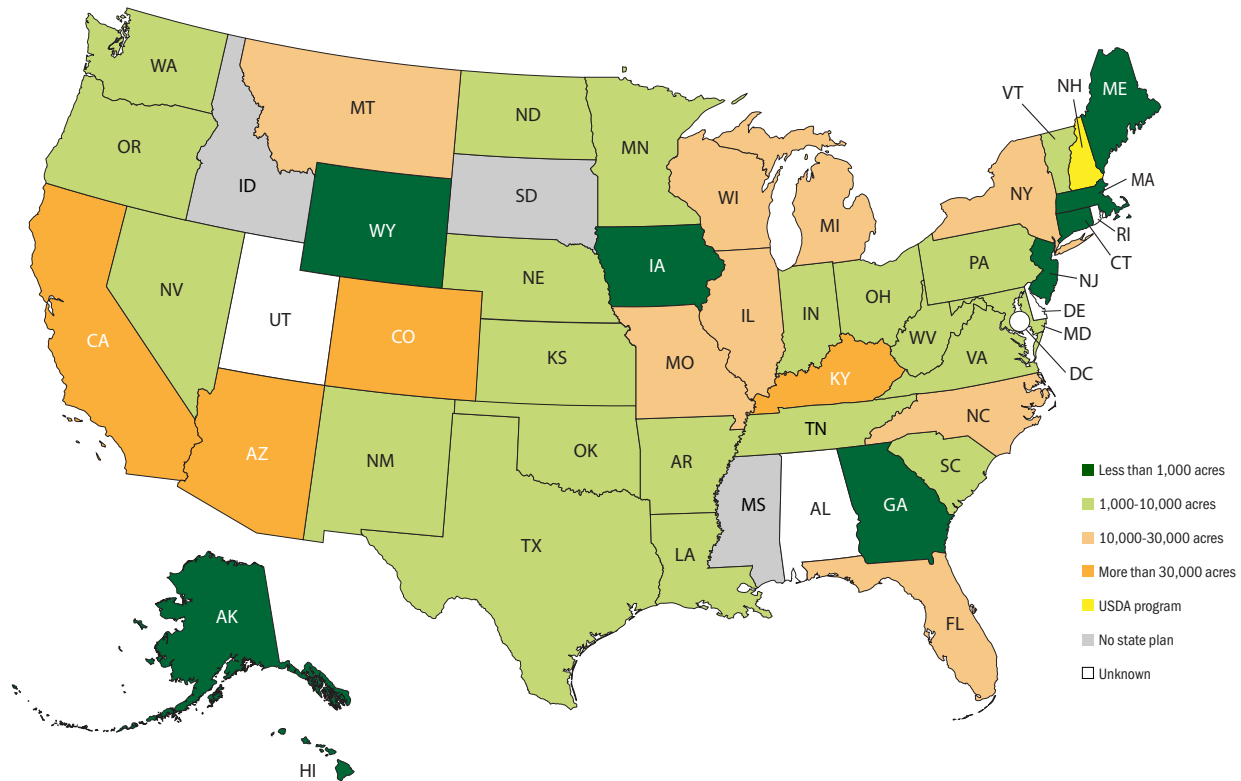
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U.S. farmers are planting less hemp than they did last year, the result of regulatory uncertainty, a surplus of hemp flower and biomass held over from 2019 and continuously falling wholesale prices.

Licensed hemp acreage reached 405,863 for the 2020 production season. Indoor greenhouse licensing authorized 93.2 million square feet of grow area.

Even with new hemp states online this year, the 2020 licensed acreage is down nearly 20% from 2019, which was more than quadruple the number of acres licensed from 2018, according to industry advocacy group Vote Hemp.

This decline in acreage is the first since the 2014 U.S. Farm Bill allowed for hemp pilot research programs nationwide.

One state, New Hampshire, has producers growing under U.S. Department of Agriculture jurisdiction. A spokesman for the agency told *Hemp Industry Daily* that the USDA has issued five licenses to producers in the state.

New York announced in August that it would also rely on the USDA to manage its hemp program for the 2021 season and eliminate its state-regulated program.



ARIZONA

With dry heat, year-round sun and a desert climate, Arizona is one of the few U.S. states that can produce hemp in more than one season. However, it has experienced difficulty doing so because of a lack of stable genetics that do not adapt well to the Arizona climate, even if they work well in other areas of the country.

Arizona's hemp plan is still pending before the USDA, so the state is operating under the provisions of the 2018 Farm Bill for the 2020 season.

The state has a thriving medical marijuana industry and is expected to vote on full recreational marijuana legalization in this year's election.



CULTIVATION SNAPSHOT

The 2020 hemp season has experienced record heat in Arizona, causing some farmers to worry that crops will test hot—a problem farmers struggled with in 2019. Growers participating in the state's expanding indoor production sector see an advantage to producing hemp in a controlled environment.

In 2019, 41% of hemp plants grown in the state tested above the 0.3% legal THC limit, according to the Arizona Department of Agriculture's Plant Services Division, which oversees the state's industrial hemp program. State officials attributed the failure rate to variable seed quality and genetic expression for hemp grown in Arizona's hot and dry climate.

By federal law, all hemp crops that test hot must be destroyed and can't be used in any way—even in states that allow both marijuana and hemp production, such as Arizona.

SUPPLY

Outdoor: 34,000 acres

Indoor: 1,520,000 square feet (34.9 acres)

Total: 34,035 acres

Licenses: 157 growers; 60 processors

2019: 37,000 acres licensed

HIA MEMBER GROWER PROFILE

"Having grown up in Nebraska, I understand the farming and harvesting principals. We've done things very lean, not overspent, prepared for the natural shifts and look forward to getting into a solid swing. A pain point I was expecting that has been the opposite has been the job the state of Arizona has done with their ag department employees—the help provided to growers to what is a brand-new market to Arizona. A very pleasant experience and thumbs-up!"

"(The COVID-19 pandemic) has made me more appreciative of having a place to go and hang out in nature and take care of plants while most others are stuck in their houses on a computer. (The pandemic has) actually slowed things down, put the natural growth cycles in perspective and made the choice of growing even a wiser choice."

George Buckler

Skunkworks Hemp

Phoenix





OUTLOOK

Arizona's hemp law, signed in 2018, legalized all products made from hemp, meaning CBD production is allowed. The state does not have any current policies or statements about CBD product types.

But while the Arizona hemp industry is less hindered by regulation than other states, hemp farmers have run into some opposition from fellow cannabis producers.

Growers in Arizona's legal medical marijuana market worried that hemp plants would pollinate their plants and render them worthless. Marijuana producers in some towns even tried to convince local leaders to enact zoning ordinances to create buffers around marijuana farms to prevent cross-pollination, though these requests were denied.

The state mandated the hemp and marijuana industries to work out their differences without official rules. Instead state trade associations worked to develop and maintain maps to remind farmers of potential proximity risks.



Despite California's reputation as a top agricultural state and the fifth-largest economy in the world, state lawmakers took their time regulating hemp, and the state continues to delay regulations for CBD products.

Gov. Gavin Newsom passed the California Hemp Bill in September 2018, opening the state for commercial hemp production in the 2019 crop year. California's laws were brought up to date with the 2018 U.S. Farm Bill in January 2020, striking outdated statutes that conflicted with the expanded definition of hemp.

California is currently operating under the 2014 Farm Bill pilot research program while developing rules to submit to the USDA, which would allow the state to become compliant with the 2018 Farm Bill and the USDA's interim final rule of 2020.

However, California has a unique structure in which the state's 58 county-level agricultural commissions also play a role in governing the hemp industry and licensing, creating a complex web of regulations for California farmers. There are still several counties and individual municipalities that have established moratoriums or outright bans on hemp production.

Involvement from California's legal marijuana industry—fearful of cross-pollination from rogue male and hermaphrodite plants in widely unstable hempseed genetics—has been one of the roadblocks to getting hemp production approved statewide.



CULTIVATION SNAPSHOT

California licensed an estimated 44,000 acres of hemp in 2019, according to advocacy group Vote Hemp. The state's vast production areas, fertile fields, agricultural knowledge and year-round warm climate make California a potential mecca for hemp production.

Hemp farmers, however, have been frustrated by mixed messages regarding production. Some counties seem to be following the 2014 pilot program while others are enforcing the 0.3% total THC rules under the 2018 Farm Bill.

Aside from the regulation issues, securing water is one of the biggest hang-ups for hemp producers in the state. California's pristine weather, though hot and dry, provides a year-round growing scenario for producers. Some growers have reported issues with caterpillars, as well as hops stunt and latent viroid problems.

SUPPLY

Licensed acres: 32,504.9 acres

Indoor production: Not available

Licensed growers: 655 growers and breeders

2019: 43,688 licensed acres



OUTLOOK

California law currently does not provide any guidance for the manufacturing, processing or selling of non-food industrial hemp or hemp products.

The California Department of Health (CDH) currently prohibits adding CBD to food (including pet food) until it has been approved by the FDA as a safe food ingredient, additive or dietary supplement.

Pending legislation proposes to establish a regulatory framework to allow industrial hemp products as an ingredient in food, beverages or cosmetics.

There was significant momentum within the state Legislature in 2019 to pass a bill sponsored by Assemblywoman Cecilia Aguiar-Currey that would reverse the CDH position and allow CBD to be used as an ingredient; however, the bill was tabled at the end of the year, and Gov. Newsom asked Aguiar-Currey to work with the CDH and his staff to resolve differences. At press time, Aguiar-Currey was preparing to reintroduce the bill in the state Legislature. Her argument is that such a move would create jobs and provide a needed economic rebound in light of the coronavirus pandemic.

The new law would also provide strong consumer protections for currently unregulated products that are raising safety concerns and require hemp product manufacturers to follow measures such as truth in labeling, independent testing and Good Manufacturing Practices.

A delay in establishing a clear framework around legal hemp CBD products in California means it's falling behind other states, including Florida, Ohio and Texas—all new hemp markets that have passed legislation allowing the retail sale of hemp-derived CBD. Meanwhile, other states are watching California and could follow its lead if it passes CBD legislation.

HIA MEMBER GROWER PROFILE

"We've had an unexpected increase in sales of our sustainably grown hemp flower during COVID-19. We've responded by planting 17 acres of highly sought varieties and many of our own novel strains, which is more than double what we grew last year. So far, the weather is cooperating with us and—knock on wood—we expect a high yield of boutique flower ready to hit the connoisseur market this fall."

Brian Peternell

Golden Eagle Farms
Santa Cruz, California



COLORADO

Colorado has been a leader in hemp production and research since 2012—before the 2014 U.S. Farm Bill pilot research program was even established—with a supportive and innovative regulatory environment.

Over the past year, state agriculture officials set up the CHAMP initiative (Colorado Hemp Advancement and Management Plan), which develops recommendations and policies for all angles of cultivation, testing, research, processing, finance and economics to define a well-structured supply chain for hemp and establish a strong market for the state. One of the visions of the initiative is to expand research and development of the hemp industry with the creation of a Hemp Center of Excellence.

Colorado State University in Fort Collins is opening a research center dedicated to studying the chemical compounds in hemp, including the formulation of cannabinoids, separation efficiencies and efficacy studies.

The state is also considering a checkoff program to promote products grown and developed in Colorado, viewing it as a necessary step in establishing the plant as a regular agricultural commodity.

Colorado has become home to some of the largest hemp producers and processors in the world, with continued investment pouring in from mainstream food and beverage companies even as the U.S. has been hit hard by the global pandemic and economic recession.



CULTIVATION SNAPSHOT

Colorado hemp farmers are producing under the 2014 U.S. pilot research rules for the 2020 crop year. A new production plan, which was submitted to the USDA in June, was sent back to the state's agriculture officials to revise or clarify specific areas. But Colorado officials said they were “negotiating” aspects of the plan with the USDA. State lawmakers, agriculture regulators and growers have continued to ask the USDA for less restrictive rules since the interim final rule was published last October, including the U.S. Drug Enforcement Administration's involvement with THC potency testing and required destruction of hemp that tests above 0.3% THC, among other concerns.

Colorado has an arid climate with low humidity and high sunlight. The combination means farmers need water permits for irrigation during peak farming season. Last year, the state experienced heavy rains and cold temperatures during planting season, with hail and frost closer to harvest, but the 2020 season thus far has been less eventful.

This year, most planting occurred during the first few weeks of June, crop specialists say. The season has been dry and hot with widespread drought, and no major pest or disease issues have been reported. However, beet curly top virus, corn earworm, root aphids and other problems have been spotted. The majority of Colorado hemp is still cultivated for CBD oil.



COLORADO

SUPPLY (AS OF AUGUST)

Licensed acres: 40,391

Licensed indoor production: 14.3 million square feet

Licensed growers: 1,425 active registrations

2018: 386 licensed growers, 12,082 outdoor acres, 2.35 million square feet of indoor production

2019: 2,300 active registrants, 80,000 outdoor acres, 9 million square feet of indoor production

OUTLOOK

Hemp farmers are cutting back nationwide, and Colorado is no exception. In 2020, the state licensed nearly 40,000 fewer acres than in 2019 and 900 fewer growers. Even with production acreage potentially halved, Colorado remains the largest hemp-producing state in 2020, and experienced Colorado farmers continue to see demand from product manufacturers across the country for smokable hemp flower and biomass.

Colorado is among the states that regulate hemp-derived CBD as a food ingredient or nutritional supplement, with no age restrictions on purchase or consumption of these products unless they are combined with age-restricted products such as alcohol or marijuana.

The state has strict manufacturing rules, stipulating that CBD- product makers must demonstrate that the hemp comes from an approved source and be in good standing with governing state laws. Products must be clearly labeled as containing hemp or CBD, include a “not tested by FDA for efficacy and safety” statement and not make any health claims.



HIA MEMBER GROWER PROFILE

“We’re making lemonade out of lemons. Lower costs for starts means more plants. However, some retailers went into bunker mode, closing or significantly reducing their in-person customer interaction and our pipeline. The best learning about cultivars and benefits comes by speaking directly with the customer. We will place increased focus toward advancing our online selling format, giving consumers better access to purchase quality medicinal-grade hemp.

“The market is saturated with mediocre product, creating downward pricing on quality product. In turn, the consumer gets a mediocre experience. It’s why we stress farm-direct and hand-cultivated—which costs more. Also, (there’s) over-regulation due to cannabis confusion (marijuana vs. hemp). Plants used to make alcohol don’t get this scrutiny.”

Carl Sheeler

Two Bears Farm
Durango



Florida is determined to make it big in the hemp industry after suffering severe economic losses in other agricultural sectors, including citrus and lumber, because of disease and hurricane damage. The state's proposed hemp regulations won federal approval from the USDA in April, two weeks before the state planned to open applications for its first commercial hemp season.

While the USDA stepped back regulations stipulating that total THC content must be tested in labs registered with the U.S. Drug Enforcement Administration for the 2020 crop year, Florida's rules still require it, which will give the state a head start when enforcement of the rule begins in 2021.

To protect its diverse agricultural economy, the state also outlines hemp transportation rules, which include a requirement that hemp shippers stop at a state agriculture inspection station and show:

- A certificate of analysis showing the material's total THC content.
- A bill of sale that includes place of origin.
- A phytosanitary certificate for live plant material.

Florida growers are enthusiastic about the prospect of growing hemp, with nearly 400 farmers licensed for the state's inaugural hemp season.



CULTIVATION SNAPSHOT

As a new hemp state and one of the first operating under new rules based on the 2018 U.S. Farm Bill, Florida has an advantage in that it has no history of past rules or production with which to compare. However, the state's farmers also have no experience to draw from, and tropical climates such as Florida's—with extreme heat and humidity—have experienced difficulty producing hemp varieties originating from cooler areas. These conditions have also contributed to pest and disease issues that new growers must learn to address.

Florida has made broad investments in research. The University of Florida's Institute of Food and Agricultural Services and Florida A&M University have both been focused on breeding efforts in cooperation with private companies to develop genetics and growing recommendations suited to the state. Continued hemp breeding and development of genetics better suited for humid, warm conditions and tropical climates will improve the odds for growing hemp in Florida.

SUPPLY

Licensed acres: 16,000

Indoor: Not applicable

Licensed growers: 386 growers, 9 processors



OUTLOOK

Florida agriculture officials are tracking and regulating CBD and hemp products, a change prompted by a state law that took effect at the beginning of 2020. Florida lawmakers in 2019 moved regulatory authority for CBD ingestibles to the agriculture department to ensure consumers are protected. Agency inspectors began visiting retail stores and food establishments throughout the state to conduct training and ensure products sold or produced in Florida are in compliance with new rules for hemp and CBD products, including testing for pesticides and heavy metals and strict labeling guidelines.

The state requires any business that manufactures, processes, packs, holds, prepares or sells food made from or containing hemp extract to apply for a Hemp Food Establishment Permit. Florida's CBD rules give the state an advantage over other markets that have not passed rules regulating CBD products.

HIA MEMBER GROWER PROFILE

"Banks are not loaning money to anyone due to COVID. We need financing for extraction equipment. It is putting a huge damper on our plans.

"Lack of extraction equipment is going to prevent us from furthering our business in hemp. We feel like outside ventures with big funding are getting preferential treatment in Florida. We came in with high hopes for creating a great product using sustainable growing methods, but we are competing with multi-million-dollar facilities funded by ventures outside our state."

Carrissa Kaser

Chroma

Lithia



ILLINOIS

The Illinois landscape is steeped in agriculture, with commodity row crops growing on thousands of acres across the state. So it's no surprise that the newest commodity available for production—hemp, and its promise of higher margins—caught the attention of experienced farmers.

The state expanded its 2020 hemp program by more than 200 growers from 2019, likely driven by the success of that season. Hemp farmers in Illinois were able to harvest 73% of their crops last year, despite weather swings that made farming less favorable than usual.

According to the Illinois Department of Agriculture, the state's farmers produced nearly 2.3 million pounds of industrial hemp in 2019. More than 2 million was for CBD biomass and flower production, while the rest included seed, which is used both for planting and hempseed oil, and stalk, used for a variety of products from fiber to animal bedding.

Illinois is operating under the 2014 U.S. pilot hemp program for the 2020 production season, but the agriculture department planned to submit its state production plan to the USDA this year.



GROWER PROFILE

"We scaled back our plantings this year, focusing on grain genetics development. We have a very small CBD flower crop for our own extracting, but with the CBD market being what it is, we dialed the planting down considerably over last year. Our grain planting is tightly controlled—about 100 varieties planted out in a mirror-control study. Seed from each type will be tested for a full protein amino acid profile, and yield/plant on seed will be studied to determine what genetics we move forward with.

"Our specific focus on planting is to develop a seed crop that is high in methionine for certified organic poultry operations. If and when the government finally gets around to approving feed for poultry, I want to integrate it into our pasture-raised, humane, organic-certified poultry operation immediately.

"We are well on track to be able to beat soy protein yield at this point on some of our genetics. I'm hoping in the near future we can start to change landscapes in the Midwest and give farmers a viable option to add to traditional corn/bean rotations."

Trenton Lawrence

Peoria



ILLINOIS



CULTIVATION SNAPSHOT

Illinois farmers' high harvest rate in 2019 was considered a success after a too-wet spring and summer drought—conditions that led the USDA to declare the state a disaster area.

In 2020, farmers are experiencing high heat, which makes planting difficult on any ground without the help of irrigation. Overall, however, growing conditions have been ideal, resulting in large, healthy plants, Illinois growers say.

Agriculture officials said while hemp grown for CBD is still of primary intrigue to Illinois farmers, there is growing interest in fiber production, which the state's climate, production capabilities and farming infrastructure are ideal for, thanks to its history of growing commodity row crops such as corn and soybeans.

SUPPLY

Licensed acres: 26,264

Licensed handlers: 770 growers, 317 processors

2019: 651 licensed growers, 7,141 acres planted, 5,233 acres harvested.

OUTLOOK

Because of hemp overproduction across the U.S., Illinois farmers struggled to find buyers for their 2019 crops, according to state agriculture officials. The state changed some rules to help growers, including allowing hemp producers to sell products to Illinois marijuana processors. Illinois continues to work toward opening markets for growers to sell their hemp.

Illinois has not enacted significant restrictions on hemp or CBD products, allowing smokable products and the use of CBD as an ingredient in food and dietary supplements.



KENTUCKY

One of the first states to produce hemp, Kentucky has remained a leader despite the trying times growers and processors within the state have been through recently. Kentucky native and self-described hemp champion Sen. Majority Leader Mitch McConnell continues to call on federal financial leaders to offer banking services to hemp and CBD companies. At the same time, the state's agriculture commissioner has demanded action from federal officials and food and drug administrators to amend restrictive rules for farmers and provide regulation on CBD products to open the markets for hemp products.

With the adoption of the federal interim final rule under the 2018 U.S. Farm Bill, Kentucky hemp leaders called on the state to keep its program under the 2014 U.S. Farm Bill pilot research program for an additional year to allow the industry more time to weigh in on needed changes without disrupting the 2020 season.

Kentucky agriculture officials want farmers to assess their risks, demand contracts before planting and to scale at a conservative rate while the nation's hemp industry is on pause because of regulatory restrictions. The state wants to attract processors to increase the markets for fiber and grain, though CBD hemp continues to dominate acreage in the state. In 2020, state officials expect acreage to be down overall.



CULTIVATION SNAPSHOT

Most of the crops were planted in June, though some didn't get into the ground until July. Weather has been variable across the state, with some areas receiving several rounds of heavy thunderstorms and rainfall, while others have been relatively dry. Growers say the combination of a wet spring and relatively hot, dry summer has provided good growing conditions that should result in a beautiful harvest and, potentially, a bumper crop.

Agronomists report very few pests or diseases in the 2020 hemp crop's early stages, though hemp leaf spot and grasshoppers have been present in research plots, and growers have seen some nutritional issues.

The University of Kentucky continues to be a resource for producers and the industry at large, with recent studies examining hemp as a building material and assessing which varieties are best suited for hemp-based biofuel.

SUPPLY

Licensed outdoor acres: 32,000

Licensed indoor production: 4.6 million square feet (105.6 acres)

Total licensed acres 32,105.6

Licensed producers: 960 licensed growers (157 of those are not producing), 150 processors (60 are awaiting approval)

2018: 209 licensed growers, 43 licensed processors, 12,800 outdoor acres

2019: 1,047 growers, 58,000 outdoor acres, 6 million square feet of indoor production



KENTUCKY

OUTLOOK

At least four major companies in Kentucky have filed for bankruptcy in the past year—processors that grew too quickly and blamed a lack of federal regulation for putting a chokehold on the growth of their businesses and the industry.

In general, growers are slowing down and planting less. After struggling to find markets in 2019, more than 150 of the producers who requested licenses in 2020 did so only to store hemp from last year, not to grow additional crops. According to the state agriculture department, the 2019 season ended up with 26,500 acres grown by 978 licensed farmers. University of Kentucky agronomists say planted acreage is down by as much as 50% in 2020. Acreage is still mostly devoted to CBD, as it has been for the past five years, but more growers are showing interest in diversifying into grain and fiber crops, which still show comparatively higher profit margins than corn and soy.

Despite its heritage as a tobacco state, Kentucky banned sales of hemp cigarettes, cigars, whole hemp buds, chew or dip containing hemp leaf or floral material, hemp leaf or floral teas and ground flower in 2018. However, the state allows other forms of hemp CBD to be sold.



HIA MEMBER GROWER PROFILE

“Victory Hemp is planting more this year than we did last year, and that’s largely because it’s easier to attract farmers to grow (hemp for) grain as opposed to CBD. CBD has been in all the excitement. I think CBD acreage has decreased somewhat significantly across the state, which has made it more competitive for grain (hemp) to be incorporated into rotation.

“We’re seeing a bit more diversity in terms of what farmers are growing the crop for. Other commodity crops like corn and soy are really commodity priced, and it’s been challenging for farmers to make money on them.

“I still think that the industry has a long way to go with regard to developing genetics that are regionally conditioned to some of the southern states, and I think the best years of cultivation and productivity from this crop are ahead of us.”

Chad Rosen

Victory Hemp

Carrollton (according to Victory’s website)



MICHIGAN

Michigan's first year of hemp production occurred in 2019 under the 2014 U.S. pilot research program. For 2020, the state opted to continue operating under those rules, though it recently passed legislation to transition the program to a commercial one, submitting its plan to the USDA.

Michigan is an agriculturally diverse state that produces more than 300 commercial crops. The state's rich farming heritage and the fact that it's home to one of the oldest land-grant universities in the country is a boon for producing a new crop. Michigan went from licensing 564 growers in 2019 to nearly double that number in 2020.

Meanwhile, hemp processor-handler numbers grew only marginally, though hemp growers can now sell to marijuana processors through a new state law.



CULTIVATION SNAPSHOT

Michigan's upper and lower peninsulas are a mix of coastal regions and flat plains that include multiple microclimates. Hot, humid summers combined with ample rains can cause issues. The first year of production saw wet weather and thick humidity, resulting in crop failures and heavy pest and weed pressure.

According to a survey of hemp producers conducted by the state agriculture department, 61% said they were able to harvest their 2019 crop. Of the 39% of growers required to destroy their crops, the top reasons included crop failure (44%), noncompliant THC levels (27%) and a lack of labor (10%). Other respondents reported issues with male plants, mold and mildew.

The 2020 season has been drier than 2019, with higher heat and humidity. Despite the heat, growers say 2020 has been a good growing year overall.

GROWER PROFILE

"There is no excuse for someone to have hemp go hot and have it confiscated and destroyed. It's way too valuable to allow it to happen, and the way you avoid that is to start testing early and watch for cannabinoid suppression. Test weekly with an independent lab to check for THC levels. Early testing costs a little bit of money but not nearly as much as the final test, when the state tests for everything, and it's insurance—it protects your investment so you don't lose your crop. That's the most important thing people need to understand: There is no reason why anybody should test hot."

David Marshall

MorningStar Grower Services and St. Fiacre's Remedy Gobles





MICHIGAN

SUPPLY

Outdoor: 13,225 acres

Indoor: 11 million square feet (252.52 acres).

Total licensed acres: 13,477.52

Licensed producers: 553 growers, 447 processor-handlers

2019: 600 licensed growers. According to the agriculture department survey, 447 growers produced 3,678 outdoor acres and 400,977 square feet of indoor production.

OUTLOOK

Heading into its second year of production, Michigan's hemp market hasn't picked up significantly yet. The state doesn't list its participants publicly, so processors and growers struggle to connect with each another. In 2019, more than half of Michigan's producers—53%—still hadn't found a market for their crop, according to the state agriculture department.

More than 60% of producers grew hemp for CBD flower, while 16% produced seed and 6% grew for fiber.

It remains unlawful to add CBD to food or beverages or to sell it as a dietary supplement, following the FDA's current position that the cannabinoid is not generally regarded as safe.

The state doesn't have explicit laws against the lucrative smokable hemp market. With 350 licensed indoor growing locations and deep experience in greenhouse production, craft smokable hemp could be a winner for Michigan producers, especially in light of bans on the product in neighboring Indiana.

Under the updated Michigan Industrial Hemp Growers Act, passed in July, the state's hemp growers can sell harvested hemp directly to marijuana processors licensed under the Medical Marihuana Facilities Licensing Act, providing another avenue for sales.



NEW YORK

Progress in New York's hemp and CBD industry ground to a halt when the state's yet-to-be-enacted hemp legislation deferred any decisions about whether extracts, including CBD, can be added to food and beverages.

While New York seemed to be playing big and bold in the hemp industry last year, including making investments designed to attract hemp manufacturers, economic stressors stemming from the coronavirus crisis and other factors slowed expansion. Canadian marijuana giant Canopy Growth shuttered its hemp growing operations in New York, citing a glut of hemp from last year. The company had also begun work on its \$150 million plan to build a cannabinoid extraction facility in New York. However, the company shifted \$100 million to New York-based Acreage Holdings to shore up a hemp-focused subsidiary as part of a restructuring agreement between the two companies.

The state has a hemp champion in U.S. Sen. Chuck Schumer, who has spoken up for hemp growers and the broader industry on topics such as the USDA interim final rule, banking and financing while urging federal lawmakers to push back impending new production rules and pushing the FDA to regulate CBD.

Schumer's influence might have played a role in New York's land-grant school, Cornell University, receiving a \$500,000 grant from the U.S. Department of Agriculture to build a hemp germplasm center. The seed bank will help breeders and geneticists develop new varieties of industrial hemp while also helping identify genes for pest and disease resistance. Cornell researchers have intensified breeding and variety trialing efforts to determine which genetics perform best in the state's northern climate.

New York agriculture officials licensed nearly six times more outdoor acres of production and three times more growers in 2020 than the previous year. Growers are producing hemp this year under the 2014 U.S. pilot research program, which limits what they can sell commercially. The state also licensed 100 more processors, though hemp industry members have decried an industry that's stagnant because of New York's delayed CBD rules.

In August, New York agriculture authorities announced that the state is giving up on regulating the crop after Nov. 1, when the USDA's interim final rule is set to take effect. In a letter to farmers dated Aug. 14, New York Agriculture and Markets Commissioner Richard Ball said unless the USDA extends the 2014 U.S. Farm Bill or agrees to change its requirements for the 2021 growing season, growers will have to apply for producer licenses directly from the federal agency. He said the requirements concerning the scope and timing of sampling and testing, the disposal of noncompliant plants and reporting are "unrealistic and impose unreasonable burdens on growers and any state interested in administering a compliant program."



CULTIVATION SNAPSHOT

New York's growing climate is similar to the cultivation conditions in Europe, where many certified seed cultivars originate. The 2020 season started with a late snow and cold temperatures, but high heat this summer coupled with adequate rainfall have provided hemp crops with good conditions. Researchers have seen gypsy moths in their pest mapping this year.

New York hemp farmers are pursuing CBD- and CBG-rich flower varieties, but the state has also seen success from producers growing grain and fiber.



NEW YORK

SUPPLY

Licensed outdoor acres: 29,777

Licensed indoor production: 9,042,279 square feet (207.58 acres)

Total licensed acres: 29,984.58

Licensed producers and handlers: 667 growers, 104 processors, 11 grower-processors

2018: 21 licensed growers, 7 licensed processors, 2,000 outdoor acres

2019: 278 licensed growers, 5,000 licensed acres

OUTLOOK

New York passed legislation in 2019 that would set up a regulatory framework for the production and sale of hemp and hemp extracts in the state, while establishing important consumer protections. But hemp farms and businesses are still waiting for details.

Meanwhile, hemp farmers in the state say they are sitting on stockpiles of unprocessed biomass from the 2019 season, and because of regulatory uncertainty at the state and federal levels, many decided not to plant hemp this year. The state's operational processors have exceeded production capacity, and many processors that have received licenses cited concern and confusion over regulations for not entering the market. Products from outside New York continue to be sold in the state without the standards codified in the legislation and pending regulations.

State health regulators say they are working with the agriculture department to release a comprehensive set of rules under the 2018 U.S. Farm Bill and state legislation; however, it is likely the provisions—which establish labeling and manufacturing standards; establish rules and regulations for flower, vape and beverage products; create a licensing structure for retailers and manufacturers; and ensure consumer safety—will not be enforced until January 2021. The coronavirus crisis has also caused farmers and processors to scale back plans.

HIA MEMBER GROWER PROFILE

“We planted about the same amount as last year. Our plans were to double our planting from last year, but we cut that back once the uncertainty of COVID started to affect the market.”

“We stopped adding additional acres of hemp knowing the retail market of CBD would be negatively affected. We also knew the federal government would be dealing with COVID and push all regulations around CBD to the back burner and not make any progress.”

Allan Gandelman

Main Street Farms

Cortland





NORTH CAROLINA

Thanks to North Carolina's rich history of tobacco production, the state's hemp scene is well-outfitted with equipment, labor, tobacco barns and other infrastructure that can easily be adapted. A large majority of the state's hemp producers responded to intense market interest in whole hemp flower that is dried and sold for smokable products in specialty retail stores.

As a result, the state has seen little interest in hemp grain and fiber production, though a few producers are beginning to dabble in these areas as a result of the past year's roller coaster of regulations aimed at smokable hemp.

The state has experienced a growth surge in both outdoor and indoor hemp production and processing since 2017, its inaugural year of production. This trend continues with more than 500 additional licensed growers in 2020, along with an increase of 5,000 outdoor acres and 3 million square feet of greenhouse production. The state doesn't cap the number of hemp growers or acreage, and licenses are issued to growers year-round.



CULTIVATION SNAPSHOT

In 2019, North Carolina hemp producers faced a dry, warm growing season, along with high disease and pest pressure. Most farmers growing hemp for CBD production and smokable flower were challenged by corn earworms attacking flowers. Other issues included caterpillars, such as cabbage looper, tobacco budworm and wireworms, in the soil. Russet mites appeared in mid-July but were moderate into mid-August. Cucumber and Japanese beetles also showed up midsummer. Fusarium and canker disease came on shortly after planting, causing losses, and botrytis presented in mid- to late-flowering stages. Foliar diseases and southern blight were also problems in 2019.

This season, many growers planted toward the end of June and the beginning of July, driven somewhat by changes in marketing strategies and concern over compliance standards. North Carolina is operating under the 2014 U.S. pilot program for this growing season. According to state crop specialists, most growers are still focused on flower production for CBD and CBG.

In July and August, North Carolina growers reported drier conditions than they had seen in the past two years. As flowers began midseason, scouting revealed there were plenty of corn earworm in the environment. Plants are growing well but have been smaller than in past seasons, and some growers were reporting bacterial and fungal diseases.



NORTH CAROLINA

SUPPLY

Licensed outdoor acres: 16,433.83

Licensed indoor production: 7,276,393.6 square feet (167.04 acres)

Total licensed acreage: 16,600 acres

Licensed handlers: 1,503 growers. 1,086 processors

2018: 97 licensed growers, 19 licensed processors, 1,930 outdoor acres, 159,000 square feet of indoor production

2019: 933 licensed growers, 11,572 outdoor acres, 4.5 million square feet of indoor production

OUTLOOK

North Carolina hemp farmers and businesses put up a hard-won fight over the past year when the state's proposed farm bill included a measure to phase out and ban smokable hemp products. A majority of North Carolina farmers are producing hemp for CBD and the high-dollar smokable hemp segment. Law enforcement wanted smokable hemp banned, saying the look and smell make it impossible for law enforcement to differentiate from illegal marijuana.

But smokable hemp looks set to remain legal in North Carolina, at least for another year. However, the final measure, signed into law by the governor in June, also leaves out a broader regulatory structure to expand industrial hemp production in the state. Regulators previously said the legislative holdup on a hemp program in North Carolina made it hard to implement the USDA interim final rule in 2020.

Aside from smokable hemp, North Carolina lacks robust regulation for other hemp CBD products. Its current stance follows FDA's mandate that CBD cannot be legally added to any human food or animal feed.

HIA MEMBER GROWER PROFILE

"We have not been able to grow our business in any meaningful way during the pandemic thus far. On the one hand, we had just begun approaching retail businesses in our area about carrying the sublingual oil and topical salve products from our 2019 grow season when the pandemic struck, and those opportunities quickly dried up. At about the same time, we had to shift our focus from marketing and other winter season work to growing this season's hemp crop.

"This winter, we will have to reassess our sales channels and develop an effective social marketing campaign that we can carry on through the grow season in 2021, but for this year we have essentially had to let go of any potential sales as a direct result of the pandemic."

Nathan Wheeler

RavenRidge Family Farm

Pilot Mountain





OREGON

Oregon has established itself among the leaders of the hemp revolution, building on experience gained while cultivating marijuana since 2015. Some marijuana growers have diversified their revenue stream with hemp, and the cannabis industry is expected to soon become one of the largest sectors in Oregon's diverse agriculture industry.

The state received federal attention from its hemp expertise, with Oregon State University receiving \$2.5 million in federal funds at the end of 2019 for the school's new hemp research program.

The university established the Global Hemp Innovation Center, a collaborative research and development facility where faculty members focus on plant research, food innovation, animal feed, cannabis-based pharmaceutical development, public health, policy and engineering. The center is working with universities and researchers worldwide to advance innovation and already has made large strides in hemp genetics, pest and disease research, irrigation work and more. With a special focus on genetics, Oregon State will be the first and only university in the U.S. to certify hempseed, which will be available for the state's hemp farmers to plant.

Oregon's U.S. senators and other lawmakers have also been vocal champions for the struggling hemp industry, pushing the USDA to delay implementation of its interim final rule and calling on federal financial institutions to provide banking and credit services. They've also urged the FDA to regulate CBD.



CULTIVATION SNAPSHOT

Freak midseason hailstorms, mold issues from too much rain and an early frost in 2019 damaged hemp crops across the state. The 2020 season has been comparatively mild, though less sun than normal might reduce plant size and yield, according to growers. Conditions in midsummer were favorable, and farmers were holding out hope they would be spared from the bad weather they experienced the previous year.

The state is producing hemp under the 2014 U.S. Farm Bill pilot research program and submitted its plan for compliance with the 2018 U.S. Farm Bill and the U.S. Department of Agriculture's interim final rule by the deadline in August. However, state agriculture officials hoped the pilot's Oct. 31 cutoff will be extended to avoid complications—and potential risks of noncompliance for growers—with the switch to the USDA's new regulations.

Like growers in other states, Oregon farmers have cut back significantly on hemp acreage in 2020. The state licensed fewer than 30,000 acres of production this year compared with more than 50,000 acres in 2019. There are also 300 fewer growers registered to grow hemp this year.



SUPPLY

Licensed outdoor acreage: 29,604 acres

Licensed indoor production: 7,309,873 square feet (167.81 acres)

Total licensed acres: 29,771.81

Licensed handlers: 1,129 growers, 439 processors

2018: 233 licensed growers, 170 licensed processors, 3,500 outdoor acres

2019: 1,449 licensed growers, 51,313 outdoor acres, 7.7 million indoor square feet

OUTLOOK

Because of the number of new growers trying their hand at production, Oregon's hemp farmers experienced some of the same struggles with oversupply in 2019 that the state's marijuana growers faced. Some fared well while others failed, but Oregon's high-quality hemp flower has remained in demand from consumers in eastern states, thanks to the growing smokable hemp trend. Despite new hemp markets coming online, Oregon farmers still garner interest from customers in regions with limited access.

Beyond smokable products, Oregon's CBD stance is varied. The state allows compliant, processed hemp and extract to be used as an ingredient in food and nonalcoholic beverages. However, a food-safety license is required. Everyone in the supply chain, starting with the registered hemp handler to the final point of sale, must be licensed by the state's food-safety program.

But alcoholic beverages containing CBD are another story. At the end of 2019, the Oregon Liquor Control Commission banned the manufacture, distribution and sale of these products and restricts liquor-licensed businesses such as bars and restaurants from blending CBD with alcohol.

The OLCC cited concerns raised by the FDA in November, saying it could not conclude CBD is generally recognized as safe for use in human or animal food, based on the lack of scientific information available at the time to support cannabidiol as a food ingredient.

HIA MEMBER GROWER PROFILE

"It's hard to tell if it is the virus or the flood of hemp on the market. It seems like there is so much cheap—or free—biomass out there that we will not recover from the flood this year. It's clear that selling biomass is a thing of the past unless you are precontracted with a processor. We have done well with flower but still have most of our oil. I don't think the market would be any different without the virus. People are still buying hemp and CBD."

Dustin Mellor

Melrose Hemp Co.
Roseburg

