

# HEMP BENCHMARKS®

## U.S Wholesale Hemp Price Benchmarks

December 2021

### HEMP BENCHMARKS® U.S. PRICING CATEGORIES



#### GENETICS

- Industrial Seeds
- CBD Seeds (Non-Feminized)
- CBD Seeds (Feminized)
- CBD Clones
- CBG Seeds
- CBG Clones



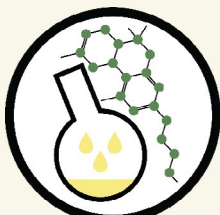
#### FARMING

- CBD Biomass Aggregate Pricing
- CBD Biomass Volume Purchase Breakdown
- CBD Flower
- CBG Biomass



#### EXTRACTION

- Crude CBD Hemp Oil



#### PROCESSING

- Refined Hemp Oil (Aggregate)
- CBD Distillate - Full Spectrum
- CBD Distillate - Broad Spectrum
- CBD Distillate - THC Free
- CBD Isolate
- CBG Distillate
- CBG Isolate

U.S. Region Products	Units	Assessed Price	Low	High
CBD Biomass (Aggregate)	\$ / % CBD / pound	\$0.35	\$0.06	\$1.00
CBD Biomass (0 - 25K pounds)	\$ / % CBD / pound	\$0.49	\$0.22	\$1.00
CBD Biomass (25K - 100K pounds)	\$ / % CBD / pound	\$0.34	\$0.18	\$0.70
CBD Biomass (100K - 1M pounds)	\$ / % CBD / pound	\$0.20	\$0.12	\$0.25
CBD Biomass (1M+ pounds)	\$ / % CBD / pound	\$0.10	\$0.06	\$0.18
CBD Flower (Bulk)	\$ / pound	\$266	\$50	\$950
CBD Clones	\$ / each	\$2.56	\$2.00	\$3.50
Industrial Seeds	\$ / pound	\$3.98	\$3.80	\$4.20
CBD Seeds (Non-Feminized)	\$ / pound	\$198	\$90	\$410
CBD Seeds (Feminized)	\$ / seed	\$0.59	\$0.15	\$1.75
Crude CBD Hemp Oil	\$ / kilogram	\$127	\$70	\$380
Refined Hemp Oil (Aggregate)	\$ / kilogram	\$639	\$170	\$2,500
CBD Distillate - THC Free	\$ / kilogram	\$991	\$350	\$2,500
CBD Distillate - Broad Spectrum	\$ / kilogram	\$456	\$250	\$675
CBD Distillate - Full Spectrum	\$ / kilogram	\$355	\$170	\$1,435
CBD Isolate	\$ / kilogram	\$440	\$250	\$750
CBG Biomass (Aggregate)	\$ / % CBG / pound	\$0.37	\$0.22	\$1.05
CBG Seeds	\$ / seed	\$0.88	\$0.35	\$1.75
CBG Clones	\$ / each	\$2.62	\$2.20	\$3.25
CBG Distillate	\$ / kilogram	\$754	\$350	\$1,609
CBG Isolate	\$ / kilogram	\$1,454	\$700	\$1,950

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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.

**Commodity market participants benefit from increased price transparency.**

### DECEMBER 2021 REPORT CONTENTS

#### Price Commentary

- CBD and CBG Biomass prices preserve last month's gains; CBD extract prices slide again; Delta-8 THC price continues to fall in December; Delta-10 THC and CBN prices both see significant declines in third month of reporting. [\*Page 3\*](#)

#### December Production Update

- Tough market, elevated prices for traditional row crops among early signs suggesting hemp acreage may not bounce back in 2022 after contracting in 2020 and 2021. [\*Page 11\*](#)

#### Hemp Fiber Emerging as New Industry Darling, but Challenges Remain

- Fiber hemp processing infrastructure and supply chains are developing, but worries about current viability of end markets persist. [\*Page 12\*](#)

#### Transportation Update

- Average shipping rates increased across the board again this month on continued supply chain issues and holiday season demand for trucks. [\*Page 15\*](#)

#### Federal Regulatory Updates

- Cannabis banking legislation dead for this year; new CBD regulatory bill introduced in the House; USDA updates hemp crop insurance policies for increased flexibility. [\*Page 17\*](#)

#### Industry Updates

- Businesses tackle how to deal with spent hemp biomass post-extraction; market forces may lead to more organic hemp. [\*Page 19\*](#)

#### State Updates

- Developments in hemp regulation, licensing and acreage, and growing conditions from numerous states. [\*Page 20\*](#)

#### International Updates

- Hemp news from Latin America, the European Union, Canada, and Fiji. [\*Page 24\*](#)

# HEMP BENCHMARKS®

## U.S Wholesale Hemp Price Benchmarks

December 2021

U.S. Region Products*	Units	Nov-21	Dec-21	MoM \$Chg	MoM %Chg
CBD Biomass (Aggregate)	\$ / % CBD / pound	\$0.34	\$0.35	\$0.01	3%
CBD Biomass (0 - 25K pounds)	\$ / % CBD / pound	\$0.49	\$0.49	\$0.00	0%
CBD Biomass (25K - 100K pounds)	\$ / % CBD / pound	\$0.34	\$0.34	\$0.00	0%
CBD Biomass (100K - 1M pounds)	\$ / % CBD / pound	\$0.20	\$0.20	\$0.00	0%
CBD Biomass (1M+ pounds)	\$ / % CBD / pound	\$0.11	\$0.10	(\$0.01)	-9%
CBD Flower (Bulk)	\$ / pound	\$281	\$266	(\$15)	-5%
CBD Clones	\$ / each	\$2.50	\$2.56	\$0.06	2%
Industrial Seeds	\$ / pound	\$3.96	\$3.98	\$0.02	1%
CBD Seeds (Non-Feminized)	\$ / pound	\$209	\$198	(\$11)	-5%
CBD Seeds (Feminized)	\$ / seed	\$0.43	\$0.59	\$0.16	37%
Crude CBD Hemp Oil	\$ / kilogram	\$146	\$127	(\$19)	-13%
Refined Hemp Oil (Aggregate)	\$ / kilogram	\$634	\$639	\$5	1%
CBD Distillate - THC Free	\$ / kilogram	\$968	\$991	\$23	2%
CBD Distillate - Broad Spectrum	\$ / kilogram	\$495	\$456	(\$39)	-8%
CBD Distillate - Full Spectrum	\$ / kilogram	\$381	\$355	(\$26)	-7%
CBD Isolate	\$ / kilogram	\$456	\$440	(\$16)	-4%
CBG Biomass (Aggregate)	\$ / % CBG / pound	\$0.38	\$0.37	(\$0.01)	-3%
CBG Seeds	\$ / seed	\$0.68	\$0.88	\$0.20	29%
CBG Clones	\$ / each	\$2.60	\$2.62	\$0.02	1%
CBG Distillate	\$ / kilogram	\$695	\$754	\$59	8%
CBG Isolate	\$ / kilogram	\$1,392	\$1,454	\$62	4%

## PRICE COMMENTARY

The overall assessed price for CBD Biomass was essentially stable this month, preserving the 13% price gain that was observed in November. Similar to last month, this month's aggregate price for CBD Biomass is still down by roughly a third compared to a year ago at this time.

While biomass prices held, rates for CBD extracts saw declines for the most part. The aggregate assessed price for Refined Hemp Oil, which includes various types of CBD distillates, was on the rise again in December. However, as in previous months this was due entirely to an increase in the price of THC Free CBD Distillate; all other types of CBD Distillate saw price declines in December.

CBG product prices were largely on the upswing for the second straight month, with the exception being largely stable, but slightly declining prices for CBG Biomass.

Notable jumps were observed in rates for both Feminized CBD Seeds and CBG Seeds. This is due to the fact that most seed purchases taking place domestically at this time are being made by indoor and greenhouse growers, who typically buy smaller amounts at higher prices.

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\*Hemp Benchmarks has modified our CBD and CBG Biomass assessment methodology. Due to a limited number of reported transactions for such biomass, and the relatively smaller volumes being traded currently, we are temporarily employing historical correlations according to deal size in order to calculate price assessments for the aforementioned product categories.

#### **Delta-8 & Delta-10 THC Distillate\***

The observed price for Delta-8 THC Distillate declined for the sixth consecutive month, slipping 4% from November to average \$839 per kilogram in December. This month's decline comes after we observed some price stabilization last month. The low end of the reported price range fell to \$450 per kilogram, down from \$650 per kilogram in November. The high end of the observed price range declined as well, from \$1,200 per kilogram in November to \$1,100 per kilogram this month.

Hemp Benchmarks is able to report prices for Delta-10 THC Distillate this month for the third time. Delta-10 THC Distillate averaged \$2,969 per kilogram in December, down 13% from November, when we observed a 5% month-on-month downturn. Observed deals for delta-10 THC ranged between \$2,400 and \$3,500 per kilogram this month, with the reported price range contracting significantly. The contraction was due almost entirely to a sharp drop in the high end of the range, which was reported to be at \$5,000 per kilogram in November.

#### **Smokable Hemp Flower**

The overall assessed price for all types of smokable CBD Flower declined this month. Despite month-on-month shifts in pricing for this product throughout 2021, the year concluded with December's spot price settling at roughly the annual average for the year, which was \$265 per pound. In 2020, the annual average price for smokable CBD Flower was \$185 per pound.

#### **Indoor-Grown CBD Flower (Bulk)**

- Average: \$574 per pound (down 7% from November)
- Low - High: \$200 - \$950 per pound
- The average price is 116% higher than the overall CBD Flower spot price.

#### **Greenhouse-Grown CBD Flower (Bulk)**

- Average \$384 per pound (down 2% from November)
- Low - High: \$80 - \$700 per pound
- The average price is 44% higher than the overall CBD Flower spot price.

#### **Outdoor-Grown CBD Flower (Bulk)**

- Average: \$156 per pound (up 2% from November)
- Low - High: \$50 - \$400 per pound
- The average price is 41% lower than the overall CBD Flower spot price.

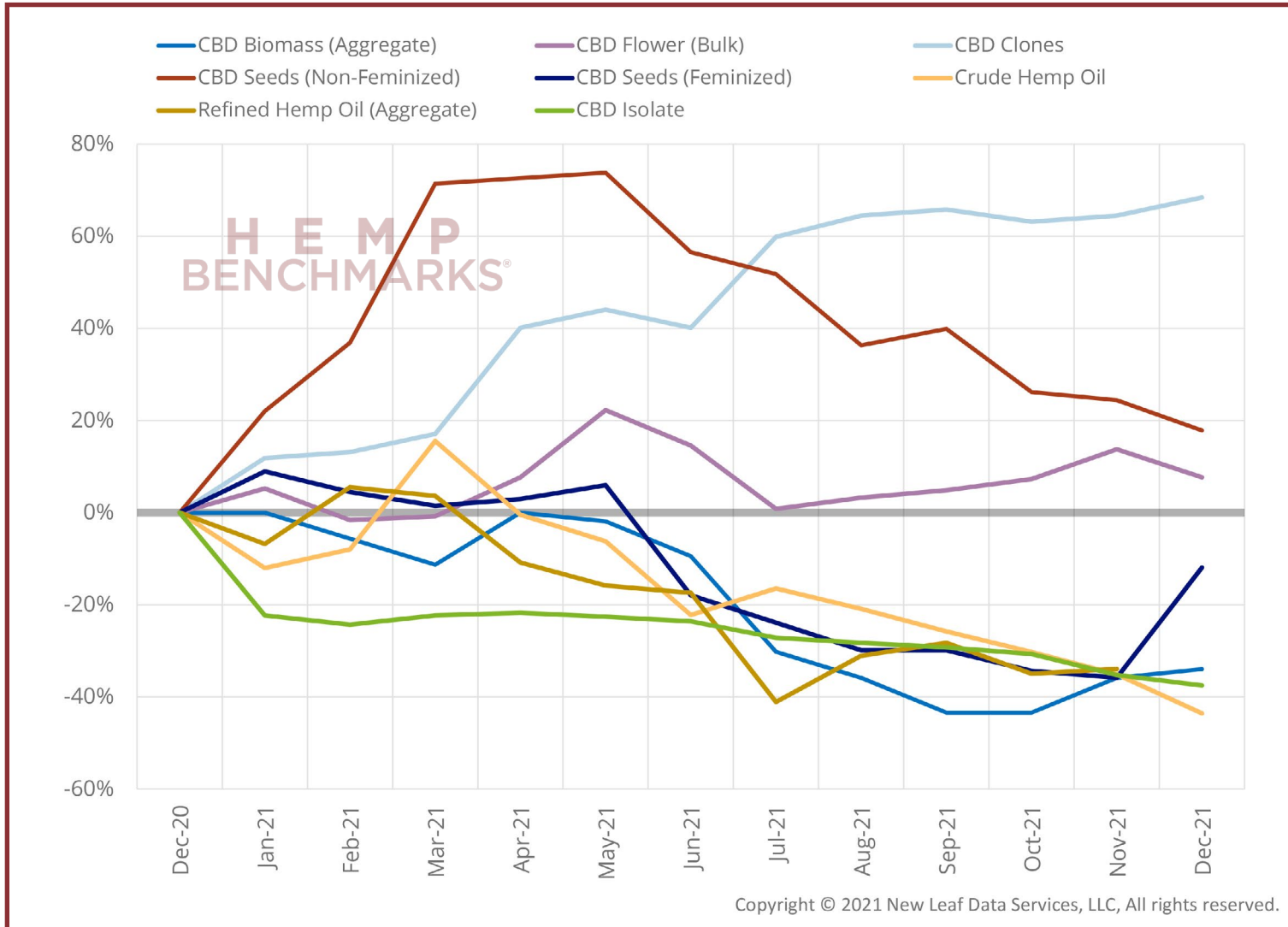
Smokable CBG Flower\* prices held fairly steady again in December at \$219 per pound, up just \$3 compared to both October and November. The observed price range for individual transactions expanded month-on-month, with deals from \$80 to \$400 per pound reported by our PCN.

#### **CBN Isolate\***

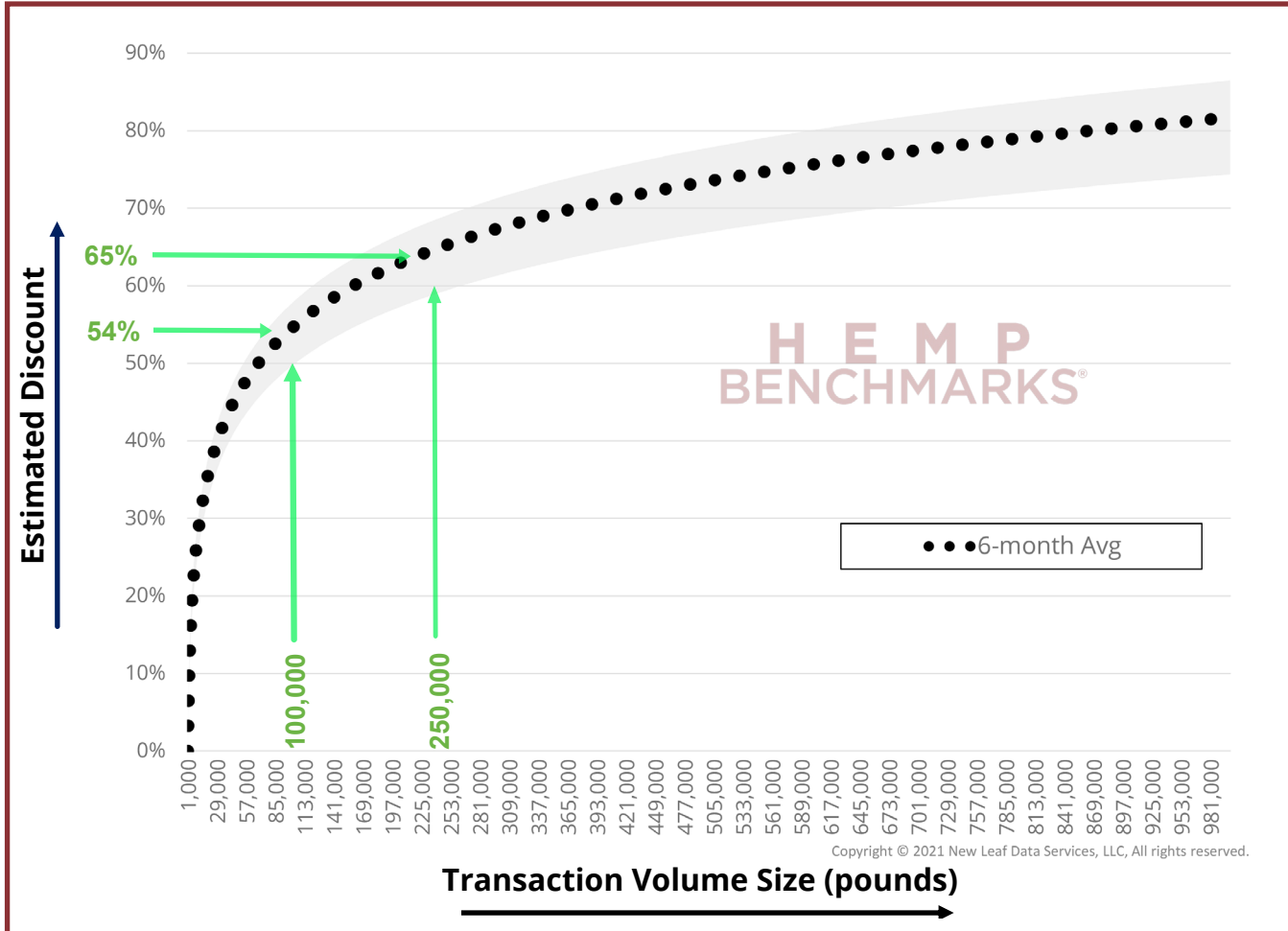
According to reported deals from our PCN, the average price for CBN Isolate in December was \$3,630 per kilogram, down over 5% from November. Individual transactions were reported to span between \$2,675 and \$4,700 per kilogram this month, with both ends of the observed price range down about \$300 from last month.

*[\*Editor's Note: The prices quoted above for Delta-8 THC Distillate, Delta-10 THC Distillate, Smokable CBG Flower, and CBN Isolate are raw transaction data and do not constitute official Hemp Benchmarks price assessments. Transaction data for such products is currently being vetted to meet Hemp Benchmarks methodology requirements, which include, but are not limited to, several months of statistically significant data and consistent or increasing transaction volume.]*

### Prices % Change from DECEMBER 2020



### CBD Biomass Volume Purchase Discounts (% off of a 1,000-pound transaction)



#### CBD Biomass Volume Discount Pricing

Volume discount pricing is a strategy that provides a financial incentive for purchasing a product or service in large amounts. In simple terms, customers purchasing more generally receive a lower price per unit.

Based on the data we have collected over the past six months, we have calculated the volume discounts that biomass purchasers received each month when doing deals larger than 1,000 pounds. Each month has shown a drastically different discount curve (as represented in the grey area) dictated by the absolute price level, season, and transactions collected. The black dotted line shows the average of the past six monthly discount curves and represents a good proxy that buyers and sellers can use to settle trades of various sizes.

**Ask us how our pricing can help negotiate your next transaction**

### Wholesale Prices - Correlation Matrix: April 2019 to December 2021 Data

	CBD Biomass	CBD Flower (Bulk)	Clones	Industrial Seeds	CBD Seeds (Non-Feminized)	CBD Seeds (Feminized)	Crude Hemp Oil	Refined Hemp Oil (Aggregate)	CBD Isolate
CBD Biomass		0.65	0.90	0.30	0.95	0.87	0.93	0.99	0.99
CBD Flower (Bulk)	0.71		0.62	0.53	0.59	0.63	0.60	0.58	0.63
Clones	0.92	0.62		0.29	0.93	0.83	0.85	0.91	0.91
Industrial Seeds	0.28	0.53	0.29		0.17	0.42	0.17	0.28	0.26
CBD Seeds (Non-Feminized)	0.95	0.59	0.93	0.17		0.86	0.96	0.96	0.97
CBD Seeds (Feminized)	0.86	0.63	0.83	0.42	0.86		0.79	0.88	0.86
Crude Hemp Oil	0.93	0.60	0.85	0.17	0.96	0.79		0.94	0.95
Refined Hemp Oil (Aggregate)	0.99	0.58	0.91	0.28	0.96	0.88	0.94		0.99
CBD Isolate	0.99	0.63	0.91	0.26	0.97	0.86	0.95	0.99	

#### What does this mean?

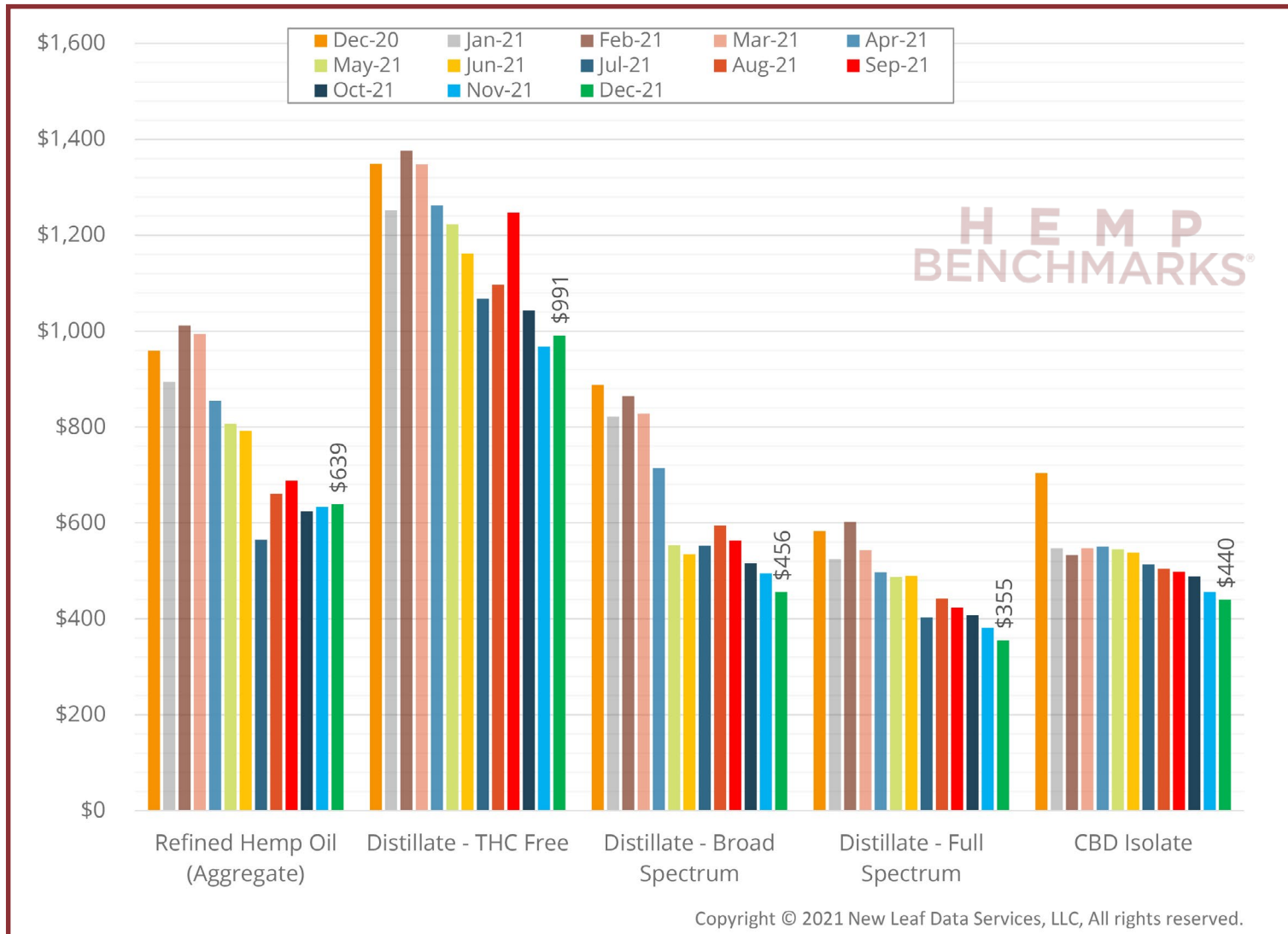
This wholesale price correlation matrix was generated from historical Hemp Benchmarks price assessments. It shows which product prices move together, move in opposite directions, or have no relationship at all. Correlations range from 1 to -1. If two products have a perfect positive correlation coefficient of 1, then the prices for each have been observed to move in the same direction, either up or down, by the same magnitude. A perfect negative correlation of -1 means that prices for two products move in opposite directions. A correlation of 0 indicates no relationship at all.

#### Example:

The correlation between Refined Hemp Oil and CBD Biomass is 0.99. This means that, based on currently available data, the prices of these two products have almost always moved in the same direction by nearly the same magnitude month-to-month.



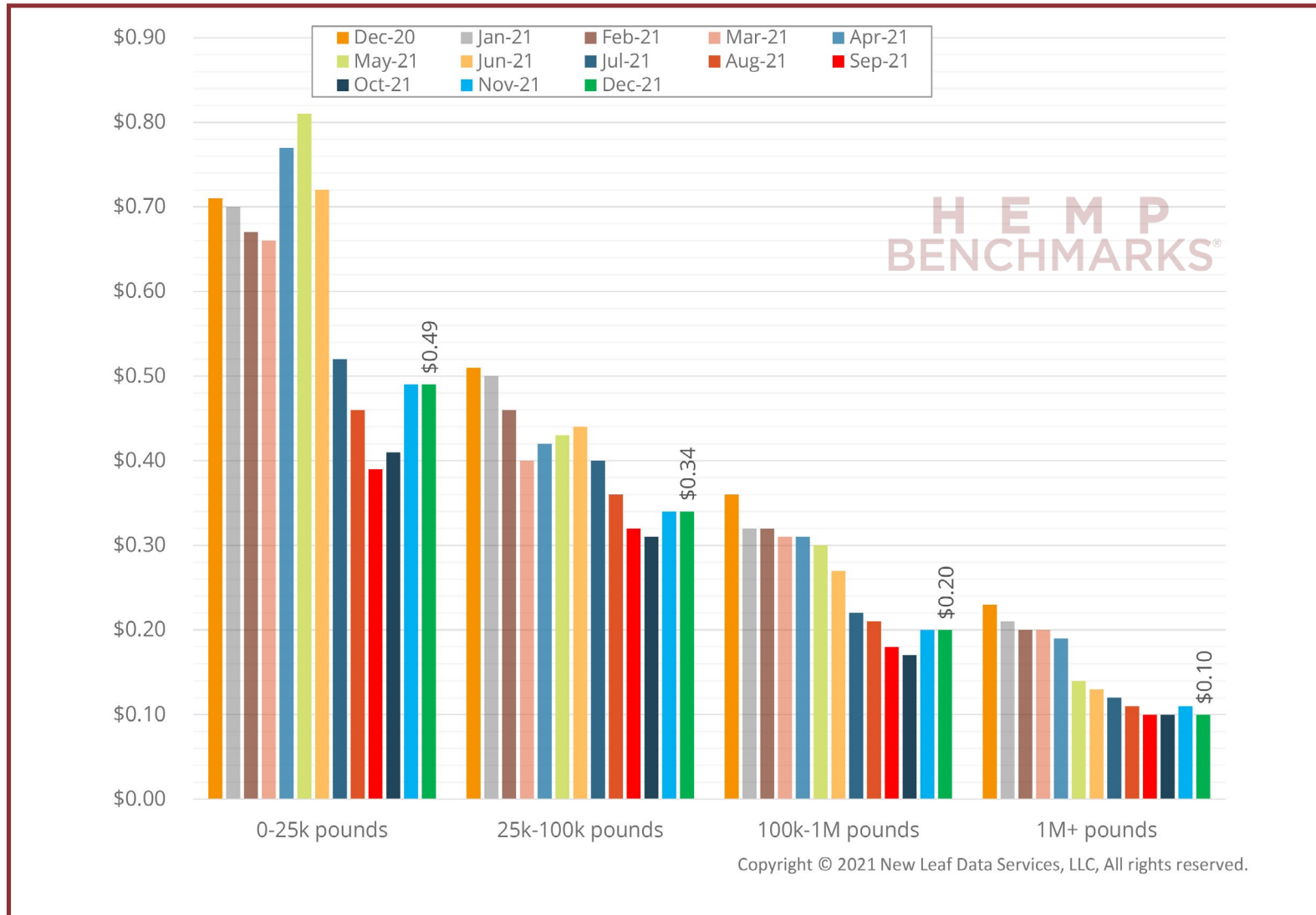
### Refined Hemp Oil Pricing Trends: (\$ / kilo)



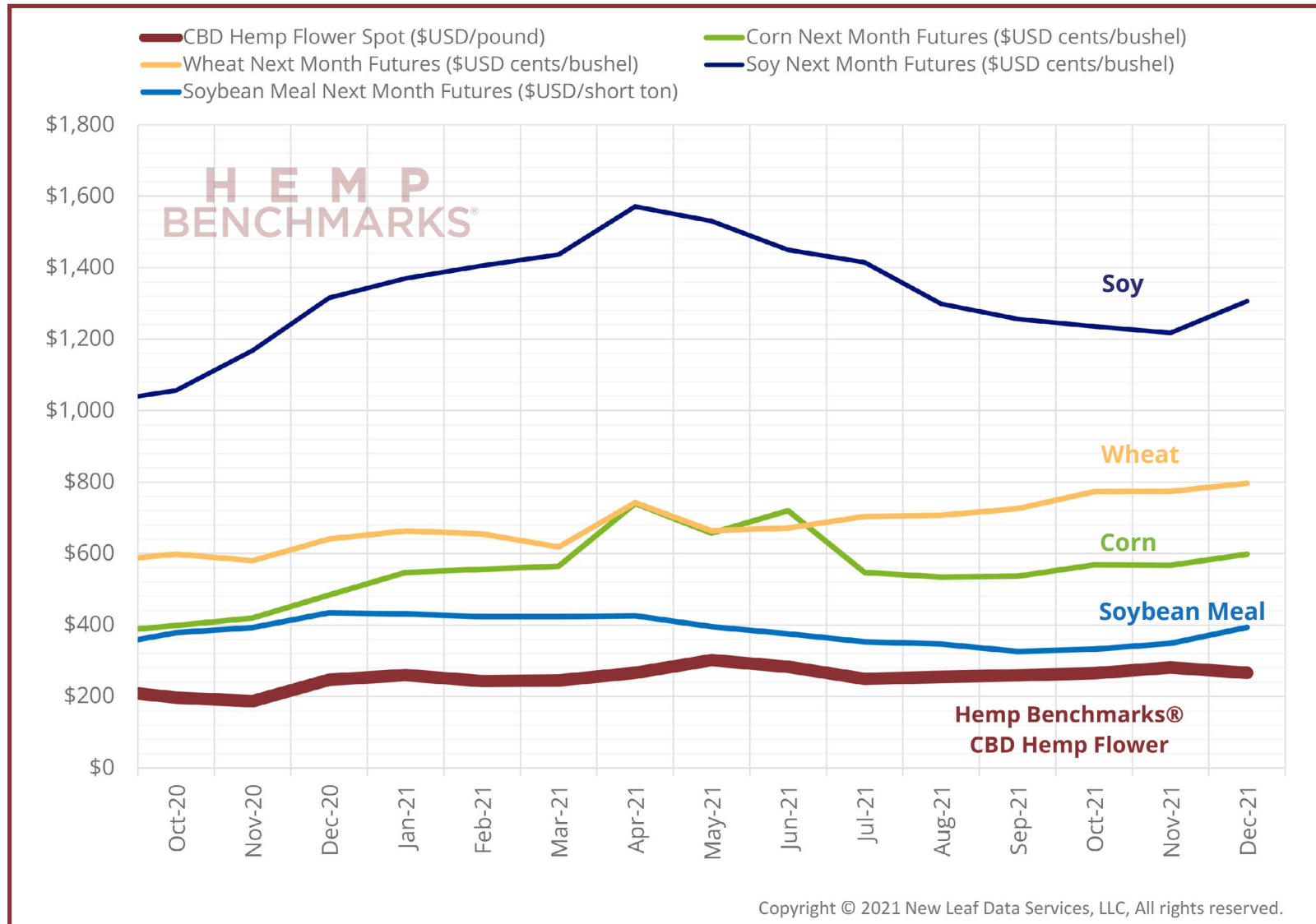
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### CBD Biomass Pricing Trends: (\$ / %CBD / pound)



### Hemp Pricing vs. Other Commodities October 2020 to December 2021



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### December Production Update

As we approach the new year, many in the hemp industry are taking stock of the just-concluded 2021 season while considering how best to approach 2022. Many experienced hemp growers and processors, who learned hard lessons from the “green rush” years immediately following hemp’s legalization in 2018, appear to be taking a much more cautious approach for next year.

According to Steve Fuhr, an Oregon-based hemp processor and multi-state industry consultant, the predominant message he is hearing from cultivators is that many are not planning to plant hemp in 2022. “The vast majority of hemp farmers I know are not growing it,” he told Hemp Benchmarks.

Fuhr pointed to a number of factors currently depressing the hemp sector. There is the dramatic drop in prices due to massive overproduction of CBD hemp biomass that still remains in storage and without buyers, with the rough market conditions leading to a “hangover” amongst growers, he said. Additionally, Fuhr believes the hemp fiber and grain markets, while promising, “are not getting any traction.”

Meanwhile, Fuhr noted disruptions from the ongoing COVID-19 pandemic are “still reverberating in the economy.” For example, hemp logistics company Fide Freight provided Hemp Benchmarks with data on rates to ship bulk hemp products by truck that show significant increases in average shipping prices compared to last year. As of this month, average rates to move bulk hemp products in a “dry van” from Denver, Colorado to various selected locations increased anywhere from 22% to 94% year-on-year, with the route from Denver to Los Angeles, California seeing the largest jump. More detailed hemp transportation cost data can be found below, on [page 15](#), and is included each month in our Hemp Spot Price Index reports.

### *High Prices for Traditional Row Crops May Suppress Hemp Acreage Again*

Ken Anderson is CEO for Wisconsin-based Legacy Hemp Holdings. His operation sells seed and production guides, in addition to contracting acreage for both hemp grain and fiber. He told Hemp Benchmarks he expects less hemp acreage and farmers next year due to several factors; among them rising prices for mainstream crops like corn and soybeans that, in turn, make hemp production less appealing. Similar factors at the start of the 2021 season led to fewer acres planted with hemp, according to Hemp Benchmarks’ reporting from earlier this year.

“It’s going to be tough to get acreage,” Anderson said, “because farmers have to jump through a ton more hoops to grow hemp. Also, it’s a crop they’re not really used to growing. A lot of these farmers know how to be successful with growing corn and soybeans. When prices are elevated it doesn’t make financial sense [to grow hemp], unless we can really pay a premium for their crops. And unfortunately, in the hemp realm right now, it’s kind of a race to the bottom. Everyone that’s trying to pick up new business is doing it by becoming the low-cost provider, rather than focusing on quality.”

Colorado, one of the leading states for hemp cultivation and processing, is a prime example of how the market has contracted. According to the newly-released [2022 Colorado Business Economic Outlook](#), produced by the University of Colorado Boulder, hemp cultivation in the state dropped from 2,000 registered growers in 2019 to about 500 in 2021, and from 87,000 acres to 21,000 in the same span. “Growers cite the lack of a market and processing facilities for hemp fiber and competition from other states legalizing industrial hemp,” [the report continued](#), “creating an abundant supply on the market.”

### ***More Education Needed for Both Cultivators and Consumers***

According to Michael “Coach” Harris, founder of the [Georgia Hemp Association](#), his local hemp market is being hampered by a lack of education amongst both cultivators and consumers. As an example, he told Hemp Benchmarks, many hemp farmers in his state are still uncertain about the best seeds and genetics to use in Georgia. He said that while the University of Georgia has done some research on that issue, “I don’t think that information was widely shared. So we still got a lot of the ‘wild, wild west,’ with people importing genetics from Oregon, California, and elsewhere - and they’re not getting the same results in Georgia soil.”

Another issue for Georgia hemp farmers, Harris noted, is the lack of testing facilities to check compliance with THC limits. Local cultivators, he said, have been left with only one testing company in Georgia: an independent laboratory, hired by the state. The lab has a mobile unit that comes out to the hemp farmer’s property.

Harris pointed out that delta-8 THC, the intoxicating cannabinoid that is currently being manufactured from hemp-derived CBD (and that has been outlawed in a number of states), has been a “life saver” for his region’s hemp industry. “I think that’s why we’re fighting so hard to keep it legal,” he added. “If we [ban] delta-8, there’s going to be some other cannabinoids later down the road that they’ll try to ban, because of the way we process it. So this is a fight that we need to [make] now.”

### ***Hemp Fiber Emerging as New Industry Darling, but Challenges Remain***

While many hemp growers wonder if the market for CBD and other cannabinoids has plateaued, the still-developing hemp fiber and grain sectors have received more attention from both cultivators

and the media. As we reported back in September, the National Hemp Association, reportedly in response to a request from the White House Domestic Policy Office, [released a report](#) on the economic impact of a sustainable U.S. hemp industry. According to a press release, the report “outlines a pathway to establish a new sustainable economy around hemp fiber and grain,” with a projected \$32 billion impact by 2030.

Melissa Nelson-Baldwin is co-owner of South Bend Industrial Hemp in Kansas. The company has been growing hemp grain and fiber since 2019 and opened its processing facility this past June. Nelson-Baldwin told Hemp Benchmarks that their decortication facility, believed to be the first of its kind in the Midwest, has been busy ever since it was first switched on. Business for hemp fiber, she said, has “grown exponentially. There was none three years ago, and now I need three shifts at my facility.”

South Bend, according to Nelson-Baldwin, is trying to create a network of fiber processing facilities across the Midwest, “so we can get [the hemp] farmer taken care of, and get his acres to the closest facility. And then, by working together, we can fill some of these large volume orders and get our client taken care of.” The processed hemp fiber, she added, is being purchased by a wide variety of industries; from non-woven textiles to bioplastic facilities. “Every industry that you can think of is calling and asking how they can utilize hemp,” she said.

Nelson-Baldwin’s operation has contracted for hemp fiber with farmers all across the region, “from South Dakota to Texas.” Most of the cultivators she works with are multi-crop farmers, who on average grow between 25 to 50 acres of fiber hemp. She recently hosted a growers appreciation dinner at their facility and said her farmers are all “pretty happy; they’re going to increase their acreage for 2022.” Nelson-Baldwin said that her company is trying to contract 4,000 acres of hemp fiber next year, with contract prices at \$240 per ton.

In 2021, Nelson-Baldwin told Hemp Benchmarks that South Bend contracted 1,000 acres of fiber hemp, but bought another 600 acres' worth on the spot market. Contract prices ranged between \$150 - \$200 per ton based on quality, with all the production at \$200 per ton this year. Planting density is typically 800,000 to 1.2 million seeds per acre. Yield is generally around seven-and-a-half to eight bales per acre, with each bale around 1,100 pounds; so roughly four to four-and-a-half tons per acre, or between \$800 and \$900 in revenue per acre for farmers. Nelson-Baldwin noted that growers can employ existing equipment for planting and harvesting.

There are some misgivings, however, that hemp grain and fiber have become the latest buzzwords in the hemp industry, similar to how CBD was acclaimed several years ago. "One of my worries is that everyone now is promoting fiber, that it is the next great thing for hemp," said Ken Anderson at Legacy. "It is the next great thing, but the market has to be established. If we make the same mistakes we did with CBD that will create another problem. I always look at trying to do business backwards. You have to have a buyer and market first. If everyone puts money into processing but no buyers, it's set up to fail."

Anderson said that hemp fiber is not yet cost competitive and any future hemp fiber market remains hobbled by a lack of federal government regulation. As yet, he pointed out, "there is no standard in America established for hemp fiber, for different input specifications. What is the standard for technical-grade fiber? What's the [required] length of fiber? That's not established in our industries as it is in other industries."

### ***2021 Weather Events Challenged Farmers, Impacted Production***

As [Reuters noted recently](#), extreme weather events in 2021 "shattered records around the globe." According to the wire

service, the year began with dangerously low temperatures in Texas. Historic drought conditions and a record heatwave sparked massive wildfires in the western U.S. during the summer months, especially in California and Oregon. In August and September, Hurricane Ida killed nearly 100 people as it moved from Louisiana to the Northeastern U.S., where the storm was blamed for flash flooding. A so-called "atmospheric river" of moisture, meanwhile, brought heavy rains and flooding to parts of the Pacific Northwest.

Vermont hemp farmers saw their crops damaged by heavy rains in 2021. Mike DiTomasso, Agricultural Resource Management Specialist for the state Agency of Agriculture Food & Markets' Hemp Program, wrote in an email to Hemp Benchmarks: "Vermont growers suffered from a variety of fungal issues during the 2021 season, which led to reduced yields, and in some cases total crop losses. Most notably, Septoria Leaf Spot was observed as being the primary culprit, but other common pathogens such as Botrytis were also present. Most cultivators attributed the issues to above average precipitation that the state experienced during the months of July and August. Some growers reported over 20 inches of rain during the month of July alone."

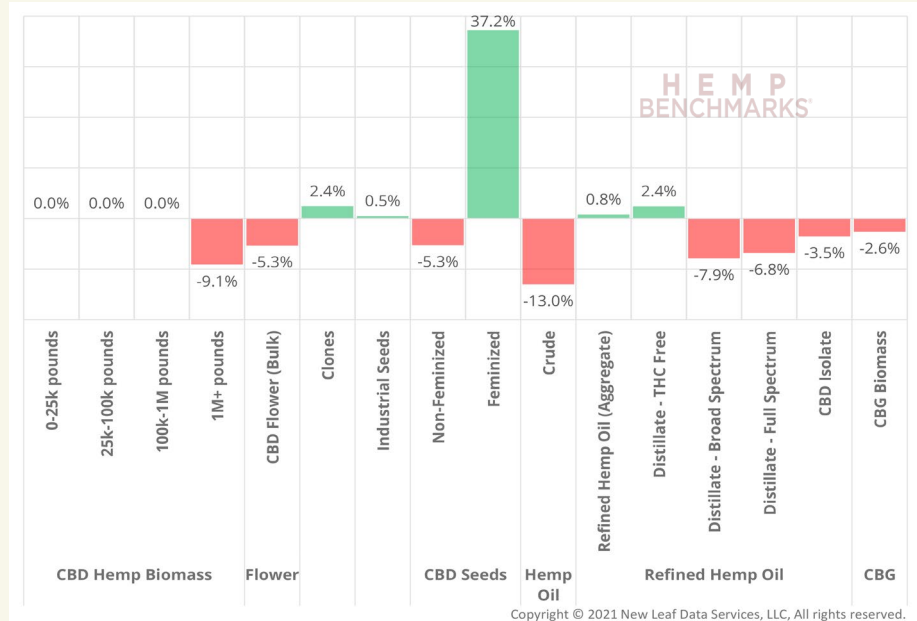
In New York, heavy, late summer rains also damaged local hemp crops. One veteran hemp cultivator, Allan Gendlemen, told [WSHU Radio](#) that he lost one of his six acres to rain in 2021. "This whole thing got completely flooded and the plants literally just died," he said. "And so now, this is empty field."

Ken Anderson in Wisconsin noted weather conditions for hemp cultivation were "all over the board" in 2021. He works with hemp farmers across the country and wondered if the extreme weather shifts may be representative of a "new normal" brought on by climate change. "We've had complete crop failure due to no moisture; we've had loss of crop due to excess moisture at harvest time," he said. "But I would say we're kind of in the median of what is normal. Basically the guys that did really good [this past season]

made up for guys that didn't do so well. As a buyer of crops we ... have to diversify."

Hemp Benchmarks relayed reports on growing conditions in various states throughout this past season, with many across the country reporting negative impacts on hemp crops due to extreme weather. On top of grappling with unpredictable and sometimes unprecedented conditions in general, such weather events are complicating efforts by farmers and genetics companies to determine which hemp varieties work best in their regions. For example, current cannabinoid hemp varieties have not generally been bred with drought tolerance in mind, which is an issue that is top of mind for growers in Oregon and other parts of the American West.

### Month-on-Month % Price Change

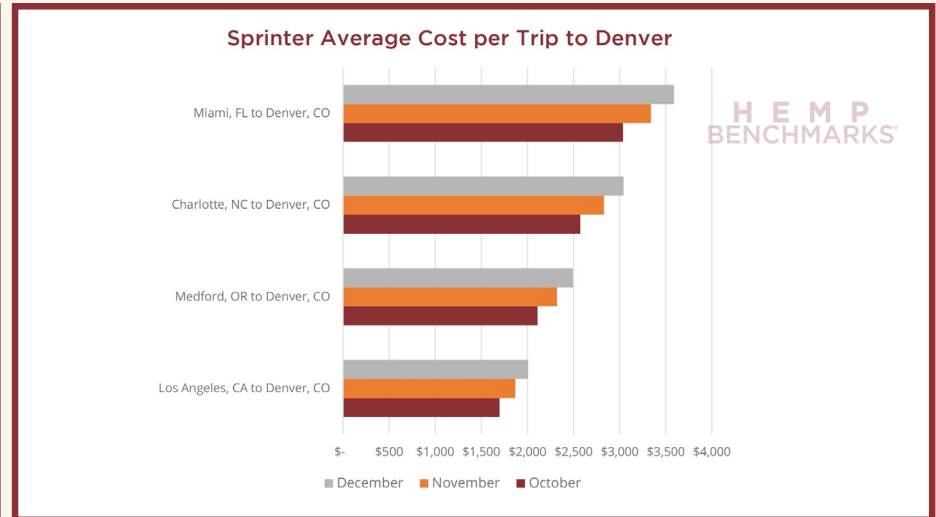
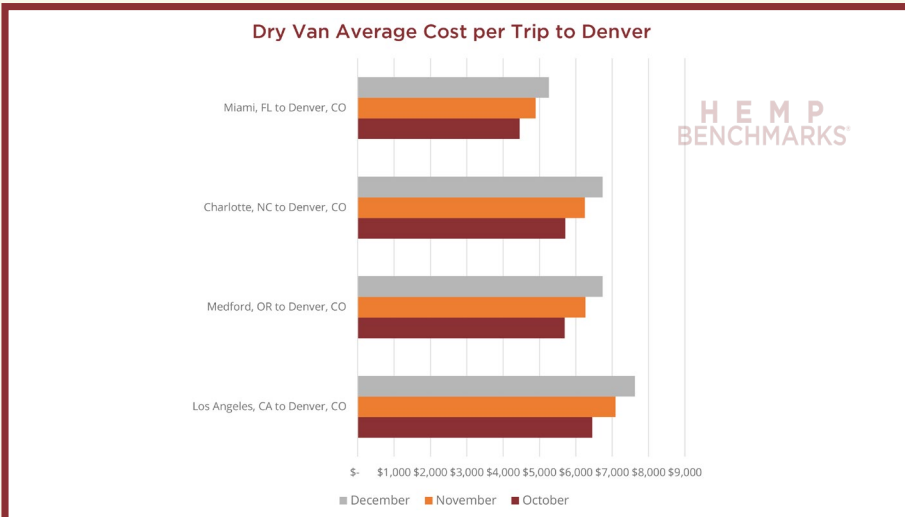
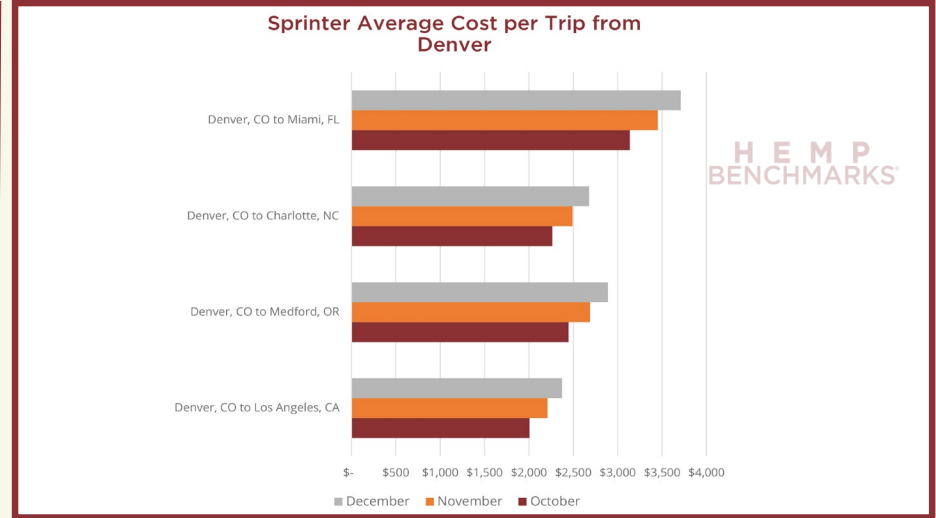
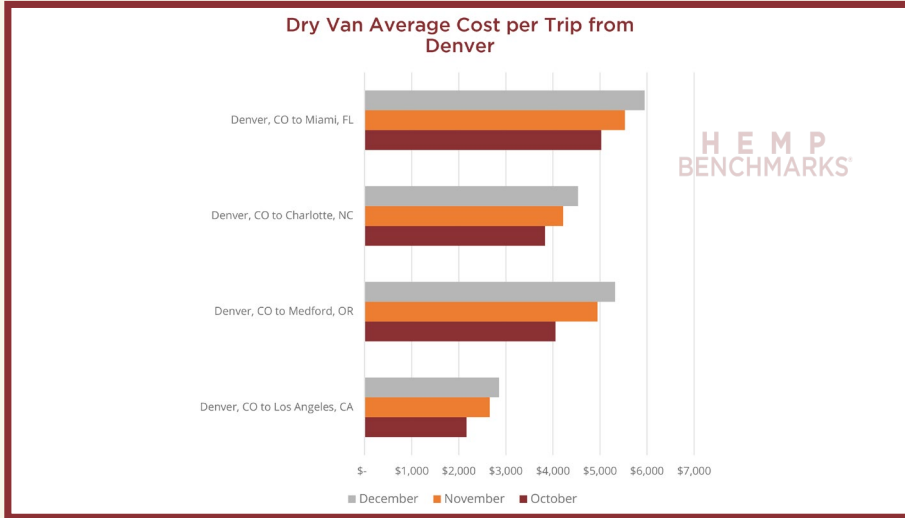


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### TRANSPORTATION UPDATE



\*Data from FIDE FREIGHT December 2021

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### TRANSPORTATION UPDATE



\*Data from FIDE FREIGHT December 2021

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### FEDERAL UPDATES

#### ***CBD Product and Safety Standardization Act***

On December 2, a group of lawmakers in the U.S. House of Representatives introduced the [CBD Product and Safety Standardization of 2021](#). According to its supporters in the House, the measure would establish federal standards for hemp-derived CBD food and beverage products, while also protecting consumers and providing market stability for hemp farmers, producers, and retailers.

Representative Kathleen Rice of New York, one of the bill's co-sponsors, said the lack of federal regulation for CBD "has put consumers at risk and left businesses looking for clarity." The proposed measure, she said in a [press release](#), "will establish the clear regulatory framework needed to provide stability for business and ensure unsafe products stay off the shelves."

"Demand for CBD products has surged, but Food and Drug Administration regulations do not reflect this new reality," Congressman Morgan Griffith of Virginia, another of the bill's co-sponsors, added in the press statement. "As a result, adulterated or unsafe products are available that threaten consumer health and businesses lack clarity."

Hemp industry advocates applauded the measure. U.S. Hemp Roundtable General Counsel Jonathan Miller [said](#) his organization was looking forward to working with the bill's sponsors, "to ensure that this legislation provides the broadest range of protections for hemp extract products for human and animal consumption." Miller

added the Roundtable was anticipating a hearing in the near future in the House Energy and Commerce Committee "to address these urgent issues."

#### ***SAFE Banking Act Dropped from NDAA***

As we noted in last month's report, governors representing 21 states - as well as Washington, D.C., Guam, and the U.S. Virgin Islands - sent a letter to the U.S. Senate in November, urging members to include the Secure and Fair Enforcement (SAFE) Banking Act Amendment in the National Defense Authorization Act (NDAA) for Fiscal Year 2022. This past September, the House voted to add the measure - which would allow cannabis businesses access to mainstream banking and financial services, while also protecting banks that work with legal cannabis businesses - to the NDAA.

In early December, however, the SAFE Banking Act was removed from the NDAA by a Senate conference committee. Representative Ed Perlmutter of Colorado, who co-sponsored the SAFE Banking Act, [announced on Twitter](#) that the measure was not included in the NDAA. Perlmutter told local news outlet [CBS4 Denver](#) that he would continue to fight for the bill. However, he added, "with every passing day, the Senate's unwillingness to deal with the issue endangers and harms businesses, their employees, and communities across the country."

#### ***USDA and Hemp Crop Insurance***

On December 2, the U.S. Department of Agriculture (USDA) announced its plans to improve and strengthen crop insurance for hemp. According to a [press release](#), the department's Risk Management Agency (RMA) will bolster its hemp crop insurance policy by "adding flexibilities around how producers work with processors," while also improving consistency with the most recent

announced USDA hemp regulations. “Hemp is an emerging crop, and we are working with hemp producers to provide insurance options that make sense for producers and for insurance providers,” RMA Administrator Marcia Bunger said in the release.

RMA has revised the policy to add flexibility to the insurability requirements for hemp under contract. Producers, it added, “are no longer required to deliver hemp without economic value for insurability. However, contracts between producers and processors may still include delivery requirements.” RMA also noted clarifications to how the amount of insurable acreage is determined if the processor contract specifies both an acreage and a production amount.

The hemp crop insurance policy is available in certain counties within the following 25 states: Alabama, Arizona, Arkansas, California, Colorado, Illinois, Indiana, Kansas, Kentucky, Maine, Michigan, Minnesota, Montana, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Virginia, and Wisconsin.

In 2021, according to the USDA, hemp producers insured 12,189 acres and 59 policies to protect \$10.9 million in liabilities.

### **FDA**

A top Food and Drug Administration (FDA) official addressed the contentious issue of when the agency would initiate federal regulation of hemp-derived cannabinoids during an address in mid-November at the National Industrial Hemp Council’s (NIHC) [annual Hemp Business Summit](#) in Washington, D.C.

According to the [NIHC website](#), Grail Sipes, Acting Chair of the FDA’s Cannabis Products Committee, reiterated the agency’s long standing policies regarding cannabinoids, saying the FDA

continues “to underscore the need for evidence to support the science, safety profile, and quality of CBD and cannabis-derived products.”

The [National Law Review](#) also quoted Sipes as saying that “clear answers to many important questions are still lacking, such as what adverse reactions may be associated with CBD from hemp-derived products and what risks are associated with the long term use of these products.” The NIHC, meanwhile, noted that Sipes also “made news” during her address by announcing the FDA was conducting a two-phase CBD market survey regarding the accuracy of labelling on CBD products.

NORML, in a [December 2 statement](#), noted that in the three years since the legalization of hemp production, the FDA “has yet to promulgate rules regarding the marketing and sale of commercial products containing hemp-derived CBD.” The organization also noted that it and other cannabis advocacy organizations have been urging the FDA to provide regulatory guidelines regarding the producing, testing, labeling, and marketing of hemp-derived CBD products.



## INDUSTRY UPDATES

### *Businesses Tackle the Hemp Waste Problem*

In a [Hemp Market Insider report published earlier this month](#), Hemp Benchmarks investigated how businesses are dealing with the millions of tons of spent CBD biomass left after extraction, including ways to monetize what to this point has largely been considered waste.

### *Will Market Forces Lead to More Organic Hemp?*

Consumer demand for certified organic products is increasing, while producer costs for conventional farming inputs are going through the roof. [Hemp Benchmarks recently spoke to researchers and industry participants](#) about how these factors might lead to an increase in organic hemp farming and certified organic hemp products.

## RESEARCH UPDATES

### *Hemp as a Cover Crop*

A [December 10 announcement](#) from the USDA Natural Resources Conservation Service regarding Conservation Innovation Grants (CIG) includes a hemp-related project among the winners. According to a press release, "CIG is a competitive program that supports the development of new tools, approaches, practices, and

technologies to further natural resource conservation on private lands."

One of the projects receiving funding is "Hemp4Soil: Growing Hemp Improves Soil Health and Helps Stabilize the Climate." A description of the project states, "Heartland Corporate Holdings will introduce hemp as a cover crop in several states and quantify its benefits." The states in question include: Illinois, Indiana, Kansas, Michigan, Montana, North Carolina, Nebraska, South Carolina, Tennessee, and Virginia.

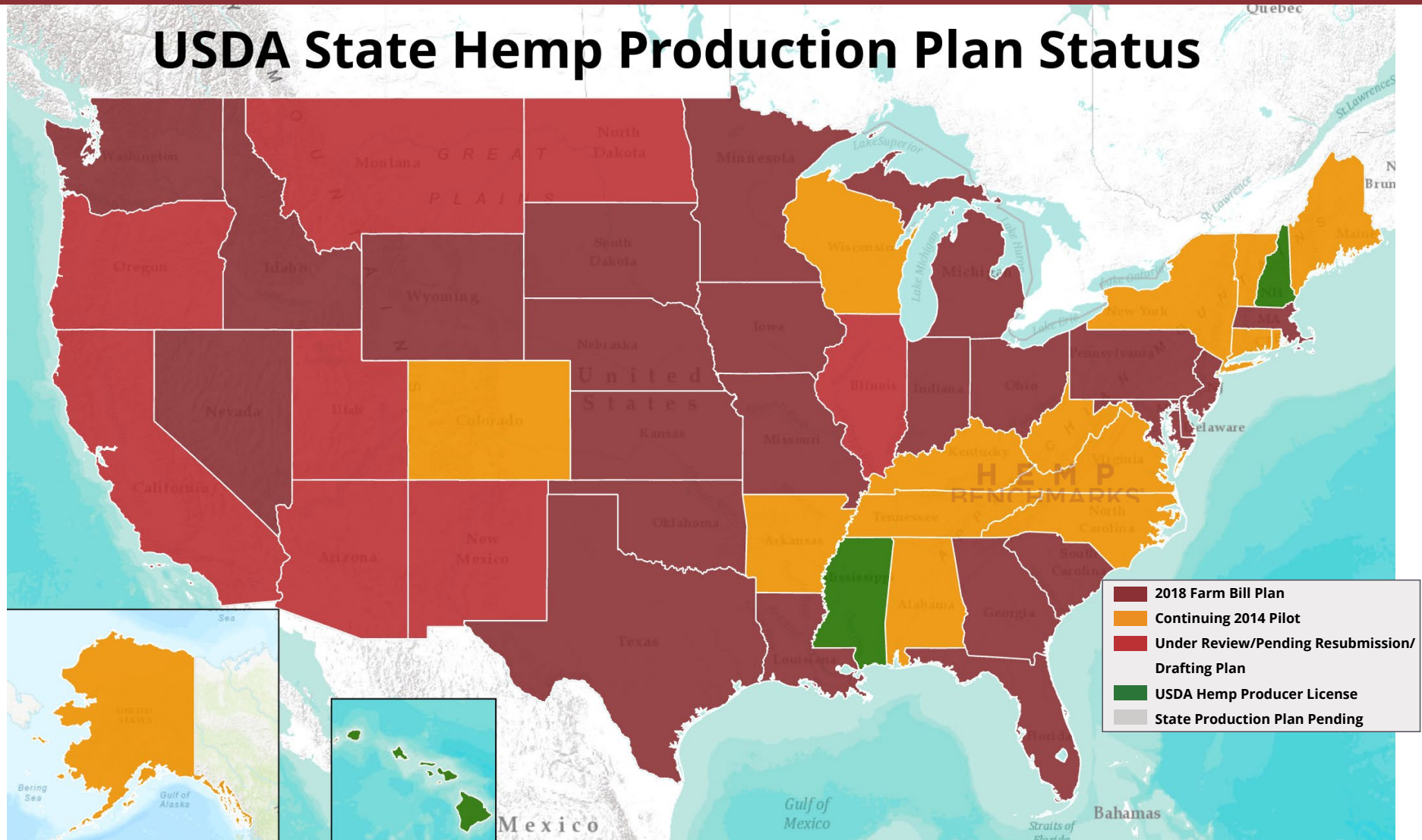


**Sign up** for our complementary Hemp Market Insider for weekly updates on topics such as:

- Updates on delta-8 THC regulations
- Specific regional updates
- Supply chain enhancements
- Detailed pricing analysis

# STATE UPDATES

## USDA State Hemp Production Plan Status



### 2021 State Hemp Licensing and Acreage Data

STATE	# of Licenses	Permitted Outdoor Acres	Permitted Greenhouse Sq Ft	STATE	# of Licenses	Permitted Outdoor Acres	Permitted Greenhouse Sq Ft	STATE	# of Licenses	Permitted Outdoor Acres	Permitted Greenhouse Sq Ft
Alabama	173			Louisiana				Ohio	179	1,498	531,697
Alaska				Maine				Oklahoma	57	3,322	38,762
Arizona	75			Maryland				Oregon	815	7,468	8,066,281
Arkansas	49	586	114,424	Massachusetts	65	407	95,041	Pennsylvania	426		
California		17,321	13,386	Michigan	158	2,830	1,301,779	Rhode Island			
Colorado	977	28,700	10,656,097	Minnesota	342	5,241	2,950,000	South Carolina	216	3,000	1,500,00
Connecticut	97	183	405,023	Mississippi				South Dakota	18	2,200	
Delaware	14	23	59,320	Missouri				Tennessee	1,012	5,683	6,307,488
Florida	718	18,134		Montana	38	5,400		Texas	760	3,405	10,871,664
Georgia	152	875	1,247,159	Nebraska				Utah	126	271	437,308
Hawaii				Nevada	49	2,784	451,322	Vermont	328	725	
Idaho				New Hampshire				Virginia	862	7,860	
Illinois	647	22,962	103,847,040	New Jersey	49	270	1,960,200	Washington			
Indiana	125	1,173	675,000	New Mexico	128	468	10,060,884	West Virginia			
Iowa	50	268		New York	743	32,711	11,477,099	Wisconsin	649	5,333	
Kansas	81	1630		North Carolina	780	6,500	4,000,000	Wyoming			
Kentucky	450	11,500		North Dakota	45			<b>TOTAL</b>	<b>11,465</b>	<b>200,797</b>	<b>175,566,974</b>

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### 2020 State Hemp Licensing and Acreage Data

STATE	# of Licenses	Permitted Outdoor Acres	Permitted Greenhouse Sq Ft	STATE	# of Licenses	Permitted Outdoor Acres	Permitted Greenhouse Sq Ft	STATE	# of Licenses	Permitted Outdoor Acres	Permitted Greenhouse Sq Ft
Alabama	422	15,160	1,209,988	Louisiana	162	2,600		Ohio	195	2,067	565,788
Alaska		70	9,000	Maine	111	363		Oklahoma	127	3,891	244,934
Arizona	165	34,000		Maryland	95	1,400		Oregon	1,635	25,273	1,100,188
Arkansas	210	2,294	369,972	Massachusetts	99	505	215,352	Pennsylvania	506	3,200	1,579,000
California	476	42,287	12,069	Michigan	952	14,338	11,736,475	Rhode Island	20		
Colorado	1,254	36,225	11,400,000	Minnesota	444	8,544	4,640,000	South Carolina	267	5,352	
Connecticut	170	500	117,899	Mississippi				South Dakota			
Delaware	13	75	34,000	Missouri	207	3,561		Tennessee	1,012	15,721	13,285,800
Florida	611	22,078		Montana	94	12,675	240,000	Texas	681	5,000	
Georgia	132	1,446	1,259	Nebraska	91	1,675	465,807	Utah	187	687	312,042
Hawaii	45	440		Nevada	116	3,875	789,623	Vermont	557*	1,532	9,045
Idaho				New Hampshire				Virginia	1,272	9,113	9,405,000
Illinois	802	25,069		New Jersey	59	449	2,526,480	Washington		3,738	
Indiana	283	8,951	1,760,000	New Mexico	276	2,037	3,845,160	West Virginia	303	3,917	
Iowa	86	733	2,106,067	New York	546	31,059	9,862,857	Wisconsin		3,484	957,757
Kansas	207	9,925		North Carolina	1,503	16,421	7,459,060	Wyoming	28	1,058	18,150
Kentucky	960	30,000	4,600,000	North Dakota	79			<b>TOTAL</b>	<b>19,799</b>	<b>429,300</b>	<b>90,878,772</b>

\*557 is combination of grower and processor licenses

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## STATE UPDATES

### Indiana

Purdue University is inviting Indiana hemp growers to participate in the school's [Integrated Pest Management \(IPM\) Hemp Project by taking part in a questionnaire](#). In an email, associate professor Dr. Ariana Torres wrote that the survey will help Purdue "identify future Extension and research needs to help support growers."

### New York

Late last month, the New York Office of Cannabis Management (OCM) published a [Notice of Adoption](#) of new regulations, with the purpose of creating "a licensing framework for cannabinoid hemp processors and cannabinoid hemp retailers." The adoption of new regulations comes as New York officials work to implement the state's adult use cannabis legalization law, which included commercial activities involving cannabinoid hemp in New York under the purview of OCM.

The adopted regulations note that cannabinoid hemp processors will be subject to license application fees of \$1,000 or \$500 and a license fee of either \$3,500 or \$1,000, "depending on whether the licensee is authorized to extract hemp extract in addition to manufacturing cannabinoid hemp products." Cannabinoid hemp retailers will be subject to a \$300 license fee for each location where such products are sold. Rules regarding Good Manufacturing Practices, labeling, testing, and certification requirements are also included in the recently-adopted regulations.

### Texas

The ongoing sagas regarding the legality of delta-8 THC and smokable hemp in Texas continued this month. This past October,

as we mentioned in that month's report, the Texas Department of State Health Services (DSHS) issued an update on the state's Consumable Hemp Program, noting that "all other forms of THC, including Delta-8 in any concentration and Delta-9 exceeding 0.3%, are considered Schedule I controlled substances." In response, some Texas retailers took legal action against the state, petitioning for a temporary restraining order to suspend the DSHS ruling on delta-8 THC.

In early November, an Austin CBD company [won a temporary injunction](#) against the state's ban on delta-8 and other THC isomers. Shortly after, however, the [Dallas Observer](#) reported that DSHS filed a notice of appeal "that essentially cancels out that injunction" and makes delta-8 and other THC isomers controlled substances again, at least for now. The [Observer also noted](#) this month that DSHS used the same legal maneuver to effectively reinstate a ban on smokable hemp that had previously been struck down. Neither notice of appeal is final and further legal proceedings will be necessary to decide the fate of smokable hemp and delta-8 THC in Texas.

### Washington State

The Washington State Department of Agriculture (WSDA) [announced on December 14](#) that it had filed a CR-103 and adopted rule language regarding voluntary registrations for hemp processors. The rulemaking is a result of legislation passed earlier this year that created a hemp processor registration so that Washington businesses could more easily engage in interstate and international commerce where such an assurance of compliance with state law might be necessary. According to the WSDA announcement, the fee for a hemp processor registration has been set at \$1,200, with the registration good for three years.

### INTERNATIONAL UPDATES

#### Argentina / Brazil

The president of the Latin American Industrial Hemp Association (LAIHA) says proposed laws in Brazil and Argentina might soon lead to “a radical change in the global dynamics of production of industrial hemp and medicinal cannabis.”

In a recent interview with [Hemp Today](#), LAIHA president Lorenzo Rolim da Silva said that, if passed, the new cannabis laws in Argentina and Brazil “would bring both countries in line with current regulations in the European Union and North America.” The web site noted Brazil - reportedly the fourth-largest farming country in the world after China, India, and the U.S. - is expected to vote on its cannabis laws before the end of 2021, while Argentina’s cannabis regulations could become effective next year.

#### Canada

The results of a five-year research program in Manitoba are expected to create a baseline for hemp data in the province, while helping producers select the best hemp varieties for the region. James Frey, a diversification specialist with Manitoba Agriculture, reported on research being carried out in Manitoba at the Canadian Hemp Trade Alliance’s annual conference in mid-November. According to [The Western Producer](#), Frey noted the program began in 2017 and was collecting data on a wide variety of factors, including hemp emergence dates, morality, plant vigor, and days to maturity. The data collected looked at both cannabinoid and fiber / grain varieties of hemp. Frey added that, after the numbers have been crunched for this year, each year’s data will be compiled into a five-year report.

#### European Union

On December 2, the European Industrial Hemp Association (EIHA) announced the EU had adopted a Common Agricultural Policy (CAP) that set the maximum allowed level of THC in hemp at 0.3%. According to an [EIHA press release](#), the change will “enter into force” on January 1, 2023. It also noted the new CAP “only applies if farmers want to receive direct payments, meaning that in Europe it is possible to plant hemp with THC level on the field over 0.3%, provided it is authorised by national regulations (e.g., 0.6% in Italy; 1% in Czech Republic).”

#### Fiji

On December 11, according to [The Fiji Times](#), Aiyz Sayed-Khaiyum, the nation’s Attorney-General, announced that Fiji’s laws will be amended to decriminalize the planting of industrial hemp and that the government will issue industrial hemp farming licenses.





### Germany

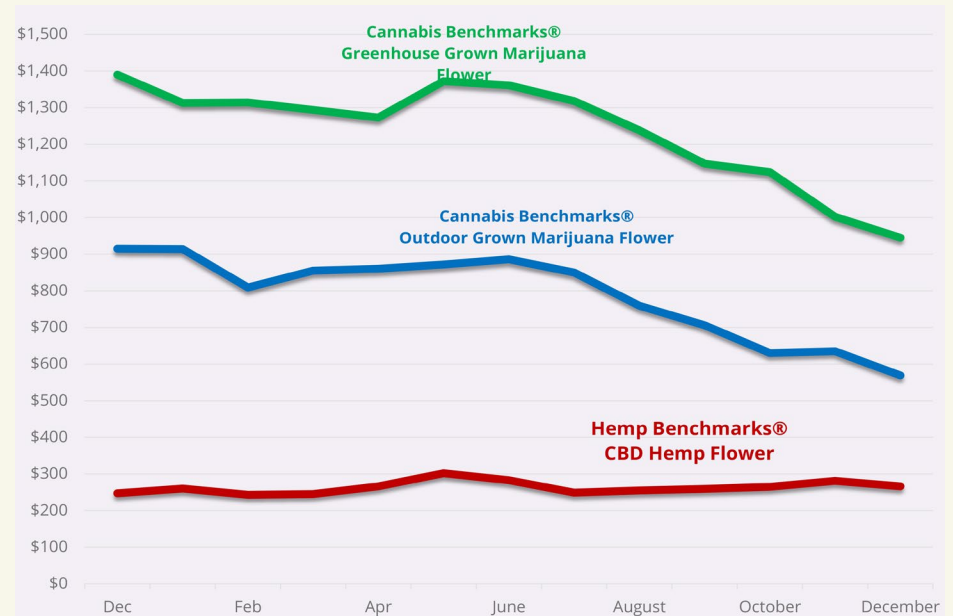
On November 30, SynBiotic, a cannabis-focused biotechnology firm based in Munich, [announced](#) what it described as “the most significant merger in the European cannabis sector,” with the company’s 50.1% acquisition of four companies from hemp industry pioneer Daniel Kruse (who is also president of the European Industrial Hemp Association) for an estimated €11.2 million (US\$12.6 million).

### Mexico

A December 1 ruling by Mexico’s Supreme Court could bring a new era for industrial hemp in the country. As reported by the [Harris Bricken Canna Law Blog](#), the Court ruled in June 2021 that several provisions in the nation’s General Health Law and the Federal Criminal Code were unconstitutional, as they banned the cultivation of cannabis with 1% THC content or less for non-medical and research purposes, since such prohibition violates the protected freedoms of work and trade.

“The importance of this ruling cannot be overstated,” the website noted. “[I]t opens the door to industrial hemp and hemp-CBD products, not just for medical, cosmetic, or therapeutic purposes, but also for industrial applications for which Mexico already has value chains in place, such as auto parts, textiles, and construction, among many others.”

### U.S. Spot Price Comparison - Hemp Flower vs. Marijuana Flower (\$/pound)



Note: Current month Cannabis Benchmarks prices are MTD at time of publishing Copyright © 2021 New Leaf Data Services, LLC. All rights reserved.

### PRODUCT DEFINITIONS

#### **CBD 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.

#### **CBG BIOMASS**

Dried hemp plant materials from cultivars that primarily produce cannabigerol (CBG) with the same specifications described above in regard to CBD Biomass.

#### **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.

#### **CBD/CBG 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. Hemp clones are genetically predisposed to high CBD and/or high CBG content and are sold as such.

#### **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/CBG 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 Y 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, broad spectrum oil, and THC Free Distillate.

**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 with various plant material, cannabinoids or terpenes that have been partially or fully removed.

**CBG distillate** is refined hemp oil extract with various plant material, cannabinoids or terpenes that have been partially or fully removed.

**THC Free Distillate** is a broad spectrum oil distillate that has had all THC components removed using advanced techniques such as chromatography.

#### **CBD/CBG ISOLATE**

Isolate is the purest form of a cannabinoid, which is produced by removing all other compounds found in the plant including terpene, flavonoids, plant parts and other cannabinoids. 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 or CBG, respectively.