

2018 PRODUCTION VALUES

A complete and detailed production value is not provided in the EICI to better evaluate its base foundation data. Using the data provided, the charts below illustrate the inconsistencies and inflated values used. The EICI report only uses kilograms as a production quantity rather than the standard pounds which does not allow for a ready comparative analysis. Units have been converted to pounds to help illustrate versus current industry standards.

Wholesale prices used in the EICI compute to \$2,268 per pound for Indoor, \$1,361 for Indoor Mixed Light and \$907 for Outdoor, resulting in an average value of \$1,512 per pound. This is high is comparison to current market value. What stands out the most is the total value for each licensed operator, specifically the Medium Indoor with wholesale revenue of \$22 million for a 22,000 sf operation, the equivalent of \$44 million per acre. In fact, based on 20.73 acres of production, \$233.3 million translates to \$11.25 million per acre. This is far beyond any industry standard. If these are in fact the true revenue figures for these operations, it is hard to understand why there exists a perceived issue with regulation costs or taxes, Sonoma County taxes are just 1.37% of this revenue level.

Cultivation License Type	# of licenses	Total Sq Ft	Total Acres per license type	Total Kilograms *	Total Pounds **	Pounds per license	\$ value per license	Total \$ value per license Type	Wholesale price per pound
Medium Indoor	4	88,000	2.02	17,600	38,801	9,700	\$22,000,000	\$88,000,000	\$2,268
Medium Outdoor	13	567,450	13.03	21,563	47,538	3,657	\$3,317,400	\$43,126,200	\$907
Small Indoor	2	20,000	0.46	4,000	8,818	4,409	\$10,000,000	\$20,000,000	\$2,268
Small mixed light Tier 1	1	10,000	0.23	1,400	3,086	3,086	\$4,200,000	\$4,200,000	\$1,361
Small Outdoor	12	120,000	2.75	4,560	10,053	838	\$760,000	\$9,120,000	\$907
Specialty Cottage Mixed Light Tier 1	1	2,500	0.06	350	772	772	\$1,050,000	\$1,050,000	\$1,361
Specialty Cottage Mixed Light Tier 2	2	10,000	0.23	1,400	3,086	1,543	\$2,100,000	\$4,200,000	\$1,361
Specialty Indoor	12	60,000	1.38	12,000	26,455	2,205	\$5,000,000	\$60,000,000	\$2,268
Specialty Mixed Light Tier 1	1	5,000	0.11	700	1,543	1,543	\$2,100,000	\$2,100,000	\$1,361
Specialty Outdoor	4	20,000	0.46	760	1,676	419	\$380,000	\$1,520,000	\$907
Total	52	902,950	20.73	64,333	141,830			\$233,316,200	

* Grams per 1 Kilogram - 1,000

** Pounds per 1 Kilogram - 2.2046

The chart below provides the EICI production values, revenues, and labor costs per license. As shown in the 2018 Wages and Direct/Indirect Jobs overview, full time jobs attributed to cultivation as provided in the EICI are in some cases grossly inflated. This is quickly evident in the Initial Net Value column for Indoor Mixed Light licenses where the stated labor results in an initial net loss of 3 times the revenue generated, hardly a viable business model.

EICI Production and revenue per license, 2018 Sonoma County

Cultivation License Type	Sq Ft	Production in Pounds	Gross value	Direct Wages	Sonoma County Tax	State Tax	Initial Net Value *
Medium Indoor	22,000	9,700	\$22,000,000	\$736,725	\$247,500	\$89,728	\$20,926,047
Medium Outdoor	43,650	3,657	\$3,317,400	\$1,449,838	\$87,300	\$33,825	\$1,746,437
Small Indoor	10,000	4,409	\$10,000,000	\$334,875	\$112,500	\$40,786	\$9,511,839
Small mixed light Tier 1	10,000	3,086	\$4,200,000	\$17,049,782	\$65,000	\$28,550	(\$12,943,332)
Small Outdoor	10,000	838	\$760,000	\$332,151	\$20,000	\$7,749	\$400,100

Specialty Cottage Mixed Light Tier 1	2,500	772	\$1,050,000	\$4,262,445	\$5,625	\$7,137	(\$3,225,208)
Specialty Cottage Mixed Light Tier 2	5,000	1,543	\$2,100,000	\$8,524,891	\$22,500	\$14,275	(\$6,461,666)
Specialty Indoor	5,000	2,205	\$5,000,000	\$167,438	\$37,500	\$20,393	\$4,774,670
Specialty Mixed Light Tier 1	5,000	1,543	\$2,100,000	\$8,524,891	\$22,500	\$14,275	(\$6,461,666)
Specialty Outdoor	5,000	419	\$380,000	\$166,075	\$7,500	\$3,875	\$202,550

* Net value as shown does not include Federal taxes and remaining operating costs.

PRODUCTION VALUE COMPARISON FOR 2018

Production levels and product unit values are exponentially higher in the 2018 *Economic Impact in the Cannabis Industry* (EICI) report than industry standards. Using data from the 2018 *State of the Industry Report* (SIR) by Cannabis Business Times, comprised of data obtained directly from 191 operators throughout North America, production values in the EICI per sf and per acre are 5 times higher. Tony Linegar, Sonoma County's Agricultural Commissioner, has stated that cannabis is worth \$1.7 million per acre*, which is close to the SIR 2018 valuation of \$2.19 million per acre. According to the production values in the EICI, one acre of cannabis is worth \$11.25 million, almost 10 times Mr. Linegar's estimate.

This discrepancy can be traced to the use of high production rates and high wholesale values per pound. Wholesale prices used in the EICI compute to \$2,268 per pound for Indoor, \$1,361 for Indoor Mixed Light and \$907 for Outdoor, resulting in an average value of \$1,512 per pound. Mr. Linegar in the same article* quoted the wholesale value of cannabis at \$500 per pound. Terry Garrett has been noted in 2018 as stating that cannabis is valued at about \$900 per pound**.

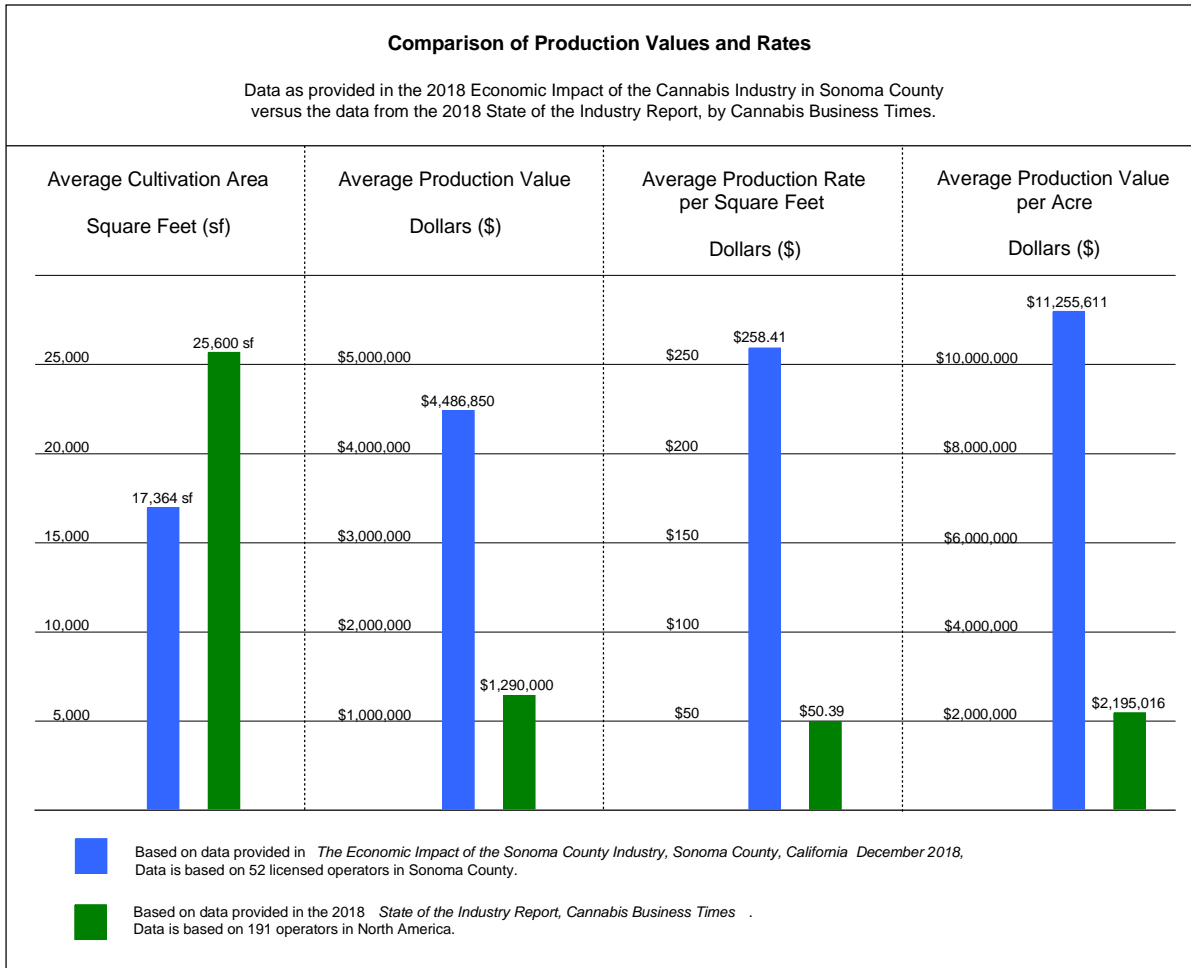
This is further evidenced by the average production value per square feet. According to SIR data, production revenue per square foot of cultivation area is \$50.39. The EICI is 5 times higher at \$258.41 per square foot. It should also be noted that going forward as production increases across the State along with the advent of competition from throughout California, most notably the highest producers in the Emerald Triangle to the north, wholesale unit values will drop even more.

* "Cannabis Harvest Heats Up In Sonoma County", Press Democrat, Sept. 29, 2017

** "Sonoma County 2018 Cannabis Harvest Small, but Much Better Than Last Year", Press Democrat, Nov. 28, 2018

Source	Total Operations	Average sf Cultivation	Average Production Value	Average Production Value per sf	Average Production Value per Acre
Economic Impacts of the Cannabis Industry	52	17,364	\$4,487,138	\$258.41	\$11,256,334
State of the Industry 2018, Cannabis Business Times	191	25,600	\$1,290,000	\$50.39	\$2,195,016

The charts below better illustrate the large discrepancies between EICI production values and those provided in Cannabis Business Times (CBT) 2018 State of the Industry Report. EICI values are in blue on the left and CBT are in green on the right.



2018 SONOMA COUNTY AND STATE TAXES

According to the data supplied in the EICI and as shown below, gross wholesale revenue from cultivation is estimated at **\$233.3 Million** for the 52 legal licenses in Sonoma County. Using the tax rates provided, the total tax due to Sonoma County is **just \$3.2 million**, a tax rate of just **1.37%**. Even when combined with State taxes, the total tax is \$4.5 million, a combined tax rate of **1.93%**.

With average revenue for the 52 cultivation licenses of **\$4.48 million** and average State & local taxes of just **\$86,922**, 1.93%, it appears there is no evidence that taxes are a hindrance to profitability or legalization. if anything, if this is truly the revenue level for operations, taxes should be raised.

As a point of reference, the revenue of \$233.3 million for the 902,500 sf, or 20.73 acres, equates to **\$11.25 million per acre**. Tony Linegar, the Agricultural Commissioner for Sonoma County, has stated that one acre of cannabis is worth **\$1.7 per acre**, almost a tenth less.

State and local taxes due for the 52 legal cultivation licenses in Sonoma County for 2018 based on EICI data.

Cultivation License Type	# of licenses	Sq Ft	Total Kilograms *	Total Pounds **	Estimated Total Value	County Tax		State Tax	
						Tax Rate per sf	Total Tax	Tax Rate per lb.	Total Tax
Medium Indoor	4	88,000	17,600	38,801	\$88,000,000	\$11.25	\$990,000	\$9.25	\$358,913
Medium Outdoor	13	567,450	21,563	47,538	\$43,126,200	\$2.00	\$1,134,900	\$9.25	\$439,731
Small Indoor	2	20,000	4,000	8,818	\$20,000,000	\$11.25	\$225,000	\$9.25	\$81,571
Small mixed light Tier 1	1	10,000	1,400	3,086	\$4,200,000	\$6.50	\$65,000	\$9.25	\$28,550
Small Outdoor	12	120,000	4,560	10,053	\$9,120,000	\$2.00	\$240,000	\$9.25	\$92,991
Specialty Cottage Mixed Light Tier 1	1	2,500	350	772	\$1,050,000	\$2.25	\$5,625	\$9.25	\$7,137
Specialty Cottage Mixed Light Tier 2	2	10,000	1,400	3,086	\$4,200,000	\$4.50	\$45,000	\$9.25	\$28,550
Specialty Indoor	12	60,000	12,000	26,455	\$60,000,000	\$7.50	\$450,000	\$9.25	\$244,713
Specialty Mixed Light Tier 1	1	5,000	700	1,543	\$210,000,000	\$5	\$22,500	\$9.25	\$14,275
Specialty Outdoor	4	20,000	760	1,676	\$1,520,000	\$1.50	\$30,000	\$9.25	\$15,498
Total	52	902,950	64,333	141,830	\$233,316,200		\$3,208,025		\$1,311,929
						Tax Rate	1.37%		0.56%

* Grams per 1 Kilogram - 1,000

** Pounds per 1 Kilogram - 2.2046

Figure 4 as provided in the EICI

Figure 4: Estimated Wholesale Value from 52 Cultivator Licenses in Sonoma County, as of July 1, 2018

Cultivation License Type	# of licenses	Sq Ft	Grams per license	Total Grams	Price per gram	\$ value per license	Estimated Total Value
Medium Indoor	4	88,000	4,400,000	17,600,000	\$5.00	\$22,000,000	\$88,000,000
Medium Outdoor	13	567,450	1,658,700	21,563,100	\$2.00	\$3,317,400	\$43,126,200
Small Indoor	2	20,000	2,000,000	4,000,000	\$5.00	\$10,000,000	\$20,000,000
Small mixed light Tier 1	1	10,000	1,400,000	1,400,000	\$3.00	\$4,200,000	\$4,200,000
Small Outdoor	12	120,000	380,000	4,560,000	\$2.00	\$760,000	\$9,120,000
Specialty Cottage Mixed Light Tier 1	1	2,500	350,000	350,000	\$3.00	\$1,050,000	\$1,050,000
Specialty Cottage Mixed Light Tier 2	2	10,000	700,000	1,400,000	\$3.00	\$2,100,000	\$4,200,000
Specialty Indoor	12	60,000	1,000,000	12,000,000	\$5.00	\$5,000,000	\$60,000,000
Specialty Mixed Light Tier 1	1	5,000	700,000	700,000	\$3.00	\$2,100,000	\$2,100,000
Specialty Outdoor	4	20,000	190,000	760,000	\$2.00	\$380,000	\$1,520,000
Total	52	902,950	12,778,700	64,333,100			\$233,316,200

2018 WAGES AND DIRECT/INDIRECT JOBS

Figures 9 & 10 of the EICI purports to show the Wages and Jobs supported by commercial cannabis operations for 2018 in Sonoma County. The spreadsheets below breakdown these generalized numbers down per license type and per license to better illustrate their actual proposed impacts. Wage and labor impacts appear inflated, in some cases excessively.

As seen, jobs for **Indoor Mixed Light** (Greenhouse) is grossly inflated, claiming 142.2 full time workers per operation, operations that only average 5,500 sf. In addition, the labor cost, wages, for **Indoor Mixed Light** is over 4 times the revenue.

Jobs and wages for **Outdoor** is also inflated claiming 14.21 full time workers per operation. As the Outdoor season is typically only 7 - 8 months, and if as noted in most applications only 4 - 6 workers are required, this would only equal 3 - 5 full time workers. Even with the influx of seasonal planting, harvesting, and processing labor (additional 4 - 6 workers for 2 months), this would still only bring the total full time jobs to 4 - 6 for **Outdoor**. In the case of the **Medium Outdoor** operations, beyond the 4 - 6 full time worker onsite, there would be another 19 - 21 full time supporting jobs offsite.

As it appears Direct labor influences the calculations for Indirect, these Wages and Jobs are also far too high. Although **Indoor Mixed Light** is only 16% of Indoor in regards to cultivation area, it somehow generates almost 30 times the indirect labor that Indoor does, 3.39 vs 95.60, that's some 95 indirect full time jobs supported by a 5,500 sf **Indoor Mixed Light** operation.

Cultivation License Type	# of licenses	sq ft per license	Estimated value per license	Direct Jobs per license	Annual Wages per license	Total Direct Jobs per license type	Total Annual Wages per license type	# of Indirect jobs Supported per license	Total # of Indirect jobs Supported per license
Medium Indoor	4	22,000	\$22,000,000	11.3	\$736,725	45.0	\$2,946,900	8.0	32.0
Medium Outdoor	13	43,650	\$3,317,400	25.4	\$1,449,838	330.5	\$18,847,890	15.4	199.7
Small Indoor	2	10,000	\$10,000,000	5.1	\$334,875	10.2	\$669,750	3.6	7.3
Small mixed light Tier 1	1	10,000	\$4,200,000	258.9	\$17,049,782	258.9	\$17,049,782	173.8	173.8
Small Outdoor	12	10,000	\$760,000	5.8	\$332,151	69.9	\$3,985,808	3.5	42.2
Specialty Cottage Mixed Light Tier 1	1	2,500	\$1,050,000	64.7	\$4,262,445	64.7	\$4,262,445	43.5	43.5
Specialty Cottage Mixed Light Tier 2	2	5,000	\$2,100,000	129.5	\$8,524,891	258.9	\$17,049,782	86.9	173.8
Specialty Indoor	12	5,000	\$5,000,000	2.6	\$167,438	30.7	\$2,009,250	1.8	21.8
Specialty Mixed Light	1	5,000	\$2,100,000	129.5	\$8,524,891	129.5	\$8,524,891	86.9	86.9
Specialty Outdoor	4	5,000	\$380,000	2.9	\$166,075	11.6	\$664,301	1.8	7.0
Total	52		\$50,907,400		\$41,549,110	1,210	\$76,010,800		788

EICI DIRECT LABOR - Wages and Workers

License Category	# of licenses	Total sf	Total # of Direct Jobs Supported	# of Direct Jobs Supported per license	Total Annual Wages	Ave Annual Salary per Direct Job	Direct Jobs per sf
			Figure 10		Figure 9		
Cultivator – Indoor	18	168,000	86	4.78	\$5,625,900	\$65,417	0.000511905
Cultivator – Greenhouse (Mixed Light)	5	27,500	712	142.40	\$46,886,900	\$65,852	0.025890909
Cultivator – Outdoor	29	707,450	412	14.21	\$23,498,000	\$57,034	0.000582373
Total	52	902,950	1,210		\$76,010,800		

EICI INDIRECT LABOR - Wages and Workers

License Category	# of licenses	Total sf	Total # of Indirect Jobs Supported	# of Indirect Jobs Supported per license	Total Annual Wages	Ave Annual Salary per Direct Job	Direct Jobs per sf
			Figure 10		Figure 9		
Cultivator – Indoor	18	168,000	61	3.39	\$2,976,700	\$48,798	0.000363095
Cultivator – Greenhouse (Mixed Light)	5	27,500	478	95.60	\$23,885,600	\$49,970	0.017381818
Cultivator – Outdoor	29	707,450	249	8.59	\$17,270,000	\$69,357	0.000351968
Total	52	902,950	788		\$44,132,300		

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Cannabis harvest heats up in Sonoma County

JULIE JOHNSON

THE PRESS DEMOCRAT | September 29, 2017

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Just as grape growers keep watch for the moment of peak ripeness, cannabis farmers have for generations monitored the color of the bud's trichomes, an aromatic crystal resin that transforms from clear to milky white, then gold to amber.

For many, the signs are there. It's time to bring the crops in.

The outdoor cannabis harvest has begun across the North Coast, the first year when the state will attempt to measure and tax the crop within a new regulated system.

"They're just as busy as the grape growers," said Tony Linegar, Sonoma County's agricultural commissioner. "That on-edge feeling this time of year — it's the same."

There are no official figures available yet to estimate the acreage of cannabis being harvested from outdoor farms this season. Farmers in the unincorporated area of the county are currently applying for business permits, with some existing operators seeking retroactive permission. No permits have been granted yet. None of Sonoma County's nine cities has allowed outdoor cultivation beyond small personal gardens.

Based on pending applications with the county, cannabis farmers are seeking permission to legally grow marijuana on roughly 40 acres of land in the unincorporated area next year. More applications are coming in daily.

Linegar estimated the county may ultimately approve about 200 acres of outdoor cultivation in the coming years.

To compare, vineyards cover about 60,000 acres of Sonoma County land, producing a grape harvest worth \$581 million last year.

But legal cannabis is the county's most lucrative crop, per acre. Depending on the size and quality of the harvest, an acre of Sonoma County grapes is currently worth about \$9,764, on average, Linegar said. An acre of cannabis is worth about \$1.7 million, based on industry standards for yield and the current wholesale value of marijuana, about \$500 a pound.

While much cannabis is grown year-round indoors under artificial lights — a process that allows growers to harvest three to four crops a year — the fall harvest of the region's outdoor crop is the culmination of a process that starts around June.

Even outdoor plants are typically grown in pots to avoid exposing the plant to fungus and other foes that might transfer from the ground soil. From early on, growers have steady work pruning the tops to coax plants into growing into a full, bushy shape and monitoring for moisture and pests. In mid to late August, workers cut the top flowers off the earliest maturing plants, giving flowers on lower branches more sun and time to ripen.

The outdoor harvest is expected to hit high gear this week for many cannabis cultivators in Sonoma County, depending on farming practices and varieties. For others, the work continues until the rainy season arrives in mid-November.

Past a locked gate, a gravel road winds past vineyards and redwoods to the heart of a 60-acre parcel south of Santa Rosa where a strain called AK-47 was ready to harvest.

Annalisa Hopper took pruning shears to a 6-foot-tall cannabis plant in a 200-gallon fabric pot, one of about 850 potted plants in the 1-acre field holding about a dozen different strains.

"It's my 12th harvest," said Hopper, 32, of Santa Rosa, part of the local crew working for an Illinois-based company called Justice Grown. "Ten years ago I didn't talk about what I did."

Hopper was among about a dozen workers bringing in the first variety ready for harvest at the Justice Grown farm. The company has cannabis projects in several states, including Illinois and Pennsylvania, and the Sonoma County garden is its first in California, according to the

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Brady is a Sonoma County native and member of the county's cannabis policy advisory group, and she agreed to bring a reporter and photographer to the site on the condition its exact location not be disclosed. They have a permit with Santa Rosa to process and distribute the crop and a pending cultivation permit with Sonoma County.

"Cannabis requires a lot of labor and monitoring during those last phases," Brady said.

Only a small fraction of Sonoma County's outdoor cannabis harvest will be considered legal this year, meaning it was grown by farmers with pending or approved local cultivation permits. The Sonoma County Growers Alliance has estimated there are about 5,000 cultivators in the county.

Linegar said he imagines cannabis will become a way for less profitable types of agriculture to stay in business by leasing portions of their property for marijuana production.

"If cannabis can be used to maintain a diversity of agriculture in Sonoma County, I am all for that," Linegar said. "If you consider how small the footprint (of cannabis) is, it alleviates the concern it will overtake all other agriculture. It's not going to take over the county."

The vast majority of cannabis produced in Sonoma County and the Emerald Triangle counties of Mendocino, Humboldt and Trinity counties will remain part of the illegal market, fueled by the high price of marijuana elsewhere in the country.

The value of marijuana has long lured thieves and spurred violence in Northern California during harvest, causing heightened concerns over security. Last week, two Santa Rosa men were shot and killed near an illegal marijuana garden on an agricultural property off River Road outside Forestville. Investigators have said they suspect the killing was connected to the marijuana but have not elaborated on what took place.

Cannabis industry leaders have said the steep costs associated with becoming a legitimate business in Sonoma County also keeps many would-be legal growers in the black market. Industry experts say it can cost anywhere between \$20,000 and \$250,000 to meet the new requirements, depending on variable costs like permit fees, biologic studies and changes to the land.

Legal marijuana "is still a fraction of what's out there," said Tim Ricard, cannabis program manager for Sonoma County.

Farmers operating legally are bracing for a major change to the bottom line, said Tawnie Logan, board chair with the Sonoma County Growers Alliance.

At \$1.7 million, the return per acre for cannabis seems high, but it's quickly whittled down after paying workers, taxes and other operational costs, Logan said. Unlike other businesses, cannabis producers can't count on routine business expense deductions because of federal tax laws.

But cultivators are also gaining access to other benefits, like the opportunity to buy supplies at wholesale prices at mainstream agriculture supply stores, said Logan, who is involved with her fiance's cannabis farm in northwest Sonoma County.

"This is the first year we've been able to be honest with the type of activity we're engaged in," Logan said. "We're getting wholesale prices — that's about a 20 percent cost savings, which is really phenomenal."

At the Justice Grown farm, cultivation director Chris Hayes has overseen the planting of about 1,200 cannabis plants. After years working in greenhouses in his previous job with Peace in Medicine dispensary, he's been delighted to watch the ecosystem at the new site unfold. The yellow jackets that swarm midafternoon and the dragon flies emerging in the late afternoon have been keeping a cannabis-hungry caterpillar at bay.

"And the mountain lions keep my staff from wandering around the property," Hayes said with a laugh.

Up the hill from the garden, a team of about eight people stand and sit around tables in the shade, using trim scissors to remove the large fan leaves off clusters of buds called colas. It was an initial round of pruning before the plants are hung to dry.

Drying typically takes one week or two. The plants are then trimmed again into neat buds with size and precision dependent on whether the flowers will be sold to consumers as flowers to smoke, or transformed into another material, like a concentrated oil.

Standing at one end of a table, 24-year-old Corey Scott of Santa Rosa changed the music to a Buffalo Tom album. His coworkers ranged in age from their 20s to their 60s. Some had more than a decade of experience and others were trimming for the first time. This was Scott's fifth

"It's definitely exciting — it's like Christmas," Scott said.

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Sonoma County 2018 cannabis harvest small, but much better than last year

JULIE JOHNSON

THE PRESS DEMOCRAT | November 28, 2018



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A cloudy summer and an early rain hampered Sonoma County's 2018 outdoor cannabis haul, but the mood remained optimistic among growers one year after major wildfires marred the newly regulated crop's harvest.

By this time in the growing season, the marijuana plants have been cut down in the fields and taken to warehouses. Workers are now cutting flower stalks off thick stems, trimming and manicuring the flowers before putting them in containers to cure in cool, dry rooms.

Workers in a bright room inside a warehouse Tuesday near the Charles M. Schulz-Sonoma County Airport were nearly done trimming a cannabis strain called strawberry diesel — one of 10 strains cultivated by Justice Grown in a 1-acre plot on a sprawling, wooded property southeast of Santa Rosa. The company lost nearly half of their 2017 crop in the Nuns fire, director of operations Shivawn Brady said.

"Last year would have been a fantastic harvest, we were so close," Brady said. "We had significant crop loss, we had staff who lost homes. So this year's harvest was very jubilant."

There is no official tally yet for this year's Sonoma County outdoor cannabis crop, which covers roughly 20 acres, according to county data. County Agricultural Commissioner Tony Linegar said 16 crop-loss inspections found several cultivation sites experienced a total loss, mostly because of the mold brought by early October rainfall. His department reports their findings to the county tax collection department, which then adjusts the tax requirement based on the loss.

"It was really an ideal season for a lot of crops," Linegar said. "The fly in the ointment was the early rain, particularly for cannabis."

The major obstacle for cannabis cultivation in Sonoma County is not weather. It's regulation.

Terry Garrett, a managing member of the Sonoma County GoLocal cooperative, estimated the value of the local cannabis harvest has dropped by more than three-quarters due to local requirements that banned cultivation in certain areas and required steep upfront payouts to get permits to grow cannabis.

Garrett, who also serves on the Sonoma County Economic Development Board and the county's cannabis task force, teamed with Sonoma State University economics professor Robert Eyler to develop an economic impact report for the local cannabis industry. Garrett said they expect to release a report in the next several weeks.

Garrett said their estimates put the value of the 2018 overall county cannabis harvest at about \$230 million based on state licensing data and their industry standards for yield, and valued it at about \$900 per pound. That's down from between \$1.5 billion to \$3 billion annual value they calculated previously through interviews and surveys with industry experts.

Garrett said some dispensaries have reported only about 10 percent of the cannabis flowers currently on the shelves were grown in Sonoma County — compared with about 90 percent in previous years.

"That's emblematic of what's happened here," Garrett said. "We've gutted the cultivation side of the business, which shifted much of the sourcing from Humboldt, Mendocino, Trinity, Sierra Foothills and farther south."

Ned Fussell, co-founder of Santa Rosa-based CannaCraft, one of the state's top makers of cannabis-infused products, said 11 of the 12 cultivators his business sources cannabis material from have left Sonoma County. Most have relocated to central California where local agencies have fast-tracked the permitting process for cultivators, he said.

"We were trying to stay local. We spent years trying to build relationships in Sonoma County," said Fussell, who said they worked closely with

With the bulk of their cultivation operations in Santa Barbara County, CannaCraft may consider shifting their manufacturing operation there, too, Fussell said.

Many local marijuana growers have said they've been waiting to receive permission to cultivate in Sonoma County for nearly two years.

Brady said Justice Grown hopes its yield will hit 1,800 pounds grown organically and by Kosher standards, and after an estimated 8 percent loss because of pathogens, which she attributes to a rushed harvest schedule put in place after the early October rains. The company had expected the business to become profitable in about four years, but Brady said that projection has been adjusted to further into the future. Justice Grown is among a group of cultivators allowed to cultivate under a grandfathering provision Sonoma County created for existing operators that was meant to be temporary.

However, the county's delay in processing permit applications has extended the length of that program.

Erich Pearson, SPARC founder and executive director, said waiting to get a permit for the Glen Ellen farms producing cannabis for SPARC's four dispensaries in Sonoma County and San Francisco has made it difficult to repair or rebuild infrastructure damaged or destroyed in the 2017 Nuns fire.

The fire destroyed SPARC's entire 2017 crop, forcing them to stock their shelves with cannabis grown elsewhere.

The uncertainty brought by Sonoma County's delay in evaluating and issuing permits has other financial implications for cultivators trying to invest in their local businesses.

Pearson said the 2018 harvest is a bright spot for SPARC, which already has put two strains of biodynamic cannabis onto dispensary shelves — black light and purple punch.

SPARC can move marijuana flowers from the warehouse to the shelves faster than other cultivators because they're not going through a distributor. They put the earliest batch onto the shelves to showcase the 2018 harvest and staff continue trimming cannabis at a rate of about five pounds per day.

"The quality was great this year," Pearson said.

You can reach Staff Writer Julie Johnson at 707-521-5220 or julie.johnson@pressdemocrat.com. On Twitter @jjpressdem.

STATE OF THE INDUSTRY REPORT

Examining the Cannabis
Cultivation Market



**WHILE WE ARE
FOCUSED ON HELPING
YOU BUILD A BETTER
BUSINESS TODAY, WE
ARE ALWAYS LOOKING
AT HOW WE CAN
BETTER SERVE YOU
TOMORROW, NEXT
YEAR, AND FIVE OR 10
YEARS FROM NOW.**

TRACKING CANNABIS CULTIVATION TRENDS

In 2016, Nexus Greenhouse Systems partnered with *Cannabis Business Times* to sponsor the first-ever “State of the Industry” report on the cannabis cultivation market. Now in its third iteration, this important research project serves as a benchmark for the entire cannabis industry and identifies industry trends that allow companies like us to better serve you, the cannabis cultivator.

Results from this third report also serve as our first data sets that will allow us to make more accurate projections into how the cannabis market will evolve, as we have access to more information than ever.

One of the major findings from this year’s study shows cultivators are responding to increasing utility costs and pressures to curb energy usage, as well as slimming profit margins, by moving to greenhouse production: 45% of respondents who currently own or work for an active cultivation business said they use greenhouses in some capacity. More than a quarter of respondents said they grow at least half of their crop in a greenhouse environment. These numbers rose compared to last year, from 35% and 19% respectively, and we expect this number to keep growing as cultivators continue to improve their environmental impacts and lower production costs, always with an eye on maximizing yield and quality.

For more than half a century, Nexus has been helping cultivators advance their businesses and achieve their energy-usage and yield goals by offering the most innovative greenhouse designs and the latest technology, including: advanced light-deprivation and roof styles that make the most of sunlight and ventilation, environmental controls that maximize yield potential while minimizing exposure to pests, and rolling benches to maximize your canopy footprint, among others. Our team not only has extensive experience in all facets of the Controlled Environment Agriculture market, which it brings to cannabis cultivation, but it also has worked with cannabis cultivators worldwide on developing the ideal greenhouses for their needs.

While we are focused on helping you build a better business today, we are always looking at how we can better serve you tomorrow, next year, and five or 10 years from now. This is why this special report is so relevant to us and the industry—benchmarking data can help us all gauge what the industry trends are now, and compiling year-over-year data will help us all monitor and prepare for where the industry is headed.

We appreciate your involvement in this study and are pleased to support *Cannabis Business Times* in its effort to lead the way in providing essential cultivation-industry data through this important annual report.

We look forward to continuing to grow this industry together.

— Greg Ellis, Director of Sales, Western States, Nexus Greenhouse Systems



MORE DATA, GREATER INSIGHTS, BETTER BUSINESS

IT'S BEEN A BUSY YEAR IN THE CANNABIS INDUSTRY.

California rolled out adult-use in January, stirring a whirlwind of both opportunity and obstacles. Nevada's newly legal adult-use market dipped (with statewide supply shortages) then developed, as has happened in many of the first eight states to legalize and regulate recreational cannabis as they map out their own regulations in a post-prohibition environment while still under the federal government's ever-watchful eye.

Massachusetts is moving along, perhaps slowly, with recreational sales anticipated to start in early July, while Maine legislators are still determining how best to regulate their nascent market. Pennsylvania's medical program sits in the spotlight, promising to become one of the industry's biggest markets thanks to the state being the fifth most populous in the nation (13 million) and the medical program being among the most inclusive. And Ohio's rocky medical rollout is causing some to steer clear of the Buckeye State as it sorts through its growing pains.

Gluts in the Northwest have strained many of Oregon's and Washington's cultivators, while other states—New Jersey, Michigan and Vermont (adult-use), and Oklahoma, Utah and Missouri (medical)—

continue to push forward on legalization.

The political environment surrounding the industry has been uncertain, as marijuana prohibitionist U.S. Attorney General Jeff Sessions rescinded several Obama-era protections for state-legal cannabis businesses and gave the U.S. Attorneys the power to decide whether or not to prosecute those businesses for violating federal law.

Canada's anticipated rollout in nationwide legalization is making the market globally appealing, and many medically licensed producers are preparing through heavy investment and acquisitions.

Despite its bumps and bruises amidst continued uncertainty, the outlook among cannabis cultivators remains relatively positive, especially when it comes to anticipated growth and expansion, and the number of new entrants to the market. Read on to explore the results of *Cannabis Business Times'* third-annual "State of the Industry" study, conducted by Readex Research (an independent, third-party leader in market research), and get important benchmarking data—from revenue and profit to expansion plans, facility types and sizes, automation trends (which are on the rise), and much more—that you can use to determine where you fit into the cannabis cultivation landscape and track industry trends that will impact your business today and into the future.



DESPITE ITS BUMPS AND BRUISES AMIDST CONTINUED UNCERTAINTY, THE OUTLOOK AMONG CANNABIS CULTIVATORS REMAINS RELATIVELY POSITIVE.

THE POLITICAL & FINANCIAL OUTLOOK: THE GREEN RUSH CONTINUES ITS APPEAL



Politically speaking, cultivators are slightly less concerned than last year. In *Cannabis Business Times*' "State of the Industry" report, the number of cultivators who said that the uncertainty about the federal government's potential policies regarding legalized marijuana affects their current or future business plans "very much" dropped 4 points (from 23% in 2017 to 19% in 2018).

Those who said they are "somewhat" impacted by this uncertainty increased by 5 points, however, from 41% last year to 46% this year, while nearly the same number said their business decisions are "not at all" impacted this year (36%) versus last year (35%).

But the general sense of optimism is more clearly reflected in revenue and profit growth among the largest number of participants in this year's study, as well as the number who expect to see growth in the coming year—not to mention the considerable number of new entrants into the market.

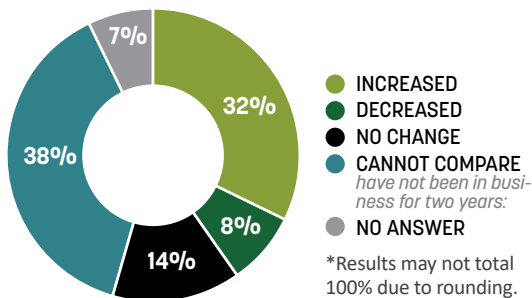
Nearly a third of participants in *Cannabis Business Times*' study reported revenue growth in their most recent fiscal year, compared to 8% who saw a revenue drop. Fourteen percent said their revenue did not change over the previous fiscal year.

And among those whose revenue increased, 10% reported an increase of 100% or more. As for *revenue declines*, less than 3% of cultivators indicated that their revenue dropped by 50% or more.

\$1.29M
THE AVERAGE OPERATION'S REVENUE FROM ITS CANNABIS CULTIVATION OPERATIONS IN ITS MOST RECENTLY COMPLETED FISCAL YEAR.

The Revenue Picture

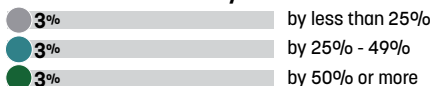
Compared with one year prior, how did your operation's **revenue** from its cannabis cultivation change in its most recently completed fiscal year?



Revenue increased by:



Revenue decreased by:

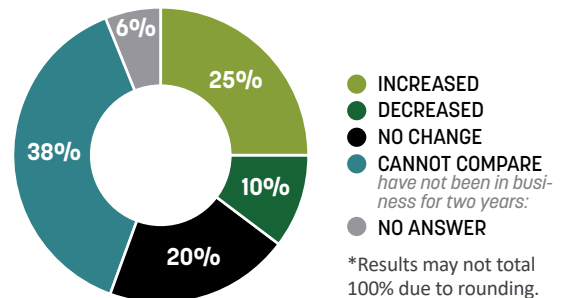


When it comes to the bottom line—a truer picture of a business's financial well-being—more cultivators (25%) reported growth in profit over the last fiscal year than those who reported no change in profit (20%) and those who reported decreased profit (10%).

Perhaps the most notable finding is that the Green Rush does not seem to be losing its appeal among cultivation businesses, despite well-noted price pressures and market saturation in many cities and counties, and considering the high cost of entry in many states. Well over a third of study participants are new entrants to the market; 38% said they could not compare revenue nor profit from their current fiscal year to the previous fiscal year as they were not in business long enough to do so.

The Profit Picture

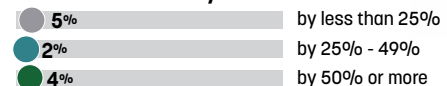
Compared with one year prior, how did your operation's **profit** from its cannabis cultivation change in its most recently completed fiscal year?



Profit increased by:



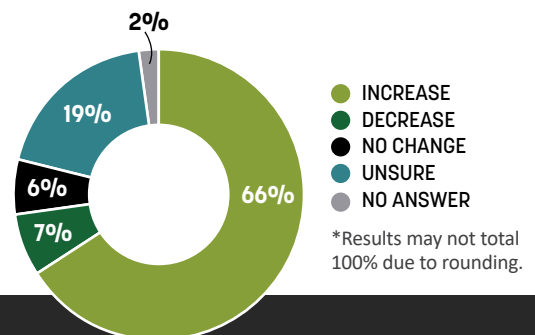
Profit decreased by:



Optimism gains even more strength when cultivators look ahead. Two-thirds of study participants said they anticipate their revenue to grow in their current fiscal year compared to their most recently completed fiscal year. Compare that to just 7% who believe their revenue will remain steady year-over-year and the 6% who anticipate that their revenue will decline.

Anticipated Change in Revenue

How do you anticipate your operation's **revenue** from cannabis cultivation will change in your **current** fiscal year compared to your most recently completed fiscal year?



REVENUE & PROFITS

Revenue

What was your operation's revenue from its cannabis cultivation operations in its most recently completed fiscal year?

	2016	2017	2018
\$5 million or more	6%	8%	11%
\$2 million - \$4.9 million	10%	9%	12%
\$1 million - \$1.9 million	8%	11%	10%
\$500,000 - \$999,999	5%	13%	8%
\$250,000 - \$499,999	9%	12%	7%
\$100,000 - \$249,999	17%	13%	14%
\$50,000 - \$99,999	30%*	6%	8%
\$25,000 - \$49,999	—	5%	3%
Less than \$25,000	—	19%	21%
No answer	16%	5%	5%

*The 2016 report showed that a total of 30% of research participants reported revenue less than \$100,000; it did not break down revenue ranges less than \$100,000. Results may not total 100% due to rounding.

Across the board, the market has held pretty steadily in most revenue categories over the past three years. The top revenue ranges of \$2 million and higher reflect several point increases, as does the lowest revenue range of less than \$25,000. And despite the point gains in the top revenue categories, those with revenues of less than \$25,000 still comprise the largest group of research participants.



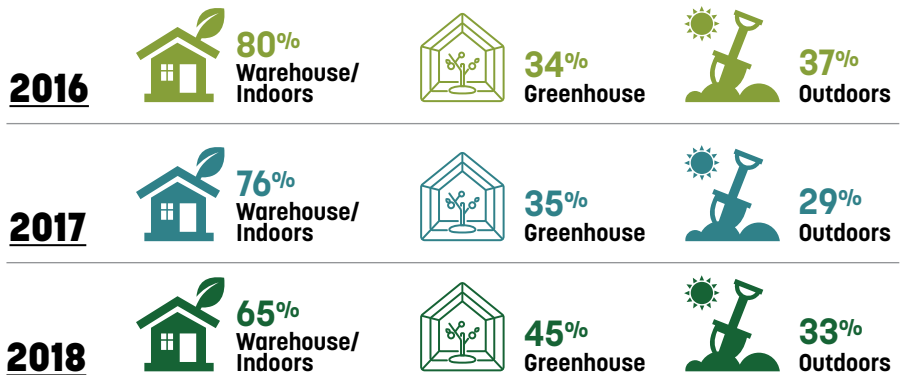
WHERE ARE WE NOW? THE BIG PICTURE

Before we look further into expectations and future plans, it's important to get a detailed picture of where the cultivation industry is now, as it lends context to planned expansion and other trends.

For starters, cultivation locations (warehouse/indoors, greenhouse or outdoors) have seen a shift since the first data on this was collected in 2016. Warehouse/indoor facilities have experienced a 15-point drop—from 80% of research participants indicating that they grow cannabis indoors in 2016 to 65% this year. Greenhouse cultivation, on the other hand, is on the rise, jumping 11 points from 34% in 2017 to 45% in 2018, bringing the number of indoor and greenhouse growers closer together.

Outdoor cultivation has declined slightly, seeing a 4-point drop between 2016 and 2018. Indoor growers are the most likely to only grow indoors—43% of cultivators said they grow indoors solely—while greenhouse and outdoor growers are far more apt to mix facility types, growing in some combination of greenhouse, indoors and outdoors.

Warehouse, Greenhouse or Outdoors Where does your operation grow cannabis?



*Note: Totals exceed 100% because respondents could select multiple answers.

Warehouse, Greenhouse or Outdoors: A Closer Look

Where does your operation grow cannabis?

	2016	2017	2018	% Change (2017-2018)
Warehouse Only	44%	51%	43%	-8%
Greenhouse Only	4%	9%	16%	+7%
Outdoors Only	10%	8%	9%	+1%
Greenhouse + Outdoors (No Warehouse)	3%	3%	9%	+6%
Greenhouse + Warehouse (No Outdoors)	13%	6%	8%	+2%
Warehouse + Outdoors (No Greenhouse)	10%	3%	3%	0%
All Three (Greenhouse, Outdoors and Warehouse)	14%	4%	11%	+7%

11%

THE PERCENTAGE OF RESPONDENTS WHO SAID THEIR CANNABIS OPERATION HAS 5 OR MORE FACILITIES/GROW SITES.

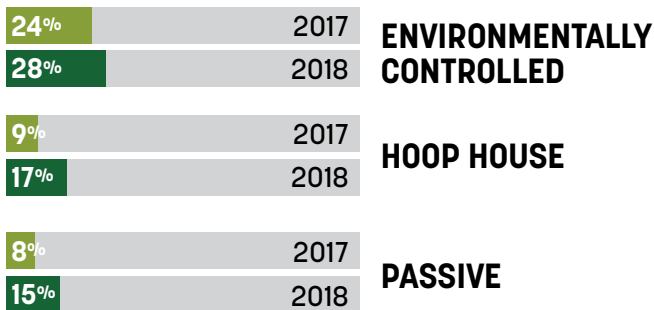


Several data sets in this report suggest a slight shift toward larger operations, one of those being the number of facilities cultivation operations have. This year saw, in most cases, an increase (albeit somewhat slight) in the number of facilities cannabis operations have. While single-facility operations remain the most common by far, the number of those operations dropped 10 percentage points in two years (from 66% in 2016 to 56% this year).

Also of note is the 5-point increase in the number of cannabis cultivation operations that have five or more facilities (rising from 6% in 2016 to 11% in 2018) as well as in those with two facilities (15% in 2016 to 20% in 2018).

Greenhouse Cultivation

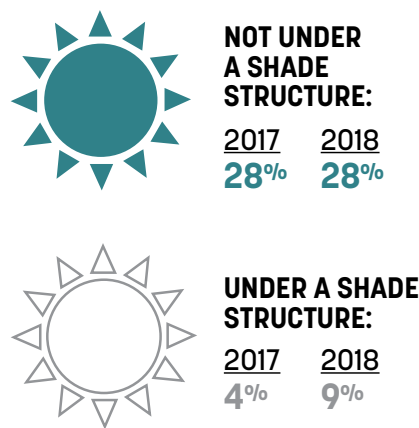
If you grow in a greenhouse, what type?



*Passive greenhouses are those that rely primarily on structure design to maximize solar impact in colder weather and minimize it during warmer weather.

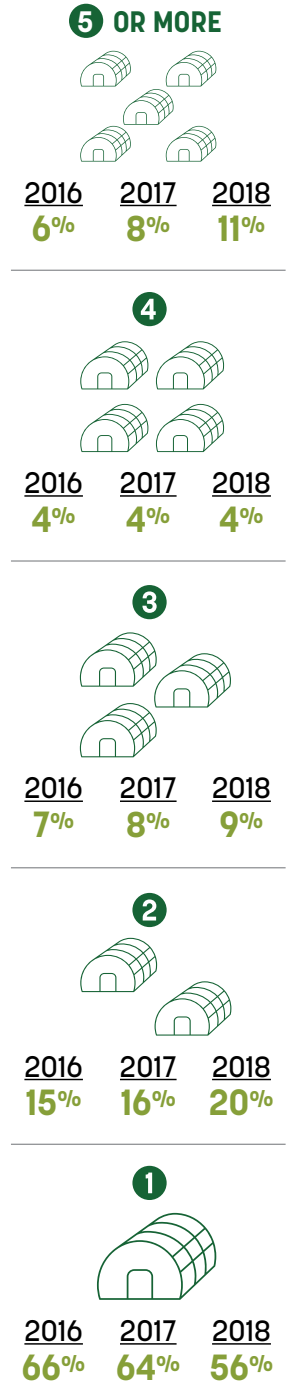
Outdoor Cultivation

If you grow outdoors, do you grow:



Grow Sites: Single vs. Multi-Facility

How many cannabis facilities/grow sites does your operation have?



SIZING UP THE INDUSTRY

Another data set that reflects an increase in larger operations (new entrants or expanded operations) is the *square footage of the cannabis operation's cultivation area*, compared to previous years' research.

The largest jump throughout past two years was seen in the number of cultivators whose cannabis production space totals 80,000 square feet or more: 17% of this year's research participants reported production areas of this size, while in 2017 and 2016, just 7% of participants' operations claimed sizes of this range.

Still, smaller grow sites are holding strong: The largest percentage of cultivators report cannabis production areas of less than 5,000 square

feet. For all three years *Cannabis Business Times* has been tracking this data, that percentage has hovered between 32% and 34%.

Because those with less than 5,000 square feet comprise such a sizeable group, this year's research broke that number down further, revealing that:

- 11% of cultivators indicated cannabis production areas between 2,500 square feet and 4,999 square feet;
- 13% reported production areas in the 1,000- to 2,499-square-foot range; and
- 9% said their production area is less than 1,000 square feet.

Grow Size

What is the square footage of your operation's cannabis production area?

SIZE	2016	2017	2018
80,000 sq. ft. or more	7%	7%	17%
50,000-79,999 sq. ft.	3%	5%	5%
25,000-49,999 sq. ft.	12%	13%	10%
10,000-24,999 sq. ft.	15%	21%	15%
5,000-9,999 sq. ft.	24%	20%	19%
Less than 5,000 sq. ft.	34%	32%	33%

*2% didn't answer in 2018

Since fewer cultivators this year reported that they are growing indoors, it's not too surprising the average percentage of growers' cannabis production area that is done indoors/in a warehouse has also dropped—by 7 points, from 60% in 2017 to 53% this year. And as greenhouse cultivation increased, so did the average percentage of growers' cannabis production area that is in a greenhouse—reflecting an 8-point increase, from 19% last year to 27% this year. The average outdoor production area saw no change.

% of Crop Space

The **average** percentage of your cannabis production area is...?

	2017	2018	% Change
Warehouse	60%	53%	↓ 7%
Greenhouse	19%	27%	↑ 8%
Outdoors	20%	20%	0%

25,600
sq. ft.

THE AVERAGE SQUARE FOOTAGE OF TODAY'S CANNABIS OPERATION'S CANNABIS PRODUCTION AREA.

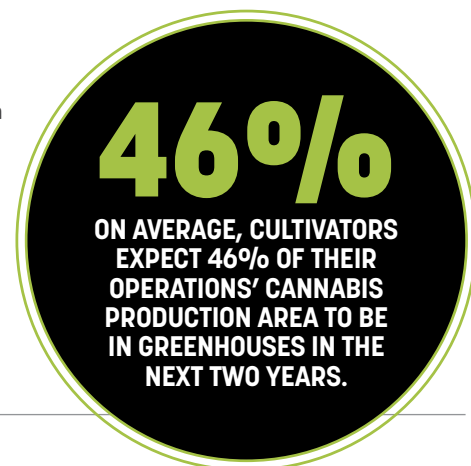


EXPANSION PLANS: BIGGER GROWTH

Another statistic that stood out was expansion plans—big ones. Seventy-eight percent of cultivators said they plan to add square footage for growing cannabis in the next two years. However, two years ago, when *Cannabis Business Times* conducted its first “State of the Industry” report, 9% of cultivators said their operations planned to add 80,000 sq. ft. or more for cannabis growing in the next two years. Last year, that number hopped slightly up to 12%, and this year, it jumped to 21%—the largest percentage among those who say they are planning to expand.

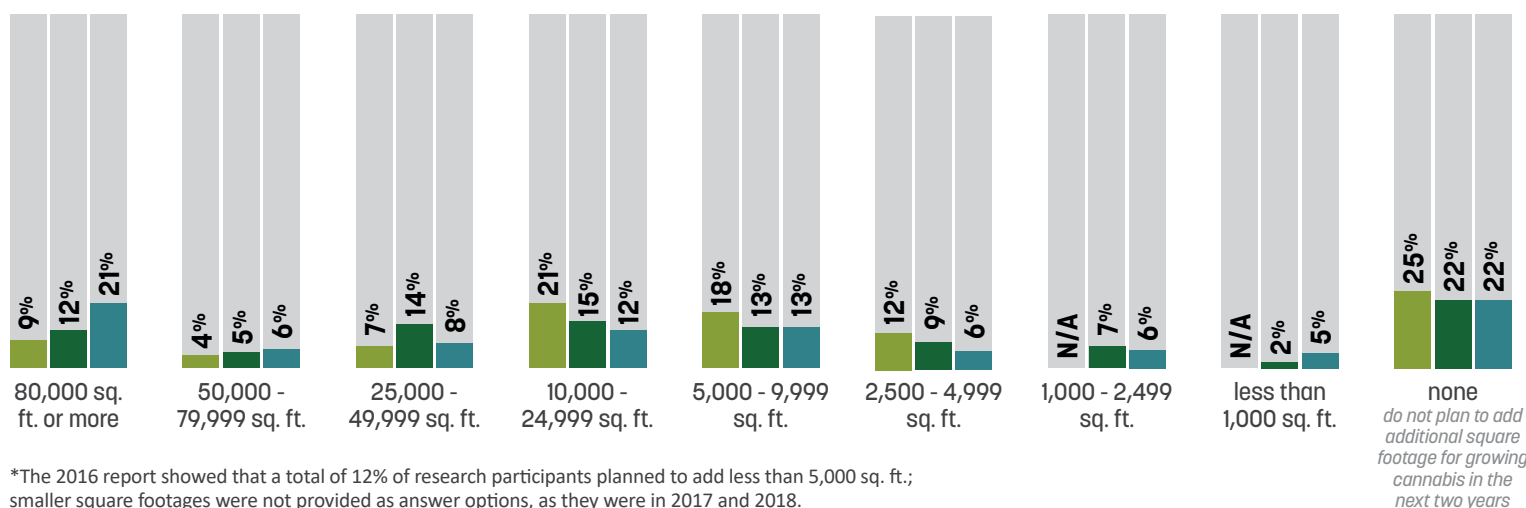
The average square footage cultivation operations plan to add jumped slightly from 22,300 sq. ft. in 2017 to 27,400 sq. ft. in 2018.

The number of research participants who said they do not plan to add cultivation space in the next two years has remained quite stable over three years. In 2016, 25% said they had no space-expansion plans; and in 2017 and 2018, this number dropped slightly to 22%.



Expansion Plans

How much additional square footage for growing cannabis does your operation plan to add in the next two years? ● 2016 ● 2017 ● 2018



*The 2016 report showed that a total of 12% of research participants planned to add less than 5,000 sq. ft.; smaller square footages were not provided as answer options, as they were in 2017 and 2018.

As for what type of expansion cultivators are planning, warehouse/indoor cultivation space still ranks at the top, with more than half of research participants saying they plan to add indoor space for cannabis cultivation in the next two years. Greenhouses (including both hoop houses and gutter connect houses) follow, with 43% of current growers planning to add these types of structures in the next two years.

What Will You Be Adding?

Which of the following does your operation plan to add for cannabis cultivation in the next two years? (Population base: current growers)

	2016	2017	2018
indoor warehouse/cultivation space	43%	47%	53%
greenhouse: hoop house	26%	27%	26%
greenhouse: gutter connect house (where multiple bays are connected into one open space using aluminum gutters)	26%	24%	23%
outdoor cultivation space	22%	20%	25%
none of these	21%	16%	18%

*Note: Totals exceed 100% because respondents could select multiple answers.





WHICH FACILITIES ARE BEING PLANNED AMONG NEW CULTIVATORS?

For those research participants who do not currently own nor work for a cannabis cultivation operation (who were excluded from the rest of the research results), the facilities they plan to add for cultivation more or less mirror the existing industry's expansion plans. More than half (59%) plan to cultivate indoors/in warehouses, while 37% plan to cultivate in greenhouses (whether hoop houses or gutter connect). Twenty-nine percent plan to cultivate outdoors, a number 4 points higher than the 25% that those who currently own or work for a cannabis cultivation operation plan to add to their existing operations.

New Entrants to the Market

If you do not currently own or work for an operation that grows cannabis, but plan to in the next 18 months*, which of the following does your operation plan to add for cannabis cultivation in the next two years?



59%
indoor warehouse/cultivation space



29%
outdoor cultivation space



26%
greenhouse: hoop house



15%
greenhouse: gutter connect house
(where multiple bays are connected into one open space using aluminum gutters)



10%
none of these

*An additional 106 research participants who do not currently own or work for an operation that grows cannabis answered several questions in the study.

PLANTS, PRODUCTION & CHALLENGES

With competition and price pressures increasing in most state markets, cultivators are continuously looking to cut production costs and maximize yield.

In fact, "competition/declining prices" was ranked as the No. 1 business-related challenge. Fifty-eight percent of total respondents reported among their top three. (See chart AT RIGHT???) And increasing yield ranked No. 2 among the top three cultivation-related challenges. (See chart AT RIGHT???)

In an effort to explore production-related costs and provide cultivators with a look at where their production costs fall in comparison to others in the industry, Cannabis Business Times asked cultivators in each type of operation (indoors, greenhouse and outdoors) for their average production costs per pound of dried flower. It's not a surprise that outdoor growers reported the lowest costs of production, followed by greenhouse and then warehouse cultivation.

While the chart below breaks down various pricing levels, the most telling data is the average for each type of cultivation operation (chart AT RIGHT????). Looking at those who reported that their average production costs per pound of dried flower was below \$200, the numbers are also telling. Among those who grow outside, 56% reported production costs per pound of dried flower at below \$200; nearly 30% of greenhouse growers reported achieving a cost per pound of less than \$200; and just 13% of indoor cultivators reported the same.

Average Production Costs Per Pound of Dried Flower



*Due to the high proportion of respondents answering in the bottom category, the sample mean cannot be meaningfully calculated; this calculated average is provided as an estimation.

Dried Flower: Production Costs

What is your operation's average production cost per pound (\$/lb.) of dried flower produced ...?

	Warehouse	Greenhouse	Outside
\$1,000 or more	6%	6%	6%
\$700 - \$999	12%	8%	0%
\$500 - \$699	21%	9%	6%
\$400 - \$499	10%	9%	3%
\$300 - \$399	19%	14%	11%
\$200 - \$299	13%	19%	14%
\$100 - \$199	9%	11%	21%
less than \$100	3%	16%	32%
no answer	7%	7%	

*Warehouse base: those whose operation grows cannabis indoors/in a warehouse; greenhouse base: those whose operation grows cannabis in a greenhouse; outside base: those whose operation grows cannabis outside.

Business Challenges

What do you consider to be your operation's three biggest business-related challenges as a cultivator of cannabis?



Competition and price pressures ranked No. 1 among cultivators' top-three business-related challenges, followed by compliance and finance management. Other concerns included uncertainty about federal law (22%), production costs (17%), marketing/brand building (16%), securing capital/funding (15%), product sales (14%), product development (9%) and managing employees/HR (8%), among others.

*Note: Total exceeds 100% because respondents could select multiple answers.

Cultivation Challenges

What do you consider to be your operation's three biggest cultivation-related challenges as a cultivator of cannabis?



Pest/disease control ranked No. 1 among the top three cultivation-related challenge growers face—12 percentage points ahead of increasing yield and 20 points ahead of achieving sustainable growing goals. Other concerns were achieving desired terpene/cannabinoid content (19%), maintaining consistent yields (17%), achieving organic goals (16%) and humidity control (14%), among others.

*Note: Total exceeds 100% because respondents could select multiple answers.

As for what types of cannabis cultivators are growing, the most significant change has been in cannabis for recreational purposes: The percentage of growers has risen 11 points, from 59% in 2016 to 70% in 2018. (This represents a 2-point drop from 2017, however, when 72% of growers reported they were cultivation for recreational purposes.) The rise in this category since 2016 makes sense considering the growth in the number of states that have legalized adult-use cannabis in the past few years.

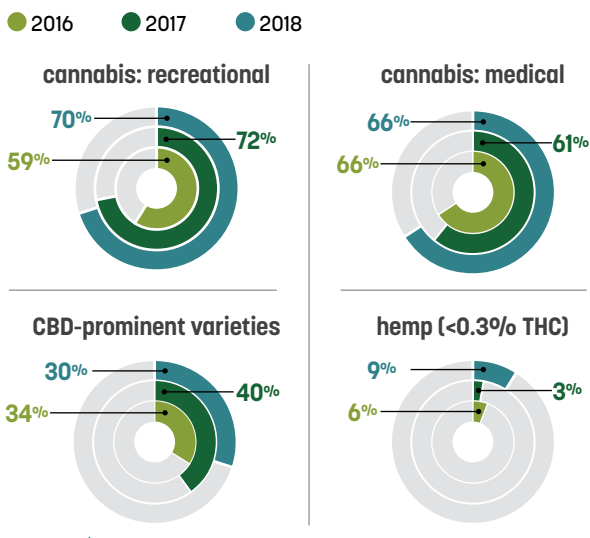
All other types of cannabis have fluctuated slightly. Contrary to reports indicating the rapid sales growth of CBD, the number of cultivators

reporting they cultivate CBD-prominent varies has dropped 4 points since 2016, and dropped 10 points compared to last year, which had shown a slight gain over 2016.

Hemp cultivation still represents a small portion of the cultivation landscape, but the number of growers indicating they are cultivating hemp rose 6 points over last year to 9%. Nearly two-thirds of cultivators have no plans to grow hemp in the next 18 months, according to our research, though interest may be piqued in the hemp market, as 27% of growers said they are unsure whether they will begin growing hemp in the next 18 months.

Crop Types

What types(s) of cannabis plants does your operation grow?



30% OF CULTIVATORS ARE GROWING CBD-PROMINENT VARIETIES.

*Note: Totals exceed 100% because respondents could select multiple answers.

Hemp Plans

Does your operation plan to grow hemp (<0.3% THC) in the next 18 months?



9% YES



64% NO

27% NOT SURE

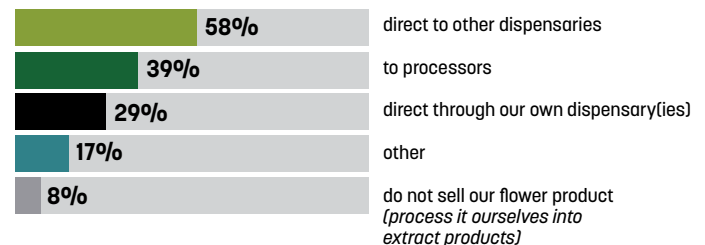
Where cultivators are selling their flower is another point of interest: 40% of study participants said they sell their flower to processors. Without previous years' data to compare this to, it is unclear whether this number is rising, falling or holding steady.

The majority of cultivators (60%) indicated they sell direct to dispensaries, while 29% said they sell their flower product through their own dispensaries. Just 8% said they do not sell their flower product, but rather process their flower themselves.

With respondents able to select more than one answer and the total equaling 150%, it is clear that many respondents sell their flower product in multiple ways.

Flower Sales

How does your operation sell its flower product?



*Total exceeds 100% because respondents could select multiple options.

As cultivators continue to seek ways to lower production costs and compete in today's marketplace, automation continues to play an important role. Just 14% of cultivators indicated that they do not use automation technology at all.

Lighting, temperature and humidity were the most commonly used automated technologies. All three inputs were automated by more than half of growers.

In this year's study, Cannabis Business Times asked research participants about more aspects of automation than in previous years, so not all types of automation have comparable data to share. However, the available data showed significant increases in usage of several automation technologies.

The number of cultivators who said they use automation technology to control humidity rose 8 percentage points, from 51% in 2016 to 59% this year.

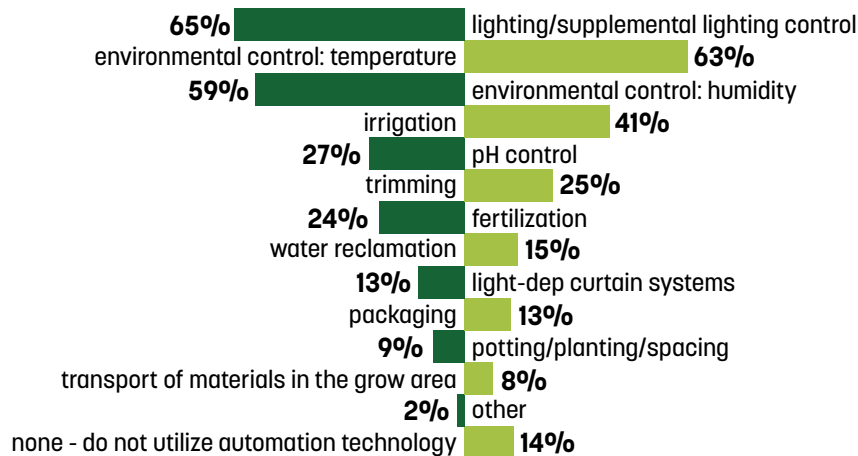
The use of automation to control pH has also been on the rise, from 14% of respondents in 2016 saying they use it to 24% in 2017 and 27% this year.

Utilization of potting/planting/spacing automation technology is climbing as well. This year, 9% of cultivators indicated they use this type of technology compared to just 5% in 2017.

A larger number of growers (8%) also said they are automating the transport of materials in the grow area compared to last year (4%).

What Are You Automating?

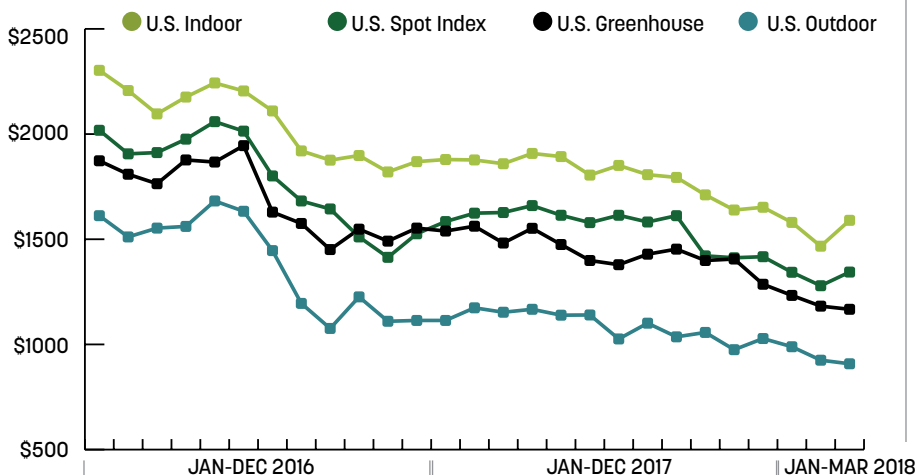
For which systems does your operation utilize automation technology in its cannabis cultivation?



*Note: Total exceeds 100% because respondents could select multiple answers.

3-Year Price Overview

(Data provided by Cannabis Benchmarks/New Leaf Data.)



AN INDUSTRY GROWING UP

The industry has seen its share of challenges this year. But with automation-technology use and greenhouse production on the rise, the industry as a whole seems to be addressing the challenges of price declines and ever-growing competition. With the number of larger cultivators and new entrants in the market also rising, competition will continue to exert pressure on existing cultivation businesses, and the need to reduce production costs further will also increase.

However, as several new states are currently rolling out new adult-use and medical programs, and several more are expected to do so this year—not to mention Canada's impending nationwide legalization—optimism surrounding the end of cannabis prohibition and the opportunities it presents grows. And the U.S. political climate's impact on business decisions lingers, but is not an overarching threat.

The fact that two-thirds of cultivators anticipate revenue growth in the current fiscal year and nearly 80% plan to expand their operation's cannabis-production square footage, suggests significant development despite the bumps and bruises the still-fledgling, federally illegal industry has encountered.

Whether the coming year will see advances in federal legislation to protect and/or advance the cannabis industry remains to be seen, but public support continues to grow as well—with 59% of Americans in favor of legalization according to an April CBS News Poll.

Like any new industry, shake-ups and consolidation are bound to occur, and some businesses will not survive. Planning ahead, accurate budgeting, reducing costs and exploring the best business opportunities that match each business's strengths will help ensure resilience in the face of obstacles and rapid evolution. Monitoring trends and benchmarking your business against others will also help you determine where you may need to make improvements or changes. This "State of the Industry" report has equipped you with the data you need to do so.



About the Research

Research for the "State of the Industry" report was conducted on behalf of Cannabis Business Times during April and May by independent research organization Readex Research. A majority of the results are based on 191 participants from North America who own or work for a cannabis cultivation operation. The margin of error for percentages based on 191 respondents is +/-7.1 percentage points at the 95% confidence level.

System 420™ Hybrid Greenhouses

Larger Yields, Better Crops, Lower Costs



PRODUCTION YIELDS

Light deprivation, environmental controls, and benching systems provide the tools to optimize the grow system for high capacity crop output.

QUALITY PLANTS

Growing healthy, natural plants is practical with insect screens for organic farming. Irrigation and fertilizer systems provide optimal plant dosing levels.

ENERGY SAVINGS

Insulated walls and roof coverings provide highly diffused, natural light energy usage for significant cost reductions.

Why Nexus? With over 1 million square feet of cannabis greenhouses constructed in 11 states, Nexus has developed unique expertise in designing integrated cannabis growing systems. Beyond cannabis, Nexus has served the horticulture industry for 50 years as an industry-leading greenhouse manufacturer. Facilities are strategically located in Colorado and Illinois for convenient shipping to the entire U.S.

That's why cannabis growers choose Nexus.



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