STATE OF THE INDUSTRY REPORT

Examining the Cannabis Cultivation Market
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.

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 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 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.
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.

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?

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?

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?

<table>
<thead>
<tr>
<th>Revenue Range</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5 million or more</td>
<td>6%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>$2 million - $4.9 million</td>
<td>10%</td>
<td>9%</td>
<td>12%</td>
</tr>
<tr>
<td>$1 million - $1.9 million</td>
<td>8%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>$500,000 - $999,999</td>
<td>5%</td>
<td>13%</td>
<td>8%</td>
</tr>
<tr>
<td>$250,000 - $499,999</td>
<td>9%</td>
<td>12%</td>
<td>7%</td>
</tr>
<tr>
<td>$100,000 - $249,999</td>
<td>17%</td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td>$50,000 - $99,999</td>
<td>30%*</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>$25,000 - $49,999</td>
<td>—</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Less than $25,000</td>
<td>—</td>
<td>19%</td>
<td>21%</td>
</tr>
<tr>
<td>No answer</td>
<td>16%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*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?

<table>
<thead>
<tr>
<th>2016</th>
<th>80% Warehouse/Indoors</th>
<th>34% Greenhouse</th>
<th>37% Outdoors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>76% Warehouse/Indoors</td>
<td>35% Greenhouse</td>
<td>29% Outdoors</td>
</tr>
<tr>
<td>2018</td>
<td>65% Warehouse/Indoors</td>
<td>45% Greenhouse</td>
<td>33% Outdoors</td>
</tr>
</tbody>
</table>

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

Warehouse, Greenhouse or Outdoors: A Closer Look
Where does your operation grow cannabis?

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>% Change (2017-2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse Only</td>
<td>44%</td>
<td>51%</td>
<td>43%</td>
<td>-8%</td>
</tr>
<tr>
<td>Greenhouse Only</td>
<td>4%</td>
<td>9%</td>
<td>16%</td>
<td>+7%</td>
</tr>
<tr>
<td>Outdoors Only</td>
<td>10%</td>
<td>8%</td>
<td>9%</td>
<td>+1%</td>
</tr>
<tr>
<td>Greenhouse + Outdoors (No Warehouse)</td>
<td>3%</td>
<td>3%</td>
<td>9%</td>
<td>+6%</td>
</tr>
<tr>
<td>Greenhouse + Warehouse (No Outdoors)</td>
<td>13%</td>
<td>6%</td>
<td>8%</td>
<td>+2%</td>
</tr>
<tr>
<td>Warehouse + Outdoors (No Greenhouse)</td>
<td>10%</td>
<td>3%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>All Three (Greenhouse, Outdoors and Warehouse)</td>
<td>14%</td>
<td>4%</td>
<td>11%</td>
<td>+7%</td>
</tr>
</tbody>
</table>
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?

<table>
<thead>
<tr>
<th>Type</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmentally</td>
<td>24%</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>Controlled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoop House</td>
<td>9%</td>
<td>17%</td>
<td>15%</td>
</tr>
<tr>
<td>Passive</td>
<td>8%</td>
<td>17%</td>
<td>15%</td>
</tr>
</tbody>
</table>

*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:

<table>
<thead>
<tr>
<th>Type</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not under a shade</td>
<td>15%</td>
<td>16%</td>
<td>20%</td>
</tr>
<tr>
<td>structure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>28%</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>28%</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>Under a shade structure:</td>
<td>4%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>66%</td>
<td>64%</td>
<td>56%</td>
</tr>
<tr>
<td>2017</td>
<td>64%</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>56%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

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.

**Grow Size**

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

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

*2% didn’t answer in 2018

**% of Crop Space**

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

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse</td>
<td>60%</td>
<td>53%</td>
<td>↓ 7%</td>
</tr>
<tr>
<td>Greenhouse</td>
<td>19%</td>
<td>27%</td>
<td>↑ 8%</td>
</tr>
<tr>
<td>Outdoors</td>
<td>20%</td>
<td>20%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**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%.

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 planning 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)

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

*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.

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.

Average Production Costs Per Pound of Dried Flower

<table>
<thead>
<tr>
<th>Warehouse</th>
<th>Greenhouse</th>
<th>Outside</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000 or more</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>$700 - $999</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>$500 - $699</td>
<td>21%</td>
<td>9%</td>
</tr>
<tr>
<td>$400 - $499</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>$300 - $399</td>
<td>19%</td>
<td>14%</td>
</tr>
<tr>
<td>$200 - $299</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>$100 - $199</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>less than $100</td>
<td>3%</td>
<td>16%</td>
</tr>
<tr>
<td>no answer</td>
<td>7%</td>
<td>7%</td>
</tr>
</tbody>
</table>

* 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.
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.

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 dispensary(ies). 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.

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

- **cannabis: recreational**
  - 2016: 70%
  - 2017: 72%
  - 2018: 59%

- **cannabis: medical**
  - 2016: 66%
  - 2017: 66%
  - 2018: 61%

- **CBD-prominent varieties**
  - 2016: 30%
  - 2017: 40%
  - 2018: 34%

- **hemp (<0.3% THC)**
  - 2016: 9%
  - 2017: 6%
  - 2018: 3%

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?

- **YES**: 9%
- **NO**: 64%
- **NOT SURE**: 27%

9% of cultivators plan to grow hemp in the next 18 months.

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

Flower Sales
How does your operation sell its flower product?

- **direct to other dispensaries**: 58%
- **to processors**: 39%
- **direct through our own dispensary(ies)**: 29%
- **other**: 17%
- **do not sell our flower product (process it ourselves into extract products)**: 8%

58% of cultivators sell their flower product directly to other dispensaries.

*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%).

### EXAMINING THE CANNABIS CULTIVATION MARKET

#### What Are You Automating?

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

- **65%** lighting/supplemental lighting control
- **63%** environmental control: temperature
- **59%** environmental control: humidity
- **41%** pH control
- **27%** irrigation
- **25%** trimming
- **24%** fertilization
- **15%** water reclamation
- **13%** light-dep curtain systems
- **13%** packaging
- **9%** potting/planting/spacing
- **8%** transport of materials in the grow area
- **2%** other
- **14%** none - do not utilize automation technology

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

### 3-Year Price Overview

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

- **U.S. Indoor**
- **U.S. Spot Index**
- **U.S. Greenhouse**
- **U.S. Outdoor**

#### 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.
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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