



the cannin report

table of contents

03 | welcome/contact

113 | medical research

04 | cannin tools

118 | cannabis terminology

05 | market & industry update

125 | hemp infographic

06 | fundamental analysis

126 | industry terminology

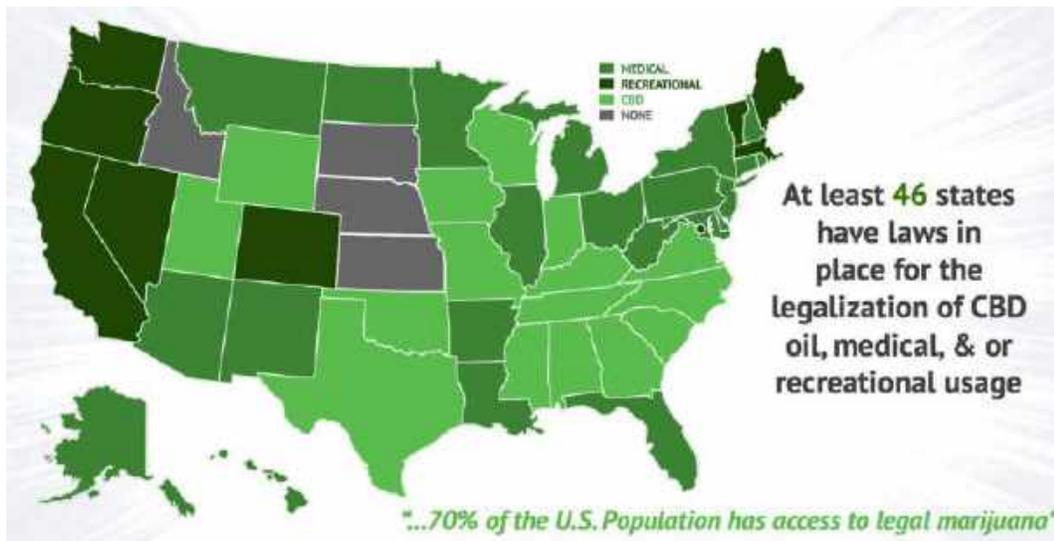
55 | branding

58 | regulations by state

about the cannin report

cannin report introduction

Thank you for purchasing the Cannin Report. It is our pleasure to welcome you to Cannin's quarterly publication. This Report will arm you with the information and resources necessary to make informed investment decisions within the cannabis industry. Our team of industry experts and investment analysts bring together important industry news, easy to read analyses and valuable investing tools to help investors of all levels, from beginners to the experienced, make educated investment decisions in this new and complex industry.



As of the release of this report, at least forty six states have laws in place for the legalization of CBD, oil, medical and/or adult use cannabis products. Approximately 70% of the U.S Population now has access to legal cannabis and/or hemp. The legal marijuana market in the U.S. is estimated to grow over 50% in the next year to \$10.7 billion and, according to early forecasts, is estimated to surpass \$12.3 billion by 2020. Many discerning investors are doing their homework, and we at Cannin are grateful that you have considered utilizing the resources of our Colorado-based team for your cannabis investment needs. We look forward to recognizing tremendous opportunities together in this booming, multi-billion dollar industry.

Yours in Great Success,
Stephen Goldman & William Goodin - Founders
Cannin, 2018

cannin platform introduction (coming soon)

Not all trading platforms are not all created equal. Cannin's software platform allows clients to buy and sell stocks on the same trusted platform containing the latest cannabis investment research. With Cannin, our clients have the ability to manage their portfolios with ease and monitor high growth potential stocks until it's the right time to act. Combining competitive trade fees, no account minimums, educational material, and trusted industry content provides our clients a wealth of cannabis industry information and support they simply can't find anywhere else. Invest in cannabis and invest in yourself with cannin.com.

contact

PO Box 18008
 Denver, CO 80218
 (720) 254-1374

our team

William Goodin *Co-Founder*
Stephen Goldman *Co-Founder*
Andrew Raines *Coder*

Austin Smith *Market Analyst*
John Farmer *Market Analyst*
Cherie Ann Gozon *Market Analyst*

cannin tools



free cannin access

Free

Cannin access gives you a free personal dashboard with technical indicator tools, curated news, and the first updates on new site features.



cannin chronicle

\$18 per month

Comprised of the best weekly content from Cannin, plus additional exclusive content and real-time fundamental analyses, the Cannin Chronicle is your go-to recap of the prior week's largest cannabis companies. Delivered every Sunday morning, Cannin will keep you informed about the biggest news and the biggest players in cannabis.



cannin report

\$99 - one time fee

A comprehensive industry report delivered every quarter to keep you ahead of the curve.



cannin platform

Coming Soon!

Will feature competitive trade fees, no account minimums, educational material, curated content from our team of investment analysis and industry leaders to offer you the insight and support you can't find anywhere else.



machine learning

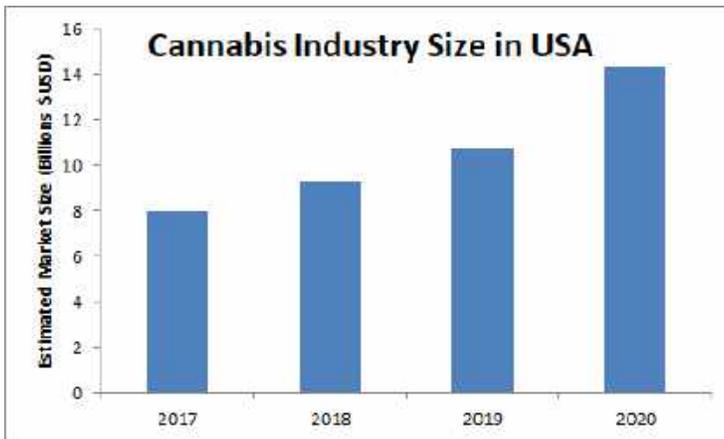
Coming Soon!

This developing program monitors the market and learns when variables predict a stock will go up – or down, providing highly accurate trading advice.

market & industry update

cannabis

Two factors influence the growth rate of this industry: the number of states passing legislation for either adult use of legal medical cannabis (currently most black-market purchasers of illegal cannabis are transitioning to legal purchases); and the pure growth in the existing markets (new populations purchasing cannabis each year). These two factors provide a quantifiable range for the market for each year. USA Sales estimates are expected to exceed \$14 Billion by 2020.

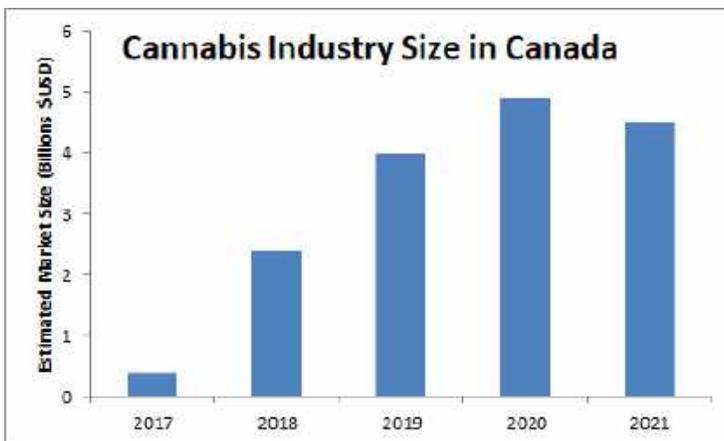


USA legal sales estimate

- 2017 - \$8.0 bil
- 2018 - \$9.3 bil
- 2019 - \$10.7 bil
- 2020 - \$14.3 bil

Canada

In Canada, the current total (legal and non-legal) annual market potential is about 650,000 kgs, worth about US \$5-6 billion. The legal market is approximately 50,000 kgs. Since Canada announced nationwide legalization for adult use, we expect to see a substantial portion of the illegal market to begin purchasing legally in the second half of 2018. We expect the legal sales growth rate to continue at a substantial pace for the first 2-3 years - much more substantial than the pure growth of the market. There will likely be some lag from the distribution/supply chain, as some provinces will have far too few legal retail stores. However, online purchases will likely exceed estimates, reducing the effect of this lag in sales within physical retail stores. 200,000 kgs of overall production is a reasonable estimate for 2018—then adding 200,000 - 300,000 kgs per year for several years as stores open up and illegal sales continue to transition to legal. We expect to see growth in the total market potential. However, we anticipate significant price compression within the next several years as production continues to increase at such a frenetic pace.

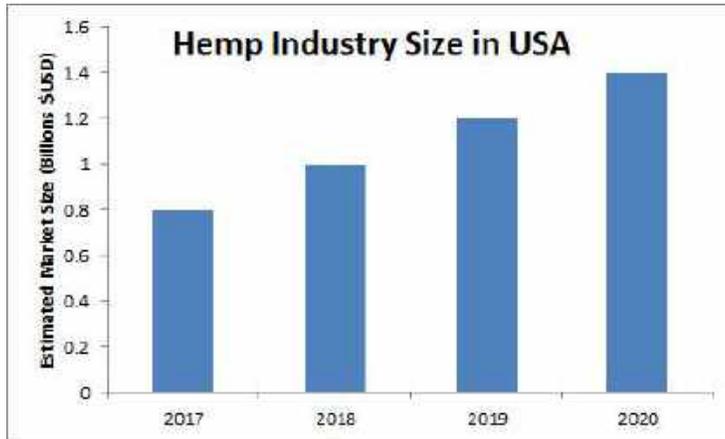


Canada legal sales estimates

- 2017 - \$400 mil
- 2018 - \$2.4 bil
- 2019 - \$4.0 bil
- 2020 - \$4.9 bil
- 2021 - \$4.5 bil

market & industry update

hemp



USA

2017 - \$800 mil
 2018 - \$1.0 bil
 2019 - \$1.2 bil
 2020 - \$1.4 bil

Industry Specifics

Here is a breakdown of where hemp products are being sold:

CBD - 23% (\$184 mil - \$291 mil)

Personal Care - 22%

Industrial - 18%

Food - 17%

Textiles - 13%

Supplements - 5%

Other - 2%

Canada

In Canada, consumer sales alone are estimated to be \$20-40 million USD and are expected to see a growth of up to 40%

2018 - \$20 - 40 mil

2019 - \$24 - 48 mil

2020 - \$37 - 67 mil

Each provincial government will oversee and regulate recreational cannabis supply and sales within their respective provinces according to their own unique models. Some provinces (Ontario and Quebec) are choosing to allow only a limited number of government-run storefronts, while others are planning for a greater number of private stores. Some provinces will allow online sales, others will not. Suppliers will be required to cut supply deals with provincial governments to ensure sales within the province. All these factors will have an impact on how much cannabis a supplier might be able to sell. As provinces and suppliers announce deals to great fanfare, it is worthwhile for investors to know how significant these deals are in terms of the larger Canadian market as the populations of some provinces are substantially less than others.

fundamental analysis



fundamental analysis

introduction to fundamental analysis

The following section of the Q2 Cannin Report contains fundamental analyses of 12 major public companies engaged in the distribution and sale of cannabis.

In essence, fundamental analysis is a deep-dive into all available information about a company which may impact potential financial success or failure. Analysis of this information is used to determine whether a stock is likely to be a good investment over the long term - such as a few years or more. The data analyzed are called “fundamentals.” These include company operations, products, management, marketing, finances, competitive advantage and more. Additionally, this analysis takes into account the current value of the stock in relation to the company’s profit to determine whether the stock price is a good value relative to the company’s profit on a historic basis.

Fundamental analysis resources are what many investors use because these tend to take a long-term position. Many investors do not play the market every day, buying and selling stocks rapidly. Investors typically buy a stock they believe will perform well in the long-term, and they typically intend to hold that stock for a long duration. These are referred to as “buy and hold” investors. Many investors do not monitor the market every day to “time the market.” They typically pay attention to long-term company performance—profit and loss based on good products and strong sales—because this is the best indicator of long term stock performance.

Fundamental analysis does not indicate what the stock price will likely do tomorrow based on short-term trends in investor enthusiasm. Please reference the technical analysis section of cannin.com free investor access for more information on this. Fundamental analysis will typically indicate what the price will likely be in the long-term—after all the short-term up and down movements average out and the long-term rational price emerges. This is based on overall company performance because prices over the long term have been proven to reflect company profits. Below you’ll see company categories such as market analysis, operations, financials, management team strength, and branding strength. These categories will be rated as **weak**, **neutral**, and **strong** based on our team’s expert analysis. Use these analyses as a resource for your next investment.

fundamental analysis sections

- p. 8 | Organigram
- p. 11 | CannTrust
- p. 14 | Canopy Growth
- p. 19 | Supreme
- p. 24 | Aurora
- p. 29 | MedReleaf
- p. 33 | Maricann
- p. 36 | TerraTech
- p. 40 | Aphria
- p. 43 | Hydropothocary
- p. 47 | Cronos Group
- p. 51 | AusCann

FEATURED COMPANY

fundamental analysis

ORGANIGRAM



profile

HQ: Moncton New Brunswick, Canada

Founded: 2013

Facilities: Moncton

ceo

Greg Engel

focus

Organigram focuses on the high quality (award-winning), high-efficiency (as much as 400 grams per sf) production of medical cannabis in New Brunswick, Canada. They are currently building high production cannabis facilities for adult use cannabis, expected fall 2018. The company claims New Brunswick offers low-cost advantages in electric power (base rate of 5.2 kWh), real estate and taxes (e.g. compared to Ontario).

size

Market Cap: \$477 million

Enterprise Value: \$421 million

Size within cannabis industry: roughly 16th of 200+

Size among cultivators: 10th of 40

of employees: 133

markets: strong

Primary: Canada, especially New Brunswick and Prince Edward's Island to begin.

Secondary: Expanding international focus. Not clear which markets yet.

subsidiaries, interests

Majority Subsidiaries: NA

Minority interests: NA

operations

Cultivation: strong

Current production: 36,000 kgs/year (May 2018)

Future capacity:

April 2019: 65,000 kgs/yr

July 2019: 81,000 kgs/yr

April 2020: 113,000 kgs/yr (almost 500,000 sf, or 11.5 acres) fully funded

Organigram recently reported their production of up to 400 grams per square foot, much higher than the industry average of 130.

Distribution:

Direct sales: ses, through their online store (and CanvasRx.com). Over 10,000 patients.

Store networks: None so far.

Supply agreements: Deal with New Brunswick to supply at least 5,000 kgs/year (11,000 lbs) for possible revenue of \$40 million/year. Deal with PEI to supply 1,000 kgs/year for possible revenue of \$8 mil per year. (at \$3,600/pound).

Registered patients: 10,700 at Nov 30, 2017

Integration/Diversification:

Vertically integrated: somewhat (cultivation and online sales), but less than others which have retail deals.

Horizontally diversified: no

FEATURED COMPANY

fundamental analysis

ORGANIGRAM



financials: neutral

Earnings/Revenue/Cost control: 12 mos ending 11/30/17

Revenue	\$7.9 m
Average selling price/gram	\$7.89 CAD
Gross profit before adjustments	\$1.0 m
Gross margin	21%v
Income after taxes	(\$3.6 mil)
Outstanding shares (diluted)	139 m
EPS (diluted)	0.11

Revenue rank in industry: roughly 15th of 200+

Revenue rank among cultivators: roughly 10th of 40

Total cost per gram: CAD \$2.11

management: strong

CEO: Greg Engel

CFO: Paolo De Luca

Company management looks to have solid experience. They claim to be fully financed for future expansions. CEO Engel came on and immediately rectified the previous problem of pesticide-tainted product through a diligent quality control process. They recently hired new management dedicated to international expansion.

branding

Organigram has entered into a partnership with, and invested over \$1 million into, The Green Solution (TGS), a major retail brand in Colorado and the states. The Green Solution has 13 retail locations, 225 products, and over \$50 mil in revenue. The TGS understands branding well. The partnership opens the Canadian market for TGS products, and brings TGS branding expertise to Organigram.

financings

Raised \$115 million from convertible debentures in January 2018.

Company says it is fully financed for its slated expansion plans.

valuation

Current share price: \$4.03

Price to Sales: 33

Price to Book: 4

EV / Revenue: 53

FEATURED COMPANY

fundamental analysis

ORGANIGRAM



recommendation: strong

Organigram is on track to become a major producer of cannabis very soon, in time to supply the adult use market when it becomes legal in Canada. It also has plans to expand internationally.

We believe the company has strong management based on experience in cannabis and related industries.

We think Organigram's cultivation capacity is very impressive. However, its distribution needs to be optimized. They now sell online and have a few supply deals but not nearly enough yet. Additionally, we believe they plan to sell substantial quantity overseas.

Organigram has a good chance to be a profitable company, though it currently is spending more than it generates in revenue and, like most cannabis companies, is losing money. We would like to see gross margins increase from 25% to 50%+ margins we have seen other producers achieve. Management claims to have recently increased efficiency and this should bring costs down.

Will its stock price improve in the long term? We think so.

Based on the most recent revenues, Organigram's price to sales (P/S) is 33 which, while extremely high for most industries, is not uncommon for this industry. Cannabis stock prices usually reflect expected future revenue, not current revenue. The tobacco industry P/S average is 5 and other industries are as low as P/S=1.

Organigram must generate 6.5 times its current revenue to bring its current (P/S) in line with the tobacco industry. The company reported US \$3.2 million in revenue for the 3 months ending 02/2018, which equates to a rate of \$15 million per year. This implies the stock is priced for revenue of about \$80 million.

We think the price of cannabis will fall dramatically within a 2 year timeframe from the current average of \$8/ gram wholesale to \$4-\$5/gram after massive new industry capacity is realized. If Organigram can produce and sell 100,000 kgs per year, as it recently claimed, at a future price of \$4/gram (conservative), this could generate revenue of US \$400 million, significantly more than what we think is built into the current stock price, it only needs to sell about 20,000 kgs at \$4/gram to generate revenue of \$80 million - which would justify its current price of \$3.86.

Organigram will have substantial amount of production capacity online soon after adult use legalization. Due to this favorable timing, ahead of many competitors, we think they have a good chance of selling the capacity and capturing the market share for future sales. Additionally, they have two supply agreements with provinces so far (albeit small provinces), and should be well positioned with their production capacity to sign subsequent supply deals ensuring future sales.

For these reasons, we think Organigram, at or near its current price of \$3.86 a share, is still a very good investment opportunity—though as the price rises this opportunity will eventually disappear.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for your investment decisions.

FEATURED COMPANY

fundamental analysis

CANNTRUST



profile

HQ: Vaughan, Ontario, Canada (near Toronto)
Facilities: Ontario, soon another in Denmark

ceo

Eric Paul

focus

One of the few North American cannabis companies reporting a profit, and roughly 8th in revenue generation, CannTrust is building a global cannabis cultivation company. They currently sell medical cannabis in Canada and are ramping up for the adult use market. Additionally, they ship cannabis to Australia and have a joint venture with Stenocare of Denmark with a large cultivation facility slated. This venture aligns with their plan to increase their global presence.

size

Market Cap: US\$ 512 million
Size within cannabis industry: 11th of 200+

markets

Primary: Canada medical, and soon, adult use markets. No supply agreements with provincial agencies yet announced.

Secondary: Australian medical cannabis market. Currently shipping there, amount unknown. Denmark by 2019.

subsidiaries, interests

Majority subsidiaries: Stenocare of Denmark (25%)

operations

Cultivation:

Future capacity: 100,000 kgs/year by 2019, potentially putting it among the top 5-8 largest producers then.
Current capacity (April 2018): It appears from their financials (dividing revenue by cost per gram) they sold about 850 kgs last quarter, a rate of 3,400 kgs/year. Their capacity is probably already much higher. They have two facilities producing: a 50,000 sf hydroponic facility in Vaughan, Ontario, and 250,000 sf (Phase One) at their new Niagara greenhouse.

By Q3 2018, total production at the new Niagara facility will be 40,000 kgs on 430,000 sf. (10 acres of the 46 acres owned there). This is roughly 1 kg per 10 sf. They plan to build another 600,000 sf (14 acre) expansion in the future at this facility, which would produce roughly 60,000 kgs/year, for a total of 100,000 kgs/yr. This facility uses the latest perpetual growing technology. It is worth noting CannTrust's Danish partner Stenocare also plans to build a large cultivation facility in Denmark.

Distribution:

Export: CannTrust has a license to export to any country where medical cannabis is federally legal. It has begun exporting to Australia. Recently, it took a 25% equity stake in Stenocare, a licensed Danish medical cannabis producer which can also import and sell cannabis. Medical cannabis was just legalized in Denmark on January 1, 2018, which makes CannTrust an early mover. Stenocare also has agreements with Denmark's two leading pharma distributors, which serve 99% of pharmacies in the country.

Direct sales: CannTrust sells online, with same day shipping. It offers dried flower, oil and accessories in a variety of strains. It also offers same-day delivery in Toronto.

FEATURED COMPANY

fundamental analysis

CANNTRUST



Supply agreements: no supply agreement with provincial agencies as yet.
patients: 40,000+, (+8,900 from YoY)

Integration/Diversification:

Vertically integrated: Yes, cultivation and direct online sales in Canada. Pharmacies in Denmark.

Horizontally diversified: No

financials

Earnings/Revenue/Cost control: NA

Qtly Revenue (Q4 '17):	USD \$7 m
Annual Revenue (2017)	USD \$25 m
Revenue rank in industry	9th of 200+
Revenue growth (YoY)	+233%
% of revenue from extracts	64%
Gross margin	roughly 50%
Earnings	\$6.2 mil in Q4 '17, and \$ 6.9 mil for full year 2017.
Total grams sold	757,669 in Q4 '17
Average selling price per gram flower	\$8.14
Average selling price per gram extract	\$9.34
Average selling price per gram	\$8.87
EPS	\$0.08 in Q4 (\$0.09 for full year 2017)

management:

CEO: Mr. Eric Paul

CFO: Mr. Ian Abramowitz

COO: Mr. Brad Rogers

Management has over 40 years of pharmacy and healthcare experience.

Current share price: US \$5.21

E/V to Sales: 18 (tobacco industry = 5)

Priced for revenue: 3.5x current revenue = \$107 million / year

Estimated potential future revenue: \$400+ million

EV / EBITDA: 32

FEATURED COMPANY

fundamental analysis

CANNTRUST



recommendation: strong

While CannTrust's valuation, using its enterprise value to sales ratio of 18, is not as high as some competitors in the current industry, it is still high for any other industry and is expected to settle down significantly in the coming few years as the Canadian and global market starts to mature. To do this, either revenue must grow without share price increasing or share price must decrease. Using the tobacco industry as a comparison, which has an industry average price to sales ratio of 5, we gather that these shares are priced for revenue roughly 3.5 higher, about \$107 million.

With revenue of \$7.8 million in the first quarter of 2018 and an average sale price of \$8.50 per gram, CannTrust sold the equivalent of roughly 942,000 grams, or 942 kgs last quarter, an annual rate of 3,764 kgs. Their future capacity could be as high as 100,000 kgs per year, 30x greater.

Can we assume they can sell all that production? The entire Canadian cannabis industry is estimated to grow to 700-900 million kgs in the near future. We believe it's unrealistic for this company to sell close to 100,000 kgs in Canada in the near future. However, we believe it might be possible to sell all this globally, if they have good distribution in place, given the number of countries that are trending toward legalization.

What will the price of cannabis be in 3-4 years? With all the competition we think it will drop from roughly \$8 per gram to \$6 or even \$4 per gram, as the market becomes flooded with cannabis from big producers. If they sell 100,000 at \$4 per gram, this results in \$400 million, nearly four times what the shares appear priced for now.

If the future price drops only to \$6 per gram, this could produce revenue of \$600 million, which we believe would drive an increase in share price over the long term. Although, this analysis makes the assumption that the company can turn revenue into profit. As companies start to do this in the coming year, our future analyses will focus more on cost control to determine who can do this best.

The company has made progress in building its future sales stability, by growing its patient base, now 40,000, the second largest patient base in the industry, and by entering into a distribution agreement with a Danish company.

Conclusion: CannTrust appears to be a good company. Its share price is high for current revenue, but it appears to us that the company could grow its revenue beyond \$200 million in the next year, which could drive the stock price higher on a sustainable, long-term basis. We think the fundamentals suggest that investors today, who are looking for a stock that could grow into its current share price in a year or two, could consider buying this stock now. Current revenue is just \$30 million on an annual basis (most recent quarter times 4), so this is a long way to go, and is not guaranteed, but it seems like a reasonable risk.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

FEATURED COMPANY

fundamental analysis

CANOPY GROWTH



profile

HQ: Smith Falls, Ontario

Facilities: in six provinces, and eight countries (Canada, Germany, Denmark, Australia, Spain, Brazil, Chile, Jamaica)

ceo

Bruce Linton

focus: strong

Primary: Cultivation, production, distribution (dried, oil, softgel capsules).

Secondary: Extraction, genetics, hemp, advisory services.

size:

Market Cap: \$6.0 B

Size within cannabis industry: 1 of 200

of employees: 1000

markets: strong

Primary Market: Canada

The Canadian medical market is currently about \$600 million and growing. It may continue growing, but it is also possible that recreational sales will consume most of the new market growth.

The legal recreational cannabis market in Canada is estimated to grow to \$5 to \$10 billion per year (CIBC World Markets). \$5 billion translates into roughly 770,000 kilograms per year (at \$6.60/gr). By comparison, the beer market in Canada, in 2014, was \$8.7 billion.

Secondary: In Germany, Chile, Denmark, Jamaica, Australia, Brazil and Spain, Canopy has subsidiaries, partnerships or business activities. It has agreements to export medical cannabis to Australia, Brazil and Germany. Future global efforts could include exporting, owning sales networks outside Canada, and/or providing advisory services.

In Germany, Canopy now exports medical cannabis to its German partner, Spektrum, a network of 400 pharmacies. In Chile, it is working with Spectrum Chile to supply medical cannabis to Chilean patients.

In Denmark, Canopy owns 62% of Spektrum Denmark, which owns a fully licensed 430,400 sf (10 acres) greenhouse facility in Odense where it will make oils and flower products and sell them under the Spectrum Cannabis brand within Denmark and, eventually, other countries in Europe. The license is valid through 2021.

In Jamaica, Canopy owns 49% of Tweed JA (formerly Grow House JA Ltd) a Jamaican company licensed to cultivate and sell medical cannabis in Jamaica. Greenhouses currently under construction.

In Australia, Canopy owns 11% of AusCann. It will be their exclusive supplier of medical cannabis and provide production, quality assurance, operational, and strategic advisory services.

In Spain, through Spektrum subsidiary, Canopy has a supply agreement with Alcaliber, the world's largest producer of opioids, giving Canopy access all over the world in Alcaliber's shipments.

Canopy will only market cannabis in countries that are federally legal, ruling out the USA at present.

FEATURED COMPANY

fundamental analysis

CANOPY GROWTH



subsidiaries, interests: strong

Majority subsidiaries:

Tweed Inc. 100.0%, Tweed Farms Inc. 100.0%, Tweed Grasslands 100.0%, BC Tweed Joint Venture Inc. 66.7%, Bedrocan Canada Inc. 100.0%, Spectrum Cannabis Canada Ltd. 100.0%, Spektrum Cannabis GmbH (Germany) 100.0%, Spectrum Chile 85.0%, Spectrum Cannabis Denmark 62.0%, Mettrum Hempworks 100.0%, Group H.E.M.P. 75.0%, Vert Cannabis 100.0%, Bodystream (2344823) 100.0%, Apollo Applied Research Inc. and Apollo CRO Inc. 100.0%, Spot Therapeutics Inc. 100.0%, Les Serres Vert Cannabis 66.7%

Minority interests:

Tweed JA 49.0%, Agripharm 40.0%, Canopy Health 43.9%, Bedrocan Brasil 39.4%, Entourage Phytolab S.A. 38.5%, Canopy Rivers 34.1%, AusCann 11.0%, Vapium 12.2%, Scientus Pharma Inc. (HydRx) 9.8%, TerrAscend 24.0%, James E. Wagner Cultivation (JWC) 14.7%, Radicle Medical Marijuana Inc. 23.8%

operations: strong

Cultivation:

Produced: 7,961 kgs last quarter (15% increase from prev qtr)

Sold: 2,330 kgs (flower equivalents) last quarter, an annual rate of 2.5 tons, and growing each quarter.

% extracts: 23%

Inventory: \$108 mil worth of cannabis, stockpiling to secure supply agreements for rec market legalization.

Products: Currently 45 products for sale online, including flower, oil and softgels.

Canopy believes it has the largest licensed and in-production operation in Canada, at over 600,000 sf (13.8 acres). It expects to add 5,000,000 sf (115 acres) capacity over the next twelve months, across 13 facilities in 6 provinces, the largest capacity of any producer. 1.6 million sf (36 acres) is already licensed.

Distribution:

To date, all provinces have said their provincial liquor control agencies will run distribution of non-medicinal cannabis. Ontario, New Brunswick, Quebec and Prince Edward Island have said the agencies will also run retail. Manitoba, Saskatchewan, Alberta and British Columbia have said these agencies will oversee private retail. It will take two years to roll out most of the retail stores in the provinces.

As such, Canopy Growth believes most of the sales in the first two years of the regulated recreational market will go through provincial online sales. Canopy is building relationships with provincial liquor agencies, rather than signing retail networks yet, which it feels will yield limited value in the short to medium-term.

Direct sales: yes, online, through Tweed Main Street online store, an online platform selling medical cannabis from multiple producers. As of 12/31/2017, it has 69,000 of 235,000 total current Canadian patients, or 30% of the total.

Store networks: None yet.

Supply agreements: Canopy has built inventory to reach supply agreements with all provinces. It now has agreements with Quebec (12,000 kgs/yr, Newfoundland & Labrador (8,000 kgs/yr), New Brunswick (4,000 kgs), Prince Ed Island (1,000 kgs) for a total of 25,000 kgs/yr. Most provinces will likely make supply arrangements with 4 or 5 primary suppliers.

Integration/Diversification:

Vertically integrated: Yes, cultivation and distribution through direct online sales.

Horizontally diversified: Has licensing agreement to manufacture and distribute Isodiol's "Pot-O-Coffee", "Pot-O-Tea" and "Pot-O-Coco" cannabis-infused products in Canada and some global markets. It also has first rights to offer "Pot-O" products in any territory outside of the US, Mexico and Puerto Rico.

FEATURED COMPANY

fundamental analysis

CANOPY GROWTH



It has an exclusive license to distribute Skinvisible's topical products in Canada when and if federal regulations permit infused topical products in Canada. It has first right of refusal for all other countries, excluding China and the US.

Canopy has a licensing agreement with Farm to Farma Inc. (FTF) giving Canopy exclusive rights to manufacture and distribute FTF's Trokie® lozenges through Canada, where permitted, and will have first right of refusal for all other countries where federally legal, excluding the United States.

financials: strong

<p>Most recent quarter revenue: \$18 mil Revenue per share: .32 Revenue growth (QoQ): +24% Gross Profit: \$38 m EBITDA: -7 m (last qtr) Net Income: \$-54 m</p>	<p>Sales and marketing cost: 43% of revenue Sale price per gram: \$8.30 (average)</p> <p>Cost per gram: -to point of harvest: \$0.59 -post harvest, pre-shipping: .44 -for shipping etc: \$1.50 Total cost per gram: \$2.53</p> <p>Total Cash: \$181 m Outstanding shares: 182 m</p>
--	--

management: strong

CEO: Bruce Linton, salary \$330k

Pres: Mark Zekulin, salary \$345k

CFO: Tim Sanders, salary \$345k

COO: Olivier Dufourmantelle, salary \$192k

VP of Sales: Rade Kovacevic, salary \$144k

Lobbying: has government relations team with over two decades of liquor agency experience.

Current share price: US \$28

E/V to Sales: 70 (Tobacco industry = 5)

Priced for revenue: \$1.1 billion

P/B: 5.8

branding: strong

Canopy owns some of the most prominent brands in cannabis, including Tweed, Bedrocan and Spektrum. It also has licensing agreements with major brands, such as Leafs by Snoop. Additionally, one of the largest liquor brands in the world, Constellation Brands, producer of Corona and Modelo beer, among other well-known brands, owns a 10% interest in Canopy. This brings large global branding expertise to Canopy.

Brands include: Tweed (Flagship), Black Label Tweed (premium sub brand), Spectrum (medical focus), Bedrocan (medical only), Main Street, Vert, CraftGrow (unaffiliated brands, offered through Tweed Main Street), DNA (award-winning genetics, licensed), Leafs By Snoop, Organa Brands, Green House (genetics).

Canopy is entering the hemp market (Mettrum) where advertising and branding are less regulated. It believes that the greater promotion it can create in this area will have a positive impact on its brands in the regulated areas.

FEATURED COMPANY

fundamental analysis

CANOPY GROWTH



recommendation

Canopy Growth is building a global, vertically integrated, cannabis production, distribution, and branding company. It is currently the strongest and biggest company in the field, producing more cannabis than any rival, and with future capacity outstripping others. However, this does not guarantee long term share appreciation.

For company success as cannabis becomes a commodity, it must carve out a secure distribution system, and become a low-cost producer. The timeframe that it will take for the retail Canadian market to mature, and price to become universal and uniform is 3-5 years. While cannabis will likely be undersupplied in the short term, it will likely be over-supplied in the longer term, cutting prices to the commodity level, where only the lowest-cost producers with secure distribution and established brands survive. Canopy must also be diversified if this happens.

With minimal earnings across the industry at present, typical Price to Earnings comparisons are useless. Canopy's Price to Sales ratio, at 83, is extremely high. We believe the tobacco industry, at 5, is a relevant long term comparison, once investor enthusiasm settles in the future. On the plus side, Canopy's P/S ratio is lower than its main rival Aurora Cannabis (93). This appears to be a good sign for Canopy but may be deceptive.

Canopy's revenue for the last quarter was \$21.7 million (and rising). This is an annual rate of \$70 million. For its price to sales ratio to drop to 5, as we think it eventually will over the coming years, Canopy must raise revenue 14 times, without the share price increasing, despite cannabis prices dropping and possible future share dilution. This would be revenue of \$1 billion. And we expect prices to fall after 2019, at least 25% from current prices of \$8, to \$6/gram. Can Canopy raise revenue 14 times to achieve this? And will share dilution from additional equity financings reduce the positive effect of revenue increases on share price?

Many variables will affect future revenue: laws and regulations, rival company moves, takeovers, cannabis prices, and the dilutive effect of future equity financing (which reduces the effect of future revenue increases on future share price). This makes it difficult to predict Canopy's future revenue and, therefore, its current share price. However, we use common sense to draw a most likely conclusion.

Canopy needs to raise its revenue 14x, to \$1 billion, to legitimize its current share price. To reach this revenue, it must sell 125 million grams (125,000 kgs) at \$8/gram, 142 million grams (185,000 kgs) at \$7/gram, or 166 million grams (166,000 kgs) at \$6/gram. These numbers are very high but, with Canopy eventually having 5.5 million sf of growing space, it could potentially produce more than 550,000 -600,000 kgs per year. So, we believe it CAN produce enough to generate this revenue, but can it SELL this much?

Canada's total demand is currently 600,000 kgs per year, but this is expected to grow a lot with adult use legalization, potentially to 1 billion kgs per year in a few years. Canopy would have to capture a big share of the Canadian market, and still sell a great deal overseas to sell all its future production. With so many producers building capacity, we think Canopy might be able to capture 20% of Canada's market at the most, which would be 200,000 kgs. This is over half of the needed volume of 125-166 million kgs it must sell to reach \$1 billion revenue.

We think Canopy is doing a great job of creating international markets, especially in Europe. However, it must sell a lot of cannabis overseas—upwards of 100 million kgs—as much as it hopes to sell in Canada. While this will take a lot of work and market development, we see Canopy as the global leader in this market. They appear to have very good management and aggressive expansion, so we do think this is possible.

FEATURED COMPANY

fundamental analysis

CANOPY GROWTH



At Canopy's current price of about \$28 a share, we are cautiously optimistic about this stock delivering positive returns in the coming two years. We don't expect the stock at its current price to be completely stable – to fully justify its current price—until the company has revenue of about \$1 billion. A big, big jump.

We do believe the company could reach this level of revenue but it could take quite a few years and much can happen between now and then.

Recommendation: **strong**

Disclosure: We personally are LONG on a small amount of this stock.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

FEATURED COMPANY

fundamental analysis

SUPREME CANNABIS



profile

HQ: Toronto Canada

Incorporated: 1979 as Supreme Pharmaceuticals

Symbol: SPRWF (OTC) FIRE (TSX)

Facilities: Kincardine, Ontario

Exchanges: TSX, OTC

Licenses: March 2016, 7Acres (subsidiary) received its production and sales licenses

ceo

John Alexander Fowler

focus: neutral

Supreme places its focus on the cultivation and wholesale distribution of premium sun-grown medical cannabis and soon adult use cannabis in Ontario through its subsidiary '7acres'. The premium segment will have better margins and less competition from black market and low-cost producers. Using sunlight they will presumably reduce their production costs. Moreover, they want to avoid the expense of patient acquisition and retention, as well as, retail order fulfillment and logistics.

size

Market Cap: \$280 mil

Enterprise Value: \$281 mil

Size within cannabis industry: about 14th of 200+

Size among cultivators: 13th of about 40

markets: strong

Primary: Near term, all Canada via wholesale markets and retail partners.

Secondary: Long term, global markets where federally legal.

subsidiaries, interests: neutral

operations: neutral to strong

Cultivation:

Current production: 5,000 kgs/year

Future Capacity: 50,000 kgs/year production rate achieved in 2019

They are currently building a production facility to provide a substantial amount of production capabilities.

Next to their current facility, they are preparing and ramping up an adjacent facility on 342,000 sf (7.85 acres) called 'Lot 16' to be completed by 2019 which will initially produce 10,000 kgs/year (in 2018), then ramp up to 50,000 kgs (in 2019). It will combine "indoor" growing technology with cost-saving greenhouse sunlight. They will use proprietary slow-dried, artisanal cured, and finished-by-hand processes to produce 10,000kgs of ultra-premium cannabis from this Lot 16 facility.

Total Canadian market size: In 2017, roughly 50,000 kgs of legal medical cannabis were sold in Canada, split roughly 50/50 between dried and oils, generating about \$400 million in sales. The total current Canadian cannabis market, including black market, is much higher—estimated at roughly 600,000 kgs, or \$4.8 billion.

FEATURED COMPANY

fundamental analysis

SUPREME CANNABIS



Health Canada now predicts Canadian cannabis demand at the end of 2018, after adult use legalization, could reach 1 million kgs/year and up in \$8-10 billion in revenue in a few years. Current industry inventory is estimated at 300,000 kgs, implying a potentially large shortfall later this year though many producers are ramping up production which may lead to oversupply in 1-2 years.

The total US market, including black market, is now roughly \$50 billion (6 million kgs), with the legal fraction about one-tenth, or \$5 billion. This is currently split 50/50 between medical and adult use, though rec sales will grow much faster in coming years.

Distribution: weak (right now)

In order to avoid the costs of running retail operations, Supreme aspires to sell strictly wholesale to producers and through retail partners. This will prevent them from obtaining retail pricing/margins which makes them vulnerable to being edged out of the market if supply becomes overwhelming and they cannot generate enough sales. They are adding retail partners and considering global markets long term.

In January 2018, Supreme agreed to sell 1000 kgs of cannabis in 2018 for \$6 million to CannMart (\$6/gram) In September 2017, Supreme sold \$1.5 mil worth of premium cannabis to Aurora Cannabis and Emerald Health Therapeutics. Further, it added new retail partners including Zenabis.

Although medical cannabis cannot be sold legally from store fronts in Canada yet - many legal dispensaries are currently in operation. Legal sales occur directly to consumers from companies with online and phone sales operations. Currently, no pharmacies are permitted to sell - though this is expected to change. In Europe, medical cannabis can only be sold through pharmacies.

Direct sales: they do not plan to sell retail through online or physical stores.

Store networks: they have agreements with retail partners including Zenabis to carry their product.

Supply agreements: none with provinces. The deals with Aurora and Emerald could be one-off sales.

Integration/Diversification: N/A

Vertically integrated: no

Horizontally diversified: no

financials: weak (low current revenues)

Earnings/Revenue/Cost control: 3 mos ending Mar 2018

Revenue	\$2.1 mil
Gross profit before adjustments	\$1.8 mil
Gross margin	60%
Operating expenses	\$4 mil
Income after taxes	-\$2.7 mil
Outstanding shares (diluted)	188 mil
EPS (diluted)	-\$0.01

Revenue rank among cultivators: below top 10.

Revenue growth (QoQ): 8%

Net income per share: \$.02

Average revenue per gram: \$6/gram

Cash: \$60 mil

FEATURED COMPANY

fundamental analysis

SUPREME CANNABIS



management: neutral to strong

All top managers have very strong corporate experience, though not in cannabis.

CEO: John Alexander Fowler

CFO: Dimitre Naoumov

COO: Peter M. Herburger

CMO: Omer Azeez, 18 years experience in international marketing with Philip Morris.

valuation: neutral

Current share price: \$1.08

Price to Sales: 33 (Tobacco industry = 5)

Price to Book: 2.5

EV / revenue: 33

branding: neutral

Currently, Canntrust is creating a premium product, and only selling it wholesale. This makes it a little difficult to achieve a strong retail brand. However, they are developing retail partners, and this could be successful. Moreover, they recently hired a marketing executive with strong branding experience from years at Philip Morris which could be a strong benefit since they currently don't have packaging or an online store to show branding process.

financings: neutral to strong

They raised \$40 million in late 2017 selling 8% convertible debentures exercisable at \$1.80 per share before November 2020. In Dec 2017, they converted all previous 10% convertible debentures into common shares, turning that debt into equity.

special risks

They raised \$40 million in late 2017 selling 8% convertible debentures exercisable at \$1.80 per share before November 2020. In Dec 2017, they converted all previous 10% convertible debentures into common shares, turning that debt into equity.

recommendation: neutral

Currently Supreme is a small player compared to the 6-10 heavyweights in Canada. They are just now reaching a production rate of 5000 kgs per year. This should generate \$30 million in revenue by itself within a year if the product is sold at \$6/gram which is based on a recent wholesale deal.

By focusing on wholesale sales, Supreme is pursuing a more risky strategy than its competitors who are vertically integrating into retail. They may sell cannabis in the short term to other producers who are short of supply, but they cannot rely on larger producers to buy from them in the long-term because the market will likely have too much cultivation capacity in 1 to 2 years.

Unfortunately, they do not have any wholesale supply deals with provinces (3-4 provinces have signed deals) and it may be too late to get these deals since their production will increase in the coming months as adult use legalization happens. Additionally, they have not announced an intention to obtain these deals.

They will have to rely on partnerships with retail partners to carry their product and hope to establish a customer demand for their premium brand product through that setting. Although this is normal in many businesses, none of this is proven yet and competition will be high.

While some competitors are averaging \$8/gram now due to owning the retail channel online and collecting patients, Supreme recently got \$6/gram for a large wholesale deal. We expect cannabis prices will slowly erode in the coming 1-2 years due to the market trending from undersupply to oversupply. This may result in a price of \$4 to \$5/gram for Supreme.

FEATURED COMPANY

fundamental analysis

SUPREME CANNABIS



Over the course of the coming 1-2 years, Supreme will ramp up production to nearly 50,000 kgs per year. By comparison this production capacity is significant. If they can sell all this at \$4 per gram, this will generate \$200 million in revenue. At \$5/gram, this will equate to \$250 million. However, if they can get \$6/gram, they will make \$300 million in revenue.

In the latter quarter, they had revenue of \$2.0 mil an annual rate of \$8.0 million. Their current price to sales ratio is 33. We believe this ratio must eventually settle to a reasonable level of 5. For this to happen they will need to generate 8.4 times more revenue to justify the current share price. This would create a P/S ratio of 5 (the tobacco industry ratio).

If an investor believes, as we do, that the share price of cannabis companies must eventually settle into a ratio with revenue of about 5, which is similar to the tobacco industry - then the current shares at US\$1.08 are priced for revenue of 8.5 times the current revenue of \$8.4 million, or \$56 million.

In the worst case scenario, if wholesale cannabis prices were to fall to \$4 a gram, Supreme would need to sell 28,000 kgs to generate \$112 million in revenue. This is only half the capacity they plan to build and grow. This may not be easy if the market becomes oversaturated with the supply of cannabis in a few years, as we expect, and Supreme does not control any retail outlets.

The one way the current price may make sense for investors is if global markets remain undersupplied for much longer than Canadian markets are. If this is true, and Supreme can sell globally, they could more easily achieve \$56 million in sales. This requires a strong sellers' market globally and the requirement that Supreme can capture it ahead of their competition.

Supreme announced in March 2018 they have invested \$10 million in a cannabis production company called Medigrow in the Kingdom of Lesotho in Africa. They have agreed to a global distribution partnership with Medigrow. This is a positive sign but there is very little information to support this yet. We know nothing about Medigrow, how much they can produce, when, etc.

We recommend watching the stock at present to see if 1) either the price may fall below \$1.00 or, 2) if Supreme's stock price stays level but the company increases revenue substantially (towards \$30 million) and develops more assured future sales deals, global markets, and retail partnerships. If either of these occurs, this could be a good stock to own.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

canntrust announces their launching of three recreational brands

CannTrust Holdings Inc. (TSX: TRST) announced on May 25th the company will be launching three recreational cannabis product brands of their own. CannTrust is currently known as one of Canada's leading cultivators and distributors of medicinal cannabis. Additionally, it's Canada's first pharmacist owner or pharmacist operated medical cannabis cultivator in Canada.

The company is releasing Liiv™, Synr.g™, and Xscape™. These brands are derived from CannTrust's wide range of experience in consumer markets for alcohol and medical cannabis products. Each product's brand identity has a unique and specialized product profile to guarantee to meet the desired range of consumers. The Liiv™ brand will be made up of strains that are for experienced consumers of recreational cannabis and are available in dried form, pre-rolled form, oils, and capsules.

Synr.g™ is a brand which is "meant for social occasions" and comes in pre-rolled or dried forms.

The Xscape™ brand will be the easiest brand for newcomers to recreational cannabis as it is designed to help take the guessing out of the equation when choosing a cannabis strain.

The strains available in pre-rolled or dried forms will be "Flix n Chill" and "Walk the Dog".

TRST closed trading on the date of the announcement to a 1.39% decrease in value.

TRST fell as much as 3.91% on the announcement date but regained value and closed to the aforementioned 1.39% decrease.

FEATURED COMPANY

fundamental analysis

AURORA



profile

HQ: Vancouver, British Columbia
Facilities: Alberta, Quebec, Denmark

ceo

Terry Booth

focus

Primary: Cultivation

Secondary: Retail distribution, extraction, home growing systems, lighting systems, cannabis patient counseling.

overview

Aurora Cannabis, headquartered in British Columbia, Canada, is one of the largest companies in the cannabis sector, with a market cap in the range of US \$3-4 billion at the time of this report. Through aggressive financing, construction and acquisition, it is pursuing a large-scale, vertically integrated, global strategy to become one of the 2-3 most dominant companies in the field. Aurora focuses on cultivation, distribution, retail presence, branding, additional operations in home cultivation systems and patient counseling, as well as, interests in cannabis oil extraction.

Aurora currently produces medical cannabis from two Canadian facilities (in Alberta and Quebec) and distributes products in Canada and Europe. Aurora is poised to grab a larger share of the market in the coming years due to the addition of several almost completed larger high-tech cultivation facilities and the legalization of Canada's adult recreational market. We expect success, but all this depends on competitive factors and expert execution by its management.

Aurora is a darling of the capital markets - having had no trouble raising money for its expansion plans. Moreover, with current stock prices high with respect to current and future expected revenue, it is not surprising that the company has opted to raise hundreds of millions of dollars in recent months through bought-deal equity financing. This has given it a war chest of cash to fund operations and expansion - but also continues to dilute shareholders' equity, making future revenue increases less efficient at raising the future stock price.

size:

Market Cap: CAD \$4-5 billion

Size within cannabis industry: 2 of 200+

of employees: 171

markets: strong

Primary: Canada (pop: 36 mil), Germany (pop: 500 mil)

Secondary: Western Europe (Italy, Denmark) (pop: 500 mil), Australia (pop: 24 mil)

subsidiaries, interests: strong

Majority Subsidiaries: CanniMed Therapeutics, Larrsen Greenhouse Consultants, Aurora Nordic (Denmark), Pedanios (Germany), BC Northern Lights and Urban Cultivator, CanvasRx (Patient counseling).

Minority interests: Radient Technologies (20%), CannGroup Australia (23%), The Green Organic Dutchman (17%). Liquor Stores (20% interest, option to 40%).

Agreements: Namaste Technologies (hardware sales), Canna Royalty (IP, pending).

FEATURED COMPANY

fundamental analysis

AURORA



operations: strong

Cultivation: neutral to strong

Current production: Roughly 13,000 kgs/yr (6,000 from their own facilities, plus 7,000 from Cannimed) (Current rank = TBD)

Future capacity: 270,000 kgs year. Aurora's total future cultivation capacity is expected to reach 240,000 kg per year within a few years, when all facilities are fully producing. It has additional sources, including 100% of CanniMed Therapeutics, 22% of CannGroup (Australian), and 17% of The Green Organic Dutchman, which will raise its total production capacity to roughly 270,000 kg per year. This will make it one of the largest producers in Canada. The issue for Aurora is timing: much of their capacity will be completed after that of their competition.

Distribution:

Direct sales: Aurora sells directly to patients via shipment, online sales, phone app: 21,718 registered patients, +12% versus prev Qtr. Also has 20,000 patients from CanniMed. It also receives patient referrals from CanvasRx.

Store networks: Aurora owns 20% stake in Liquor Store network (220 outlets, W Canada) and 100% of Pedanios (German pharmacy chain, 2200 outlets) the leading wholesale importer, exporter, and distributor of medical cannabis in the European Union.

Supply agreements: Quebec, 5,000 kgs/yr; Namaste Technologies (global hardware distributor). Aurora's supply agreement with Quebec requires it to supply a minimum of 5,000 kg of cannabis in the first year of legalization, or 8.6% of Quebec's total expected demand of 58,000 kg. Aurora's allotment can go higher if demand exceeds expectations and as Aurora's production ramps up. Aurora's agreement is the smallest of six cannabis supply agreements Quebec signed. The others were with Quebec-based Hydropothecary (20,000 kg, or 35% of expected demand), Canopy Growth (12,000 kgs, 20%), Aphria (12,000 kgs, 20%), MedReleaf (8,000, 14%), Tilray (5,000 kg, 8.6%). By way of comparison, Canopy, a significant rival of Aurora's, has secured supply agreements with all 5 of the provinces which have established supply agreements to date. However, the other four provinces are the smallest provinces.

International markets: International markets: Aurora has received EU GMP certification which allows it to directly ship cannabis to Germany, which operates 2,200 pharmacies throughout the country. This certification is not easy to obtain and gives Aurora a first mover advantage versus other North American producers. Sales in Germany are increasing and currently comprise roughly 25% of Aurora's total revenue. Pedanios, Aurora's subsidiary, is one of the few companies in Germany which is also certified to export to other EU countries. The population of Germany is 82 million, while that of the entire European Union is 508 million.

Pedanios recently won a tender allowing it to supply cannabis to the Italian Ministry of Defense which controls supply to the Italian market of 60 million people. This could give it an early mover advantage within that market. The first-year supply agreement calls for 100 kgs. Aurora owns a 23% stake in Cann Group of Australia, which has a license to import and export cannabis genetics and medical cannabis products. Aurora has applied for a license from Health Canada to export to Australia. Medical cannabis was legalized at the federal level in Australia in early 2016, although rules differ at the state level. Recreational use is still illegal nationwide. Some analyses forecast that the Australian market for medicinal cannabis products could quadruple to \$1 billion by 2020. Australia has a population of 24 million.

Integration/Diversification:

Vertically integrated: cultivation, distribution

Horizontally diversified: cultivation, extraction, home growing systems, patient counseling

FEATURED COMPANY

fundamental analysis

AURORA



management: strong

CEO: Terry Booth
CFO: Glenn Ibott
COO: Allan John Cleiren

valuation: neutral

Current share price: US \$4.69
Price to Sales: 74. (Tobacco industry = 5)
Priced for revenue: about US \$726 million
Potential future revenue: \$1 billion +
EV / Revenue: 114

financials: strong

Most recent quarter revenue: USD\$12.2 million
Revenue growth (QoQ): + 37%
Annual revenue pace (mrq x 4): \$64 mil
Earnings: - \$19 million (mrq)

financials: strong

Aurora's financial and operational results indicate they're consistently improving performance. This includes solid increases in patients served, revenue, grams sold, grams produced, and cash on hand. They also reported lower cost per gram sold. Results were as follows:

- 21,718 registered patients, a 12% increase (versus Q1, for all results)
- 1,161,809 grams sold, a 30% increase
- 1,204,259 grams produced, a 19% increase
- CAD \$11.7 million in revenue, a 42 % increase

Q2 2018 financial highlights

	Q2 2018	Q1 2018	Change %
Active registered patients	21,718	19,280	12.6%
Grams sold	1,161,809	889,965	30.5%
Grams produced	1,204,259	1,009,585	19.3%
(In CDN \$000's unless otherwise noted)			
Revenues	\$ 11,700	\$ 8,249	41.8%
Average selling price per gram	8.36	8.22	1.7%
Gross margins on Aurora-produced cannabis	73.8%	67.6%	
Cash cost of sales per gram	1.74	2.16	-19.4%
Cash cost to produce per gram	1.41	1.87	-24.6%
Cash and cash equivalents	350,841	127,915	174.3%

Gross margins on Aurora-produced cannabis, cash cost of sales per gram, and cash cost to produce per gram are non-IFRS financial measures that do not have a standardized meaning under IFRS and may not be comparable to other companies.

branding

Despite Aurora management's claims that branding is a priority, we see evidence of only minimal product and packaging design, which lacks adequate style to convey a distinct, attractive, consumer-friendly brand in the marketplace. At the moment, we rate branding as a weakness of the company relative to competitors, including Canopy Growth, which owns Tweed, a well-developed brand.

Viewing Aurora's and its competitors' products on CanvasRx, an online medical cannabis portal Aurora owns and which offers products from many producers, makes this very clear. On the medical oil side Aurora has developed only the most basic, medical style product (bottle) design, giving it a clinical look without personality or appeal.

FEATURED COMPANY

fundamental analysis

AURORA



This falls short of companies which have made more effort, such as Broken Coast and Organigram. The outer packaging for the bottle conveys a slightly greater but still modest degree style still with no personality or significant aesthetics. Overall, we feel the packaging conveys little more than a value brand. Unless Aurora wants to be a value brand, this strikes us as a weak entry into the branding differentiation game.

We believe the flower side holds greater potential for branding long-term and hints at the branding vigor a company will apply to recreational products—we see greater efforts by some competitors, but none by Aurora. Mainly, there is no packaging effort at all, which this is usually the first step in branding. The product images here are of buds, which is the “bulk, commodity, opposite-of-branding” approach and most common of all images among non-branded suppliers. It is the least creative and effort-intensive approach, providing no clear distinction compared to other brands.

CanniMed, a cannabis supplier Aurora recently acquired, has a similar lack of brand differentiation. Virtually no effort has been made in packaging to distinguish it from any other brand. While many producers have done little in branding, we would expect a leading company like Aurora to have elevated branding differentiation as some of its brand-conscious competitors.

We suspect this is due to the frenetic pace in which Aurora has been establishing its cultivation facilities and distribution channels. Since most of Aurora’s larger production capacity has not yet come online, it is still a relatively small producer. So this lack of branding may not hurt the company in the long run. If it moves quickly on branding now, when more of its product begins to hit the shelves later this year, there may be no significant impact.

recommendation: **neutral**

Aurora looks to become one of the dominant players in the cannabis industry. However, this doesn't mean it is a good buy at its current market price. Deciding whether its current price will produce short or long term gains are contingent upon estimates of future revenue and income. These estimates depend on what proportion of their production will be sold wholesale to distributors and how much they can sell through their own retail channels—capturing more margin. Equally important is what future wholesale and retail prices will be.

On its financials, Aurora has reported accelerating revenue and patient growth quarter over quarter in the last year—excellent signs—and has much larger cultivation facilities slated for competition this coming year. Aurora does not yet report income (“earnings or profit” over and above expenses) due to its aggressive spending on expansion. In other words, like most cannabis companies, it is currently losing money.

With no earnings yet, the most commonly used stock valuation measure, Price to Earnings, is useless. Alternatively, we must rely on ratios such as Price to Sales and Enterprise Value to EBITDA (Earnings before Interest, Tax, and Depreciation and Amortization). These ratios are currently very high relative to those in more mature industries, showing us that the stock price is very high relative to sales revenue. As the industry matures, it cannot be expected to stay this high relative to sales into a 2-3 year horizon.

Long-term investors must realize that the shares today are priced for much higher expected future revenue (and income) levels. Investors must decide (with the help of the experts at cannin) what level of revenue the shares are currently reflecting and whether Aurora can surpass that enough in the future to push the share price even higher than what we see now. This requires estimating future years’ revenue, which also depends on estimating future market, company, and pricing factors.

This analysis does not try to predict short-term price movements based on bursts of investor enthusiasm or lack thereof. For that, consult our site for technical analysis.

FEATURED COMPANY

fundamental analysis

AURORA



Aurora's current price to sales ratio (P/S) is 74, which is extremely high value compared to any mature industry. The average P/S ratio in the tobacco industry is 5. At its current share price, Aurora's revenues would have to rise by 15 times, to \$750 million to yield a P/S ratio in line with the tobacco industry average. If the tobacco industry average is a good long-term benchmark for future cannabis valuations, and we think this makes sense, this suggests the current shares are priced for revenue of about \$750 million.

Is this possible? Aurora currently produces about 5,000 kgs per year (5 million grams) and generates revenue at a pace of about US \$ 64 million per year, at an average price of \$8.36 per gram. Its new Aurora Sky facility in Edmonton is expected to produce 100,000 kgs per year, or 100 million grams. At its current average price per gram, this adds \$836 million in revenue, enough to justify its current price.

As the market matures, and supply increases, could Aurora hope to continue to command a price of CAD \$8.26 per gram? This seems unlikely. We think prices will fall to at least \$6 per gram in the coming 1-2 years, and maybe lower. At \$6/gram, 100,000 kgs will yield about \$600 million in revenue. At \$4/gram, this commands \$400 million in revenue.

Aurora claims to have capacity which will eventually yield over 200,000 kgs per year, not just the 100,000 from the new facility in Edmonton. This would indicate potential revenue above \$800 million, at \$4/gram.

We see it unlikely that Aurora will generate the \$750 million in revenue necessary to justify the current share price. It will need to sell nearly everything it produces, in a growing but competitive world market.

We believe management of the company is good, however, we believe there are enough other large competitors in the industry to further cast doubt that the company can generate enough revenue to drive its current share valuation higher.

Currently, we give the shares a neutral rating near the recent price range of \$4.69. We'd like to see revenues rise above \$200 million before purchasing, to prove it is on its way to reasonable revenues, and/or see the price to drop further. If you already hold these shares, we recommend a long-term HOLD. This is an excellent company with good chance of success.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

FEATURED COMPANY

fundamental analysis

MEDRELEAF

MedReleaf
THE MEDICAL GRADE STANDARD™

profile

HQ: Markham, Ontario, Canada

Incorporated: 2013

Symbol: MEDFF

Facilities: Markham, Bradford and Exeter, all in Ontario.

Exchanges: Toronto Stock Exchange (LEAF), OTC

ceo

Neil J. Closner

focus: strong

MedReleaf is ISO and GMP certified, an R&D focused company, voted top Licensed producer at 2017 Lift Canadian Cannabis Awards where it won four first place awards for premium cannabis.

Primary:

1) production and sales of award-winning premium cannabis flower (produced in fully enclosed indoor grows, with higher cost and selling price).

2) production and sales of medium-to-high-quality cannabis for oil extraction (from greenhouses, with lower cost and excellent margin). Offers dried cannabis, oils, capsules.

Secondary: accessories, including grinders, vaporizers, and lockable containers.

size:

Market Cap: \$1.91 bil

Enterprise Value: \$2.2 billion

Size within cannabis industry: 6th of 200+

Size among cultivators: 4th of about 40

of employees: 220

markets: strong

Primary: Medical cannabis market in Canada, and soon, the adult use market.

Secondary: Partnerships in Germany, Brazil and Australia.

It has a supply agreement with a large German pharmacy serving 1,800 (8%) of Germany's 21,000 pharmacies, is about to begin shipments once approved, and is seeking a production license there. It has begun exporting to Brazil. Its Australian partners have received their cultivation and production licenses. It's not clear how much revenue is from global sales so far.

operations: strong

Cultivation:

Current production: Markham facility (7,000 kgs/year) plus Bradford facility (9,500 kgs); sum equaling +/- 16,500 kgs

Future capacity: 140,000 kgs/year, fully funded, by 2019

Bradford Ontario facility expansion—to finish late summer 2018: 35,000 kgs/yr

Exeter Ontario facility near completion: product expected Q1 2019: 105,000

Rank by future capacity: in the top 6

MedReleaf just closed on 1 million sf (23 acres) of existing greenhouse on a 69-acre property in Exeter, Ontario and 95 acres of adjacent land for \$21.5 million in cash and 225,000 common shares (\$26 mil total value). First harvest is expected in Q1 2019 - subject to license approval. Greenhouse production lowers unit cost (versus enclosed indoor cultivation) and is ideal for growing cannabis targeted for oil extraction and diversifying their product offering.

MedReleaf can produce 300 grams of cannabis per sf, much better than the industry average of 130.

FEATURED COMPANY

fundamental analysis

MEDRELEAF

MedReleaf
THE MEDICAL GRADE STANDARD™

Total Canadian market size: In 2017, roughly 50,000 kgs of legal medical cannabis were sold in Canada. These sales were split roughly 50/50 between dried cannabis and oils and generated about \$400 million in sales. The total current Canadian cannabis market, including black market, is much higher—estimated at roughly 600,000 kgs. Health Canada now predicts Canadian cannabis demand at the end of 2018, after adult use legalization, could reach 1 million kgs/year, and up to \$\$8-10 billion in revenue in a few years. Current industry inventory is estimated at 300,000 kgs, implying a large shortfall later this year.

Distribution

Direct sales: Yes, online sales with patient centric service. Same day shipping and same day delivery in greater Toronto area. 89% satisfaction from 1000s of surveys.

Store networks: Agreement to distribute through Shoppers Drug Mart. Current law allows online sales, but no retail sales yet.

Supply agreements: Only with Quebec which agreed to supply at least 8,000 kgs/yr for 3 year term.

Integration/Diversification:

Vertically integrated: Yes, cultivation and distribution.

Horizontally diversified: Slightly (accessories). It is primarily a cultivator.

financials: strong

Earnings/Revenue/Cost control: 12 mos ending Dec 2017

Revenue (last Qtr x 4)	45 mil
Revenue per share	0.38
EBITDA	\$1.9 mil
Operating margin	8.04%
Income before taxes	-3.5 mil
Income after taxes	-\$5 mil
Outstanding shares (diluted)	98 mil
EPS (diluted)	-0.05

Revenue growth (YoY): 8.9%

Revenue per gram dried: \$8.05

Revenue per gram oil: \$11.83

Average revenue per gram: \$8.98

Total cost per gram: \$1.83

management: strong

Management owns 8% of company

CEO: Neil J. Closser: former VP of business development at Mount Sinai Hospital. Chairman of the Board of Canada Cannabis Association. 20 years of experience.

CFO: Igor Gimelshtein: former VP at a leading private equity firm.

COO: Donald Courtney: 20 years global experience in wine, food and CPG business.

VP of Strategy: Former VP of Cannabis practice at DeLoitte, 15 years experience.

branding

MedReleaf has an excellent website which clearly presents the company's competitive advantages.

These include: ISO certification, dedication to science, innovative plant genetics, unique lockable containers, customer service, and quality products. Its "Why MedReleaf" website section is well made, showing the company has been intentional with how to present itself in the best, most compelling light.

FEATURED COMPANY

fundamental analysis

MEDRELEAF

MedReleaf
THE MEDICAL GRADE STANDARD™

MedReleaf conducts R&D to produce the highest quality plants. It owns proprietary genetics and has won 10 awards for quality cannabis, including 4 first place awards. It sells 20 dried products, 6 oils, 4 capsules and 1 topical cream—the first licensed producer to have all these. We don't know yet how much of this consumers know about (or care), or if MedReleaf brand sales benefit from this impressive information. However, the company has a strong brand focus and the unique claims necessary to stand out in the market. It aims at the higher end of the market (premium flower and oils), where the best margins are.

In February 2018, MedReleaf introduced its first adult-use recreational brand, 'San Rafael '71'. It's designed to attract the classic consumer, which represents one of the largest segments of the Canadian cannabis market. To launch the new brand they partnered with Amsterdam Brewing to launch San Rafael '71 4:20 Pale Ale, a non-cannabis beer that introduces and promotes the new cannabis brand. This shows branding creativity.

The company recently signed a licensing deal with Woodstock Cannabis Company to sell the iconic Woodstock brand in the Canadian cannabis market, again showing its understanding of branding.

Medical product and packaging design:

Current medical product design is attractive and simple, using contemporary green and purple colors. It is slightly better looking than many plain medical competitors. It looks like a contemporary, high quality medical product.

We think it will move into more unique and special product design to enter the adult use market.

valuation

Current share price: US \$18.81

Price to Sales: 58 (Tobacco industry = 5)

EV / revenue: 65

recent financings

On January 31, 2018, MedReleaf closed a bought deal equity financing raising approximately \$132.5 mil.

risks

There are many inherent risks with investing in cannabis companies. MedReleaf may be one of the companies which is somewhat less risky than others, due to its dedication to highest levels of certification, quality, science, and transparency.

recommendation: neutral

MedReleaf is very attractive to investors. They produce premium products and currently earn an average of nearly \$9 per gram for premium cannabis and oils. They captured at least 10% of the Canadian medical market last year, generating \$33 million in sales in a market of roughly \$300 million.

Canada's population is 36 million, suggesting the average per capita spend on medical cannabis could be \$8.30.

MedReleaf is rapidly expanding capacity. It hopes to be producing over 100,000 kgs per year in 2019. If they are indeed now producing 16,000 kgs per year, as they claim, they could soon be generating at a pace of over \$100 million in revenue per year. They may, however, now be stockpiling some of this current production until later in the year to meet increased demand from adult use legalization.

Medreleaf is locking down distribution agreements. It has an agreement with Quebec already as well as established online sales. We expect it to nail down other provincial agreements also.

FEATURED COMPANY

fundamental analysis

MEDRELEAF



MedReleaf is pursuing global markets. It has a pharmacy deal in Germany, which has 82 million people. At \$8.33 per capita (Canada's spending), Germany may become a \$680 million medical cannabis market. (Quite a few Canadian producers will soon be supplying Germany, because there are currently no domestic producers.) Eight other European countries have legalized medical cannabis, including Austria, the Czech Republic, Denmark, Finland, Italy, Portugal, Poland and Spain. Once established in Germany, MedReleaf would be expected to pursue other opportunities in Europe.

It also has partnerships in Brazil and Australia.

Its management seems very strong. There are no obvious weaknesses in strategy or execution, or mistakes in the past. Its potential for strong branding is proven, based on its well created website and management experience in CPG, wine, and pharma.

In its most recent quarter, it sold US \$9.3 mil, suggesting an annual revenue rate of \$37 mil. At US \$19, the stock price reflects a market cap that is now 58 times its revenue of \$37 million. We believe cannabis stock valuations must eventually settle to price to sales ratios of 5 (comparable to the tobacco industry) or lower (other industries). This means the company must generate at least 12x its current revenue, \$450 billion, to justify its current share price.

We expect cannabis prices to stay high in the coming year as demand skyrockets, but then to drop substantially in a 2-3 year timeframe as a lot of new supply comes online.

If MedReleaf produces 140,000 kgs of cannabis by mid to late 2019 and can sell it all for \$6 a gram, which seems safe in the short term, this will generate \$840 million in revenue. At \$7/gram, this generates \$980 million.

If in the longer term, such as 3+ years, prices drop below this, to say, \$5 per gram, they would generate somewhat less, \$700 million. This is still enough to justify its current share price, and probably drive it higher.

We think MedReleaf is an excellent company with solid management and is ready to jump into global markets as they open up. Judging from its future ability to produce and sell, we think the stock is reasonably priced for its future revenue, and is likely to be a good long term (3+ years) investment.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

FEATURED COMPANY

fundamental analysis

MARICANN



profile

HQ: Toronto and Munich

Incorporated: 2013

Symbol: MRRCF, MARI.CN, 75M.F

Exchanges: OTC, CNQ, Frankfurt

Facilities: Langton, Ontario

overview

Maricann is a vertically integrated producer and distributor of medical marijuana to the Canadian market, planning to enter the Canadian adult use market when legalized (October 2018). The company has production facilities in Langton, Ontario, Canada. In addition to cultivation and distribution, it operates in cannabis oil extraction and accessories.

focus: strong

Primary: Low-cost (\$1.34 per gram produced), high-quality greenhouse production of three product lines: dried cannabis (10 varieties), cannabis oil (4 varieties) and cannabis seeds and clones.

Secondary: Accessories including vaporizers, grinders and other paraphernalia.

licenses

Original license: 2014. Updated license: Nov 2017. Expires in Sept, 2020.

Has license to export from Canada into Germany

size

Market Cap: US \$161 million

Size within cannabis industry (by market cap): roughly 35th of 200+

Size among Canadian cultivators: 18 of roughly 40

markets: strong

Primary: Canada

Secondary: Soon to be Germany, and Switzerland

subsidiaries, interests

Maricann owns 95% of MGMBH, a German company applying for German production licenses. It also owns 100% of NanoLeaf Technologies Inc, a biotech company with globally patented drug delivery technologies, and Haxxon Ag, a Swiss company producing cannabis cigarettes free of tobacco, cannabis vape cartridges, and other refined products.

operations: strong

Cultivation:

Maricann currently produces about 2,000 kgs/year of dried cannabis flower (April 2018). It is expanding its facilities in Canada in three phases to reach 942,000 sf (21 acres), capable of producing 95,000 kg per year within 1-2 years. Phase One, which is complete and roughly the first 25% of its expanded facility, is awaiting licensing to begin cultivation. This will immediately increase its current capacity to 25,000 kg/year, with more to come by end of 2018.

Maricann plans to build 400,000 sf of greenhouse in two facilities in Germany. These would produce roughly 40,000 kgs. Its subsidiary, Haxxon, operates a 64,000 sf facility near Zurich, Switzerland.

FEATURED COMPANY

fundamental analysis

MARICANN



Distribution: Currently all legal sales of medical cannabis in Canada happen online. Pharmacies and drug stores are not yet approved, but may become so. Many licensed producers are reaching agreements with pharmacy chains to sell medical cannabis if the channel is approved.

Online: Maricann sells flower and oil through its online store, and other online stores (e.g., CanvasRx.com). It has over 11,000 registered patients.

Germany: Three-pronged strategy: import from Canada; cultivate in Germany; and CBD cultivation from industrial hemp.

Maricann does not yet have any supply agreements with provincial governments. This may soon be required in all provinces except Ontario, the largest, which plans to buy from all licensed producers.

Pharmacies: Maricann has a very significant agreement with McKesson, which controls 2,116 pharmacies (20.01% of pharmacies) across Canada, to supply medical cannabis to patients if pharmacies are approved to sell. It also has an agreement with Lovell Drug stores to be their exclusive distributor of medical cannabis.

Financials: **neutral**

Maricann's expenses currently far exceed its revenue. Of particular concern, its cost of goods still exceed its sales revenue, meaning it has a negative gross margin. We expect to see Maricann rein this cost issue in soon, because they speak of their intention and ability to become a low-cost producer.

earnings/revenue/cost control:

Revenue: \$2.8 million (year ending Mar, 2018, last reporting period)

Revenue per share: \$0.02

Revenue rank in industry: about 14th

Earnings: (US \$8.7 mil)

Cost per gram to produce: \$0.60

Total cost to produce: 1.34 (target)

Cash: \$32 million

management: **neutral**

Management team experience looks good on paper, but there have been issues, such as the recently cancelled financing by syndicators. The CEO Ben Ward is also under investigation for stock dealings at a previous company he managed.

branding: **strong**

The recent hiring of Geoff Kosar as VP of Marketing brings solid branding expertise to the team, as he previously headed marketing at Diageo, home of many top spirit brands.

financings: **neutral**

The most recent \$70 million financing in March 2018 raised \$40 million before syndicators terminated the agreement due to trade investigations made by members of the board and the CEO. In October, 2017, Maricann raised \$31 million dollar in a private placement financing of convertible 9% debentures. In May 2017, it raised \$42.5 million in non-equity financing from The Green Streaming Finance Company of Canada Inc. in order to fund its German expansion at two facilities.

valuation

Current share price: US \$1.22

Price to Sales: 56

Price to book: 1.9

FEATURED COMPANY

fundamental analysis

MARICANN



recommendation: strong

Maricann currently spends far more on expansion than their \$2.8 million in sales revenue. This means they are currently losing money. They expect to increase revenue significantly in the coming year.

Share price to sales (market cap divided by revenue), is very high at 56. This price is not sustainable. The tobacco industry average is P/S=5. Investors are paying this price anticipating much higher future revenue.

Maricann's current share price reflects a future revenue of roughly \$35 million. Maricann's future revenue depends on 1) how much cannabis they can produce, 2) how much they can sell, and 3) at what price.

Competition will bring the price of cannabis down from its current \$8/gram rate. Further, we estimate that Maricann sells half its cannabis at retail (higher price) and half at wholesale (lower price). Based on this information, we estimate Maricann's average sales price per gram will be \$4-6 per gram in 2-3 years.

Selling their entire planned capacity of 95,000 kgs at \$4/gram yields future revenue of \$380 million. Generating revenue above \$35 million should drive the share price above its current level. This requires selling 10,000 kgs at \$4/gram. Can they do this?

Despite not having any supply agreements with provincial governments, we see their distribution prospects as strong. They have a good market developing in Germany and Switzerland, in addition to a strong online business in Canada, and the prospects of a very strong pharmacy channel with McKesson in Canada.

Maricann's deal with McKesson, which controls 20% of Canada's pharmacies, is a very important. It will give Maricann a substantial retail presence and help them secure strong, steady sales if (probably when) pharmacies are approved to sell medical cannabis.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

FEATURED COMPANY

fundamental analysis

TERRA TECH



location

HQ: Irvine, CA

Facilities: California, Nevada, New Jersey

ceo

Derek Peterson

overview

Terra Tech is one of the top revenue generators among US cannabis companies. They currently operate dispensaries in CA and NV, where they are building greenhouses, extraction labs, and more dispensaries. These operations generate approximately 85% of their revenue.

focus: strong

Primary:

- 1) Vertically integration (cultivation, production, extraction, distribution) of their agricultural business focused on medical and recreational cannabis in targeted US states.
- 2) Non-cannabis hydroponic produce: They have an established hydroponic produce business, growing and distributing herbs and floral products from large greenhouses in NJ. They could convert these greenhouses to cannabis in the future if NJ law changes to allow it. This business sells produce in 1200+ stores nationwide, and generates approximately 15% of their revenue.

Secondary: They also sell cartridges, vape pens and wax products in dispensaries.

size

Market Cap: \$172 million

Size within US cannabis industry (by market cap): 14 of 15 public companies

Size within total cannabis industry: roughly 40th out of 200+

of employees: 270

Shares Outstanding: 920 million (very high)

markets: strong

Primary: Medical and adult use cannabis markets in California and Nevada. Nevada's cannabis market is forecast to grow to \$622 million by 2020 (New Frontier Data). California is forecast to hit \$3.7 billion by the end of 2018, and \$5.1 billion in 2019 (BDS Analytics). CA has only had legal adult use since Jan 2018, NV since July 2017. CA and NV are two of eight states allowing recreational cannabis, and two of 29 states allowing medical cannabis at the state level.

Secondary: They are targeting Colorado, Florida and New Jersey for expansion. Other states may follow.

operations: strong

Cultivation:

In NV, Terra Tech is about to begin cannabis cultivation and extraction at two new cannabis facilities in Sparks and Reno, through agreements with NuLeaf. In Oakland, CA, it is constructing a 13,000 sf cultivation facility with the capacity to produce up to 2,000 pounds of cannabis per year (900 kgs). The facility is licensed and expected to be fully operational by mid-2018.

They operate 11 acres of greenhouses for non-cannabis cultivation in NJ, which they may convert to cannabis if and when NJ changes its laws.

Distribution:

Store networks: In Nevada, Terra Tech has four Blüm dispensaries in Reno and Las Vegas. In California, it has two 'Blüm' dispensaries in Oakland and Santa Ana, and is building another in San Leandro.

FEATURED COMPANY

fundamental analysis

TERRA TECH



Direct sales: It does not appear to sell cannabis online currently.

Integration/Diversification:

Vertically integrated: Yes, cultivation, distribution, dispensaries, branding.

Horizontally diversified: Yes, cannabis and non-cannabis produce.

financials

Revenue over last 12 months: \$36 million, (\$30 million from cannabis, 86%)
Most recent quarter revenue: \$8.7 million
Revenue rank in US cannabis industry: #1
Revenue rank in total industry: #4
Revenue growth (YoY): 41%
Revenue growth (QoQ): 54%
Revenue per share: 0.037
Earnings: none
Cash: Recently raised \$40 million for expansion

management: strong

CEO: Derek Peterson since 2012, previously operated a dispensary in CA.

CFO: Michael James, has held many senior financial positions, started as CFA in 1980.

COO: Michael Nahass, has held financial management positions since 1995.

Chief Ag Officer: Ken Vande Vrede, in agricultural business since 1995.

branding

Blum: an established brand of dispensary in CA and NV.

IVXX: a brand of cannabis products with attractive product and package design sold in over 200 stores.

MediFarm: the company's cultivation arm.

The management does not appear to have a senior marketing officer with national experience, however, the CEO has operated a dispensary, so he may know a fair amount about branding in this category. The company has an established cannabis product brand, IVXX, and an established dispensary brand, Blüm. However, we don't know if these were acquired or created. Can it manage and develop these brands beyond their current state? We'll be watching them to give you further guidance on this.

valuation

Current share price: \$1.85

Price to Sales: 4.6 (Tobacco industry = 5)

Priced for revenue: \$38 million

Potential future revenue: NA, but higher than \$38 million

FEATURED COMPANY

fundamental analysis

TERRA TECH



recommendation: **neutral**

Strengths: Presence in CA and NV markets, center of rapid US growth. Currently #4 in N. American cannabis sector in revenue. Established brands, Blüm and IVXX. CEO with dispensary operation experience, vertical integration, cash flow from established non-cannabis business (hydroponic produce) to help fund expansion, and low price to sales ratio compared to industry.

Weaknesses: Huge number of outstanding shares (970 million) will dilute future revenue gains' effect on share price. They also have a low gross margin. Terra Tech's price to sales ratio of 4.6 is the lowest in the industry, slightly below the average in the tobacco industry, which is 5. This means it is priced for revenue roughly equal to its current revenue. Normally we would be excited. But it does give us reason to ask, why is it not valued as high as other stocks? It has strengths: presence in the fast-growing California market, established brands, vertical integration, and established brands.

We think there are two problems. One is the extremely high number of outstanding shares: 970 million. This dilutes the effect of future revenue gains on share price, making share price increases more difficult. And secondly, a low gross margin of 15%. Other companies in the sector have a gross margin over 50%. This means the company's production costs are too high. Can Terra Tech improve this?

We don't think there is a substantial near-term upside for this company's stock, but we also don't see a long term downside, due to its reasonable valuation. We think it is a safe buy, with only a moderate chance of upside in the long term if it increases its production efficiency and eventually converts its large operating NJ greenhouses to cannabis production. We recommend investors watch this company closely, as it could become a bigger player in the market.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

aurora cannabis releases new “aurora frost” line with premium selling point

Aurora Cannabis Inc. (OTCQB: ACBFF) announced on May 30th the company's new product line called Aurora Frost. This new product line consists of dried cannabis which has a higher potency of tetrahydrocannabinol (THC) than any other product that Aurora has offered in the past. The line of premium dried cannabis will be at an uncommon THC content level of 35%.

“

...Aurora Frost has publicly available findings from a third party laboratory results on the potency.

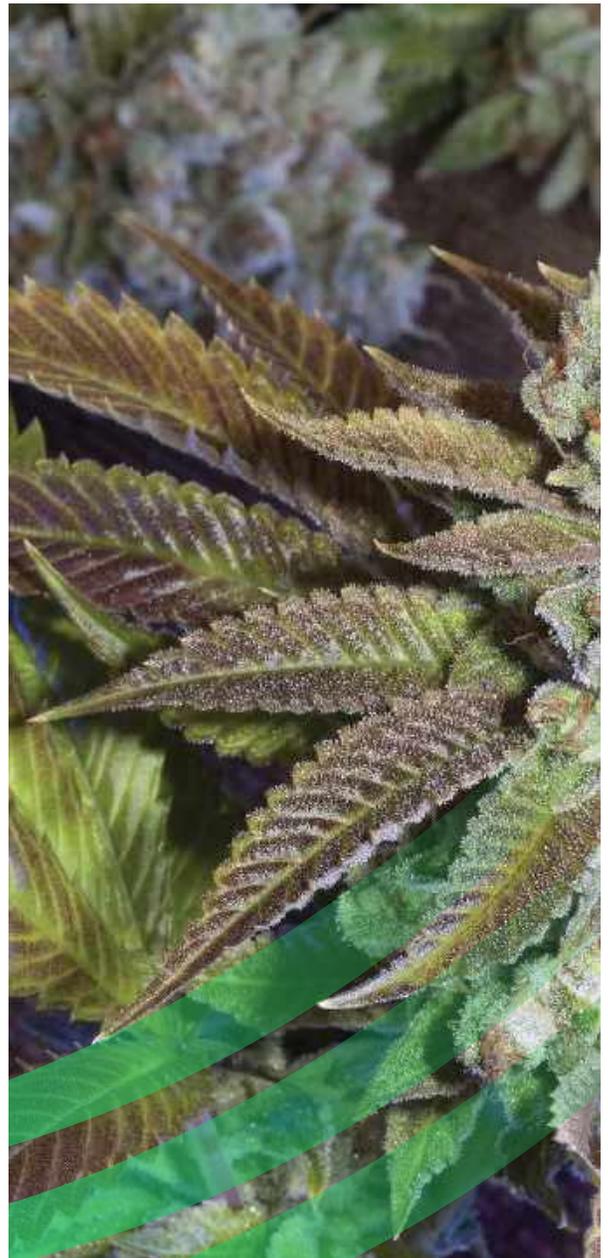
”

Like all other Aurora products, Aurora Frost has publicly available findings from a third party laboratory results on the potency.

The Aurora Frost lines of products is produced with premium cannabis in whole flower form. The dried whole flowers are rich in the common active pharmaceutical ingredients found in cannabis flowers.

These products are currently available for online purchase..

All orders of Aurora Frost are shipped inside child-safe and certified glass bottles.



FEATURED COMPANY

fundamental analysis

APHRIA



location

HQ: Leamington, Ontario, Canada
Facilities: Ontario and now British Columbia (from purchase of Broke Coast and Cannan Growers)

ceo

Vic Neufeld

focus

Primary: Low-cost greenhouse production of high-quality medical cannabis in Canada. Ramping up for adult use market when legalized in Canada (October 2018), and planning significant exporting to global medical cannabis markets.

Secondary: support services including medical consultations, group therapies, and rehabilitation for veterans and first responders.

size

Market Cap: \$1.75 billion
Enterprise Value: \$1.79 billion
Size within cannabis industry: 5th of 200+
Size within cultivators: 3rd of roughly 40
of employees: 150

markets: strong

Primary: Canada and Europe (particularly Germany, Italy and Israel)

operations: strong

Current capacity: 100,000 kgs/year
Future capacity: 220,000 kg/yr, fully producing by Jan 2019

Aphria will likely emerge in the coming 1-2 years among the top four cannabis cultivators by size, along with Canopy Growth, Cannabis Wheaten, and Aurora Cannabis. All have the potential to produce 200,000+ kgs per year but actual future production depends on these companies executing their expansion projects successfully.

distribution

Direct sales: Yes, online through its ecommerce store. Also via wholesale shipping of MMJ plant cuttings and dried buds to other licensed producers.

Supply agreements with provinces: Yes, with Quebec to supply 12,000 kgs in year one of legalized adult use. Also, through Nuuvera and Tetra Bio Pharma, Aphria will supply 2.5 kgs of cannabis to New Brunswick per year.

Store networks: Has agreement with Shoppers Drug Mart chain in Canada (1,300-store). This will give it strong distribution of medical cannabis if (probably when) this type of distribution is approved by Canada government. Currently medical cannabis is only allowed to be sold online.

branding: neutral

Aphria's current product packaging for medical cannabis is plain and simple, typical for the medical field. We do not yet see signs from Aphria of branding that would push it into the forefront of adult use brands.

There is potential legislation being considered in Canada's government that would severely limit the uniqueness of future Canadian cannabis consumer branding. Aphria may be waiting to see what happens on that before developing or showing any branding efforts.

management: strong

Current share price: \$ 7.78
Price to Sales: 44 (Tobacco industry = 5)

FEATURED COMPANY

fundamental analysis

APHRIA



financials through 2/28/18: strong

Earnings/Revenue/Cost control:

	3 mos ending 2/28/2018 (000,000s)	9 mos ending 2/18/2018 (000,000s)
Revenue	10.3	24.9
Production costs	2.4	6.4
Gross profit before adjustments	7.9	18.4
Gross margin	77%	72%
Operating expenses	12.6	26.5
Operating profit (loss)	(4.0)	(3.8)
Non-operating expenses	21.0	46.3
Income before taxes	17.0	42.6
Income after taxes	12.9	34.4
Outstanding shares (diluted)	9167 million	153 million
EPS (diluted)	0.08	0.22

Revenue rank in industry: 8th
 Revenue growth (QoQ): +20%
 Net income per share: \$0.08/share
 Cost to produce per gram: \$0.96
 Total cost per gram: \$1.56
 Cash: \$120 million

valuation: strong

Current share price: \$ 7.53
 Price to Sales: 44 (Tobacco industry = 5)

recommendation

In its most recent quarter ending Feb 2018, Aphria reported revenue of \$10 million, up 100% from the previous year and up 20% from last quarter. This is an annualized pace of \$40 million. Its production costs were under \$1 per gram, low by industry standards. And its recent quarter EBITDA was \$2.9 million, becoming the 10th consecutive quarter of positive EBITDA. Aphria is one of the few companies yet to pull this off.

We believe Aphria is destined to be profitable due to its low cost of production, and successful focus on profitability to date. But is its current stock price destined to go up long term?

Aphria's current stock price is high relative to current revenue, yielding a price to sales ratio of 44. This is 9 times the average P/S ratio in the tobacco industry (P/S=5). This means the current stock price reflects much higher expected future revenue. For Aphria's stock to eventually settle into a P/S = 5 like the tobacco industry, Aphria must generate 9 times its current revenue, or \$380 million, and maintain the current stock price.

Aphria plans to produce over 200,000 kgs / year by 2019. If Aphria can produce and sell all this for an average price of \$5/gram wholesale, they could generate \$1 billion in revenue. At \$6/gram, they generate \$1.2 billion. This is well above what the stock appears to be priced at now.

Even if the price drops below \$5/gram due to oversupply in the market—such as to \$4/gram—this would still generate \$800 million/year in revenue. The question is, can they sell all this cannabis when so many other producers will also be trying to sell off their large supplies?

FEATURED COMPANY

fundamental analysis

APHRIA



Aphria's acquisition of Nuuvera positions it for strong export sales. Nuuvera does not yet have revenue and has no experience producing cannabis, but it has export relationships in Israel, Italy, Germany and other countries. Nuuvera also has experience with management from pharmaceutical, online gaming, and tech industries. This leads us to believe Aphria has a chance of succeeding in selling their full future capacity.

We think the company has strong prospects to be profitable in the future. Its stock price appears reasonable given expected future revenue. We think it is a good stock to own for the long-term (3+ years), given its current price. We cannot predict long-term upside to the stock price, because we want to see how well it turns revenue into profit, but we think that it is reasonably priced for future revenue, and could be a good investment into a future profitable company.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.



HYDROPOTHECARY

FEATURED COMPANY

fundamental analysis

HYDROPOTHECARY

profile

HQ: Gatineau, Québec**Incorporated:** 2013 (as BFK Capital Corp)**Symbol:** HYYDF (OTC)**Facilities:** all on 143 acres in Gatineau, Québec**Exchanges:** TSX-V, OTC Greys**Licenses:** 1 of 90 LPs in Canada. 1 of 5 LPs in Quebec.

Received licenses for production and sale in 2014.

First sale in 2015

ceo

Sebastien St-Louis

focus: strong

Large-scale greenhouse production (lower cost than indoor production) of cannabis in Quebec, where they achieve lower costs from abundant renewable electricity at competitive rates (lower than Ontario), abundant water and skilled people. Additionally, they buy cannabis from global sources, and incorporate these into their brands. Its proximity to large populations in Montreal, Ontario and the rest of Quebec and Ontario is advantageous. Current planned expansions up to 100,000 kgs are fully funded. "We expect to allocate the majority of our capital now to distribution, downstream activities, intellectual property and branding." They only work in countries where cannabis is federally legal (not USA).

size

Market Cap: \$687 million**Enterprise Value:** \$545 million**Size within cannabis industry:** 10th of 200+**Size among cultivators:** 7th of about 40**# of employees:** 101 (Jan 2018)

markets: strong

Primary: Year 1, Quebec (pop. 8.4 mil, 23% of Canada).**Secondary:** Year 2 and beyond, Ontario, (pop 14.2 mil, 39% of Canada), all Canada, and global mkts.

The total Canadian market size was roughly 50,000 kgs of legal medical cannabis were sold in Canada in 2017, split roughly 50/50 between dried and oils which generated about \$400 million in sales. The total current Canadian cannabis market, including black market, is much higher—estimated at roughly 600,000 kgs, or \$5.0 billion. Statistics Canada estimates roughly five million Canadians purchased cannabis last year. Health Canada now predicts Canadian cannabis demand at the end of 2018, after adult use legalization, could reach 1 million kgs/year, and up to \$8-10 billion in revenue in a few years. Current industry inventory is estimated at 300,000 kgs, implying a large shortfall expected later in 2018. However, total planned capacity for the top 10 Canadian producers is 1.7 million kgs.

By contrast, the total US market, including black market, is now roughly \$50 billion, (6 million kgs), with the legal fraction about one-tenth, or \$5 billion. This is currently split 50/50 between medical and rec. Although, rec sales are expected to grow much faster in the coming years.

subsidiaries, interests

Majority Subsidiaries: 167151 Canada Inc., Banta Health Group and Coral Health Group.

cultivation: strong

Current production:

3,600 kgs/year

25,000 kgs/yr production rate by mid 2018

108,000 kgs/yr by end 2018

Achieving 105,000 kgs/yr on their planned 1.3 million sf of grow space at 12 kgs per sf.

Company has agreement with Segra International, a plant biotechnology company specializing in industrial-scale plant tissue culture micropropagation, to mass produce clones for Hydrothecary. This will vastly increase their plantlets supply to use and sell.

FEATURED COMPANY

fundamental analysis

HYDROPOTHECARY



HYDROPOTHECARY

distribution

In Canada, legal sales only occur directly to consumers via online and phone operations. Storefronts (including pharmacies) are not yet legal, although some illegal stores operate in the open anyway. The industry expectation is pharmacies will be approved, and many producers are signing agreements with pharmacies to prepare for that day. By contrast, in Germany, medical cannabis currently can only be sold through pharmacies.

Direct sales: Yes. They have a well-branded, attractive and easy to use website designed for ecommerce. It also has relationships with over 140 clinics and is adding.

Supply agreements: Yes. HydroPothecary finalized the biggest provincial supply agreement yet signed by any producer, with Quebec, to supply 20,000 kg in the first year, 35,000 and 45,000 kg in the second and third. The expected 5-year total is 200,000 kgs. Ontario, the biggest Canadian province, appears to be taking an approach to buy from many suppliers as demand evolves, rather than lock in certain amounts.

Store network agreements: No

financials

	3 mos end Jan '18	6 mos end Jan '18	12 mos end Jan '18
Revenue	1.2 million	2.3 mil	\$3.4 mil
Gross profit before adjustmts	450 k	913 k	
Gross margin	731 k	1.4 mil	
Operating expenses SGA etc	63%	60%	
Operating profit (loss)	4.7 mil	5.1 mil	
Operating margin	(\$4.2 mil)	(\$5.6 mil)	
Non-operating expenses	5.5 mil	8.3 mil	
Income	(9.0 mil)	(10.9 mil)	
Outstanding shares (diluted)	179 mil	84 mil	
EPS (diluted)	(0.10)	(\$0.13)	

Revenue rank among cultivators: about 10th

Average revenue per gram: \$8.99/gr

Production cost per gram: \$0.97

Cash: \$206 mil (April 2018)

management: neutral

Management holds about 10% of outstanding shares

CEO: Sebastien St-Louis

CFO: Ed Chaplin

VP, Finance: Jocelyn Racine, has three decades of experience

Director of Ops: Arno Groll

Master Grower: Agnes Kwasniewska

FEATURED COMPANY

fundamental analysis

HYDROPOTHECARY



HYDROPOTHECARY

branding: strong

The company appears to have strong branding focus and abilities. They have a well branded and nicely operating website. They also received the top honors at the Canadian Cannabis Awards in packaging.

Their product, Elixir, is the first sublingual (under the tongue) cannabis spray authorized by the ACMPR. It is a high THC oil product in a child-resistant spray bottle. Another of their products, Decarb, a powder, was voted "Top New Product" at the Canadian Cannabis Awards, and Elixir received the third-place award in that category and the second-place award in the "Top High THC Oil".

valuation

Current share price: \$3.40

Price to Sales: 209 (Tobacco industry = 5)

EV / revenue: 109

financings

Between July 2017 and January 2018, Hydrothecary has raised \$243.6 million in public markets, one of the best-capitalized companies in the industry.

recommendation

Hydrothecary's 5-year, 200,000 kg, agreement with Quebec is arguably the most distinguishing factors to an investor. This guarantees strong revenue for 5 years, even though the future market 2+ years down the road may be saturated with cannabis. The agreement calls for a minimum of 20,000 kgs in year one, 35,000 kgs in year two, 45,000 kgs in year three of legalization, and somewhat more in years 4 and 5.

They also claim to have a debt-free balance sheet, two fully-funded expansion projects, and more money for other purposes, such as branding and development of additional distribution, nationally and globally.

Will their share price go up? Their share price is 109 times its revenue, a super high value, meaning investors are very excited about their future, especially their supply agreement with Quebec, and are building expected future revenue into the price.

Their current revenue in the most recent reported quarter was only \$1.2 million due to the unfinished expansion of their production facilities. This implies a current \$4.8 mil per year rate. Average price for wholesalers today is about \$8/gram currently.

For their share price to be reasonable relative to revenue, we expect it to eventually settle to the level of the mature tobacco industry which has a price to sales ratio of 5. To reach this, Hydrothecary's revenue must grow 22 times—or more—while maintaining the same share price. That means the current shares are priced for revenue of roughly \$110 mil.

We expect cannabis prices to remain strong in year 1 of legalization due to undersupply and to drop in the year 2019 and beyond, due to oversupply. Where they will settle is not yet clear, though, in Oregon, where competition is now fierce due to current surplus, prices are so low many small growers are leaving the business.

Considering only what Hydrothecary can now feel almost guaranteed to sell to Quebec, at \$8 per gram for its 20,000 kgs in year one, this generates \$160 million in revenue next year. If it receives \$6/gram in year two, sales of 35,000 kgs generate \$210 million. And at \$5/gram in year three and beyond, 45,000 kgs means \$225 million in revenue. We think these are conservative price per gram estimates.

This guaranteed revenue exceeds the \$109 million we think the current share price is reflecting.

FEATURED COMPANY



HYDROPOTHECARY

fundamental analysis

HYDROPOTHECARY

Will it be able to sign deals with other provinces? It doesn't appear that it will have additional cannabis production capacity for year one of legalization, due to the schedule of its expansion plans. So, they may miss out on any more deals that require year one supply. If they can buy supply from other global producers, they may be able to fill the gap.

They can also seek to sell their cannabis in year 2 to fast-growing global markets and beyond when their production will reach 105,000 kgs. If they can sell 105,000 kgs at \$5/gram in year 2 or 3 and later, it would generate \$525 million in revenue. This would drive their share price much higher than it is today.

Additionally, they are getting into micropropagation, through their deal with Segra, to sell plantlets to other producers, thus adding to, and diversifying, their revenue. However, this would seem to add to a future oversupply problem and add competition, so we don't know how successful this will be.

The company's current Quebec deal locks in solid revenue for five years, ensuring they will remain in business to evolve. With global markets expanding rapidly, we think they have a reasonably good chance to reach the revenue required to justify their current share price. Although, they must ink some strong distribution deals in the coming year, in Canada and abroad, we think as they prove their reliability with Quebec, other buyers will come forward.

For this reason, we give the company a strong investment rating at the current price of \$3.40, assuming the stock buyer intends to hold them for several years. While their share price could increase in the short term due to investor enthusiasm if it signs more deals, we don't believe these deals will justify a higher long-term share price—until their long-term revenue looks like it will solidly go beyond \$110 million per year.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

FEATURED COMPANY

fundamental analysis

CRONOS



profile

HQ: Toronto, Canada

Incorporated: Jan 2013, originally as PharmaCan

Symbol: CRON

Facilities: Ontario (84%), British Columbia, Israel, Australia

Exchanges: TSX, OTC

ceo

Michael Gorenstein

focus: neutral

Cronos is a cannabis investment company that invests in cannabis producers that are either with or actively seeking a production license. These are in federally legal markets (not the USA) and are typically Canadian companies. It has two medical cannabis brands: Peace Naturals (Ontario) and OGBC (British Columbia) - both of which are licensed producers. Cronos is geographically diversified and vertically-integrated, with a presence on four continents. Its main activities are currently in Canada and Germany.

It has four joint ventures, including in Israel and Australia, and holds minority interests in cannabis-related companies and Licensed Producers.

It's strategy has four elements:

building an efficient global operation

diversifying revenue

developing intellectual property that ensures enduring margin

growing a portfolio of brands with customer loyalty

size

Market Cap: \$1.25 bil

Enterprise Value: \$1.21 bil

Size within cannabis industry: of 200+

Size among cultivators: of about 40

markets:

Primary: Canada

Secondary: Germany, Australia

subsidiaries, interests: strong

Majority Subsidiaries:

- as of Feb 2018, owns a 50% of Cronos Australia, which is planning to construct a 20,000 sf indoor facility to produce up to 2,000 kgs of cannabis annually.

- owns a 50% interest in MedMen Canada Inc, which focuses on branding, R&D and creating a retail chain in provinces that permit private retailers. Medmen does not produce cannabis, will buy from Cronos.

- in March 2018, Cronos entered a joint venture with MedMen Enterprises USA, LLC.

Minority interests: none

operations: neutral

Cultivation: **weak** to **neutral** (facilities not complete, insufficient capacity planned)

Current production: 6,650 kgs/year on 70,000 sf of grow space

Future capacity: 47,000 kgs/year on 420,000 sf of grow space

Cronos' total planned capacity is low compared to its main competitors. When all capacity is completed, 84% of production will be in Ontario, the rest in BC (1%), Israel (11%) and Australia (5%). 86% of their cannabis will be grown in fully indoor facilities, 14% in greenhouses. This will make them a more expensive producer than others which focus on greenhouse production.

FEATURED COMPANY

fundamental analysis

CRONOS



Their slated facilities in Ontario, belonging to Peace Naturals, will use 8 out of 90 owned and licensed acres. This would allow them room to expand further in the future. Additionally, cultivation has begun in the 28,000 of the greenhouse there, first harvest expected in Q3 2018.

The British Columbia facility belongs to OGBC, including 13 licensed acres on 30 total acres.

Total Canadian market size: In 2017, roughly 50,000 kgs of legal medical cannabis were sold in Canada, split roughly 50/50 between dried and oils, generating about \$400 million in sales. However, the total current Canadian cannabis market, including the black market, is much higher—estimated at roughly 600,000 kgs, or \$4.8 billion. Health Canada now predicts Canadian cannabis demand at the end of 2018, after adult use legalization, could reach 1 million kgs/year, and up to \$8-10 billion in revenue in a few years. Current industry inventory is estimated at 300,000 kgs, implying a large shortfall later this year.

The total US market, including the black market, is now roughly \$50 billion, (6 million kgs), with the legal fraction about one-tenth, or \$5 billion. This is currently split 50/50 between medical and rec, though rec sales will grow much faster in coming years.

Distribution

Cronos sells medical dried cannabis and oils through wholesale and direct-to-consumer channels under its medical cannabis brand, Peace Naturals.

Direct sales: Yes

Store networks: they are building a network through OGBC (stores are expected to become legal)

Supply agreements: None with provinces.

In Canada, medical cannabis cannot yet be sold legally from storefronts, but it happens to a degree anyway. Legal sales only occur directly to consumers from companies with online and phone sales operations. No pharmacies allowed yet, though this is expected to change soon. In Europe, medical cannabis can only be sold through pharmacies currently.

Integration/Diversification:

Vertically integrated: Yes (production and retail distribution)

Horizontally diversified: No

financials

Earnings/Revenue/Cost control:	12 mos ending Sept 2017	3 mos ending Mar 2018
Revenue	\$4.9 mil	US \$2.2 mil
Revenue per share	0.04	
Production costs	\$2.18	
Gross profit before adjustments	\$7.23 mil	
EBITDA	\$2.45 mil	-\$1.27 mil
Income after taxes	\$1.7	
Outstanding shares (diluted)	\$143 mil	
EPS (diluted)		

FEATURED COMPANY

fundamental analysis

CRONOS



Revenue rank among cultivators: About 15th
Revenue growth (QoQ): +83%
Cash: \$13 mil

management: **neutral**

CEO: Michael Gorenstein
CFO: William Hilson
COO: David Hsu

branding: **strong**

Cronos rebranded Peace Naturals in Q1 2018, with new packaging, logo and marketing materials, a revised website with a new shopping portal experience, and new products such as strain-specific oils and limited edition cultivars.

valuation: **weak**

Current share price: US \$5.96
Price to Sales: 255 (Tobacco industry = 3)
Price to book: 11
EV / revenue: 246

financings

Raised \$46.0 mil In Q1 2018 through bought deal. In April 2018, raised an additional \$109 million through bought deal.

risks

There are many inherent risks with cannabis investing. Cronos may be slightly less risky than some producers by virtue of being diversified with several licensed producers and global partners within planned markets. It does not invest in federally illegal markets like the USA. Other risks are discussed below.

recommendation: **weak**

In February 2018, Cronos Group became the first licensed producer to list on a major stock exchange in the United States. This brings more attention to the stock and more potential buyers. This is good for the company, but may not be good for investors as the stock may get overvalued since few of its competitors have a similar standing in the exchange.

In Q1, 2018, they sold 500 kgs of cannabis. Of the 500 kgs, 88 kgs were sold directly to consumers (B2C) at \$10.09 per gram, totaling \$0.9 million or 30% of revenue and 388 kgs were sold wholesale to other businesses (B2B) at \$4.87 per gram, totaling \$1.9 million or 64% of total sales. In other words, two-thirds of the revenue came from lower margin B2B, for less than \$5.0 per gram, half what consumers are thought to pay.

With the coming legalization of cannabis, many provinces are planning to become the major wholesale buyers of cannabis for distribution in their provinces. As this happens, future wholesale prices will likely be below \$5.00 per gram.

Cronos has a much smaller capacity expansion plan that quite a few larger players despite over a billion dollars in market capitalization. Additionally, its indoor facilities will result in somewhat high operating costs in the face of dropping prices. This does not present a highly attractive picture of the business going forward. The stock may be exaggerated and overvalued due to its Nasdaq listing and MedMen JV.

FEATURED COMPANY

fundamental analysis

CRONOS



Like most cannabis companies, Cronos does not yet report a profit. At \$5.96, the stock is trading at 133 times its revenue, an extraordinarily high price compared to a mature industry like the tobacco industry which trades at 5 times revenue.

We think the stock price must eventually settle to a Price to Sales ratio (P/S) of about 5. For this to happen, revenue must rise by 42 times without the stock price rising, or the stock price must fall significantly. In its most recent quarter, Cronos had revenue of \$2.9 million, an annual rate of \$11.6 mil. In our view, investors are paying this price with expectations of much high future revenue. Future revenue 26 times its current revenue is \$250 million. Can Cronos generate that kind of revenue?

Cronos' currently plans its future capacity to be 47,000 kgs or 47 million grams. It currently sells 30% at retail for \$10 gram, and 70% at wholesale for \$5/gr. Continuing with this ratio, when they produce 47,000 kgs., they will generate \$141 million at retail, and \$165 million from wholesale, for total revenue of \$306 million. This is slightly above what we think they need to generate in the long term (\$250 million) to justify their current share price.

This means, if they can sell all their future planned production, amidst plenty of competition, they will meet or slightly exceed the revenues built into their current stock price.

Cronos does not currently property on which to build more capacity but they appear to have the financing power to raise more money in capital markets to build that capacity. However, they would likely raise that money from issuing more equity. This would further dilute shareholder stock, spreading future revenue gains over more shares and making it less likely to result in stock price appreciation.

Given its low future planned capacity, pricing pressures from high supply coming online in the coming years, and its high current stock valuation, we do not think this is a stock to be excited about until the stock value comes down more, too, below \$5.

Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

FEATURED COMPANY

fundamental analysis

AUSCANN



location

HQ: Perth (Joondalup), WA (Western Australia), Australia

Incorporated: Sept 2014

Symbol: ACNNF (OTC)

Facilities:

Exchanges: OTC, Auss exchange

Licenses: Got production license in Aug 2017. One of a few Aussie companies to have production and sales licenses. Is also the only Australian co to also have import, export licenses.

ceo

Elaine Darby. She has degrees in microbiology, biochemistry and law. She was an award-winning winemaker and has experience in international business.

focus

Producing and selling medical cannabis to patients in Australia, and later the world. They are focused on creating cannabis treatments for pain, plus other conditions. This is a \$9 billion market in Australia alone.

size

Market Cap: \$301 Mil

Enterprise Value: \$300 Mil

Size within cannabis industry: roughly 25th of 200+

Size among cultivators: roughly 15th of about 40

of employees: NA

subsidiaries, interests: strong

Majority Subsidiaries: N/A

Minority interests: N/A

Agreements:

- AusCann is 10% owned by Canopy Growth, the biggest cannabis company in the world.
- Canopy has agreement with Auscann to import MJ for AusCann to distribute till Auscann produces more.
- has a partnership with Tasmanian Alkaloids Pty Ltd. to distribute medical cannabis in Tasmania. TasAlk produces 40% of the world's alkaloid raw material.
- partnership with DayaCann, the only licensed medicinal cannabis grower in Chile.

markets: strong

Primary: Initially Australia (and Tasmania), where medical MJ is legal, but adult use is not (nor expected soon). Also Chile, through partnership.

Secondary: It has an export license so once production ramps up, the world.

FEATURED COMPANY

fundamental analysis

AUSCANN



operations

Cultivation: **weak** to **neutral**

Current production: unknown

Future capacity: unknown

Distribution: **neutral**

Direct sales: Claims to have 24,000 patients, but last revenue report was only \$200k.

Store networks: Has agreement with leading Australian pharmacy API to distribute medical cannabis through nationwide pharmacy network.

Supply agreements: It will import from Canopy Growth to assist in the supply local market initially.

Integration/Diversification: **neutral**

Vertically integrated: not yet, but they have licenses to produce and distribute, so they could.

Horizontally diversified: no

financials: **weak**

Earnings/Revenue/Cost control: mostly NA	12 mos ending Dec 2017
Revenue	\$200k
Income after taxes	\$13 million
Outstanding shares (diluted)	\$270 million
EPS (diluted)	-\$0.05

Revenue rank among cultivators: quite low

Cash: \$9 million

management: **strong**

Chairman: Dr. Mal Washer, former member of Parliament for 15 years as well as the past chair of the Alcohol and Other Drugs Council of Australia. He has extensive experience in agricultural and horticultural activities and currently operates a commercial avocado plantation in Western Australia bringing highly relevant medical and horticultural expertise and experience to AusCann.

CEO/COO: Elaine Darby (see above)

CMO (medical): Dr. Danial Schechter

CFO: ms. Raegen Main

Dir of Biz Dev: Dr Stewart Washer, has been CEO in medical tech, biotech, agrifood co's

CSO: Dr Patty Washer

branding

N/A

valuation: **neutral**

Current share price: \$1.13

Price to Sales: 1500 (Tobacco industry = 3)

EV / revenue: 1500

EV / revenue rank in industry: N/A

FEATURED COMPANY

fundamental analysis

AUSCANN



financings

Raised \$12 million recently to institutions and high net worth investors.

risks

In addition to all the normal risks of investing in the cannabis industry, which is high, Auscann risks are higher since less is known about the company (they put out little news, and we don't even know their production plans yet) they have very little revenue, and they operate in Australia, a market of which we have limited knowledge.

recommendation: **weak**

Little is reported by AusCann and little is written about the company in the news. This is neither helpful nor encouraging - yet what is reported and/or known is pretty optimistic.

Auscann is often referred to as having the lead position in the Australian cannabis industry. Additionally, they are 10% owned by Canopy Growth. This seems quite favorable since Canopy would not let them struggle if they have such a strong investment.

The company has not yet finalized its production plans which is an inherent barrier to evaluation.

The company has reported only \$200k in revenue for the year ending Dec 2017. Its price to sales ratio is an astronomical 1200. Assuming its P/S will eventually settle to a reasonable level of 5, like the tobacco industry, this means the shares are currently priced (at \$0.79) for revenue 400x higher than current, or \$80 million.

If future cannabis prices settle to \$6/gram, achieving this revenue requires selling 16 million grams, or 16,000 kgs per year. If the price settles to \$4/gram, this requires selling 25 million grams or 25,000 kgs/year.

While we don't yet know how much cannabis they plan to produce, producing 16,000 to 25,000 kgs per year is not a huge number compared to other LP's within the industry. The industry average production is 10sf per kg, so this would require 250,000 of grow space, or 5.7 acres of greenhouse or indoor grow space.

From a licensing perspective, they are ahead of other competitors in Australia. They can produce/sell import and export. They may have a strong position if they can deliver on production and distribution. It's a big unknown.

We think they are a company to watch, with strong potential in Australia, and potentially some potential as an exporter (though Canada allows exporting too, and they will have massive oversupply in a few years).

We would not advise investing just yet. Watch it for news about its production plans, and other news.

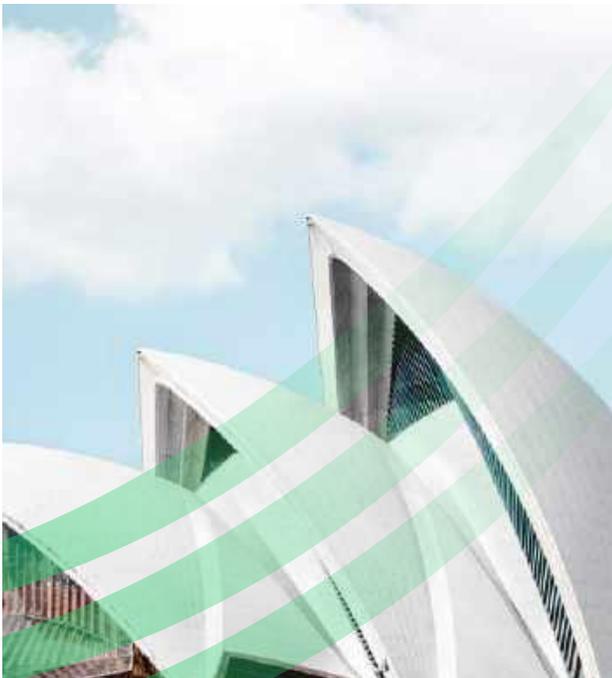
Coming in future Cannin Reports: Due to the fact that most cannabis companies are not yet reporting profit, current analyses focus primarily on a company's ability to generate top-line revenue more than bottom line profit. As cannabis companies begin to turn the corner and report profit in the coming years, stay tuned to Cannin Reports. Our upcoming analyses will dig deep into cost control issues to determine who can do this best—in time for you to use this insight for your investment decisions.

cronos group announces launch of cronos australia

Toronto-based cannabis investor and producer Cronos Group (TSX-V: MJN) (OTC: PRMCF) announced the launch of Cronos Australia and the grant of medicinal cannabis cultivation and research licenses there.

Cronos Australia is a 50/50 joint venture between Cronos Group and New Southern Capital Pty Ltd. Cronos Australia will serve as Cronos's hub for Australia, New Zealand, and Southeast Asia.

Rodney Cocks, the Chief Executive Officer of Cronos Australia, was a consultant with The Boston Consulting Group, then a senior role at an Australian multinational, before finally co-founding New Southern Capital. He holds an MBA from Wharton, an MPA from Harvard, and was also named the Victorian Australian of the Year in 2005.



“

...Aurora Frost has publicly available findings from a third party laboratory results on the potency.

”

Cronos Australia's first production campus will be located on 120 acres and it will begin construction of the first phase with a 20,000 sf facility with annual production capacity of 2,000 kg. In the interim, Cronos Group will supply it with Peace Naturals' medicinal cannabis to support its Australian patient access, subject to obtaining its import license.

Cronos is a geographically diversified and vertically integrated cannabis company that operates through two wholly-owned licensed producers Peace Naturals Project Inc. (Ontario) and Original BC Ltd. (British Columbia). These collectively hold over 125 acres of agricultural, licensed land.

Cronos also owns Cronos Israel. It also has access to over 12,000 pharmacies in Germany through an exclusive distribution agreement.

branding



branding

Branding is not yet a major force in the consumer choice of cannabis in this early stage of the market. If the government allows the market to develop its branding without interference, we think the branding will become a major force in consumer choice. However, the government has proposed regulations which will substantially curtail packaging design. If approved it's approved, this will set back branding quite a bit.

If the regulations do not pass, companies will eventually develop a significant, unique “umbrella” brand identities and personality for their entire company, as well as unique names and identities for their sub-brands. In the same way, the people don't buy “beer”, “clothing” and “cigarettes,” they won't just buy cannabis. They will buy large company brands like Budweiser, Nike and Marlboro and small craft brands like the many unique craft brew brands now available. Suppliers will bring each of these sub-brands to unique life through stories and imagery that will help consumers understand and distinguish between brands, as they do among other lifestyle brands.

Many cannabis suppliers have not done any significant branding yet. Broken Coast, Tweed, and Hydropothecary are exceptions. In general, oil products have slightly less branding development than flower products. While the branding efforts of the few may not be paying dividends yet, they indicate which companies understand the value of branding and are better positioned for future gains from branding.

While branding and brand loyalty have not yet become dominant forces driving consumer cannabis selection, they are gaining influence and will continue if the proposed regulations are not approved. In the early stages of the rec market we expect consumers to pay most attention to generic product features such as price, variety, strain, and THC level. Over the course of a few years, as the market matures, we would expect branding and brand loyalty to become a dominant force in recreational cannabis sales, as it has become in the alcohol and tobacco fields.

Companies building their brands around well-known personalities, such as Leafs by Snoop and Willie's Reserve, are attempting to jump ahead of the rest of the “build it from scratch” brands. These companies will capture the early fascination of a segment of consumers who identify with a personality. If the product delivers, this could translate into early brand loyalty and long-term market share.

The larger bulk of brands will build their brands slowly, from scratch, through brand signals like packaging, web design, headlines, web content, brand story, the overall customer experience, and the performance and reliability of the cannabis. All these convey a personality which will appeal to certain types of people.

How long it takes the market to develop into a brand driven market depends on the rate and manner in which the legal recreational cannabis market is allowed to mature by the federal and provincial governments. When availability and price become universal and uniform across the country and customer wishes become better pronounced, brands will become more dominant.

The proposals that Health Canada has under consideration would mandate plain packaging but these are merely proposals, so we don't yet know what the future will be for branding.

branding

Assuming wiser heads prevail and the market is allowed to mature more naturally, retail branding will inevitably dominate in time as seen in the tobacco and alcohol markets where branding is essential to profits. With profits and strategic diversification in mind, tobacco and alcohol will eventually enter the market through acquisitions.

Some of the better-developed cannabis brands in Canada currently are Tweed, Leafs by Snoop, Broken Coast, Peace Naturals, Hydrothecary, and Bedrocan. In the USA, brands such as Willie's Reserve, Marley Natural, Kiva and Legal have created appealing presences.

regulations by state

regulations by state

summary

Despite the fact that cannabis remains illegal on a federal level, public acceptance and market demand are helping to drive state-level legalization of both medical and adult-use cannabis across the country.

Following a flurry of approvals in 2016, when five states passed medical-use laws and another four voted to permit adult-use cannabis, 2017 was a year of consolidation. During the year, one state (West Virginia) legalized cannabis for medical users, and another (New Hampshire) decriminalized possession, while a number of states were busy getting ready to introduce cannabis legislation in 2018 and beyond.

Twenty nine states have enacted laws that permit residents to use cannabis for medical conditions, and another seventeen allow non-psychoactive CBD oil. Regulations vary considerably from one state to another, but in most instances a user must obtain a recommendation letter from physician, and join a patient registry.

With the legalization of adult-use cannabis in Vermont in January, 2018, ten US jurisdictions now allow anyone aged 21 or over to consume cannabis: Alaska, California, Colorado, the District of Columbia, Maine, Massachusetts, Nevada, Oregon, Vermont, and Washington. Adults in eight states may purchase cannabis from online or brick-and-mortar retailers while in Vermont and D.C. they are currently limited to growing plants at home, unless they are registered to buy medical cannabis.

In the first nine cases, adult use was ushered in by popular vote - which is considered the quickest means to legalization - while in Vermont the law was passed in the state legislature as the state no longer allows ballot initiatives. Nevertheless, opinion polls conducted over the past several years have consistently shown legal cannabis to be favored by a majority of Vermont's voters.

States located in the west of the country and New England have so far led the way in legalizing adult-use cannabis. Now, increasing popular support and the prospect of significant revenues from sales taxes and license fees are leading states all over the US to consider expanding access to medical-use cannabis - or allowing non-medical users to use cannabis recreationally.

In 2018, an election year, a number of states including Arizona, Arkansas, Michigan, Ohio, and Florida are expected to include the question of adult use on the ballot in November. Other states that could legalize cannabis in the next year or two include Illinois, Delaware, New Jersey, Maryland, Minnesota, and Rhode Island, which would need to do so via their respective state legislatures since they do not allow ballot initiatives.

There are also several states, such as Oklahoma, South Dakota, and Missouri, that are aiming to let voters decide this year whether to allow comprehensive medical cannabis use.

REGULATIONS BY STATE

alabama

Medical use: Yes (CBD only). Legalized in 2014 via Carly's Law, which authorized a clinical trial at the University of Alabama at Birmingham to treat children with seizures using non-psychoactive CBD oil. In 2016, an update to this legislation allowed the possession and use of CBD oil by patients of all ages, and with a wider range of conditions. These patients require a doctor's recommendation letter, but do not need to join a clinical trial.

Adult use: No

Possession: Only legal for medical users of CBD oil, with doctor's recommendation letter. Otherwise, first-time possession is treated as a misdemeanor, and subsequent events as felonies.

Home cultivation: No

Industrial hemp: Yes. House Bill 393, which authorizes the exemption of industrial hemp grown for academic or trial purposes from the definition of "marijuana", was signed into law in 2016. The Alabama Department of Agriculture and Industries may oversee an industrial hemp research program in coordination with institutes of higher education. Cultivation has not commenced, however.

Restrictions on product types: CBD oil with a THC content of less than 0.3% is the only product permitted in the clinical trial at the University of Alabama. The recent expansion of medical conditions eligible for CBD treatment use refers to a product with a maximum THC content of 3%.

Regulatory bodies: None. The Department of Neurology at the University of Alabama at Birmingham is responsible for administering the CBD oil to patients in the study.

Notes: An attempt to legalize medical-use cannabis in 2015 failed after it was blocked in the State Senate. Participants in the University of Alabama medical trial obtain their CBD oil free of charge through the program. In contrast, the new law that extends CBD oil use to a larger group of patients contains no provisions for dispensaries or other in-state vendors of the product. This means that, in practice, users must cross state lines to purchase the product, or obtain it online.

REGULATIONS BY STATE

alaska

Medical use: Yes, legalized in 1998 via Measure 8.

Adult use: Yes, legalized in 2014 via Measure 2.

Possession: Registered medical users may possess up to 1oz of flower, 7g of concentrate, or products containing 5,600mg of THC, or any combination of the three.

Home cultivation: Yes. Adult patients of 21 and older may grow up to six plants, of which no more than three may be in flower at any one time.

Industrial hemp: No. Efforts are currently under way to pass a pair of acts related to the regulation and legalization of industrial hemp in Alaska.

Restrictions on product types: Yes. Beverages, as well as products that "closely resemble" familiar goods such as candy, are prohibited.

Regulatory bodies: The Marijuana Control Board regulates all cultivation, production and sales. There is no separate regulatory structure governing medical cannabis.

2016 registered patients: 1,127

2016 estimated adult use customers: 67,000

2016 medical use sales: \$4.0 million

2021 projected medical use sales: \$11.3 million

2016 adult use sales: \$0

2021 projected adult use sales: \$79.3 million

Notes: Adult-use sales commenced in late 2016. Operating licenses cover both adult-use and medical-use cannabis. There is no state-level limit on licenses, but municipalities are permitted to restrict their numbers. The medical-use program consists of a card registry for patients and caregivers.

REGULATIONS BY STATE

arizona

Medical use: Yes, legalized in 2010 via Proposition 203.

Adult use: No

Possession: Qualifying medical users or their designated caregivers may possess up to 2.5oz per 14 days, if it is obtained from a registered dispensary

Home cultivation: Patients and their caregivers may apply for permission to cultivate cannabis if they live more than 25 miles from the nearest dispensary.

Industrial hemp: No. A bill authorizing commercial cultivation of industrial hemp was provisionally approved in May, 2017, but was subsequently vetoed by the Governor.

Restrictions on product types: No

Regulatory bodies: Arizona Department of Health Services

2016 registered patients: 87,733

2016 medical use sales: \$341.1 million

2021 projected medical use sales: \$524.7 million

2016 adult use sales: \$0

2021 projected adult use sales: \$687.7 million

Notes: Proposition 205 to legalize adult-use marijuana was narrowly defeated in 2016, but the initiative will be re-introduced in the 2018 election.

REGULATIONS BY STATE

arkansas

Medical use: Yes, legalized in 2016 via Issue 6.

Adult use: No

Possession: Medical use only. Patients may possess up to 2.5oz of usable cannabis.

Home cultivation: No

Industrial hemp: Yes. The Arkansas Industrial Hemp Act, which provides for the establishment of a research program to study the economic and agricultural potential of hemp, was passed into law in April 2017. The first growers' licenses are expected to be issued in the spring of 2018.

Restrictions on product types: No

Regulatory bodies: The Medical Marijuana Commission (growers and dispensaries), the Alcoholic Beverage Control Agency (facilities), and the Department of Health (medical cannabis patient registry).

2016 medical use sales: \$0

2021 projected medical use sales: \$56.4 million

Notes: The first licenses for cultivation and dispensary have recently been issued, and medical-use sales are expected to commence in early 2018.

REGULATIONS BY STATE

california

Medical use: Yes, legalized in 1996 via Proposition 215 (the Compassionate Use Act).

Adult use: Yes, legalized in 2016 via Proposition 64 (the Adult Use of Marijuana Act).

Possession: Up to 1oz of flower and/or up to 8g of concentrate

Home cultivation: Adults 21 and over may grow six plants for personal use.

Industrial hemp: Yes. California legalized industrial hemp cultivation for commercial purposes in 2016, however this law will not come into effect until authorized under federal law.

Restrictions on product types: No

Regulatory bodies: To date, there has been no state-level oversight of the medical cannabis industry, although certain cities and counties impose their own regulations. A comprehensive set of business license requirements and other regulations for medical and adult-use cannabis, as well as industrial hemp, has now been released. These will all come into effect on January 1, 2018, when adult-use sales commence, and will involve a number of state departments.

2016 registered patients: Estimated at 775,000 to 875,000

2016 medical use sales: \$1.84 billion

2021 projected medical use sales: \$1.48 billion

2016 adult use sales: \$0

2021 projected adult use sales: \$4.32 billion

Notes: With the passing of Proposition 215 in 1996, California became the first state to legalize medical marijuana. The Golden State is the largest cannabis market in the country, with around 30% of national legal sales in 2016. Adult-use sales officially commenced on January 1, 2018, although several cities and counties have yet to finalize their local regulations and permit sales to begin.

REGULATIONS BY STATE

colorado

Medical use: Yes, legalized in 2000 via Colorado Amendment 20.

Adult use: Yes, legalized in 2012 via Colorado Amendment 64.

Possession: Registered patients may possess up to 2oz of usable cannabis, while for other users the limit is 1oz.

Home cultivation: Yes. Up to six plants, of which no more than three may be in flower at any one time per adult of 21 and older. Each residence may have no more than 12 plants, and all must be kept in a locked, enclosed space.

Industrial hemp: Yes. Cultivation for research and commercial purposes is permitted. Colorado was one of the first three states to begin planting industrial hemp in 2014, and by 2015 it accounted for the majority of domestic production, with 8,975 acres planted, out of a national total of 12,795 acres.

Restrictions on product types: No

Regulatory bodies: Colorado Department of Revenue, Marijuana Enforcement Division

2016 registered patients: 107,534

2016 estimated adult use customers: Estimated 575,000 - 625,000

2016 medical use sales: \$453.3 million

2021 projected medical use sales: \$500.7 million

2016 adult use sales: \$865.7 million

2021 projected adult use sales: \$1.39 billion

Notes: Although the legislation is still evolving, Colorado has the most comprehensive cannabis regulatory structure in the United States, and is often held up as a model for other states. Colorado is also known for bringing in substantial tax revenues (\$199 million in 2016) from cannabis sales, and for using the funds for purposes such as building schools, helping the homeless, and combating substance abuse.

REGULATIONS BY STATE

connecticut

Medical use: Yes, HB 5389, February 2012.

Adult use: No

Possession: 2.5oz per month for medical use. For non-medical users, possession was decriminalized in 2011, meaning that for possession up to 0.5oz of flowers there is a \$150 fine, but no criminal record or jail time.

Home cultivation: No

Industrial hemp: Yes. An industrial feasibility study commenced in 2014. In 2015, industrial hemp was legalized and excluded from the definition of controlled substances. No cultivation licenses have been issued to date.

Restrictions on product types: Yes. Most forms of the plant are allowed, however in the edibles category, only baked goods are permitted. Beverages are also banned.

Regulatory bodies: Connecticut Department Of Consumer Protection, Medical Marijuana Program

2016 registered patients: 8,201

2016 medical use sales: \$29.3 million

2021 projected medical use sales: \$104.9 million

2016 adult use sales: \$0

2021 projected sales: \$60.3 million

Notes: The state's medical dispensary program is under expansion, with minors now permitted to access products, as long as they are not in smokable, inhalable or vaporizable form. Also, nurses are now allowed to dispense.

REGULATIONS BY STATE

delaware

Medical use: Yes, legalized in 2011 via Senate Bill 17.

Adult use: No

Possession: Up to 6oz for medical use, with a registration card. For non-medical users, possession of up to 1oz was decriminalized in 2015, and is treated as a civil infraction.

Home cultivation: No

Industrial hemp: Yes. An industrial hemp research program was signed in to law in 2016. No trials have commenced yet.

Restrictions on product types: Yes. There are restrictions on oils sold for use by minors. No restrictions for adult patients.

Regulatory bodies: Delaware Health and Social Services, Division of Public Health, Office of Medical Marijuana

2016 registered patients: 776

2016 medical use sales: \$1.7 million

2021 projected medical use sales: \$5.0 million

2016 adult use sales: \$0

2021 projected adult use sales: \$46.5 million

Notes: Implementation of the medical use program has been slow, with only one dispensary, "compassion center", (out of three permitted) in the state currently operating. However, efforts to legalize adult use cannabis in the state's General Assembly are ongoing.

REGULATIONS BY STATE

district of columbia

Medical use: Yes. Legalized in 2010 via Amendment Act B18-622.'

Adult use: Yes. Legalized in 2014 via Initiative 71.

Possession: Any person aged 21 and over, whether a registered patient or not, may possess up to 2oz of dried cannabis or the equivalent in any other form.

Home cultivation: Any person aged 21 and over, whether a registered patient or not, may grow up to six cannabis plants in their residence. No more than three of these may be mature at a time.

Industrial hemp: No

Restrictions on product types: No

Regulatory bodies: Medical: Department of Health. Adult-use: No

2016 registered patients: 3,577

2016 estimated adult use customers: 79,000

2016 medical use sales: \$14.4 million

2021 projected medical use sales: \$37.5 million

2016 adult use sales: \$0

2021 projected adult use sales: \$55.8 million

Notes: The current adult-use regulations do not contain a provision for retail sales, so only registered patients (for any condition) can purchase cannabis at dispensaries. Currently, adult users may only grow cannabis for their own use, or may give or receive it as a gift. Industry advocates are now hoping that the passage of a general FY 2018 spending bill now being considered, plus a committee ruling, will enable the city to fund the establishment of a regulatory and licensing system for adult use sales.

REGULATIONS BY STATE

florida

Medical use: Yes. Low-THC cannabis was legalized in 2016 via Florida Amendment 2.

Adult use: No

Possession: Restricted to medical users with registry cards, but there are no maximum quantities specified.

Home cultivation: No

Industrial hemp: Yes. Agricultural colleges are permitted to run pilot programs that can, under certain conditions, be converted to commercial schemes after two years. Licensing has yet to begin, but there is reported interest among farmers and existing cannabis producers.

Restrictions on product types: Yes. Edibles, oils, vapes, sprays and pills are permitted, but no smokable products are available. Medical cannabis products must contain at least 10% CBD and no more than 0.8% THC, except for those used in terminal illnesses, where a higher THC content is allowed.

Regulatory bodies: Florida Department of Health

2016 medical use sales: \$0

2021 projected medical use sales: \$1.52 billion

Notes: The anticipated inclusion of the Florida Recreational Marijuana Amendment on the ballot in 2018 appears to have been delayed until 2020, due to insufficient petition signatures. Nevertheless, there is substantial commercial interest in gaining a foothold in Florida, which is the second largest cannabis market in the US. Seasonal residents (at least 31 days a year) of Florida are eligible to apply for a registration card.

REGULATIONS BY STATE

georgia

Medical use: Yes, legalized in 2015 but limited to non-psychoactive CBD oil ("Charlotte's Web").

Adult use: No

Possession: CBD oil only, restricted to members of the medical CBD registry.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: Yes. The only permitted product is CBD oil that contains no more than 5% THC, and has a CBD content that is at least equal to its THC level.

Regulatory bodies: There is no regulatory authority. The Board of Regents of the University System of Georgia oversees the CBD oil program.

Notes: Georgia has no cannabis dispensaries. CBD oil is only available to patients on the medical CBD registry, however it is still technically illegal to buy or sell any form of cannabis in the state. This means patients have to buy CBD oil out of state or online, which exposes them to the risk of prosecution by the Drug Enforcement Agency.

REGULATIONS BY STATE

hawai'i

Medical use: Yes, legalized in 2000 via Act 228, but legal sales did not commence until 2017.

Adult use: No

Possession: Registered patients may purchase 4oz of flower every 15 days.

Home cultivation: Yes. Registered patient or their caregivers may grow up to 10 plants for personal use

Industrial hemp: Yes. The University of Hawai'i at Manoa is running a two-year pilot program to study the use of hemp for biofuel, and for removing toxins from the soil. The Industrial Hemp Pilot Program was legalized in 2016 via Act 228, and in 2017, the Act was amended to require industrial hemp to be recognized as an agricultural commodity, and thereby not as a Schedule I substance.

Restrictions on product types: Yes. Beverages are prohibited, as are edibles with the exception of lozenges.

Regulatory bodies: State of Hawaii Department of Health, Medical Marijuana Dispensary Program

2016 registered patients: 13,150

2016 medical use sales: \$1.7 million

2021 projected medical use sales: \$34.3 million

Notes: Medical use cannabis was legalized by the State Legislature of Hawai'i in 2000, and a patient registry was established. However, there was no means for patients to buy cannabis legally until 2016, when the Medical Marijuana Dispensary Program became operational. However, until August 2017, when the first legal dispensary sales were made, patients had to purchase out of state or online, thereby risking prosecution by the DEA, or grow their own cannabis plants.

REGULATIONS BY STATE

idaho

Medical use: No

Adult use: No

Possession: Registered patients may purchase 4oz of flower every 15 days.

Industrial hemp: No

Notes: The State legislature passed Senate Bill 1146a to legalize CBD oil in 2015, but the Governor vetoed the measure, and all forms of cannabis remain illegal.

REGULATIONS BY STATE

illinois

Medical use: Yes, legalized in 2013 via the Compassionate Use of Medical Cannabis Pilot Program Act. Sales from dispensaries commenced in 2015.

Adult use: No

Possession: 2.5oz per 14 days, for registered medical users. For non-medical users, possession of up to 10g has been decriminalized and is punishable by fine only.

Home cultivation: No

Industrial hemp: Yes. Legislation passed in 2016 provides for the establishment of a pilot program that enables the state's Department of Agriculture and universities to plant industrial hemp for research purposes. No growers' licenses have been issued to date.

Restrictions on product types: Yes. Edibles or other products that need to be refrigerated or heated are prohibited.

Regulatory bodies: State Department of Agriculture, Department of Financial and Professional Regulation, Department of Health.

2016 registered patients: Approx. 20,000

2016 medical use sales: \$36.2 million

2021 projected medical use sales: \$375.9 million

Notes: There is some hope that Illinois will be the next state to legalize adult-use cannabis, with lobbying focused on the anticipated tax revenue from cannabis sales. The outcome is expected to depend on the results of the next gubernatorial election in November 2018.

REGULATIONS BY STATE

indiana

Medical use: Yes. (Non-psychoactive CBD oil only.) Legalized in 2017 via House Bill 1148.

Adult use: No

Possession: Non-psychoactive CBD oil is permitted for use by epilepsy sufferers enrolled on the patient registry.

Industrial hemp: Yes. Licensed growers may cultivate industrial hemp for research and commercial purposes. However, the legislation forbids any parties to break federal law, a provision that is being interpreted in Indiana as allowing the plant to be grown for research, but not for commercial use. No licences have been issued to farmers yet.

Restrictions on product types: Yes. Only CBD oil containing no more than 0.3% THC and at least 10% CBD is permitted.

Regulatory bodies: The State Department of Health runs a registry for patients and caregivers.

Notes: Senate Bill 15, which legalized the use of CBD oil for the treatment of epilepsy, was signed by the Governor in April, 2017. However, the Attorney General then declared all CBD oil to be illegal. Sales of CBD oil in local retail outlets have continued, pending clarification of the definition of "non-psychoactive".

REGULATIONS BY STATE

iowa

Medical use: Yes. Non-psychoactive CBD oil for the treatment of children with uncontrollable seizures only. Legalized in 2014 via the Medical Cannabidiol Act.

Adult use: No

Possession: Patients on the medical register may possess up to 32oz of CBD oil with a THC content of no more than 3%.

Industrial hemp: No

Restrictions on product types: Only CBD oil with no more than 3% THC is permitted.
Regulatory bodies: The Iowa Public Health Department issues medical registry cards to eligible patients.

Notes: The law contains no provisions for obtaining the CBD oil in Iowa, so caregivers of eligible children with epilepsy must purchase products out of state or online. This officially puts them at risk of prosecution by the DEA, although other federal agencies have deemed hemp-derived CBD oil with a maximum THC content of 0.3% legal across the country.

REGULATIONS BY STATE

kansas

Medical use: No

Adult use: No

Industrial hemp: No

Notes: Legislation that decriminalizes the possession of cannabis for personal use was passed in 2016. The law originally sought to legalize CBD oil as well, but this provision was removed.

REGULATIONS BY STATE

kentucky

Medical use: Yes. CBD oil only. Legalized in the Clara Madeline Gilliam Act of 2014.

Adult use: No

Possession: CBD oil only. There is no register, although patients require a recommendation letter from a physician practising at a hospital or clinic affiliated with a public university in the state.

Industrial hemp: Yes. The Industrial Hemp Research Program, managed by the Kentucky Department of Agriculture, runs a rapidly expanding hemp cultivation project for research purposes. Around 3,100 acres were planted in 2017.

Restrictions on product types: Only CBD oil is permitted.

Regulatory bodies: None

Notes: Kentucky law exempts CBD from the definition of "marijuana". Patients may use CBD oil "pursuant to the written order of a physician practising at a hospital or associated clinic affiliated with a Kentucky public university", but there are no restrictions regarding medical conditions or permissible THC or CBD levels.

REGULATIONS BY STATE

Louisiana

Medical use: Yes. Low-THC cannabis products only. Legalized in 2015 via Senate Bill 143.

Adult use: No

Possession: Registered patients may possess industrial hemp-derived CBD oil and other low-THC products in accordance with their doctor's recommendations.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: Only products that cannot be smoked or vaporized are allowed. The law states that only the lowest possible THC levels are permitted, but details are unclear.

Regulatory bodies: Louisiana Board of Pharmacy, and Louisiana Department of Agriculture and Forestry.

2016 medical use sales: \$0

2021 projected medical use sales: \$27.0 million

Notes: Senate Bill 143 and House Bill 149, which were signed by the Governor in 2015, legalized medical-use cannabis but did not provide a regulatory framework and left many questions unanswered. The legislation does mention that THC must be at the lowest possible "acceptable therapeutic level" but does not specify what this level is. Dispensary sales have yet to commence, but hemp-derived CBD oil with low THC levels is available for purchase from specialty stores.

REGULATIONS BY STATE

maine

Medical use: Yes. Legalized by popular vote (Question 2) in 1999.

Adult use: Yes. The Marijuana Legalization Act was passed in 2016.

Possession: 2.5oz of flower every 15 days.

Home cultivation: Yes. Any adult may grow up to six plants for personal use, or as a caregiver.

Industrial hemp: Yes. Cultivation is permitted for commercial purposes, and the first license applications from prospective growers are being accepted now. No research program exists currently.

Restrictions on product types: No

Regulatory bodies: Medical use: Department of Health and Human Services, Division of Public Health Services, Medical Use of Marijuana Program. Adult-use: Bureau of Alcoholic Beverages and Lottery Operations.

2016 registered patients: 20,000 (estimated)

2016 medical use sales: \$52.2 million

2021 projected medical use sales: \$35.5 million

2016 adult use sales: \$0

2021 projected adult use sales: \$126.2 million

Notes: While adult-use cannabis was approved in 2016, and retail sales were slated to begin in early 2018, regulatory changes are still being discussed and the commencement of sales could be delayed until 2019. However, anyone aged 21 and over may grow cannabis for their own consumption, as a caregiver, or to gift.

REGULATIONS BY STATE

maryland

Medical use: Yes. Legalized in 2014 via Senate Bill 364 and House Bill 884.

Adult use: No

Possession: Medical users may purchase and possess up to 4.23oz (120g) of flower, or 36g of THC in infused products, every 30 days. For non-medical users, possession of up to 10g has been decriminalized.

Home cultivation: No

Industrial hemp: Yes. Individuals may cultivate and sell industrial hemp as part of a research program operated by the Maryland Department of Agriculture or a university. Small-scale planting has begun, but growers' licenses have yet to be issued for wider cultivation.

Restrictions on product types: Edible products are prohibited, although patients are permitted to make their own edibles.

Regulatory bodies: Yes. The Maryland Medical Cannabis Commission.

2016 medical use sales: \$0

2021 projected medical use sales: \$45.9 million

2016 adult use sales: \$0

2021 projected adult use sales: \$613.1 million

Notes: Although medical-use cannabis became legal in Maryland in 2014, dispensaries did not open for business until 2017, once the regulatory infrastructure had been put into place.

REGULATIONS BY STATE

massachusetts

Medical use: Yes. Legalized in 2012 via the Massachusetts Medical Marijuana Initiative.

Adult use: Yes. Legalized in 2016 via a public vote on Question 4.

Possession: Adults of 21 years and over may be in possession of up to 1oz of usable cannabis in a public setting, 10oz at home, or 5g of cannabis concentrate.

Home cultivation: Adults of 21 years and over may grow up to six plants for personal use, as long as they are kept out of public view. A patient with a hardship cultivation registration may grow enough plants for a 60-day supply.

Industrial hemp: Industrial hemp may be cultivated for the purposes of research or commerce, under the regulation of the Massachusetts Department of Agricultural Resources. No licenses have been issued to farmers yet.

Restrictions on product types: No

Regulatory bodies: Medical: Department of Public Health of the Commonwealth of Massachusetts. **Adult-use:** Cannabis Control Commission. **Industrial hemp:** Massachusetts Department of Agricultural Resources.

2016 registered patients: 19,000

2016 medical use sales: \$100.0 million

2021 projected medical use sales: \$238.4 million

2016 adult use sales: \$0

2021 projected adult use sales: \$929.3 million

Notes: A measure seeking to legalize adult-use cannabis was approved by voters in 2016, but retail sales are not scheduled to commence until mid-2018. Home cultivation is already allowed, however.

REGULATIONS BY STATE

michigan

Medical use: Yes. Legalized in 2008 when the public voted on Proposition 1.

Adult use: No

Possession: 2.5oz for a qualifying patient (or caregiver) with a registry card and photo ID, or up to 12 plants growing at home.

Home cultivation: Patients on the medical registry, or their caregivers, may grow up to 12 plants at home, as long as they are kept in an enclosed, locked area. Any plants cultivated count towards the legal possession limit.

Industrial hemp: Yes. Industrial hemp may be cultivated under research programs operated by universities and the Michigan Department of Agriculture and Rural Development. Only small-scale planting has occurred to date.

Restrictions on product types: No. No restrictions exist on a statewide basis, but certain cities and counties have regulations that determine which products can be sold.

Regulatory bodies: Yes. Bureau of Medical Marijuana Regulation.

2016 registered patients: 179,000

2016 medical use sales: \$651.5 million

2021 projected medical use sales: \$626.6 million

2016 adult use sales: \$0

2021 projected adult use sales: \$939.1 million

Notes: In 2017, enough signatures were collected to add a vote on legalizing adult-use cannabis to the 2018 ballot.

REGULATIONS BY STATE

minnesota

Medical use: Yes. Legalized in 2014 in the Minnesota Medical Marijuana Act.

Adult use: No

Possession: For non-medical users, possession of up to 42.5g is treated as a misdemeanor, and is punishable by fine.

Home cultivation: No

Industrial hemp: Yes. Institutions of higher education may participate in research programs overseen by the Minnesota commissioner of agriculture. 1,205 acres of industrial hemp were planted in 2017.

Restrictions on product types: Yes. The only permitted product types are liquid concentrates and non-edible infused products.

Regulatory bodies: Yes. Minnesota Department of Health

2016 registered patients: 996

2016 medical use sales: \$9.6 million

2021 projected medical use sales: \$43.9 million

Notes: Minnesota decriminalized possession of up to 42.5g of cannabis as far back as 1976.

REGULATIONS BY STATE

mississippi

Medical use: Yes. Low-THC CBD oil, resin and processed plant extract only. Legalized in 2014 via House Bill 1231, which became Harper Grace's Law.

Adult use: No

Possession: Patients on the medical register may possess low-THC products as per their doctors' recommendations.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: The only products permitted are processed cannabis extract, oil and resin that contain a minimum of 15% CBD and a maximum of 0.5% THC.

Regulatory bodies: No

Notes: Mississippi has the strictest CBD regulations in the country. CBD oil is the only product currently available, and must be obtained from either the University of Mississippi or Mississippi State University. Patients must be under the supervision of a licensed physician.

REGULATIONS BY STATE

missouri

Medical use: Yes. CBD oil was legalized in 2014 in the Missouri Medical Marijuana Bill.

Adult use: No

Possession: Eligible patients may possess CBD oil that conforms to the requirements. Possession of up to 10g of cannabis has been decriminalized, with no jail time for first-time offences.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: Yes. Hemp-derived CBD oil with more than 5% CBD and no more than 0.3% THC is the only product permitted.

Regulatory bodies: Yes. Department of Agriculture, Department of Health and Senior Services.

2016 medical use sales: \$0

2021 projected medical use sales: \$141.0 million

Notes: A medical cannabis bill was rejected by the state legislature in 2016, and in the same year a proposed referendum failed to gain the number of signatures required for inclusion on the ballot.

REGULATIONS BY STATE

montana

Medical use: Yes. Legalized in 2004 when the Montana Medical Marijuana Act was approved by popular vote.

Adult use: No

Possession: A registered cardholder or caregiver may possess up to 1oz of usable cannabis per cardholder.

Home cultivation: A registered cardholder or caregiver may cultivate up to four mature plants and 12 seedlings per cardholder.

Industrial hemp: Yes. The Montana Department of Agriculture has implemented a commercial licensing program and is issuing licenses to farmers, who must use certified seed. 542 acres of industrial hemp were cultivated in 2017.

Restrictions on product types: No, although some local restrictions exist.

Regulatory bodies: Department of Public Health and Human Services

2016 registered patients: 113,200

2016 medical use sales: \$19.6 million

2021 projected medical use sales: \$58.0 million

Notes: The medical-use program was severely restricted in 2011 after a bill to repeal the Montana Medical Marijuana Act passed but was vetoed by the Governor. The number of eligible cardholders was cut back, but has started rising again.

REGULATIONS BY STATE

nebraska

Medical use: No

Adult use: No

Possession: Possession of up to 1oz (first offence) is treated as a civil infraction and punishable by fine. Second and third offences are subject to a few days' jail time and a fine.

Industrial hemp: Yes. The Nebraska Department of Agriculture and post-secondary institutions are permitted to plant industrial hemp for research purposes. Research cultivation commenced in late 2016.

Notes: Nebraska has one of the country's most conservative attitudes toward cannabis, and has rejected every cannabis-related bill ever raised. Along with Oklahoma, the state even sought (unsuccessfully) to overturn neighboring Colorado's cannabis legislation in 2014.

REGULATIONS BY STATE

nevada

Medical use: Yes. Legalized in 2000 via popular vote on Question 9.

Adult use: Yes. Legalized in 2016 via popular vote on Question 2.

Possession: Registered patients may purchase or produce up to 2.5oz of usable cannabis every 14 days. Non-patients may possess or produce up to 1oz of usable cannabis or 3.5g of cannabis concentrate.

Home cultivation: Registered patients may cultivate up to 12 plants if they live 25 miles or more from the nearest cannabis retailer. Non-patients who live 25 miles or more from the nearest cannabis store may raise up to six plants per person, or 12 plants per household.

Industrial hemp: Yes. The Nevada Department of Agriculture and institutions of higher education may grow industrial hemp for research purposes, under the Nevada Board of Agriculture's pilot program. Licenses have been issued and cultivation has increased rapidly, with 417 acres planted in 2017.

Restrictions on product types: No

Regulatory bodies: Department of Health and Human Services

2016 registered patients: 13,561

2016 medical use sales: \$75.6 million

2021 projected medical use sales: \$150.4 million

2016 adult use sales: \$0

2021 projected adult use sales: \$282.2 million

Notes: Sales of adult-use cannabis started on 1 July, 2017.

REGULATIONS BY STATE

new hampshire

Medical use: Yes. Legalized in 2013 via House Bill 573.

Adult use: No. However, House Bill 656, which permits adult use of cannabis, is on its way to becoming law after being passed by the New Hampshire House of Representatives on January 9, 2018.

Possession: A qualified patient and/or caregiver may purchase and possess up to 2oz per 10 days. In other cases, possession of up to $\frac{3}{4}$ oz (first or second offence) was decriminalized in 2017, and is now punishable by fine.

Home cultivation: No

Industrial hemp: Institutions of higher education may conduct research-based cultivation programs for up to three years. In February 2017, the state decriminalized industrial hemp by removing it from the list of controlled substances. Small-scale cultivation has commenced but growers' licenses have yet to be issued, pending the passage of House Bill 656, which would fully legalize the cultivation, possession and use of industrial hemp.

Restrictions on product types: No

Regulatory bodies: New Hampshire Department of Health and Human Services

2016 medical use sales: \$3.7 million

2021 projected medical use sales: \$21.9 million

Notes: While New Hampshire has been expanding its list of medical conditions that qualify a patient for a medical cannabis card, the state is unusual in not recognizing chronic pain as a qualifying condition in its own right. In other words, chronic pain sufferers must have one of the listed conditions in order to qualify, which leaves large numbers of people with painful conditions such as arthritis, diabetic nerve damage, and degenerative disk disease dependent on opioid drugs.

REGULATIONS BY STATE

new jersey

Medical use: Yes. Legalized in 2010 via Senate Bill 119.

Adult use: No

Possession: Qualifying patients or their caregivers may be dispensed up to 2oz per 30 days.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: Oils and waxes are prohibited, and so are edibles (other than for minors). All products, including flower, may contain a maximum of 10% THC.

Regulatory bodies: New Jersey Department of Health and Senior Services, New Jersey Department of Agriculture.

2016 registered patients: 6,354

2016 medical use sales: \$31.0 million

2021 projected medical use sales: \$52.5 million

Notes: The state's incoming governor, Phil Murphy, has pledged to start the necessary procedures to legalize adult-use cannabis soon after he takes office on January 16, 2018.

REGULATIONS BY STATE

new mexico

Medical use: Yes. Legalized in 2007 via Senate Bill 523.

Adult use: No

Possession: Qualified patients and caregivers may possess and transport up to 230g (approx. 8oz) of cannabis.

Home cultivation: Yes. Qualified patients may apply for a Personal Production License to grow up to four mature plants and 12 seedlings for personal use.

Industrial hemp: No

Restrictions on product types: Concentrates may not contain more than 70% THC.

Regulatory bodies: New Mexico Department of Health

2016 registered patients: 19,629

2016 medical use sales: \$97.9 million

2021 projected medical use sales: \$131.3 million

Notes: Two bills legalizing industrial hemp production were passed in 2017, but were subsequently vetoed by Governor Susana Martinez. A district judge declared the vetoes illegal, but this decision has now been overturned in the New Mexico Supreme Court, and the Governor's vetoes stand.

REGULATIONS BY STATE

new york

Medical use: Yes. Legalized in 2014 via the Compassionate Care Act.

Adult use: No

Possession: A certified patient may possess a 30-day supply of cannabis. The quantity permitted is determined by the recommending physician.

Home cultivation: Yes. Qualified patients may apply for a Personal Production License to grow up to four mature plants and 12 seedlings for personal use.

Industrial hemp: Yes. Industrial hemp may be cultivated as part of an agricultural pilot program run by a university or the Department of Agriculture and Markets. 2,000 acres were planted in 2017.

Restrictions on product types: Yes. Edibles, pills, capsules, oils, tinctures and vaporizers are the only ingestible product types permitted.

Regulatory bodies: New York State Department of Health

2016 registered patients: 10,500

2016 medical use sales: \$35.7 million

2021 projected medical use sales: \$253.5 million

Notes: New York State is actively encouraging farmers to commence industrial hemp cultivation, and aims to become a national leader in hemp research and production. The state is currently offering \$10 million in grants to help accelerate the development of the industrial hemp industry.

REGULATIONS BY STATE

north carolina

Medical use: Yes (non-psychoactive CBD oil only). Legalized in 2015 via House Bill 766.

Adult use: No

Possession: Possession of 0.5oz of cannabis is classed as a misdemeanor and is punishable by fine only.

Home cultivation: No Industrial hemp: North Carolina State University and North Carolina A&T State University may operate research-based cultivation programs overseen by the state's Department of Agriculture. 965 acres of industrial hemp were cultivated in 2017.

Restrictions on product types: The only product permitted is CBD oil containing a maximum of 0.9% THC and a minimum of 5% CBD.

Notes: There is no patient registry or provision in the law for obtaining non-psychoactive CBD oil. While retail stores that offer a wide range of hemp-derived products including CBD oil and edibles do exist in the state, the maximum THC content for these products is 0.3%. If patients or their caregivers purchase CBD oil with a higher THC level out of state or online, they risk being prosecuted by the Drug Enforcement Agency when they bring it in to North Carolina. A medical-use cannabis bill was rejected in the State House in 2015.

REGULATIONS BY STATE

north dakota

Medical use: Yes. Legalized in 2016 by popular vote on Measure 5.

Adult use: No

Possession: Registered patients and their caregivers may purchase up to 3oz of usable cannabis per 30 day period.

Home cultivation: Yes. Patients who live 40 miles or more from the nearest dispensary may grow up to eight plants for personal use.

Industrial hemp: Yes. Hemp may be cultivated for research or commercial purposes by universities, overseen by the State Agricultural Commissioner. North Dakota is now one of the country's leading industrial hemp producers, with 3,020 acres under cultivation in 2017.

Restrictions on product types: Product types permitted are capsules, tinctures, patches and topical products. Smokable cannabis is only allowed if expressly recommended by the patient's doctor or nurse.

Regulatory bodies: North Dakota Department of Health

2016 medical use sales: \$0

2021 projected medical use sales: \$25.7 million

Notes: Although medical-use cannabis became legal in 2016, sales have still not commenced and no date has been announced, despite initial expectations that dispensaries would open in early 2017.

REGULATIONS BY STATE

ohio

Medical use: Yes. Legalized in 2016 via House Bill 523.

Adult use: Yes

Possession: Not yet specified.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: Yes. Smokable products are prohibited, but vaporizers are allowed, along with all other product types.

Regulatory bodies: Ohio Department of Commerce, Ohio Board of Pharmacy.

2016 medical use sales: \$0

2021 projected medical use sales: \$225.6 million

Notes: According to the law passed in 2016, the medical-use cannabis program must be fully operational by September, 2018. In the meantime, qualifying patients are allowed to travel to Michigan or another state that has legalized medical cannabis, in order to buy cannabis and bring it back to Ohio.

REGULATIONS BY STATE

oklahoma

Medical use: Yes. Legalized in 2018 via Question 788.

Adult use: No

Possession: There are no regulations regarding CBD oil possession, as long as it complies with the THC level restriction.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: Restricted to oil that comes from an FDA-approved source and has a THC content no higher than 0.3%.

Regulatory bodies: None

Notes: The law originally permitted non-psychoactive CBD oil to be used by children only, but in 2016 adult patients also became eligible to use the product as part of the authorized clinical trial. There are no legal provisions for obtaining CBD oil, and patients initially had problems accessing the product in Oklahoma. Several stores that sell hemp-derived products have now opened around the state, however.

REGULATIONS BY STATE

oregon

Medical use: Yes. Legalized in 1998 by popular vote on Ballot Measure 67, which became the Oregon Medical Marijuana Act.

Adult use: Yes. Legalized in 2014 by popular vote on Ballot Measure 91.

Possession: Registered medical-use patients may possess up to 24oz of usable cannabis. Nonmedical users aged 21 and up may possess up to 8oz of usable cannabis.

Home cultivation: Registered patients may grow up to six plants at a registered grow site address. Caregivers may grow up to six plants for each of a maximum of four patients. For adult-use consumers, four plants per residence is the maximum allowed.

Industrial hemp: Yes. Individual farmers registered with the Oregon Department of Agriculture may grow industrial hemp for commercial purposes. Oregon is one of the top hemp producers, with 3,469 acres under cultivation in 2017.

Restrictions on product types: No

Regulatory bodies: **Medical:** Oregon Health Authority. **Recreational:** Oregon Liquor Control Commission.

2016 registered patients: 77,620

2016 estimated adult use customers: 450,000

2016 medical use sales: \$101.6 million

2021 projected medical use sales: \$37.8 million

2016 adult use sales: \$292.1 million

2021 projected adult use sales: \$868.4 million

Notes: Oregon was the first state to decriminalize cannabis in 1973, and has established a well organized legal infrastructure for cannabis and a rapidly expanding cannabis industry over the intervening years.

REGULATIONS BY STATE

pennsylvania

Medical use: Yes. Legalized in 2016 via Senate Bill 3.

Adult use: No

Possession: Registered patients may possess a 30-day supply of oils, tinctures, pills, infused liquids, and topicals.

Home cultivation: No

Industrial hemp: Yes. The Department of Agriculture and universities may conduct research under an industrial hemp pilot program. Pennsylvania started hemp production in 2017.

Restrictions on product types: Smokable forms of cannabis are prohibited, as are pre-made edibles. Patients may make their own edibles, however.

Regulatory bodies: Pennsylvania Department of Health

2016 registered patients: Approximately 10,000

2016 medical use sales: \$0

2021 projected medical use sales: \$227,400

Notes: Since medical-use cannabis was approved in 2016, the state has been establishing the regulatory, medical and supply infrastructure necessary for dispensary sales to commence. The first dispensaries will open for business in February, 2018.

REGULATIONS BY STATE

rhode island

Medical use: Yes. Legalized in 2007 via Senate Bill 791.

Adult use: No

Possession: A patient cardholder or primary caregiver cardholder may purchase and possess up to 2.5oz of usable cannabis per patient cardholder, per 15-day period.

Home cultivation: A patient cardholder or primary caregiver cardholder may cultivate and/or possess up to 12 mature plants per patient cardholder. In addition, a patient cardholder may cultivate and/or possess up to 12 seedlings.

Industrial hemp: Yes. The Department of Business Regulation oversees a commercial hemp program, and authorizes institutions of higher education to cultivate industrial hemp for research purposes.

Restrictions on product types: No

Regulatory bodies: Rhode Island Department of Health

2016 registered patients: 15,470

2016 medical use sales: \$48.8 million

2021 projected medical use sales: \$37.8 million

2016 adult use sales: \$0

2021 projected adult use sales: \$101.9 million

Notes: Rhode Island is widely expected to legalize adult-use cannabis in 2018, in the face of public support and the fact that residents will soon be able to purchase legal cannabis in neighboring Massachusetts.

REGULATIONS BY STATE

south carolina

Medical use: Yes (CBD oil only). Legalized in 2014 via Senate Bill 1035, which became the Medical Cannabis Therapeutic Treatment Act, or Julian's Law.

Adult use: No

Possession: If recommended by a treating physician, caregivers may possess CBD oil for the treatment of a child with severe epilepsy.

Home cultivation: No

Industrial hemp: Yes. Industrial hemp may be grown for commercial and research purposes. The first group of 20 licenses have been issued to farmers for the 2018 growing season.

Restrictions on product types: The only permitted product type is CBD oil containing a minimum of 15% CBD and a maximum of 0.9% THC. It must be obtained from an approved source, and also approved by the FDA.

Regulatory bodies: None

Notes: A 2016 bill to legalize medical-use cannabis was rejected, but other bills for legalization have since been submitted.

REGULATIONS BY STATE

south dakota

Medical use: No

Adult use: No

Possession: Cannabis is illegal for all purposes and possession of small quantities is a misdemeanour crime. Ingestion of controlled substances is illegal, and testing positive for cannabis can be a felony offense.

Home cultivation: No

Industrial hemp: No

Notes: South Dakota is regarded as the country's least tolerant state towards cannabis. Two ballot initiatives to legalize cannabis for medical use (in 2006 and 2010) were rejected by voters.

REGULATIONS BY STATE

tennessee

Medical use: Yes. CBD oil only. Legalized in 2016 via House Bill 2144.

Adult use: No

Possession: Possession of any quantity of cannabis is a criminal misdemeanor. However, the 2016 law exempts cannabis oil with a THC content of less than 0.9% from the definition of controlled substances if it forms part of a clinical research study.

Home cultivation: No Industrial hemp: Yes. Commercial hemp cultivation is permitted when overseen by the Department of Agriculture. Along with Colorado and Kentucky, Tennessee was one of the first three states to plant industrial hemp in 2014. Since then, however, Tennessee's rate of expansion has been relatively slow, with 225 acres planted in 2017.

Restrictions on product types: Restricted to CBD oil with a THC content of less than 0.9%.

Regulatory bodies: No

Notes: The law makes no provision for participants of the clinical study to obtain CBD oil, so patients initially had to purchase it online or in other states and risk prosecution by the DEA. There are now several retailers in Tennessee that sell CBD oil, although their products are made from hemp, and therefore contain no more than 0.3% THC.

REGULATIONS BY STATE

texas

Medical use: Yes. Low-THC cannabis only. Legalized in 2015 in the Texas Compassionate Use Act.

Adult use: No

Possession: Possession of products with more than 0.5% THC is illegal, and is subject to fines and imprisonment.

Home cultivation: No

Industrial hemp: No

Restrictions on product types: Yes. Only low-THC cannabis products that contain at least 10% CBD and no more than 0.5% THC are permitted. Products currently available in Texas include hemp derived CBD oil, capsules, balm, and vaporizers. Smokable products are prohibited.

Regulatory bodies: No

2016 medical use sales: \$0

2021 projected medical use sales: \$156.6 million

Notes: Qualifying patients with epilepsy need the approval of two physicians who are authorized to "prescribe" low-THC cannabis. This contravenes federal law, which means that no patients can officially access the products. However, the existing state law has actually been deemed unnecessary as long as the patient does not require a product with more than 0.3% THC. Hemp-derived products such as CBD oils (which by definition contain no more than 0.3% THC) have been deemed legal in all states, so patients in Texas are able to buy these from online retailers without a prescription.

REGULATIONS BY STATE

utah

Medical use: Yes (non-psychoactive CBD oil only). Legalized in 2014 via House Bill 105.

Adult use: No

Possession: Possession of hemp extract, i.e. any hemp-derived product such as CBD oil (which by definition may contain no more than 0.3% CBD) is permitted for registered patients. In all other cases, possession of cannabis is punishable by fine and/or incarceration.

Home cultivation: No

Industrial hemp: Yes. The Utah Department of Agriculture and institutions of higher education may grow industrial hemp for research purposes.

Restrictions on product types: Yes. Only hemp-derived CBD oil with at least 15% CBD and no more than 0.3% THC is allowed.

Regulatory bodies: No

2016 medical use sales: \$0

2021 projected medical use sales: \$17.2 million

Notes: Patients with untreatable epilepsy and a doctor's recommendation may join the patient registry. There is no provision in the law that enables patients to acquire the CBD oil, however, but as CBD products made from industrial hemp have been declared legal throughout the US, consumers are purchasing online or in specialty retail stores in the state.

REGULATIONS BY STATE

vermont

Medical use: Yes. Legalized in 2004 via Senate Bill 76.

Adult use: Yes. Legalized in January 2018 via House Bill 511, which will permit adults to possess and cultivate cannabis from July 21, 2018. The full legalization of adult-use sales is expected to follow in 2019.

Possession: Registered patients and their caregivers may possess up to 2oz of usable cannabis between them. In other cases, possession of up to 1oz of usable cannabis was decriminalized in 2013, and is classed as a civil infraction punishable by fine. When adult use becomes legal on July 21, 2018, any person of 21 years and older will be allowed to possess up to 1oz without penalty.

Home cultivation: Registered patients and their caregivers may cultivate up to two mature cannabis plants and seven immature plants between them. The new law will permit adults to grow up to two mature plants and four seedlings at home.

Industrial hemp: Yes. The Vermont Secretary of Food, Agriculture and Markets oversees a commercial cultivation program set up to produce CBD products. In 2017, its third year of operation, over 80 farmers participated in the program.

Restrictions on product types: No

Regulatory bodies: Vermont Department of Public Safety

2016 registered patients: 2,477

2016 medical use sales: \$7.6 million

2021 projected medical use sales: \$13.5 million

2016 adult use sales: \$0

2021 projected adult use sales: \$51.5 million

Notes: In January, 2018, Vermont became the first state to legalize cannabis for adult use via the state legislature rather than by popular vote. The law, which will come into effect in July, 2018, provides for legal possession and cultivation for adults. Retail sales are expected to be legalized once a commission established for the purpose of determining how to regulate and tax sales has made its recommendations, which are due in 2019.

REGULATIONS BY STATE

virginia

Medical use: Yes (CBD oil or THC-A oil only.) The 2015 passing of Senate Bill 1235 does not technically legalize non-psychoactive cannabis oils, rather it provides an affirmative defense against prosecution.

Adult use: No

Possession: While cannabis is illegal in all forms, patients with severe epilepsy can obtain a doctor's recommendation that will enable them to use non-psychoactive CBD oil or THC-A oil without fear of being charged with possession of cannabis.

Home cultivation: No

Industrial hemp: Yes. Research and commercial cultivation programs are overseen by the Virginia Board of Agriculture and Consumer Services. At the moment, the output may not be sold, and the hemp harvested from the 100 or so acres currently planted can only be used for research purposes.

Restrictions on product types: The only product types allowed are CBD oil with at least 15% CBD and no more than 5% THC, and THC-A oil with at least 15% THC-A (a non-psychoactive form of THC) and no more than 5% THC.

Regulatory bodies: No

2016 medical use sales: \$0

2021 projected medical use sales: \$17.2 million

Notes: The current law, which provides epilepsy patients who need CBD oil or THC-A oil to treat their condition a legal defence against prosecution, is seen as the first step towards the legalization of medical-use cannabis.

REGULATIONS BY STATE

washington

Medical use: Yes. Legalized in 1998 via Initiative 692, or the Medical Use of Marijuana Act, and Senate Bill 5052 (2015).

Adult use: Yes. Legalized in 2012 via Initiative 502, and Senate Bill 5052 (2015).

Possession: A qualifying patient with a medical cannabis endorsement (or the patient's designated provider) may purchase and possess up to 3oz of usable cannabis, or the equivalent in liquid, solid or concentrate form. For those without a medical cannabis endorsement the limit is 1oz of usable cannabis, or the equivalent.

Home cultivation: A qualifying patient may also cultivate up to six cannabis plants at home, and possess an additional 8oz of usable cannabis harvested from these plants. A treating physician may authorize the patient to grow up to 15 cannabis plants at home, and to possess an additional 16oz of usable cannabis from these plants.

Industrial hemp: Yes. Industrial hemp production is permitted as part a research program directed by the Washington State Department of Agriculture. 175 acres of hemp were planted in 2017, but the program could now close owing to an absence of funding in the December 2017 state budget. The State Legislature may still allocate the \$287,000 needed for the program in 2018 and 2019, however.

Restrictions on product types: No

Regulatory bodies: Washington State Department of Health, Washington State Liquor and Cannabis Board

2016 registered patients: 100,000 - 125,000 (estimated)

2016 estimated adult use customers: 775,000 - 825,000

2016 medical use sales: \$45.6 million

2021 projected medical use sales: \$0 (will be combined with adult-use sales)

2016 adult use sales: \$677.3 million

2021 projected adult use sales: \$1.29 billion (medical and adult-use combined)

Notes: Along with Colorado, Washington was one of the first two states to legalize adult-use cannabis in 2012. With the passing of Initiative 502 in 2012, Washington established a comprehensive regulatory and taxation system that was used as an example by Oregon when that state was preparing for the legalization of adult-use cannabis two years later.

REGULATIONS BY STATE

west virginia

Medical use: Yes. Legalized in April, 2017 via Senate Bill 386.

Adult use: No

Industrial hemp: Yes. The West Virginia Commissioner of Agriculture may license farmers to grow industrial hemp for commercial purposes. Cultivation commenced in 2016, with around 10 acres in production. West Virginia is the only state where industrial hemp may contain up to 1% THC, rather than the national limit of 0.3%.

Regulatory bodies: Bureau of Public Health - Office of Medical Cannabis

Notes: The new law on medical-use cannabis was initially expected go into effect in mid-2018, but its implementation has now been postponed until 2019.

REGULATIONS BY STATE

wisconsin

Medical use: Yes. (CBD oil only.) Legalized in 2014 via Wisconsin Act 267, which was amended in 2017 via Senate Bill 10.

Adult use: No

Possession: A patient may possess CBD oil if his/her physician has certified that it is needed for the treatment of any condition.

Home cultivation: No

Industrial hemp: Yes. Industrial hemp has now been reclassified as an agricultural commodity in Wisconsin. The Department of Agriculture, Trade and Consumer Protection, universities, and Native American tribes may establish pilot programs to study industrial hemp. Cultivation will begin in 2018.

Restrictions on product types: Only CBD oil is permitted, but the law does not specify limits for THC or CBD.

Notes: Although CBD oil was legalized in 2014 for the treatment of seizures, the law did not provide a legal way for patients to access the product, even when the scope of the law was widened to include any medical condition a doctor deems treatable with CBD oil. However, both iterations of the law can be seen as redundant for many patients, given that hemp-derived CBD oil, which contains not more than 0.3% THC, is generally accepted as legal throughout the United States. Patients in Wisconsin can therefore buy CBD oil from specialty stores, as well as online, without a doctor's letter.

REGULATIONS BY STATE

wyoming

Medical use: Yes. Non-psychoactive CBD oil and other forms of hemp extract only. Legalized in 2015 via House Bill 32.

Adult use: No

Possession: A patient with an untreatable seizure disorder, or such a patient's caregiver, who has a registration card authorized by a neurologist is exempt from prosecution for the possession of non-psychoactive hemp extract in any form.

Home cultivation: No

Industrial hemp: Yes. The Department of Agriculture and the University of Wyoming may cultivate industrial hemp for research purposes. The legislation was passed in 2017 and will take effect in mid-2018.

Restrictions on product types: Yes. The only product permitted is hemp extract with a THC content of no more than 0.3% and a CBD content of at least 5%.

Regulatory bodies: None

Notes: The law contains no legal means for registered patients to obtain CBD oil or other hemp extracts in Wyoming. It is, however, possible to buy CBD oil and other hemp-based products online.

INTERNATIONAL REGULATIONS

canada

Medical use: Yes. Legalized in 2001 by Health Canada in the Marihuana Medical Access Regulations (MMAR), which have now been replaced by the 2016 Access to Cannabis for Medical Purposes Regulations (ACMPR).

Adult use: Yes. Legalized in 2017 via Bill C-45, which officially goes into effect on July 1, 2018.

Possession: Registered medical cannabis patients may possess up to 150g of cannabis. When the new adult-use regulations are applied, each province and territory will be able to determine its own possession limits for adults, but indications are that most will apply a limit of 30g.

Home cultivation: Currently, registered medical cannabis patients may grow their own plants, or appoint someone to cultivate for them. Home-grown cannabis counts towards the current possession limit. Home cultivation by a patient who is registered with a licensed producer is not allowed. After mid-2018, each province and territory will have its own home cultivation regulations.

Industrial hemp: Yes. The 1998 Industrial Hemp Regulations permitted individuals and companies to apply for licenses to cultivate and process industrial hemp. Canada has now become has a major hemp producer, with an estimated 130,000 acres planted in 2017 to meet burgeoning demand for exports. Canadian producers are currently permitted to grow hemp for stalks or seed only, however a recent regulatory change will allow the use of hemp flowers to extract cannabidiol (CBD).

Restrictions on product types: Pre-made edible products will be prohibited for at least the first year of adult-use legalization, but consumers will be able to use cannabis oil to make their own edibles.

Regulatory bodies: Health Canada

2017 registered patients: 200,000

2017 total (legal + illegal) cannabis sales: CAD 5.7 billion (USD 4.6 billion). Legal medical-use cannabis accounted for less than 10% of total sales.

2021 projected legal adult + medical use sales: CAD 5.6 to 10.7 billion (USD 4.5 to 8.7 billion)

Notes: Sales of adult-use cannabis were originally expected to commence on July 1, 2018, which is Canada Day. However, Prime Minister Justin Trudeau has indicated that this is not a fixed date, and that the law will go into effect sometime during the summer of 2018, once the provincial and territorial governments have passed their respective cannabis laws. While cannabis use is being legalized on a national level, many aspects of the legislation are being left up to each province or territory to determine. Areas where jurisdictions will differ include possession and cultivation, legal age for usage, where cannabis can be sold, and public cannabis smoking. The national government is issuing grants to various institutions that study public health issues related to cannabis.

medical research

medical research news & trends

increasing acceptance of cannabis is driving medical research and innovation, may soon help combat the opioid epidemic



Drug overdose deaths are now all too common in the United States and the current opioid epidemic is the worst drug crisis in US History. Two-thirds of all drug overdose deaths involve an opioid. This crisis recently made national headlines after The White House officially declared the opioid epidemic a public health emergency in late 2017.

In light of this declaration, Public Health Officials plan to roll out initiatives to combat this crisis. Such as greater access to opioid treatment for patients in isolated areas, expedited hiring process for the Department of Health and Human Services, and the allocation of federal grant funds to target those with opioid addictions among other measures. While these measures may help aid in the effort, experts say Congress will need to allocate billions of dollars to properly address the crisis.

Despite increasing awareness of the dangers of opioid abuse, opioid-related mortality continues to increase, with no signs of slowing, taking over 100 lives each day in the United States.

Experts attribute much of this epidemic to an increase in prescriptions of opioids to combat chronic pain in patients. In an attempt to identify solutions to combat this epidemic some experts have suggested utilizing medical cannabis in lieu of addictive and potential harmful opioid medications.

Early clinical research indicates certain cannabinoids react with pain receptors, indicating that doctors can use cannabis in addition to, or instead of, opioids. Because chronic pain is a major indication for medical cannabis, legislation which establishes access to medical cannabis may impact overdose mortality related to opioid analgesics in states which have legalized cannabis for medical use.

While there is currently no definitive correlation between cannabis legalization and opioid abuse reduction, increasing evidence suggests a link may in fact exist.

medical research news & trends



**Cannabis is safer, cheaper, and easier to manage
... to treat opioid addiction.**



In fact, a growing number of members of the medical community now believe that cannabis could play an essential role in the fight to end the opioid addiction crisis that is plaguing the United States. THC and CBD, the two most commonly studied compounds found in cannabis, have powerful analgesic properties. CBD has the additional advantage of being non-psychoactive. Cannabis is impossible to overdose on (for adult humans) and has few of the severe side effects that are common with opiates, such as organ damage.

Cannabis is safer, cheaper, and easier to manage than methadone, naltrexone, and buprenorphine, which are currently used to treat opioid addiction. For many users, cannabis and low-THC/high-CBD products can, therefore, serve as excellent substitutes for opioid painkillers, and have the potential to save many lives as well as reducing healthcare costs. As an added benefit, various forms of cannabis can also lessen the symptoms of withdrawal from dependence on opiates, as well as benzodiazepines and alcohol.

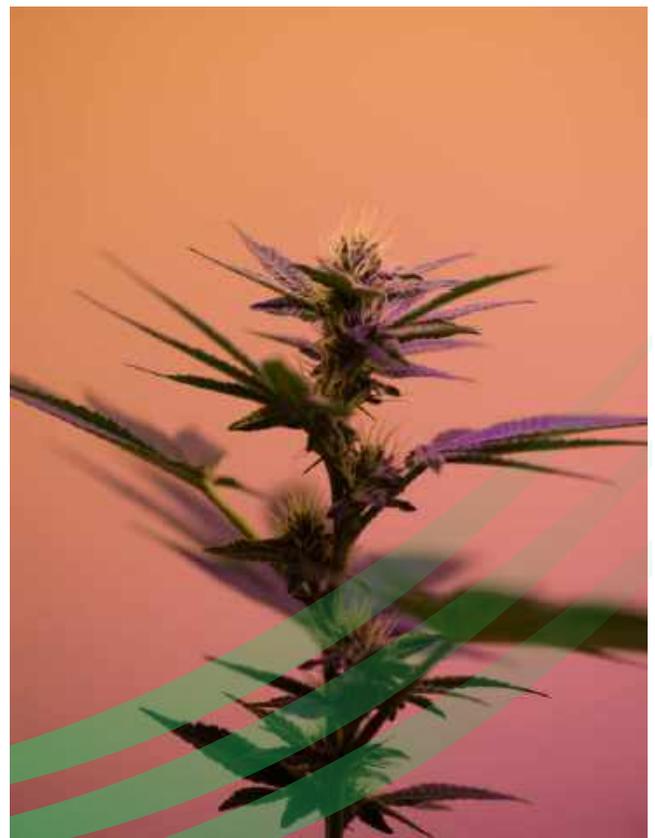
While there are lingering misconceptions about the safety of cannabis in some quarters, the general attitudes toward it have shifted considerably. Rapid growth in the cannabis sector is now driving innovation in a number of associated areas, including the medical field. Research into applications for cannabis compounds is increasing, and both traditional pharmaceutical groups and specialist biotech companies are developing cannabis-based therapies as well as synthetic analogs.

A handful of medications based on cannabis, or on its specific properties, are already available in various markets, and several others are in the pipeline for launch over the next few years. These prescription drugs contain standardized dosages of the active compounds, have undergone clinical trials, and are approved by the FDA. These factors make them attractive to many physicians and patients who might be hesitant about recommending or using cannabis itself.

In the United States, cannabis is still classified as a Schedule I drug, which is (incorrectly) defined by the Drug Enforcement Agency as having "no currently accepted medical use and a high potential for abuse".

As research and medical cannabis product availability gather pace, it will become increasingly harder for the DEA to keep cannabis on the Schedule I list of controlled substances. Even if cannabis-based pharmaceuticals do not prove to be the deciding factor in legalizing cannabis throughout the country, their widespread use is sure to contribute to the lifting of the federal prohibition.

As the cannabis-based pharmaceutical sector develops and its products become widely prescribed, demand for high-quality medical-grade cannabis and industrial hemp will continue to increase. The growth of this industry is likely to be beneficial to the producers of top-quality raw materials that can negotiate supply agreements with cannabis-based pharmaceuticals, as well as for the manufacturers of these medical products themselves.



medical research news & trends

cannin has selected a shortlist of some of the most exciting players in the field of cannabis-based therapies at the moment:

Arena Pharmaceuticals (NASDAQ:ARNA)

Arena is a biopharmaceutical company that develops small molecule drugs for a variety of conditions. The company is currently conducting phase 2a of its clinical trial on APD371, a powerful, selective cannabinoid-2 (CB2) agonist that is intended to treat visceral pain experienced by Crohn's Disease patients. This novel compound acts on the body's cannabinoid-2 receptors to suppress intestinal inflammation that causes chronic pain. The highly selective nature of this compound means it is non-psychoactive and non-dependence forming. The company is expecting to receive data from the trials in Q1 2018.

GW Pharmaceuticals (NASDAQ:GWPH)

UK-based GW Pharmaceuticals is the global leader in plant-based cannabinoid therapeutics and has several innovative new drugs in its pipeline. Its Sativex® (nabiximols) mouth spray was the first-ever prescription drug formulated from plant-based cannabinoids and is now used in 30 countries (but not in the US) to treat spasticity, neuropathic pain and other symptoms of multiple sclerosis. GW is currently conducting clinical trials on Epidiolex®, a new type of drug based on purified cannabidiol (CBD) that is intended to treat Lennox-Gastaut syndrome, Dravet syndrome, and other intractable childhood epilepsy disorders. Data from phase 3 of the study have just been published in *The Lancet*, and show the drug to be effective and well tolerated.

Insys Therapeutics (NASDAQ:INSY)

Insys' activities include the development of pharmaceutical cannabinoids and novel drug delivery systems. Syndros® is a synthetic THC drug that treats loss of appetite, nausea, and vomiting in cancer and HIV/AIDS patients. The company's product pipeline holds several therapeutics, including a liquid cannabinoid solution for pediatric epilepsy that is currently in phase 2 clinical trials, and an inhalable dronabinol (THC) system. Insys has recently announced that another oral cannabinoid for Prader-Willi syndrome, a genetic disorder that can cause childhood obesity and type 2 diabetes, has been granted fast-track status and will enter clinical trials in Q1 2018.



Zynerba Pharmaceuticals (NASDAQ:ZYNE)

Zynerba specializes in developing transdermal cannabinoid therapeutics and has now announced that its products will be focused on the treatment of rare psychiatric and neurological disorders. One drug that is currently in phase 1 clinical trials is ZYN001, a patch that delivers an inactive form of synthetic THC into the bloodstream, where it becomes active. ZYN001 is intended for the treatment of neuropsychiatric conditions such as Tourette syndrome. ZYN002 is a synthetic CBD gel that has been awarded an Orphan Drug Designation for fragile X syndrome by the FDA. It is also in phase 2 of trials for adult refractory focal epilepsy and epileptic encephalopathy.

PreveCeutical Medical (OTC:PRVCF)

PreveCeutical is a Canada-based life science company that develops innovative therapies for a range of conditions using organic and Nature Identical™ compounds. Its Sol-gel delivery system is currently in development and is expected to be approved in 2019 for licensing to medical cannabis producers. Sol-gels are controlled-release CBD gels that are administered nasally and remain active in the nasal passages for up to seven days. This delivery method ensures easy application, exceptionally high bioavailability, and rapid delivery to the brain.

medical research news & trends

studies show medical cannabis may lead to fewer opioid prescriptions

A Advocates of medical cannabis and cannabis legalization have long argued that the plant provides an effective treatment for pain, while carrying much less risk of harmful side effects when compared to other more traditional pain drugs. With the terrifying rise in deaths related to prescription opioids, interest in cannabis as a safer alternative for those with severe or chronic pain has never been greater. Two new studies, both published in the *Journal of the American Medical Association Internal Medicine*, suggest cannabis may indeed be a valuable tool in fighting the opioid epidemic.

Though other studies have supported the idea that cannabis may help addicts avoid relapses, these two studies don't directly examine the impact cannabis has on addiction or overdose deaths. Instead, the studies look at the impact that cannabis has on opioid prescriptions. The over-prescription of opioids is widely held to be a significant factor in the opioid epidemic, so the researchers sought to determine if the availability of medical or recreational cannabis influenced the number of opioid prescriptions written or filled.

The first study examined trends in opioid prescribing for patients on Medicaid, from 2011 to 2016. States with either medical or recreational cannabis laws were compared to states without cannabis laws. Comparisons were done every quarter, so states without cannabis laws could switch categories if they passed and enacted laws at some time during the study.

The study showed that states with medical cannabis laws had an average of about a 6% lower rate of opioid prescriptions for pain. States with laws also allowing recreational adult use showed an additional reduction of about 6%, 12% below the average of states with no cannabis laws. The additional decrease in states with recreational laws indicates that medical cannabis laws fail to help a substantial number of patients who could benefit from cannabis as an alternative to opioids.

The second study examined trends in opioid prescribing for patients on Medicare, from 2010 to 2015. Each year the researchers looked at the opioid prescriptions filled in states with medical cannabis laws compared to those without.

The study found that patients in states with medical cannabis dispensaries filled roughly 14% fewer prescriptions for daily doses of opioids, compared to patients in states with no medical cannabis. In states that allow medical cannabis, but don't permit dispensaries and only allow patients to grow their cannabis at home, the reduction in opioid prescriptions was only about 7%. This indicates that the easier availability of cannabis from dispensaries leads to a greater number of patients choosing cannabis in place of opioids.

W. David Bradford, an economist at the University of Georgia in Athens who is an author of one of the studies, indicated the results of these studies add to other evidence suggesting cannabis is a viable alternative to opioids. He said the weight of the evidence is "now hard to ignore." He believes federal law should be changed to permit doctors to prescribe cannabis as a treatment for pain.

Given the overwhelming cost to society associated with prescription opioids, it's encouraging to see more studies supporting the idea that cannabis can provide an effective alternative. Hopefully the mounting evidence and support from the medical and research communities will speed the process of federal legalization.

glossaries

... (nie) w techn...
... lub odprowadzające...
... II; br D. komży...
... krótka biała szata...
... produkcy...
... podziału klasowego i wy...
... ka; ustrój oparty na tych...
... k. 2. «wspólnota mienia...
... rodowy. (lc.)
... część maszyny elektry...
... pierścienia, po kt...
... szczotki do...

general cannabis glossary

11-hydroxy-THC: The main active metabolite of tetrahydrocannabinol (THC), which is formed in the body following the consumption of cannabis. Cannabis contains tetrahydrocannabinolic acid (THCA) which, once heated, is converted into THC and then metabolized by the body into 11-hydroxy-THC. This molecule is psychoactive as well.

Aeroponics: A method of cannabis cultivation in air without the use of soil or other traditional medium.

Alcohol Extraction: Process of separating essential oils from cannabis plant material using hydrophobic liquids such as alcohol.

Aquaponics: A method of cannabis cultivation using a combination of aquaculture and hydroponics.

Borosilicate Glass: Refers to a type of glass, resistant to thermal shock, used to make many glass pipes and dab rigs.

Bud: Slang term for female cannabis flower.

Bud Rot: A type of fungus which develops within the core of a cannabis bud. This typically occurs in unfavorable growing or drying/curing conditions.

Budder: Typically a BHO or CO2 cannabis extract with a “creamy consistency”.

Budtender: A medical or recreational cannabis dispensary worker who sells cannabis products.

Butane Hash Oil (BHO): Cannabis oil concentrate produced from cannabis flowers using butane as a solvent.

C1D1 Processing Environment: Class 1 Division 1 is the classification for a hazardous area where explosion and fire hazards exist because of the presence of flammable gases, vapors or liquids. BHO, ethanol and other solvent extractions are typically required to be performed within a C1D1 environment, however, regulations do vary from municipality to municipality.

Cannabinoids: Active molecules produced by cannabis plants. They are involved in psychoactivity as well as the medicinal effects of the plant. Around 100 cannabinoids are known today.

Cannabinoid Hyperemesis Syndrome: A condition associated with Cannabis use, typically characterized by symptoms of recurrent nausea, vomiting and abdominal pain found in a percentage of chronic, heavy users of cannabis.

Cannabinoid Receptor: Receptors which are activated by THC and CBD (among other compounds) and part of the endocannabinoid system; located throughout the human body.

Cannabis: Term short for Cannabis Sativa or Cannabis Indica, the plant.

general cannabis glossary

Cannabis Cup: The world's foremost cannabis festival where judges from around the world sample and vote on their favorite marijuana varieties.

CBD: Cannabidiol. This molecule is present in Cannabis and hemp. Known to have many medicinal effects.

CBN: Cannabinol. This molecule is present in Cannabis and hemp and is the oxidative product of THC degradation. Known to have many medicinal benefits.

Closed Loop Extraction: Typically referring to BHO or Propane extractions, and widely accepted as safer than “open blasting”, this process recycles hydrocarbon solvents within a closed system instead of releasing these gases into the air.

CMH Light: Ceramic Metal Halide (CMH) is a broad spectrum lamp typically used for indoor cultivation.

CO2 Oil: Cannabis oil concentrate produced using carbon dioxide as a solvent. Often produced at elevated temperatures and pressures.

Concentrates: Cannabis products with elevated concentrations of THC or CBD.

Dab: A smokable marijuana concentrate which is typically the product of a BHO or CO2 extraction.

Decarboxylate: The process of heating cannabis at lower temperatures to activate inactive cannabinoids like THCA and CBDA into their active forms THC and CBD, respectively. Decarboxylation also happens naturally with exposure to light, air and heat.

Dimethylheptylpyran: Synthetic analogue of THC, invented in 1949.

Dispensary: A storefront which is licensed to sell medical and or recreational cannabis products.

Distillate: A “solvent-free”, process of concentrating to high-potency cannabis concentrates which is typically the product of either a “short path” or “fractional” distillation.

Edibles: Consumable final products produced by cannabis companies. Typical products include cookies, chocolates, gummies and mints/lozenges.

Eighth: Refers to a typical measurement of $\frac{1}{8}$ of an ounce of cannabis, or 3.5 grams.

Entourage Effect: The concept of interactive synergy between various cannabis compounds.

Extraction: The process of removing cannabis compounds from plant materials typically by using solvents and heat.

Feminization: A process of conditioning female plants to obtain male pollen needed for seed production.

general cannabis glossary

Fertigation: Refers to the injection of fertilizers and water-soluble nutrient products into an irrigation system.

Flavonoid: Phytonutrients in cannabis, and other plants, which are known for providing non-green color pigments and produce a range of effects.

Flowering Stage: Refers to the final stage of cannabis cultivation, post vegetation stage, whereby cannabis flowers develop typically using a light cycle of 12 hours “under light” and 12 hours of “light deprivation” during a 24 hour cycle.

Flush: Prior to harvest and lasting anywhere from a few days to a few weeks, whereby mature, flowering cannabis plants are only given water and no other nutrients in an attempt to improve quality and “smoothness” of cannabis buds.

Fractional Distillation: A method of extraction whereby a liquid mixture is separated into fractions based on differences in boiling points of various compounds after heat is applied.

Half: Refers to a typical measurement of cannabis equal to 14 grams.

Hash: Traditionally the resin collected from the flowers of the cannabis plant but may be used to refer to one or more of the various concentrated cannabis products available on the market today.

Hermaphroditic Cannabis: Cannabis demonstrating both male and female reproductive organs, having origins which are either genetic or environmental, often caused by “light leak” during flowering stages and/or significant variations in PH levels among other factors.

Hemp: A type of cannabis grown for its fibrous content as well as CBD content.

High-cannabinoid full spectrum extract (HCFSE): Hydrocarbon method of extraction which aims to preserve cannabinoids.

High-terpene full spectrum extract (HTFSE): Hydrocarbon method of extraction which aims to preserve terpenes.

HPS Light: High Pressure Sodium (HPS) is a broad spectrum lamp typically used for indoor cultivation.

Hybrid: Strains containing a mix of sativa and indica genetics, can be found to have varying THC:CBD cannabinoid concentrations.

Hydrocarbon Extractions: Currently one of the most prevalent forms of extraction using Butane, Propane or other hydrocarbon solvents.

Hydroponics: A growing system for plants using water as a growth medium to deliver nutrients.

Indica: Cannabis Indica is one of the two main species of Cannabis with a short, densely branched, wide-leaf appearance.

general cannabis glossary

Kief: Substance referring to the resinous trichomes of cannabis.

Landrace: A domesticated, traditional species of cannabis which has developed over a period of time through adaptation to its natural environment and isolation from other populations or species.

LED Light: Light Emitting Diode (LED) is a broad spectrum lamp typically used for indoor cultivation.

Live Resin: A type of cannabis concentrate manufactured using a technique which takes freshly harvested cannabis and freezes it to subcritical temperatures both before and during the extraction process.

Man-Trap: Also known as an “air lock”, “sally port” which comprises a small space with interlocking doors. Used to maintain cleanliness and mitigate contamination and potential crop-loss within a cultivation facility.

MIP: Marijuana Infused Products facility where various products are sourced and/or manufactured and infused with cannabis extracts.

Mother Plants: Stock plants specifically raised to provide cuttings (clones) for new plants.

Nabilone: A synthetic cannabinoid with antiemetic and analgesic medicinal benefits.

Open Blasting: Process of performing a solvent-based extraction without the use of a closed-loop system. Typically very dangerous and banned in many cities and states.

Ounce: Refers to a typical measurement of cannabis equal to 28.35 grams.

Percolator: Common accoutrement to many water pipes, this device serving as an extra water chamber provides greater diffusion/filtration for better inhalation.

Phenotype: The combination of a plant’s observable traits including appearance and biochemical properties.

Plant Cloning: A simple process which allows you to replicate a plant by taking a clipping and adding plant hormones to encourage the development of new roots.

Pre-roll: A cannabis flower joint (rolled in paper).

Purging: Process of removing residual solvents from extract concentrates.

Residual Solvent: Remaining solvent within a concentrate post processing.

Rick Simpson Oil: A highly-concentrated cannabis oil containing at least 20% THC.

Rosin: A cannabis concentrate produced via heat and pressure techniques, free of solvent purification.

general cannabis glossary

Rotary Evaporator: Also known as a “rotovap” this device is used to aid in the removal of solvents during the extraction process.

Sativa: Cannabis Sativa is one of the two main species of Cannabis with a tall, loosely branched, long, narrow leaf appearance. Known to reach heights of up to 20 feet.

Schwag: Slang term for poor quality cannabis.

Sea of Green: The idea of growing many smaller cannabis plants instead of fewer, larger ones.

Seed to Sale Concentrates: Cannabis concentrates created and sold by a single source.

Shatter: A cannabis concentrate produced from cannabis flowers that hardens after processing with hydrocarbons. Typically after hardening, slabs can be broken apart and “shatter” hence the name.

Short Path Distillation: A distillation technique whereby a molecule travels a short distance at a reduced pressure.

Spider Mites: Any number of species of arachnid which both feed on and kill cannabis plants.

Strain: A slang name for different cultivars, or phenotypes, of cannabis sativa plants.

Supercritical CO2 Extraction: An extraction technique which creates phase changes in carbon dioxide using both temperature and pressure.

Terpenes: Pungent essential oils within cannabis which have distinct flavor profiles.

Testing Laboratory: Labs which provide analytical data pertaining to both potency and safety of all cannabinoid infused products and medicines.

THC: Tetrahydrocannabinol, the active molecule in cannabis sativa. Responsible for the psychoactivity of cannabis.

THC-A: Tetrahydrocannabinolic acid. The acidic precursor of THC, made by the cannabis sativa plant.

Tincture: A liquid edible made from cannabis. Often also includes ethanol, non-cannabis oils, or glycerin as carrier agents for cannabinoids. Orally delivered.

Tissue Culture: A technique used to maintain or grow plant cells under sterile conditions in an artificial medium.

Topical: A cannabis infused product manufactured to apply to the skin. Often produced with permeation enhancers to increase effects.

Trichome: A cannabis sativa plant structure responsible for manufacturing cannabinoids and terpenoids in the plant.

general cannabis glossary

Vacuum Oven: A device used in the post-extraction process which is commonly used to remove residual solvents through evaporation.

Vape Pen: A compact medical delivery device, typically with a heating element, than upon achieving high temperatures can volatilize cannabinoids for ingestion.

Vaporizer: A medical delivery device, typically with a heating element, than upon achieving high temperatures can volatilize cannabinoids for ingestion.

Vegetative Stage: Refers to the growth stage of a cannabis plant prior to the flowering stage.

Wax: Also known as “Ear Wax”, this term refers to cannabis concentrate produced from cannabis flowers typically using hydrocarbons. Waxes are softer in than shatters.

industrial hemp – the world’s most useful plant

stalk

construction materials (from pulp)

- Hempcrete
- Panels
- Insulation
- Fiberglass substitute
- Caulking & mortar

paper (from pulp)

- Newsprint
- Cardboard
- Packaging
- Fine paper

industrial textiles (from fibers/pulp)

- Rope and cordage
- Carpets
- Tarpaulins
- Sails
- Netting

textiles (from fibers)

- Fabrics
- Clothing
- Bedsheets
- Diapers
- Upholstery

petroleum substitutes (from fibers)

- Biomass fuels (ethanol, biodiesel, heavy oils, gas & solid fuels)
- Chemical feedstocks
- Plastics
- Paints

Hemp is the strongest natural fiber in the world, and has thousands of different uses

leaves

- Mulch and compost
- Excellent for livestock bedding, as they are highly absorbent, deodorizing and pest-repelling
- Cover and weed suppression when planted amongst other crops

flowers

- CBD oil
- CBD oil lotions & balms
- CBD oil capsules, tinctures & sprays
- Essential oil

seeds

foods

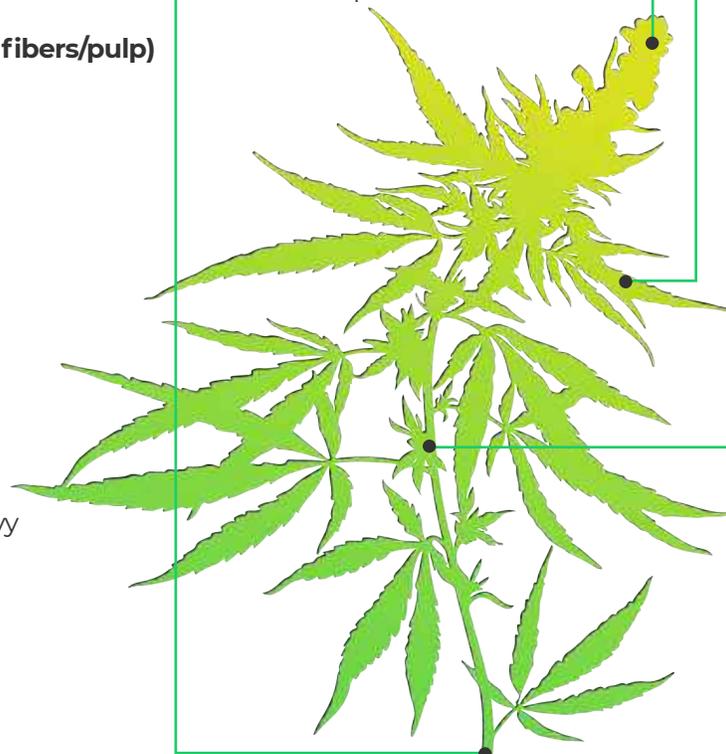
- Hemp seed oil
- Hemp milk
- Hemp seed hearts
- Protein powder
- Essential fatty acid oil supplements
- Animal feed

industrial products

- Oil paint
- Varnish
- Printing ink
- Various biofuels
- Solvents
- Coatings

personal care

- Soap
- Shampoo
- Lotions, creams & balms
- Cosmetics



benefits of growing industrial hemp:

Hemp grows fast, uses little water, needs no pesticides and yields more per acre than any other crop. It can also prepare the soil for other crops by drawing out toxins and adding back nitrates.

roots

- Traditionally used to treat joint pain, broken bones, inflammation, burns, infections and parasites.
- Rehabilitate the soil by drawing toxins from it, which prepares it for other crops.
- Facilitate soil aeration and drainage, and help prevent land erosion.

industry glossary

52 Week High - A stock's high point over the last 52-week period.

52 Week Low - A stock's low point over the last 52-week period.

Alpha - The expected return from an investment from its inherent value.

Annual report - The yearly audited record of a corporation or a mutual fund's performance that is distributed to shareholders.

Annualized rate of return - The average annual return over a period of years, taking into account the effect of compounding. Also known as compound growth rate.

Appreciation - The increase in value of a financial asset.

Bear market - A bear market is a prolonged period of falling stock prices. The opposite of a bull market.

Beta - A measurement of volatility where 1 is neutral; above 1 is more volatile; and less than 1 is less volatile.

Bull market - Any market in which prices are advancing in an upward trend. The opposite of a bear market.

Capital loss - The amount by which the proceeds of a sale of a stock are less than its purchase price.

Capitalization - The market value of a company, calculated by multiplying the number of outstanding shares by the price.

Dividend - A dividend is an optional portion of a company's profit paid to shareholders.

Dow Jones Industrial Average (DOW) - The most commonly used indicator of stock market performance, based on prices of 30 actively traded blue chip stocks, primarily major industrial companies.

Equity fund - A mutual fund or collective fund in which the money is invested primarily in common and/or preferred stock. Stock funds may vary, depending on the fund's investment objective.

Federal Reserve Board (The Fed) - The governing board of the Federal Reserve System, they regulate the nation's money supply by setting the discount rate, tightening or easing the availability of credit in the economy.

Index - An investment index tracks the performance of many investments as a way of measuring the overall performance of a particular investment category. The S&P 500, for example, is a benchmark for large-stock investors. It tracks the performance of 500 large U.S. company stocks.

industry glossary

Inflation - A rise in the prices of goods and services.

Large-cap - The market capitalization of companies with market values greater than \$10 billion.

Market price - The current price of an stock.

Market risk - A certain possibility that an investment will not achieve its target price.

Mid-cap - The market capitalization of companies with market values between \$3 to \$10 billion.

NASDAQ - National Association of Securities Dealers Automated Quotations system, which is owned and operated by the National Association of Securities Dealers. NASDAQ is a computerized system that provides brokers and dealers with price quotations for securities traded over-the-counter as well as for many New York Stock Exchange listed securities.

Portfolio - A collection of investments managed as a collective whole with specific investment goals in mind.

Price-to-earnings (P/E) Ratio - A stock's price divided by its earnings per share, which indicates how much investors are paying for a company's earning power.

Recession - A downturn in economic activity, defined by many economists as at least two consecutive quarters of decline in a country's gross domestic product.

Risk tolerance - The degree to which one can tolerate volatility in their investments.

Securities - Another name for investments such as stocks or bonds.

Securities and Exchange Commission (SEC) - The federal agency created by the Securities and Exchange Act of 1934 that administers the laws governing the securities industry, including the registration and distribution of mutual fund shares.

Share - A unit of ownership in an investment, such as a share of a stock or a mutual fund.

Standard & Poor's Index - Broad-based measurement of changes in stock market conditions based on the average performance of 500 widely held common stocks commonly known as the Standard & Poor's 500 or S&P 500.

Valuation - An estimate of the value or worth of a company or the price investors assign to an individual stock.

Volatility - The amount and frequency with which a stock can fluctuate in value.

the cannin report