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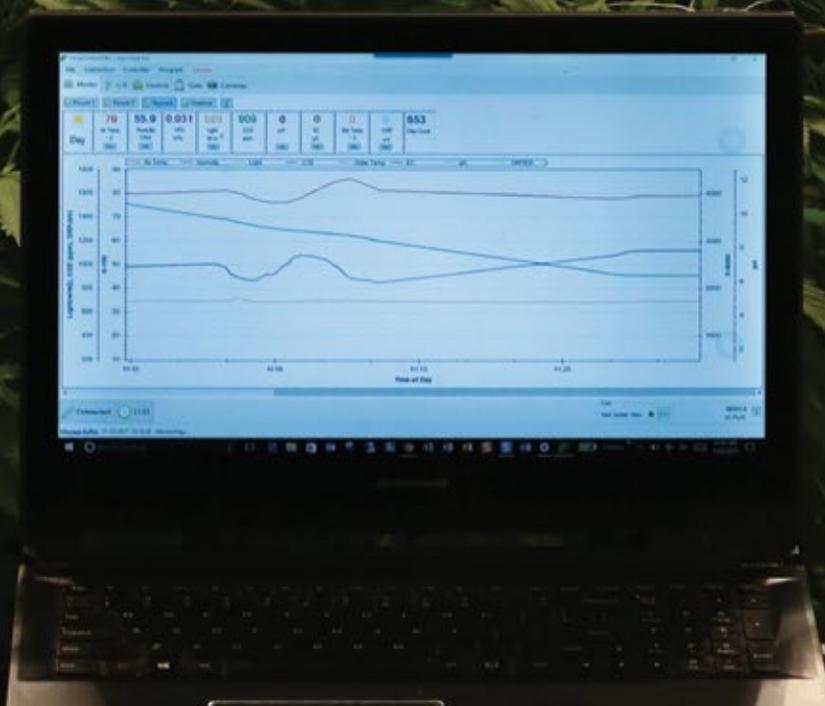
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Founded in early 2011, *Marijuana Business Daily™* focuses solely on cannabis businesses and the investors who back them.

If you are leading or financing a cannabis-related company, we help you prosper via trusted information services and exceptional events.

Our publications have the highest business readership in the industry. Our events are sellouts, year after year after year. And, we've been cited everywhere from *Harvard Business Review* and the *Wall Street Journal* to *Forbes*, *Fortune* and *Fast Company*.

Do you need practical information, real-life data or industry connections to help your business grow? You'll find what you need in one of our publications or at our national events.

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In This Issue

FEATURES



26 The Great Glut

Growers and retailers can take steps to protect their businesses when too much cannabis hits the market and prices sink.

32 Extracting the Most From Your Plants

Cultivators targeting the concentrates market should consider everything from strain type and chemistry to extraction methods and terpenes.

40 Not So Fast

The medical and adult-use markets are two different beasts, so dispensary owners taking the leap into rec must plan carefully.

50 Cultivation 2.0

Cannabis growers are plowing money into automation technology to remain competitive and boost efficiency – but pitfalls abound.

60 All Systems Down

Marijuana business owners need to craft a backup plan in the event vital technology suffers a meltdown.

66 Capitalizing on Downtime

Entrepreneurs can take advantage of delays in the rollout of new marijuana markets.



COVER PHOTO: Steve Dykes

REGISTRATION NOW OPEN

DEPARTMENTS

10 Investing and Funding Corner: 2016 Stock Performance

Shares of publicly traded U.S. cannabis companies posted strong gains last year, fueled by election-related hype in the fourth quarter.

20 Infused Business Strategies: Sourcing Ingredients

With infused products, find good suppliers and be sure your ingredients are readily available for the day you ramp up production.

82 5 Questions With Privateer Holdings CEO Brendan Kennedy

Brendan Kennedy shares insights about institutional investors and cannabis, investment opportunities in Canada and around the globe, and how he thinks the MJ industry will fare under President Trump.

88 In Focus: Banking-Related Services

A look at the subsector of companies that focus on connecting marijuana-related businesses with bank accounts and related services.

From the Publisher.....	8
Cannabusiness By The Numbers.....	9
Ancillary Business Strategies.....	14
Company News.....	72
Movers & Shakers.....	76
Industry Developments.....	94
State at a Glance: Maine.....	105
Advertiser Index.....	106
Insightful Industry Observations.....	108

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Quality vs. Quantity

I was recently told by a prominent Colorado cannabis retailer that there has been a noticeable decline in the quality of marijuana in the market over the past year. And as MJBizDaily charted in January, Colorado wholesale prices declined significantly in 2016.

While both of these trends seem alarming, they are logical, expected ... and a positive sign for the industry overall.

Colorado is arguably the most mature and open cannabis market in the country. The state's industry has experienced a slow stream of consolidation, while demand has continued to grow. The result: Fewer cultivators are producing more marijuana. And automation is playing a big part in these economies of scale.

A universal truth in manufacturing is that there's an inverse correlation between quality and quantity. The more you ramp up production, the harder it becomes to maintain quality. That's exactly what we're seeing in the cannabis industry.

So why do I hold that this is a positive development?

Because improved manufacturing operations increase consistency, leading to higher customer confidence and brand loyalty. Improved efficiency results in reduced cost of goods sold that will drive down consumer pricing. Ultimately, this all creates a segmented market with some cultivators focusing on high-volume, low-cost product that is consistent and reliable, and other growers concentrating on small-batch cultivation with superior quality and premium-priced products.

Take the beer market as an example. According to the Brewers Association, craft beer accounted for 12% of the overall volume share for beer in the United States in 2015 and 21% of overall dollar sales. Craft brewing is a \$22.3 billion market segment that did not exist 30 years ago.

This same market bifurcation can be evidenced in the rise of specialty coffee, specialty tea and nearly every other consumer products market. Consumers will have more choices on quality and price, which will in turn increase engagement, consumption and sales.



So as we see larger commercial production practices, handcrafted premium cannabis will continue to carve out market share. This issue's cover story touches on this by looking at the increased deployment of automation in the manufacturing process, which is helping growers realize economies of scale.

My advice is always to play to your strengths.

Onward and upward!

A handwritten signature in blue ink, appearing to read "G. Jage".

George Jage
President & Publisher
Georgej@MJBizDaily.com

Debating the Issues

When it comes to some of the more contentious issues facing marijuana industry professionals today, it appears that many are willing to reconsider their positions. At the fall 2016 Marijuana Business Conference & Expo in Las Vegas, industry executives squared off against each other on a variety of hot-button topics in the industry. Attendees weighed in by texting their answers to each question both before and after each debate, and results were displayed so the crowd could see reactions in real time.

Here's a sampling of how their opinions changed:

Which cultivation method is best: greenhouse or indoor?



Should marijuana retailers stay small and focus on one location or attempt to go big and open multiple locations?



Should medical marijuana dispensaries cater to recreational cannabis users or focus solely on patients using cannabis strictly for medical purposes?



Is it time to rename strains?



Marijuana Stock Gains in 2016

Stocks of U.S. publicly traded cannabis companies – a notoriously volatile and risky segment of the equity markets – posted strong gains in 2016. To be fair, there really wasn't anywhere to go but up, given that marijuana stocks tanked in 2015.

Shares of 12 marijuana companies, picked to ensure broad representation across all sectors of the industry, spiked 50% in over-the-counter trading during the first week of January 2016. They continued to rise and fall above that mark throughout the first half of the year.

Prices then climbed dramatically in the weeks and months leading up to the Nov. 8 presidential election. Judging by their precipitous decline the day after the election, the market was anticipating a Hillary Clinton presidency. Prices never returned to their pre-election highs. Still, despite some characteristic dips and spikes, cannabis stocks ended the year up more than 400%.

Performance of 12 Marijuana Stocks in 2016



Note: MJ stocks are AMMJ, AXIM, CANN, CBDS, CNAB, CVSI, KSHB, MSRT, SRNA, TRTC, VAPE, XXII
 Source: Yahoo! Finance
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“

The sessions were excellent, they provided a wealth of knowledge. The presenters had absolute mastery of the subjects and interacted in an exceptional way with the public.

Zory M., Puerto Rico

”



A worker in the Gavita facility in the Netherlands.
Photo courtesy of Gavita

Going Global

Gavita International shares tips on how to expand an ancillary company's footprint abroad

by Joseph Peña

With medical and even recreational markets cropping up across the world, an increasing number of ancillary cannabis businesses - from consulting firms to software providers and greenhouse companies - are looking to become global players.

Gavita International, a Dutch pioneer in horticultural lighting, is at the forefront of this trend.

The company has distributors and resellers for its lighting fixtures in more than 30 countries, giving it deep insight into the opportunities and challenges of international expansion. Last year, it merged international operations under Dutch management and sold a major stake of its business to a large gardening company based out of New York.

Entering international markets can be much more difficult than expanding in the United States, as the regulatory framework, attitudes toward marijuana and business customs are often completely different abroad.

Ancillary companies keen to expand internationally therefore must do their homework, especially in these politically tumultuous times that have ushered in the surprise election of Donald Trump and Britain's Brexit vote, said Theo Tekstra, marketing manager for Gavita International.

"There is a risk in new markets, and political changes can cause risks," Tekstra said. "You have to look very closely at the economic and political developments in new markets. They could have implications on your business and you must do a risk assessment."



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The Colorado-based Rare Dankness facility uses Gavita lighting.
Photo courtesy of Rare Dankness

Below are some other tips for expanding abroad, based on Gavita's experience.

Consider Selling Shares in Your Company

When planning an international expansion, look at where you are in the life cycle of your company. For a small ancillary startup, for example, evaluate the benefit of asking a big player to take a minority share. Find a committed party vested in the industry and your success. This can help you grow more quickly.

"A committed shareholder will take your business on board and run with it, expanding your capabilities greatly," Tekstra said.

Contacts are everything if you're entering a new international market, Tekstra added. A committed shareholder with established contacts could prove to be priceless.

"In many cases the financial benefit can speed up your marketing efforts and penetration of a market," Tekstra said.

If you run a growing company, your money is probably locked in purchasing raw materials, development efforts and production expansion. You therefore need additional funds to invest in overseas markets.

Gavita International went this route, selling a 75% share of the company to Hawthorne Gardening Co., a subsidiary of Scotts Miracle-Gro, for \$136 million last year.

"Sometimes being successful depends on who you do business with," Tekstra said.

"If you're a larger company that experienced extremely strong growth like we did, it can cause problems. Organic growth is nice. But growth for a development and production company requires a lot of financing."

Tekstra noted that you can borrow money or accept venture capital from investors. Both have downsides, however.

"They are not interested in your business or segment. They are just in it for the money," Tekstra said.

He added: "As a growing company you need legal, financial and management resources to help you reach the next level. If you want your company to maintain a market-leading position, you need to do what is best for the company."

SPEND MARKETING DOLLARS WISELY

When setting a marketing strategy as part of an international expansion, you want to avoid throwing money at the effort in the hope some things will stick.

"Be economical with your marketing investments," said Theo Tekstra, marketing manager for Gavita International.

Trade shows are a good option. The number of international trade shows has swelled, but it's expensive to travel and haul your materials and equipment overseas. Visit a show as an attendee before you invest in the vendor space, which will give you a better understanding of the show's value.

Trade shows also are a good place to connect with distributors, resellers and colleagues – and to discuss newly emerging markets and distribution strategies.

Video production is another wise investment. A YouTube channel or Facebook Live feed can have a wider marketing reach than the trade show circuit.

To film content, invest in a good camera and sound equipment plus a branded studio or set.

"Something worth doing is worth doing well," Tekstra said.

It's also crucial to publish marketing material – and often your product's packaging and instructions – in the local language. In many regions, it is a legal requirement to have your product documentation available in the local language. Check the translation for accuracy. Ask a native speaker and your local distributor to proofread it.

Finally, find innovative ways to invest marketing money to reach your audience.

"We've invested in interactive store displays with televisions that we update remotely with videos that reach our end users directly," Tekstra said.



Theo Tekstra, Gavita International's marketing manager

– Joseph Peña



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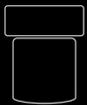
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Sometimes that means partnering with someone who can provide those resources.”

Vet Target Markets

It's important to consider the legal implications of entering a new international market and fully understand the cannabis climate, Tekstra said. What is normal in one country might be risky business in another. And figuring out the structure of a marijuana program in another country can be difficult, especially if the primary spoken language is not English.

If, for example, your ancillary business promotes its products specifically for use in the cannabis industry, you might not be allowed to distribute in some countries. You can consult with an international attorney to determine whether you can enter a market, Tekstra said.

If you can't afford to retain reliable legal counsel, seek out colleagues and reputable local sources who know the market, he said. Ask other business owners what they know about the market, why they're investing there and how they're performing. Ask about their experiences with local distributors, too.

Simultaneously, ask, “Is my product right for the country?”

In a poor or emerging country, the market for a product with a high price point might be limited. But there might be a new product you can develop that is suitable for that market, specifically something with a similar function at a lower price.

Another factor to consider: Is the new target market large enough for you to have an impact? Australia is a large country but has a smaller population – does it make sense for you to do business there?

Next, evaluate your distribution strategy, Tekstra said. Do you want as many distributors as possible? Or do you want to limit the number you work with?

Partnering with exclusive distributors – even for a limited period of time – can help you create volume and loyalty as well as prevent price erosion. However, not every retailer may be willing to do business with one local distributor.

That's why it's critical to understand the local culture and local politics: You may need multiple distributors to serve a single market.

It's important to get to know the players in the market as well. Learn who has the largest sales and connects to most retail points. Every market is different, and some don't have a number of large distributors.

Ask what distributors in the market are willing to do for you. Not many take your product and run with it – they keep it in stock while you create the demand. You are responsible for promoting your product.

Collect good information from local parties, including businesses with operations there, distributors, resellers, lobbyists and lawmakers.

“The best information you get comes from the local people,” Tekstra said. “They are involved in the industry in the country and they know what the political movements are.”

Leverage Your Expertise

Provide training resources that appeal to distributors and retailers in new markets.

This year, Gavita is launching an e-learning site to certify resellers. It will include live webinars and an exam. Each year certified resellers will need to complete refresher courses.

“We see the challenge in retail as ‘added value,’” Tekstra said. “Consumers can buy just about anything online – on Amazon or on Wal-Mart – but to survive in the market as a retailer, you have to provide added value.”

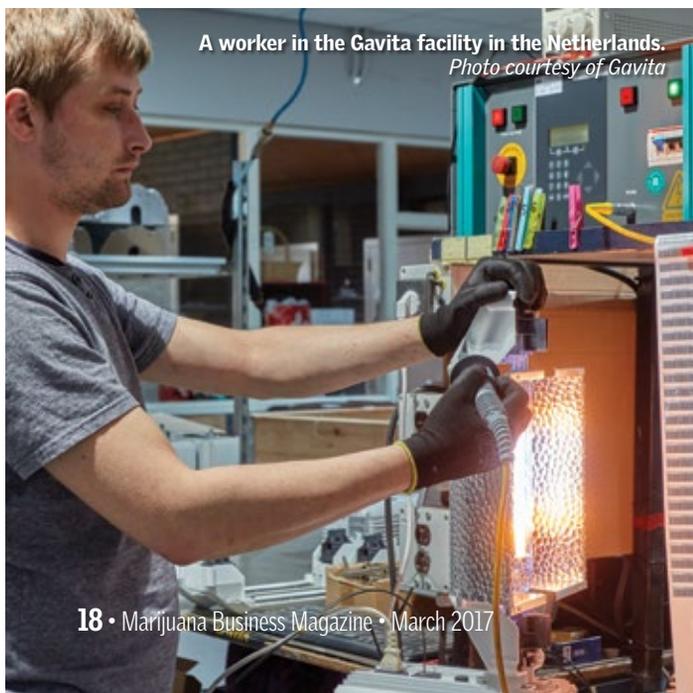
You can use e-learning, online training guides, videos and webinars to educate your distributors so they can share information with retailers.

Also, invite distributors to your manufacturing facility to learn more about your product, its application and the production of it. You'll equip them with new knowledge about your product and they'll be better equipped to rep your brand.

Your local distributor must also be able to support customers in their native language. They are your first line of support, Tekstra said. Language barriers and time zones can prevent you from directly offering this support.

Train your distributors well. They represent your company and product, and they must be able to ensure your product is used correctly for optimal results. Distributors will also need to train resellers, so provide them with the proper training materials.

In short: Research, plan and execute when taking the international plunge. ◆



A worker in the Gavita facility in the Netherlands.
Photo courtesy of Gavita



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Sourcing Ingredients

Start with good suppliers and be sure your ingredients are readily available for the day you ramp up production

by Bart Schaneman

Finding high-quality, reliable suppliers is crucial when it comes to sourcing ingredients for marijuana-infused edibles, drinks and other products.

So says Andy Brassington, CFO of Seattle-based Evergreen Herbal. He should know: Evergreen Herbal produces more than 50,000 units per month of cannabis-infused beverages, chocolates, teas, hard candies and pre-rolls – among other products.

While sugar, chocolate and teas are easy to buy in bulk, Brassington noted, Evergreen Herbal scours the globe to find the right suppliers for distinct flavors.

“We find the best vendors and suppliers that match what we’re looking for,” he said.

High-quality suppliers aren’t the only factor fueling the success of Evergreen Herbal, which began in 2013 under Washington’s medical marijuana program and later transitioned into the recreational market after the legalization of adult-use cannabis.

The company strives to maintain good business relationships with its suppliers by paying them on time and sharing market information. Evergreen Herbal, which employs more than 35 full-time workers, also plans ahead to ensure ingredients for new recipes are easily sourced on the assumption that production eventually will be ramped up.



Evergreen Herbal, in partnership with Lucid Oils, produces fractionally distilled oil for use across all product lines. Photo courtesy of Lindsey Ganahl

And Brassington offered one other piece of advice: It’s crucial not to take the wrong approach and focus too much on the marijuana side of things when it comes to infused products.

“We’re really in the food and beverage manufacturing industry,” he said of Evergreen Herbal, which has more than 200 customers in Washington. “We just happen to have this ingredient called cannabis.”

Choose Suppliers Wisely

Brassington has three tips for finding the right supplier:

- Seek out the leaders in a particular food category. Evergreen Herbal’s team has traveled extensively to



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Europe, Asia and across North America to find product manufacturers from across the food and beverage industry as well as ingredients, equipment and packaging suppliers.

- Do your homework and get on the phone. “Finding the ideal flavor house takes time and that’s a very important part of the ingredient supply chain when you’re manufacturing a food or beverage product,” Brassington said. Evergreen Herbal talks with a potential supplier’s product development, manufacturing and quality assurance teams. It also follows up with references and tries to understand a supplier’s strengths before cementing a contract.
- Trade shows are good for someone starting up a business or product line or just getting familiar with the industry. “Trade shows are a great resource for business owners to learn from the leaders in the industry,” he said. “In one venue you can meet a handful of ingredient manufacturers or ingredient suppliers.” Brassington recommends attending the shows that attract the leading suppliers in your desired category. Do online research well in advance to find the appropriate event, and use the show as a learning experience. Another way to find a good show is to ask your current suppliers which ones they attend.

“We’re not buying from middlemen and third parties and brokers. We’re buying from food-ingredient specialists.”

Evergreen also has third-party labs test all of the raw products it purchases, which range from chocolate to mango puree. Those ingredients must pass an internal product-quality program as well.

Brassington said it isn’t that difficult to strike a balance between high quality and large quantities.

“We’re not buying from middlemen and third parties and brokers,” he said. “We’re buying from food-ingredient specialists.” Evergreen Herbal buys sugar directly from a sugar manufacturer, for example.

A visitor to the Evergreen Herbal facility takes in an expanse of colorful, fruity sodas in the bottling room.
Photo courtesy of Lindsey Ganahl



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Lab technicians at work preparing oil, wax and shatter for Evergreen Herbal's Loudvape product line.
Photo courtesy of Lindsey Ganahl

In addition, Evergreen Herbal buys its chocolate ingredients from a fifth-generation, family owned chocolate manufacturing company in the United States.

"They didn't find us," Brassington said. "We found them."

Sourcing Cannabis

Evergreen Herbal can't source every ingredient from outside its home state, however. All of its cannabis is grown in Washington. Federal law doesn't allow cannabis to be shipped across state lines.

The company chooses its growers carefully from the state's hundreds of licensed cultivators. Its employees called around, fanned out across the state and found growers. A few even approached Evergreen Herbal.

Brassington said when the company wants to create low-odor, flavorless distillate it seeks out raw marijuana with easily removable terpenes. For wax and shatter products, it seeks high-terpene strains and selects marijuana based on freshness and harvest dates.

In general, he and his team work with growers who have good agricultural practices and are stewards of the land. In short: They want farmers who take farming seriously.

"We're very selective of who we work with," Brassington said. "We want people who are committed, that have a good business plan, who don't take shortcuts and produce high-quality, consistent product. We work with people who have been committed, professional growers."

Consistency Wins Out

When it comes to suppliers, becoming a desirable customer isn't that complicated.

"We pay our bills on time," he said. "We're consistent buyers. We provide [market] forecasts. We become a good customer to these people, and they become good suppliers to us."

Consistency in food and beverage manufacturing is very important, Brassington added.

"Once consumers like a product, they want it to be the

same tomorrow, next week, six months from now," he said. "Once we have good suppliers, we're pretty loyal."

When approaching potential mainstream business partners in the food and beverage industry such as fruit juice manufacturers and sugar companies, overcoming the stigma associated with marijuana can be a challenge. To get past that, Brassington points to the number of states that have some form of legalization.

"I say that we are fully licensed and credentialed by every governing authority in the state of Washington," he said. "And that we've been in business for more than four years. And the state of Washington has the most transparent regulatory framework in the U.S. We're very happy to be doing business in the state of Washington."

Plan Ahead

For infused businesses developing a new product, it's important to create recipes with easily sourced ingredients. The ingredients should be available in bulk, even for a small-batch recipe. Ideally, the day will come when production of that small-batch recipe must be boosted to meet consumer demand.

"We would not put ourselves in a position to be hamstrung by not being able to get the necessary ingredient," Brassington said. "It is the challenge of any food or beverage company, whether you're Nestle or General Mills or us. Lab testing of new products and formulas is where it starts, of course, but you always have to plan ahead. If you can't replicate it in a production environment, then you probably shouldn't be doing it."

He also emphasized that sourcing ingredients isn't a static process.

"The proper blending of ingredients, batch after batch, time after time, is an opportunity for continuous improvement in product quality," Brassington said. "We want our consumers to enjoy the best flavors and experience possible. It starts with ingredients, but at the end of the day you want the customer to be pulling your product off the shelf and being happy that they did." ◆

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A photograph of a large indoor cannabis grow room. The room is filled with rows of cannabis plants in various stages of growth. The ceiling is equipped with numerous bright, rectangular grow lights and several white fans. The walls are white, and the overall atmosphere is industrial and controlled. The text 'The GREAT GLUT' is overlaid on the image in a large, bold, white font.

The GREAT GLUT



Bins of Buds: One Colorado grower's crop, ready to send to market.
Photo courtesy of Jay Czarkowski

THE LAWS OF supply and demand are a cornerstone of economics.

When supply exceeds demand for a product – be it tulip bulbs or crude oil – the price for that product falls. As in any other industry, marijuana growers and retailers should take precautions against a supply glut.

by John Schroyer

How growers, retailers can adapt when too much cannabis hits the market



A Colorado cannabis grower monitors a decent-sized batch of marijuana plants as they vegetate.
Photo courtesy of Jay Czarkowski

Consider Colorado. Growers there have been squeezed after watching wholesale prices tumble more than 30% last year. The average wholesale asking price per pound of recreational flower plunged 38%, from \$2,106 in January 2016 to \$1,306 by the end of the year. The price for medical flower slid 31%, according to the online MJ marketplace CannaBase.

Growers in California, Oregon and Washington state also have been hit with surplus supplies and falling prices. And more markets are likely to be zapped in the future, especially if cannabis is legalized at the federal level and companies are allowed to ship product from coast to coast.

“Eventually, you have to believe that you’ll be able to cross state lines (with MJ products). Why wouldn’t we? That’s going to happen one day,” said Jay Czarkowski, a principal at Colorado-based Canna Advisors.

Marijuana Business Magazine spoke

with several experienced industry insiders to get suggestions for how growers and retailers can cope with a market glut. Their suggestions ranged from bolstering a company’s brand to focusing on customer service and waiting out price fluctuations.

Build Your Brand

For starters, don’t wait until an oversupply crisis hits. Try to anticipate that it’s coming and plan accordingly.

This means developing a full company brand – including a wide range of products – instead of simply growing as much cannabis as possible and relying on market demand.

“If you have a product that stands out, either because you have good brand awareness or if you have a really unique strain ... your demand will not go down,” said Cody Stross, the CEO of Northern Emeralds, a grow operation in Humboldt County, California. “We’re all creatures of habit ... and once (customers) identify

with your product, they want it, whether or not your product is the best on the shelf or not. That’s probably the easiest thing for people to do. The other would just be to have the best product.”

To develop a solid brand, incorporate everything from unique strain names to easily identifiable packaging to branching out to different products instead of just classic flower. For example, growers could begin getting into vape pen cartridges and using some of their flower to produce branded vape oil. That could help a company backfill some lost profits until the flower market stabilizes.

“The name you develop is much more valuable than the name you don’t develop. We’re seeing that clear as day,” Stross said.

Nail Customer Service

Customer service is perhaps the most important strategy for retailers and other types of businesses vulnerable to oversupply. Focusing on this area of your



One way to combat oversupply issues is simply to make sure your product stands out among the competition, says Cody Stross, CEO of Northern Emeralds in California. Photo courtesy of Northern Emeralds



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business will create loyalty more quickly than just about anything.

“The best thing they could do is just like any other industry: superior product at a good price with top-notch customer service,” Czarkowski said. “Those basic tenets of business still seem to elude so many people in this industry.”

This doesn't apply only to retailers. It works for growers, too. Growers need to take into account that they can – and arguably should – be working hand-in-hand with retailers.

“Anyone that's going to market, or is currently in the market, they really need to be asking customers what they want,” said Sam Chapman, co-founder of Oregon-based New Economy Consulting. “It blows my mind how many retailers in general – and as a result, growers – are just selling things that have traditionally sold in other markets.”

Instead, he said, growers should communicate with retailers about what's most in demand and concentrate on delivering plants and strains that sell best for various products. That could range from particular flower strains and pre-rolled sativas or indicas to easily produced edibles and vape pen cartridges.

Line Up Buyers Months in Advance

Another way for growers to avoid falling victim to the laws of supply and demand is to set up buyers well before an actual harvest takes place.

“One of the smartest ideas is to line everything up, and have some samples that are lab tested,” said Zeta Ceti, owner of Green Rush Consulting in California. “Even if you just start vending other peoples' product ... that's just a critical juncture.”

This is a standard practice among growers operating in California's volatile medical cannabis market. In the northern Emerald Triangle region, the outdoor October/November harvest triggers an annual price drop in wholesale cannabis prices.

“In the last few years, (prices) would

“One of the smartest ideas is to line everything up, and have some samples that are lab tested.”

bounce back really significantly. Like, (wholesale) prices would drop \$500, and they'd bounce back. But now, prices are dropping \$700 or \$800, and they're not bouncing all the way back,” said Stross of Northern Emeralds. “It's definitely an indication of a lot more cannabis being produced.”

Having a locked-in buyer at least guarantees some return on an investment, as opposed to not finding any buyers and watching a perfectly good crop go to waste.

Focus on Quality

Quality is another basic business tenet, but it's one that could mean life or death for plenty of cannabis growers. Quality products will always rise to the top of the free market.

“You have hundreds and hundreds of people who say they're 'breeding.' All they're doing is crossing a couple of strains, and they see what happens. Most of these people have zero plant experience and have no idea what they're doing,” Czarkowski said.

Instead, he pointed to a Colorado company named New West Genetics (Czarkowski is on the company's board) that's using science to create superior cannabis plants.

“For three or four years running now, they've been doing real genetic development. Not just developing genetics for THC content or for a pretty purple flower, but for a stable crop, crops that are resistant to powdery mildew, resistant to bugs, that kind of thing,”

Czarkowski said. “That'd be one step toward a quality product.”

Play the Waiting Game

Another option that many growers in California take advantage of is to carefully store product and simply wait until wholesale prices return to normal. Then sell.

“Smart farmers will store their product properly – which not everybody knows how to do – and they'll hold it and sell it between February and October, when the markets are a little better,” Stross said. “The bottom line is strategy. If you can save enough to not be dependent on these few months to make sales, that would be best.”

One of the easiest ways to store product, Ceti said, is to vacuum seal cannabis flower.

“They'll take some of their product, allocate a certain amount and vacuum seal it and store it – and wait until the beginning of (May) and break it out and sell it then,” Ceti said, referring to a number of strategic marijuana farmers who plan each year for the price drop after the fall harvest.

And while growers are waiting for those prices to stabilize, they can explore even more business options, Stross said.

“If you're not making sales, and you still want to work, what else can you do to build your company during this time when it's a little slower?” Stross said. “Maybe this is where you go strain-hunting for next year.” ♦



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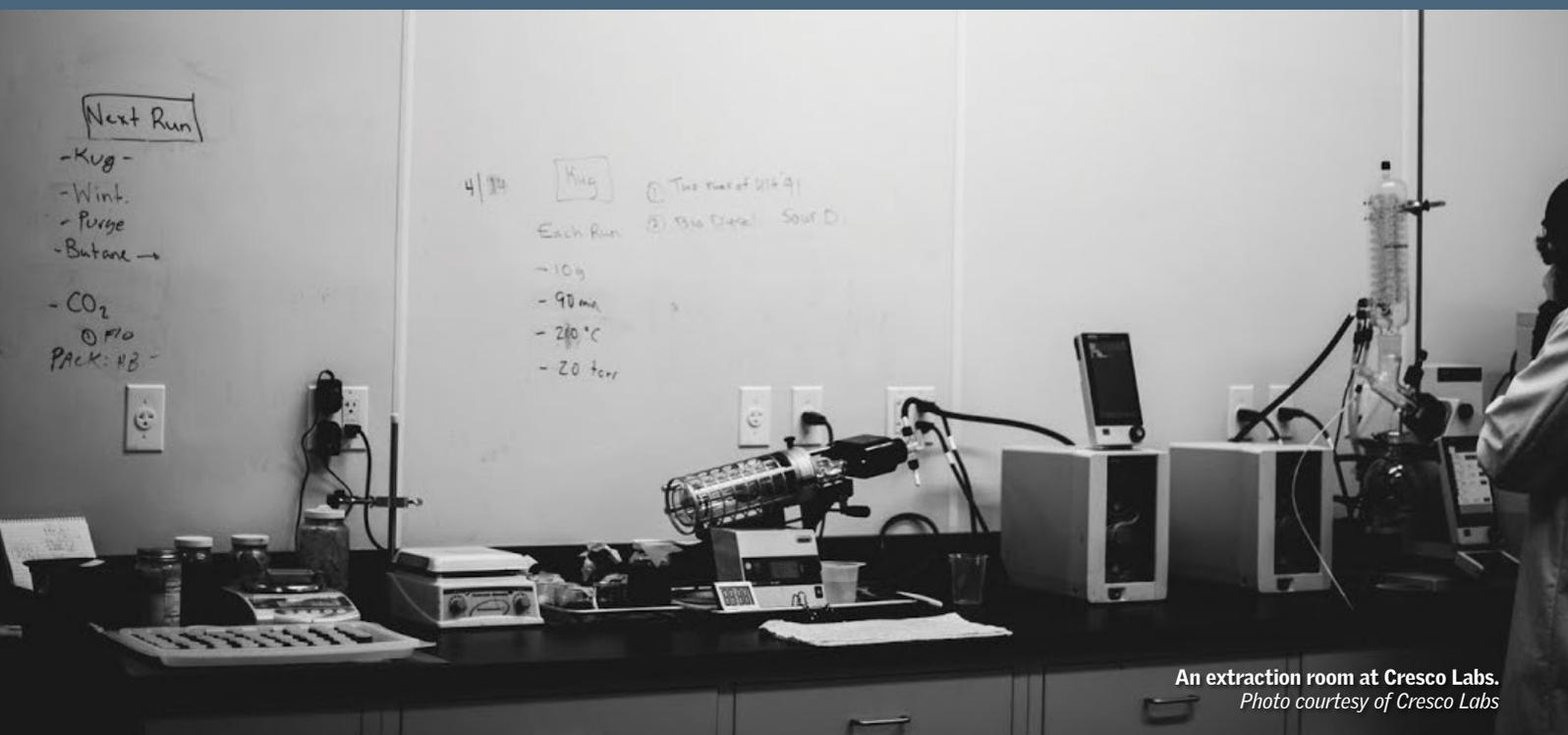
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EXTRACTING the Most

Growers targeting the concentrates market should consider everything from strain type and chemistry to extraction methods and terpenes



An extraction room at Cresco Labs.
Photo courtesy of Cresco Labs

From Your PLANTS

by Omar Sacirbey

RECREATIONAL AND MEDICAL cannabis consumers increasingly are turning to concentrates such as waxes, budders and oils, introducing new considerations for cultivators and processors who want to tap into this burgeoning area of the marijuana industry.

Growing specifically for concentrates is a bit of a different beast than focusing on the flower. Each concentrate can have different potency levels, consistencies and tastes, so the strain used and its chemical makeup can have a significant impact on the final product.

A sampling of shatter produced at Cresco Labs.
Photo courtesy of Cresco Labs





Jason Nelson, cultivation manager
for Cresco Labs.
Photo courtesy of Cresco Labs

Strain selection therefore is vitally important, as are terpenes and the extraction method used – be it mechanical or solvent-based.

Two basic extraction methods are prevalent in the industry today: The mechanical approach uses dry sifting and heat pressing, while the solvent method relies on substances like butane, CO₂ and ethanol.

“What kind of strain you want to choose will depend on what kind of end product you want and what kind of extraction process you want to use,” said Samuel Edwards, founder of Sonoma Cannabis Company in Santa Rosa, California, which makes concentrates and recently took third place in the 2016 Emerald Cup CO₂ oil category.

Resin Indicates Yield

High yield – or the amount of concentrate that can be derived from cannabis – is one of the sought-after traits in strains grown for extraction purposes. Typically, it takes at least a quarter of an ounce of flower, or about 7 grams, to yield 1 gram of wax or shatter.

So it makes sense to use strains with high amounts of THC, given that it will take less plant material to yield a gram of concentrate than it will with lower THC levels.

For concentrates, moreover, you want high-THC strains with lots of resins because they will produce a better yield.

“You really are primarily focused on the resin glands, the trichome heads, especially for a wax (or a) shatter,” Edwards said.

High-yielding strains that Edwards likes include Sour Tangie and

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Lemon Jah Goo, which he converts into rosin using heat-press extraction.

While some strains have higher THC levels than others, there are ways to “visually assess” which ones would make good concentrates material.

“As far as physical characteristics that you can look for, you can pretty easily assess resin density on a strain,” said Jason Nelson, cultivation manager at Cresco Labs, a medical marijuana grower and processor headquartered in Illinois.

He advises using “something like an indica that’s really dense and frosty compared to a sativa that can sometimes be more stretchy.”

“It has resin glands associated with it, but it’s not that truly, really frosty dense look,” he added.

The trichomes also can signal the best extraction process for a particular strain. After six or seven weeks into the flowering phase, Edwards will touch

“What kind of strain you want to choose will depend on what kind of end product you want and what kind of extraction process you want to use.”

the trichomes. If they feel brittle, they are better for mechanical extraction; if they are a bit oily, they are better for solvent extraction.

That’s why the final product you want to make can be an important factor when deciding which strains you want to grow for extraction. For

example, if your final product is a rosin, which is produced through mechanical extraction, you’ll want strains with those brittle trichomes Edwards described. If your final product is butane hash oil, which is manufactured using the solvent extraction method, you want strains that are oily.

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“The ultimate bellwether is when you do the actual extraction and see how much extract a certain amount of flower yields,” Edwards said.

Terpene Flavors Sell

Another important factor cultivators should consider when thinking about strains for extracts are terpenes, the organic compounds that give cannabis and other plants and fruits their aromas and tastes. Wax and shatter consumers are particularly keen on terpenes, as are users who vape.

“Most people consuming wax and shatter do look for a nice flavor profile, knowing that they’re going to get a pretty potent experience regardless if it’s a 60% wax or an 80% wax,” Nelson said. “So we do strain specific waxes and shatters – strains that are very flavorful.”

As examples, he singled out Durban Poison as having an excellent terpene profile, as well as a proprietary sativa strain called Sojy Haze.

“It’s just some of the best wax we’ve ever had because it has a very unique flavor profile – very strong, floral, very enjoyable to consume,” Nelson said.

While consumers have previously leaned toward so-called “fuel” strains like Sour Diesel and OGs, Edwards said consumers are now more interested in the citrus-flavored strains such as Sour Tangie, Lemon Jah Goo and Blood Orange Tangie.

“There’s this aspect of the citrus-sweet balance that seems to be really popular in the market right now,” Edwards said.

Entourage Effect

Terpenes enhance not only color and flavor, but they also improve the impact of cannabinoids on users, according to growers. For example, some terpenes, like beta-caryophyllene, unlock human endo-cannabinoid receptors and thus promote a faster uptake of THC and other cannabinoids.

“Strains like Headband have a strong onset because they have a lot of

beta-caryophyllene,” Edwards said.

When trichomes and terpenes work together, that’s what cultivators call the entourage effect.

Growers agree there is plenty of anecdotal evidence indicating that marijuana’s effect on consumers is better when terpenes are present in concentrates versus when they are left out.

“It looks like there’s an entourage effect with increased medicinal properties when you actually have terpenes, compared to not having them,” Nelson said.

Consider THC distillate, a wax or shatter that has had the terpenes removed through distillation. The distillation results in a THC purity of 90% or more. The final product is flavorless, which appeals to patients who want their chocolate or gummy to taste only like chocolate or gummy.

But many consumers say they want the terpenes in their final product, even in edibles, to achieve the entourage effect.

“In general, we find that our market is actually asking to have some of the terpenes remain in our edibles,” Nelson said.

“People say the experience is more powerful when they have those terpenes in there,” he added. “We find that people overlook that little bit of flavor alteration in preference to getting some terpenes and getting a more noticeable effect from that edible.”



Samuel Edwards, founder and CEO of Sonoma Cannabis Company.

Photo courtesy of Sonoma Cannabis Company

Referring to the entourage effect, Nelson said that having the terpenes in the product can deliver a stronger experience for consumers than cannabinoids can individually.

Terpenes Cultivation

While some strains have more terpenes than others, growers have methods at their disposal to increase the amount of these organic compounds in their plants.

Edwards suggests stressing the plants with limited water and no nutrients. “You stress them a lot, you don’t feed them, you get really high terpene and THC trichrome content. And that allows for better extraction,” Edwards said.

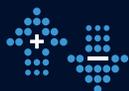
Edwards also likes to harvest his plants at dawn. That’s because plants produce terpenes at night, which then evaporate over the day. By harvesting at dawn, you have a better chance of capturing more terpenes in the flower. Edwards’ workers harvest at 5 a.m. and then either extract right away or put the product on dry ice for future extraction.

While growers like Edwards and Nelson are among those developing a keen sense of which strains work best for concentrates, both are quick to acknowledge they have just scratched the surface.

“We know maybe 5%-10% of what there is to know,” Edwards said. ♦



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Behind the scenes at Chalice Farms' extraction facility.
Photo courtesy of Chalice Farms

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L'Eagle Services has developed a niche in its market – a long curing process that amplifies the scent, flavor and potency of the flower.
Photo courtesy of L'Eagle Services

How to navigate the transition from medical to rec

by Joseph Peña

IF YOU OWN a medical cannabis dispensary and are hoping to enter an emerging recreational market, you might be tempted to make the shift as soon as possible.

But here's a word to the wise: Rein yourself in, because a hasty transition is a recipe for disaster.

“You don’t have to be first to market,” said Brian Caldwell, a rec industry veteran who is president of the cannabis consulting company Triple C Licensing in Washington state. “Don’t jump the gun. Watch and see what happens. Let the market settle and then make the best business decision.”

Industry veterans gave several tips for navigating your state’s new landscape. Among other things, study the relevant regulations at every level of government, reevaluate your business plan – maybe you want to establish a niche to distinguish yourself – and partner with reliable growers and other rec vendors. Also, don’t ignore your medical marijuana patients, and join a trade group to stay informed.

Know the Regs and the Locals

As with the medical market, your first step is to review state, county and city regulations for the various licenses each entity offers, said Mark Malone, a Denver attorney who is executive director of Colorado’s Cannabis Business Alliance.

“It’s an absolute must,” said Malone, the former legal adviser for Craft Concentrates, a Denver-based producer of concentrates, edibles and other products.

While you might know your state’s medical marijuana rules like the back of your hand, be aware that regulations could be very different for stores, cultivators and manufacturers in the rec market.

And, as in the medical marijuana market, be sure to study state and local regulations because they can conflict. Cities and counties may have more stringent operational restrictions than the state does, Malone said.

Moreover, local residents may be more uneasy about recreational cannabis than medical. In fact, municipalities stretching from Massachusetts to California have been quick to impose moratoriums and outright bans on recreational marijuana before the new market gets off the ground.

In other words, it pays to keep your ear to the ground to be aware of local politics and other developments

that could play a role in any market transition.

Another precautionary move: Meet with your local planning commissioners now, said William Simpson, founder and president of Oregon’s Chalice Farms, a vertically integrated cannabis business with three recreational grows, six retail stores, an extraction facility and a commercial kitchen.

They’ll be approving permits and zoning, so it could be beneficial for you if they know your name – if you don’t already. Follow up with them and be sure to attend public meetings.

“If you’re not involved, there are going to be big things that you miss,” Simpson said.

Review Your Business Plan

Research the cost of local real estate, the expense of maintaining dual licenses (if applicable in your state) and the profit margins for your products. And consider establishing a niche.

Patience may save you money on real estate in newly zoned locations.

Amy Andrlé is co-owner of L'Eagle Services, a Denver dispensary that cultivates and sells organic, pesticide-free cannabis.
Photo courtesy of L'Eagle Services



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One of Chalice Farms' three recreational grows.
Photo courtesy of Chalice Farms

TIPS FOR INFUSED COMPANIES MAKING THE REC JUMP

Like retailers new to the recreational cannabis market, infused products manufacturers must move cautiously when increasing their customer base.

Be a consistent supplier before promoting yourself as a brand that deserves shelf space in a hypercompetitive market. That can be achieved through extensive planning.

In some cases, manufacturers are producing three or four times as many products for the rec market as they had been for the medical industry, said Nancy Whiteman, co-founder and co-owner of WanaBrands, a Colorado-based edibles, extracts and medicinal capsules producer.

"There is a lot of production planning that goes into this," Whiteman said, "and you have to understand the metrics of your business very, very well."

With more clients comes more volume, and Whiteman suggests companies consider investing in a reasonable level of automation.

Determine what you can automate and what needs to be done by hand. Adjust your labor line accordingly.

"Plan for and automate for success," Whiteman said.

Also, be mindful of how new regulations – even in established markets – can backlog testing.

"Testing is always something you have to consider in the mix as you move from med to rec," Whiteman said.

In October, for example, a new Colorado law required individual infused products to be stamped or imprinted with a THC symbol. That change in standard operating procedure required brands to reprocess their products for certification and, in turn, backed up labs.

Be transparent with clients about those kinds of challenges, Whiteman said.

"Treat your [clients] like partners," she said. "We're all in this together, so explain to them what's happening. Give them the information they need so they have context."

– Joseph Peña

When the market settles, the cost of real estate may stagnate as demand cools. Also, know the potential capacity of a new facility.

"Reevaluate your current location," said Caldwell of Triple C. "Look at real estate and take into account that a new facility might need to accommodate 1,000 to 2,000 customers a day."

If your state allows you to maintain dual licenses for medical and recreational sales, study the fine print, said Amy Andrle, co-owner of L'Eagle Services, a Denver recreational cannabis outlet. Andrle and her husband, John, opened L'Eagle in 2009 and transitioned the business to an adult-use license in 2014 after choosing not to maintain their permit to sell medical cannabis.

So Andrle speaks from experience when she suggests an important question for business owners to ask: "What are the associated costs of maintaining both licenses?"

In Colorado, for example, dispensaries with dual licenses must catalogue separately in seed-to-sale tracking systems, point-of-sale systems as well as counter sales. Assess whether that's a cost-effective approach.

"Know what you can handle logistically and from a labor standpoint," Andrle said.

Take a close look at profit margins on your products, too.

"In Colorado, recreational sales are taxed much more heavily than medical," Malone said. "Make sure you fully calculate what your costs are from your vendors as well as what tax implications there are per sale."

It's also helpful to know your niche.

L'Eagle's specialty is clean, organic cannabis known for a long curing process that amplifies the flower's scent, flavor and potency.

"When you look at the landscape of marijuana now, there are not a lot of ways to distinguish yourself from conventional cannabis," Andrle said. "Hold on to a specialization. Wave that flag."

Partner With Solid Rec Vendors

A backlog in testing – as has happened in Oregon – can create a shortage of recreational product, and vendors may be stretched thin in the first few months that rec is legal.

Don't assume product will be available from the get-go, said Triple-C's Caldwell. You might have dependable vendors who provide medical cannabis, but that doesn't mean they can or

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will provide recreational products, too, Malone said.

Start building relationships with manufacturers now, said Simpson of Chalice Farms. Reach out to them at association meetings or trade shows. Study their products and their capacity. Ask what they're planning to produce, what their strategic business plan is and how many clients they work with. Ensure they're positioned to support your needs.

You can also scout other dispensaries, look at advertisements or search your state's online database of local licensees to find vendors, Malone said.

Tour a manufacturer's facilities or a vendor's grow to understand its operations. That will ensure you're working with a vendor you can depend on. If a vendor's operations are disorganized or noncompliant, look elsewhere for your product.

L'Eagle partners with a vendor to produce products using the store's trim. If that's the case for you, test the trim when you ship it out and again when it comes back in, Andrle said.

It's important to trust, she said, but you must also verify. Make sure the profiles match and that vendors aren't cutting your trim with another product. Your reputation and license depend on it.

Continue to Provide Quality Care

If you have a dual license, do not turn your back on your MMJ patients.

This is a critical point, said Caldwell: "You can embrace rec, but you have to respect medical."

Keep medical consumers informed about the changes they will see in your dispensary.

In Washington state, for example, medical cannabis users were hit with a marijuana excise tax when regulators rolled MMJ into a recreational program. Patients became eligible for a 10% discount but also were now paying tax on a product not previously subject to such an assessment.

So make sure patients know about changes in advance.

"Communicating with the medical patients you serve is very important,"

Andrle said. "They were your lifeline, and you don't want to lose them."

Whether you're in a state that allows dual licenses or you choose to forfeit your MMJ license to sell only rec, explain those changes to your patients, too.

Create rewards programs or deepen discounts for medical patients. Ask them how you can continue to meet their needs, Andrle suggested.

Manufacturers should demonstrate their commitment to serving the medical market by offering fewer products but supplying them consistently, said Nancy Whiteman, co-founder and co-owner of Wana Brands, a Colorado-based edibles, extracts and medicinal capsules producer with operations in Colorado, Oregon and soon Nevada.

It's counterintuitive to have a robust medical menu that is frequently in back stock.

In Colorado, where plant count in the medical market is controlled by patient count, trim has become expensive and the expectation of high dosage remains. Producers must pick and choose which products to support.

"It's not because we don't love our medical patients – we do," Whiteman said. "We just don't have the plant material to support the product."

Join an Industry Group

Trade groups give regular updates on regulations and compliance and what your peers are doing to prepare for changes, Whiteman said. They also give you a voice in upcoming legislation.

"The industry has so many moving parts in terms of regulations," said Whiteman, who serves on the board of Colorado's Cannabis Business Alliance. "It's easy to miss them if you're not a part of an industry group. If you're not at the table, you're really missing out on a chance to shape the industry."

Join a group that aligns with your ideals, Simpson said.

Vet industry groups so you align your brand with like-minded business owners, Simpson said. If there isn't a local association you want to join, gather the



Brian Caldwell is president of the cannabis consulting company Triple C Licensing in Washington state.

Photo courtesy of Brian Caldwell

people you know to form an association. Or work with an attorney and a lobbying group and attend all state, county and city meetings.

"It's important to have a voice on Capitol Hill and good contacts with your regulatory body," said Malone, the Denver attorney. "For that, industry groups are your best bet."

Communicate With Consumers and Clients

Your consumer database is a gold mine. It will help you communicate with customers and create brand loyalty, Caldwell said.

Facebook and Instagram are unreliable tools in the cannabis industry – the companies have closed the accounts of marijuana businesses – but some point-of-sale systems can be leveraged to create a customer database.

Collect phone and email information. Your point-of-sale system might allow you to send mass SMS communications or emails, or it might allow you to export a list of customer contact information.

"There are limitations on what you can do on social media, so use other technology to the best of your ability," Caldwell said. ♦

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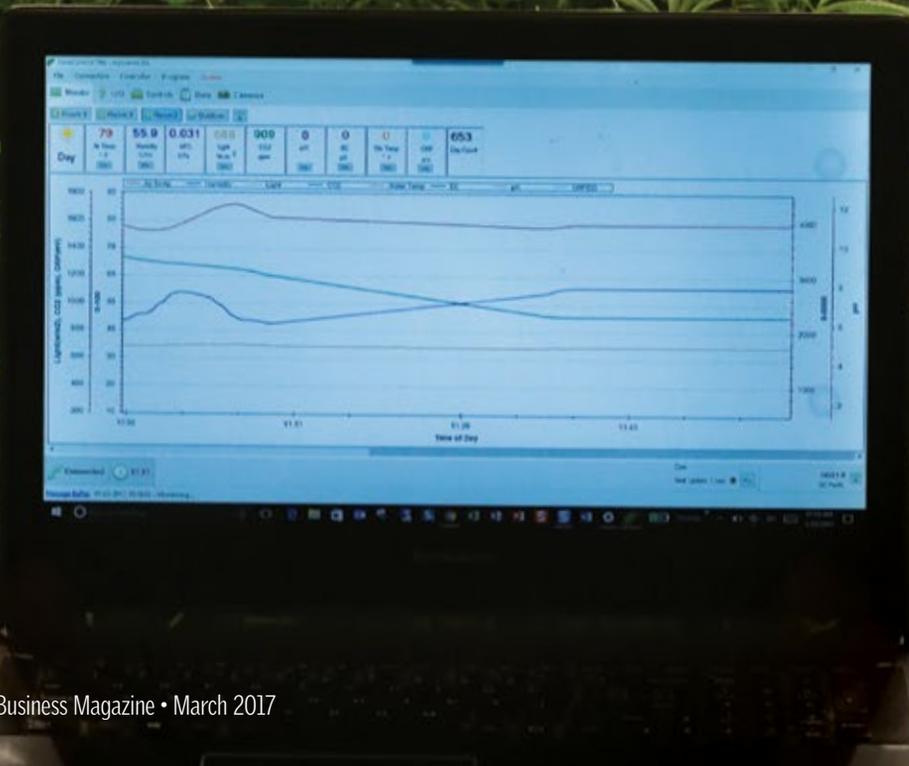
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Gardener Rob Williams works with plants at Shango Premium Cannabis, where chief cultivator Shane McKee, right, has joined those in the marijuana industry who are turning to automation.
Photos by Steve Dykes

Cultivation 2.0



Marijuana growers are investing heavily in automation technology to remain competitive and boost efficiency, but pitfalls abound

by Omar Sacirbey

THERE'S A WAR on the horizon for cannabis cultivators. As the marijuana industry matures and evolves, wholesale cannabis prices are plummeting in some markets – especially those that allow dozens or hundreds of cultivation operations. The result: Growers in these states are facing new competitive and financial pressures. Profit margins are shriveling, cannabis is becoming a commodity and big players are starting to put the squeeze on their smaller counterparts by building economies of scale.



These trends are particularly acute in the recreational market, but they're also playing out in medical cannabis states as well. And they're expected to accelerate in the coming years as the industry marches forward. In the future, growers that don't or can't adapt to these changes will get gobbled up or destroyed completely by the competition.

With this as the backdrop, cultivation companies increasingly are turning to automation to cut costs, gain an edge over the competition, bolster control over the grow process and improve efficiencies.

Mechanization can accomplish many of the things that people now do manually, such as turning up the thermostat or watering and feeding the plants. If smartly implemented, automation can save businesses tens of thousands of dollars over the long haul and improve the quality of the plants.

But diving headfirst into automation blindly can be a big mistake. Growers must be selective about which processes they choose to automate, and they must remember to crunch the numbers, particularly when it comes to production costs. While automation can be a great solution for many situations, growers have been known to spend six-figure sums on technology they ultimately didn't need – or that failed them. Trial and error is sometimes a given.

Shane McKee, chief cultivator with Shango Premium Cannabis, a marijuana brand and dispensary chain in Portland, Oregon, noted that automating the irrigation system in a large grow can be especially tricky.

McKee spent hundreds of thousands of dollars on failed or expired automation equipment in general, including irrigation. "There have been things that we bought that didn't work, and things that we bought that we're still using," he said. "So there's been a lot of research and development along the way – things that we spent money on that we're no longer using."

Cultivators have different opinions on what should and shouldn't be automated and how different technologies



Gardener Daniel Demeulle works in a grow room under the watchful eye of an environmental sensor installed at Shango Premium Cannabis.
Photo by Steve Dykes

should be implemented. What they do have in common is how they arrive at their decisions: They review their costs and the problems they're trying to solve, and they determine how mechanization can help. Growers that take this approach to automation are much more likely to succeed.

Must Automate

Autumn Rose Karcey, president of Cultivo, a cannabis cultivation consulting firm in Los Angeles that specializes in automation, predicts that growers may not have a choice when it comes to employing technology, especially those that operate a big grow.

"In five years, it's not going to be a choice of 'do I automate or not,'" she said. "In a large-scale operation, automation is key for survival. The Nabisco cookie factory isn't going to question whether they use automated equipment. You just reach a point of growth where you have to automate in any manufacturing practice, in any industry."

Even small growers can benefit from mechanization, Karcey said. If a fan malfunctions when you're out of town but you have a sensor that can alert you, you can call someone to fix the problem.

Moreover, the necessity of automation won't be driven just by size, but profit margins. The 30% wholesale margins many growers have enjoyed won't last: They are already dissipating in mature markets like Colorado and

Washington state. When those margins decline, which players survive will largely depend on who cuts costs.

"Automation is going to play a key role," Karcey said. "If it costs me \$500 to produce one pound of cannabis and my neighbor \$900 to produce one pound – based on the fact that I have automated equipment – who's going to survive?"

Automation for Your Environment

What to automate first? Most experts say you should aim for the grow's environment – air conditioning, heating, dehumidifying, humidifying, watering and feeding.

"The most important thing is environmental controls with multiple



Autumn Rose Karcey, president of Cultivo.

redundancies,” said McKee of Shango, which has a total of about 200,000 square feet of cultivation space at its sites in Oregon, Washington and Nevada. The company produces Chong’s Choice flower, Shango-branded edibles and other products.

If you’re going to automate your facility, you also may as well invest in software that monitors temperature, humidity, CO₂, irrigation and other factors at your site. The technology alerts you via text or email when any of those factors get too low or too high.

For example, McKee was alerted after one of his Portland sites lost power. He went there to make sure the backup generators and controls had kicked in and were functioning until the main power returned.

He said it’s “critical” to have backup generators to ensure your systems continue operating in the event of a power outage.

It’s worth remembering that while automation software is powerful, it would be risky to use by itself without backups. There are many ways to implement such backups.

“There’s no one system that you can trust when you have 500 pounds of product in one room,” McKee said. “You build in redundancies. If one thing fails, you can catch it another way.”

At Shango, for example, McKee has a primary set of digital sensors to monitor the environmental conditions in his sites and regulate equipment. If those sensors fail, he has backup analog sensors that come on and regulate the environment as need be.

There are other ways to minimize risk. If you have a room that requires 25 tons of air conditioning, for example, you don’t use one 25-ton air conditioner. Instead, you try five, 5-ton units. That way, if one air conditioner goes down, the others will suffice until the broken unit is running again.

“If we’re down 20% for a few days, it’s not going to kill me,” McKee said, adding that the crop isn’t damaged.

Automating Irrigation

Compared to climate and humidity, watering and feeding are more difficult to automate, McKee said. But it can be done. Like climate monitors, water and nutrient monitors allow growers to watch and adjust how much of both their plants are receiving.

But be aware that automating these may require some trial and error.

“The toughest struggle we’ve had is automating the plumbing on large-scale grows,” McKee said. “When

HIRE A PRO

If you’re a grower who decides to take the automation plunge, don’t do it yourself.

Instead, hire an engineering professional. This should be someone who knows cultivation automation software and how to build or renovate a site so that it accommodates mechanization and maximizes the savings and product quality.

“You need a building design plan from a pro, because without that design plan, even the best contractor can only do so much,” said Shane McKee, chief cultivator with Shango Premium Cannabis, a cannabis brand and dispensary chain in Portland, Oregon.

Ideally, that building design expert will also know something about cannabis.

“Even some of the biggest botanical companies won’t understand your needs and the redundancies that you need,” McKee said.

Shango used to contract out those design and software duties. But over the past year, the company has hired an in-house construction team of about 15 people that includes software engineers. Their task is to maintain and improve Shango’s automation and monitoring systems.

Finally, growers also need to be able to clearly tell engineers what they want to achieve and educate them about how various strains respond to different environments.

Leaving cultivation site design to a grower who doesn’t work in construction can lead to overspending and inefficient building layouts.

Autumn Rose Karcey, president of canna-centric grow consultancy Cultivo, recently visited a grow site in Nevada that was steeped in LED lights but skimped on its air conditioning use. The grower raved about how much money was being saved in electricity costs. But the company was producing only about half the weight of product it could have been with the correct environment.

“It doesn’t matter how much they were saving in power or how energy efficient they looked, that place is going to have to be completely revamped or they’re going to be done in five years,” Karcey said.

“They let their grower play general contractor, which is the biggest mistake an investor can make. If you don’t know construction, why are you designing a building?”

– Omar Sacirbey

you get into these large facilities where the water and nutrient sources are far away and the rows are very long, that is where we've gone through four or five different types of systems that didn't work."

At one site, for example, plants on one side of an aisle were receiving half the amount of water and nutrients that the plants on the other side were getting. The reason? The plants on the well-fed side were closer to the nutrient reservoir than the plants on the underfed side, so that the latter received food more slowly. The solution was to extend the hoses on the well-fed side of the aisle so water and nutrients traveled an equal distance to plants on both sides.

You can also receive notifications about whether you're supplying too much or not enough individual nutrients. After receiving an alert, for example, you can give your plants a small dose of water until you correct the nutrient issues.

The size of your grow and the plumbing will play a major role in how you automate your watering and feeding.

"It really comes down to the room sizes and how central the nutrient reservoir is, whether you built from the ground up and you were able to lay the

plumbing underground, or whether you have the plumbing overhead because you're improving an existing building," McKee said.

Trimmers

Trimming machines are another example where cultivators have found relief through mechanization.

Richard Abromeit, CEO of Montana Advanced Caregivers in Billings, decided to buy a trimming machine for about \$8,000 in 2014 after becoming fed up with the high employee turnover for the trimmer position.

The company started testing the machine and adjusting its controls, then advertised the change on social media so patients would know about the cost savings.

"Trimming was revolutionary for us," Abromeit said. "The machine does the work of five people, and we can pass the savings on to patients."

Abromeit did have concerns that machine trimming would hurt the product. But those fears proved wrong.

"Quality hasn't suffered," said Abromeit, whose employees do the trimming while the plants are still wet with oil and moisture. That way the trimmer won't beat the trichromes off the plant.



Richard Abromeit,
CEO of Montana
Advanced Caregivers

The only added cost Abromeit has put into the trimming machine is \$750 for a new fan motor. "Had we cleaned it right," he said, "I think that piece of machinery would have worked for us another five years easy."

Now his team cleans the trimmer about every 10 days. It takes one person two hours to clean it. Ideally, you want to do it at the end of the shift when you can let the parts sit overnight with the cleaner on it and then rinse it off in the morning with water. Then you put it back together in about 10 minutes with T-wrenches.

The trimming machine at Montana Advanced Caregivers.
Photo courtesy of Montana Advanced Caregivers



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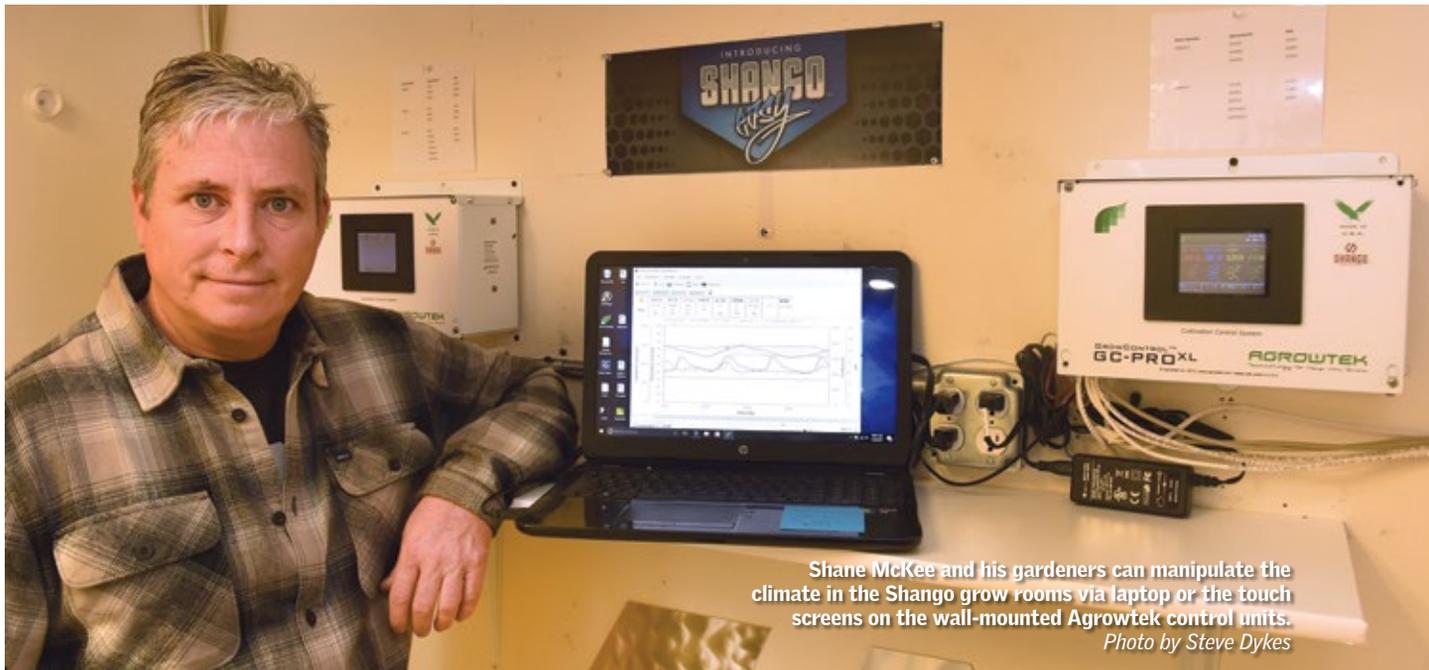


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Shane McKee and his gardeners can manipulate the climate in the Shango grow rooms via laptop or the touch screens on the wall-mounted Agrowtek control units.
Photo by Steve Dykes

It takes about two weeks for employees to learn how to use the trimmer, which can't be left running unattended. "There's a learning curve and you notice that your trimming gets better as you use it," Abromeit said.

The cannabis is fed into the hopper and then flows into the trammel and into the trimmer. Trimmer machine operators need to know that separate strains must be fed into the machine at different speeds. That's because various strains have differing characteristics – their density, how leafy they are and how stringy they are. All of these influence how the strains go through the trimmer.

When Not to Automate

While growers who have tried automation generally endorse it, many also believe that not every process requires automation. Moreover, many growers disagree over what should and shouldn't be automated.

For example, while Abromeit swears by his trimmer, he doesn't leave watering and feeding to automation because he likes to give different strains varying amounts of nutrients. That can be harder to regulate in an automated system. So he does it by hand.

"One plant strain will take nutrients

at a different rate than another – say a Kush as opposed to a faster-growing sativa like a Super Silver Haze, which needs to be pounded with nutrition," Abromeit said.

The only way to achieve selective feeding without hand-watering is to have multiple nutrient reservoirs marked for specific strains. But reservoirs take up a lot of space, and having more than one may not be a good option when you have a craft grow business like Abromeit's facility.

"Because of these differences, we do it by hand," Abromeit said.

Cultivo's Karcey, by contrast, considers hand-watering a waste of time and is skeptical about machine trimming.

"There are some things that you can automate, and there are some things you can never duplicate, like the hand trim," Karcey said. "If I put everything through trim machines, I wouldn't be competitive in a market like California. You have to have hands on that."

McKee feels that while his backup generator is critical in supporting his climate control equipment, he doesn't use it as a backup for lighting.

"We're not worried if they don't get light for eight or 10 or even 12 hours," he said. "We've got a few backup lights in there. We've got some heat in there,

dehumidification, just the absolute minimums that would be necessary to keep the plants in an OK state."

Deciding on Automation

If different growers offer opposing advice on when to use automation, how should a grower who is new to automation decide what to do?

You start with numbers, especially production costs, Karcey said. You must know your cost per pound of production, how much electricity your building uses, your air conditioners' BTUs and the cost of your water, nutrients and labor, among other considerations.

"You have to ask, 'What does it take to grow this cannabis?'" Karcey said.

Another good reason to know your numbers? Engineers will sometimes recommend the equipment and setup that makes them the most money, and not necessarily what is best suited for your site. Knowing the numbers will help you make the appropriate choice.

"You really have to ask yourself, 'Is this what I need?'" Karcey said.

Another way to decide is by experimenting. If you're considering introducing automation, start in one room. That way you can minimize the impact of mistakes. And, if it works, you can scale up.

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consider sectioning off a part of their buildings and reserving that area for experimentation, Karcey suggested.

Another way to decide whether a certain situation merits automation: Does it relieve you of unskilled labor chores and give you time to spend in your garden examining your plants?

“When a guy gets caught up doing chores and his job becomes doing chores, he pays attention less,” McKee said. “If you don’t have all that labor to do, you’re able to pay attention to details.”

Karcey agreed. “The idea of automation is not to give growers a vacation,” she said, “but it’s so they can do their jobs more effectively as cultivators. It’s to give them more time to spend with the plant.” ♦



The fans, lights, watering system and HVAC in this grow room are all part of Shango's automated process. Photo by Steve Dykes

TECHNOLOGY WISH LIST

We asked cultivators what kind of problems they would like to see technology address, and what that technology might look like. Here are three answers.

Richard Abromeit, Montana Advanced Caregivers, Billings, Montana

Abromeit said he would like to see more handheld analysis devices that would allow cultivators to test for pesticides and other contaminants, as well as cannabinoid and terpene content. He said there's a model on the market he is considering checking out, and he believes growers like him would clamor for such devices.

“We need more of this analysis stuff. It's nice to have solutions for things that we have to go outside of our facilities for,” Abromeit said. “It would be nice to have an onsite machine that analyzes and that can't be tampered with.”

That way, he said, business owners and patients wouldn't have to rely on testing labs that could be unreliable.

Joseph Mattord, Vancouver Ave. Consulting, Portland, Oregon

Keeping a clean facility is one of the best ways to guard against microbes that can damage your plants, but paying a cleaning crew day-in and day-out would be too expensive.

The solution, Mattord said, might be an industrial-sized version of those robotic vacuum cleaners now sold in department stores mainly for home use.

“We need something more industrialized to mop floors and maybe clean the bottom two feet of the wall,” Mattord said. “You could just have it come on when everybody's away.”

Shane McKee, Shango Premium Cannabis, Portland, Oregon

McKee says the biggest technology problem he faces is “all software in our industry is clunky at best.”

He explained: “Our seed-to-sale software is used as POS and has very few capabilities compared to even simple POS systems available in normal markets. We have to use several different [software programs] – seed to sale, POS, inventory management, environmental control and financial – and they do not work well together.”

The solution? A facility-management software program that can singlehandedly and seamlessly handle those disparate tasks now run by the separate software programs.

“But the time and cost to design have kept us from doing so thus far,” McKee said. “The larger our company grows, the more technology we need, and the tech market is far from keeping up with the accelerated growth of the cannabis industry.”

As such, he would welcome more companies that can provide “affordable quality software options specific for managing cannabis facilities.”

– Omar Sacirbey



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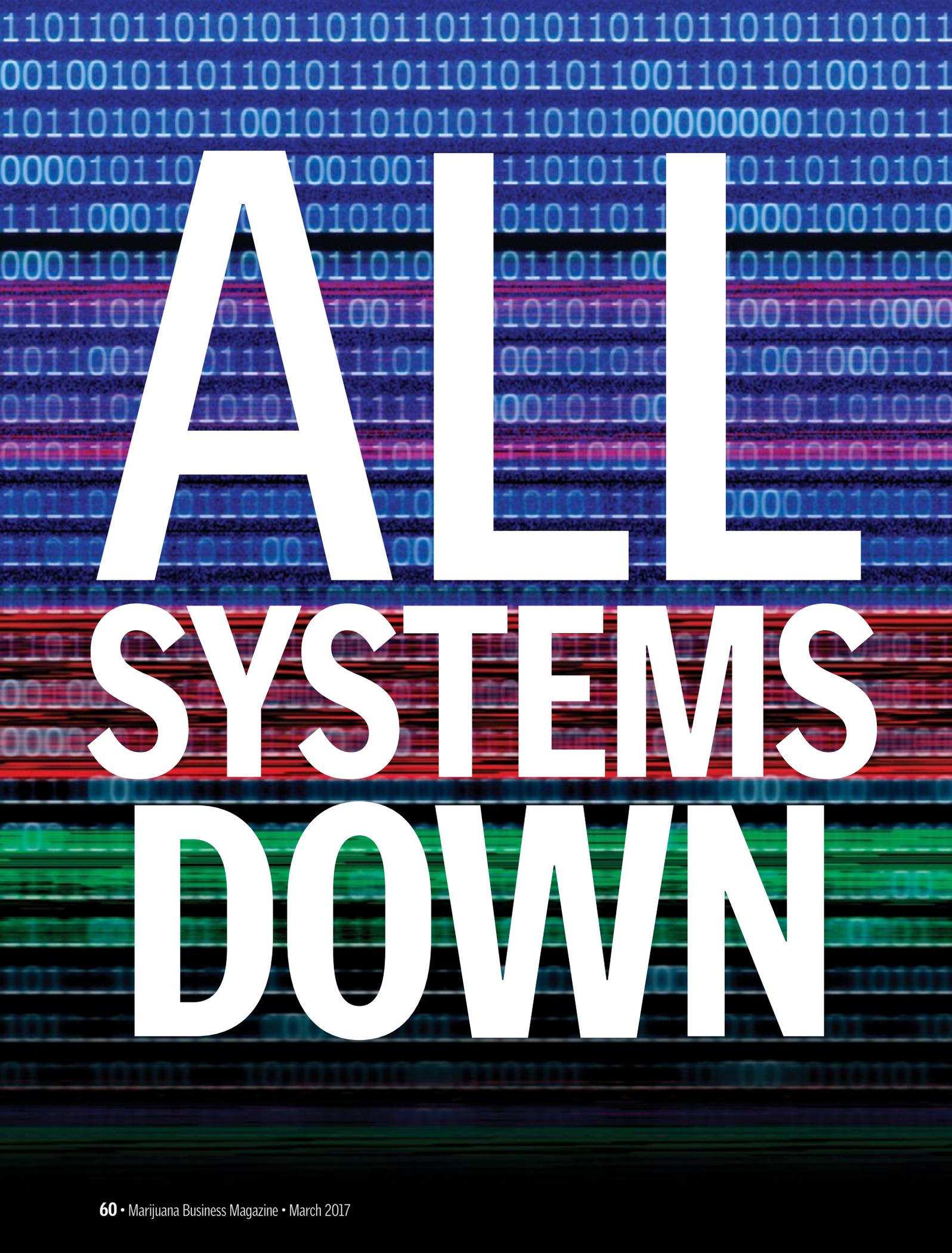
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ALL SYSTEMS DOWN



How to ready your cannabusiness in case of a technology meltdown

by Omar Sacirbey

IT'S GOOD BUSINESS to keep up with technology and use it to make your medical cannabis dispensary or recreational shop run efficiently.

But it's bad business to rely on it exclusively, especially if you lack a backup plan in case your technology crashes. In short, it pays to be prepared if things head south – and it's not difficult to create a strategy to control the damage.

That lesson was made painfully clear in early January when MJ Freeway's widely used software platform for cannabis businesses crashed. The incident sent more than 1,000 marijuana retailers in 23 states scurrying to handle everything from sales and inventory management to regulatory compliance issues. Many were forced to shut temporarily because they were unable to meet state requirements for tracking and recording sales, while others that stayed open took longer than usual to execute transactions.

"It's a slaughterhouse when you look at how much business was lost" on the first full day of business after the system crashed, said Moe Asnani, co-owner of The Downtown Dispensary in Tucson, Arizona.

The dispensary, which used MJ Freeway's software, had to close for a full day. Asnani estimated he lost several thousand dollars in sales because of the closure and that the industry's losses could total in the tens of millions, though that's impossible to verify.

Not If, But When

When Asnani realized the software wouldn't be up anytime soon (MJ Freeway still hadn't fully recovered when this magazine went to press in late January), he had employees record sales information by hand. The dispensary was then able to open its doors after closing for a day.

Asnani was somewhat prepared: Before MJ Freeway's system crashed, he exported data saved from the POS system – including product, sales and patient information – to a spreadsheet once a week. He last did it three or four days before the crash, so the dispensary didn't lose too much information.

And because Asnani had the raw data backed up on the spreadsheet, he was able to provide it to an MJ Freeway engineer who, in turn, was able to restore it once the company got its software platform back online.

MULLING BACKUP OPTIONS

Moe Asnani understands the importance of having a team that can, when necessary, record sales transactions by hand in the event of a technology crash.

But no matter how well he felt his team may have mastered such laborious recordkeeping, it's something he wants to avoid in the future.

"It's the worst thing you can experience because you're basically using a manual ledger system to track your transactions," said Asnani, co-owner of The Downtown Dispensary in Tucson, Arizona.

After the sales-tracking disaster he faced when MJ Freeway's point-of-service software platform was crippled by an alleged cyberattack on Jan. 8, Asnani contemplated a couple of options.

The first: Pay for an automatic backup system that uploads information at frequent intervals, such as once an hour or a day. The company could, for example, use an onsite backup service at the dispensary or pay a third party such as Amazon Web Services to do the job.

The second: Use two different POS software programs from different providers, instead of one. In that case, employees would enter the sales and patient data into both systems.

Asnani ultimately chose a variation of the second option.

He's decided to give Denver-based MJ Freeway's POS system another chance – at about \$400 per month. He won't, however, continue to use MJ Freeway for his cultivation tracking needs, when the cannabis is followed from the seed to the packaging.

For that he will employ Roswell, Georgia-based Leaf Logix Technology's software, which costs about \$500 per month.

As he did before the crash, he will continue to back up his POS data by exporting it to a spreadsheet that is saved on other computers. If MJ Freeway were to lose the data again, Asnani would at least have the information in the spreadsheet and could load it into the Leaf Logix system. At that point, the Leaf Logix technology could be upgraded for POS tracking if need be.

Asnani noted his staff used to back up data about once a week but now plans to export it every two or three days.

Why did he give MJ Freeway another chance?

"We are an all-Apple store and a lot of software solutions don't work with Mac as seamlessly as they [MJ Freeway] do," Asnani said. "A lot of the other software companies were not able to meet Arizona labeling compliance requirements."

Asnani conceded it can be more pricey to use two systems.

"But in the grand scheme of things, it's cheaper than what we're experiencing now," he said. "It's kind of an insurance policy."

– Omar Sacirbey

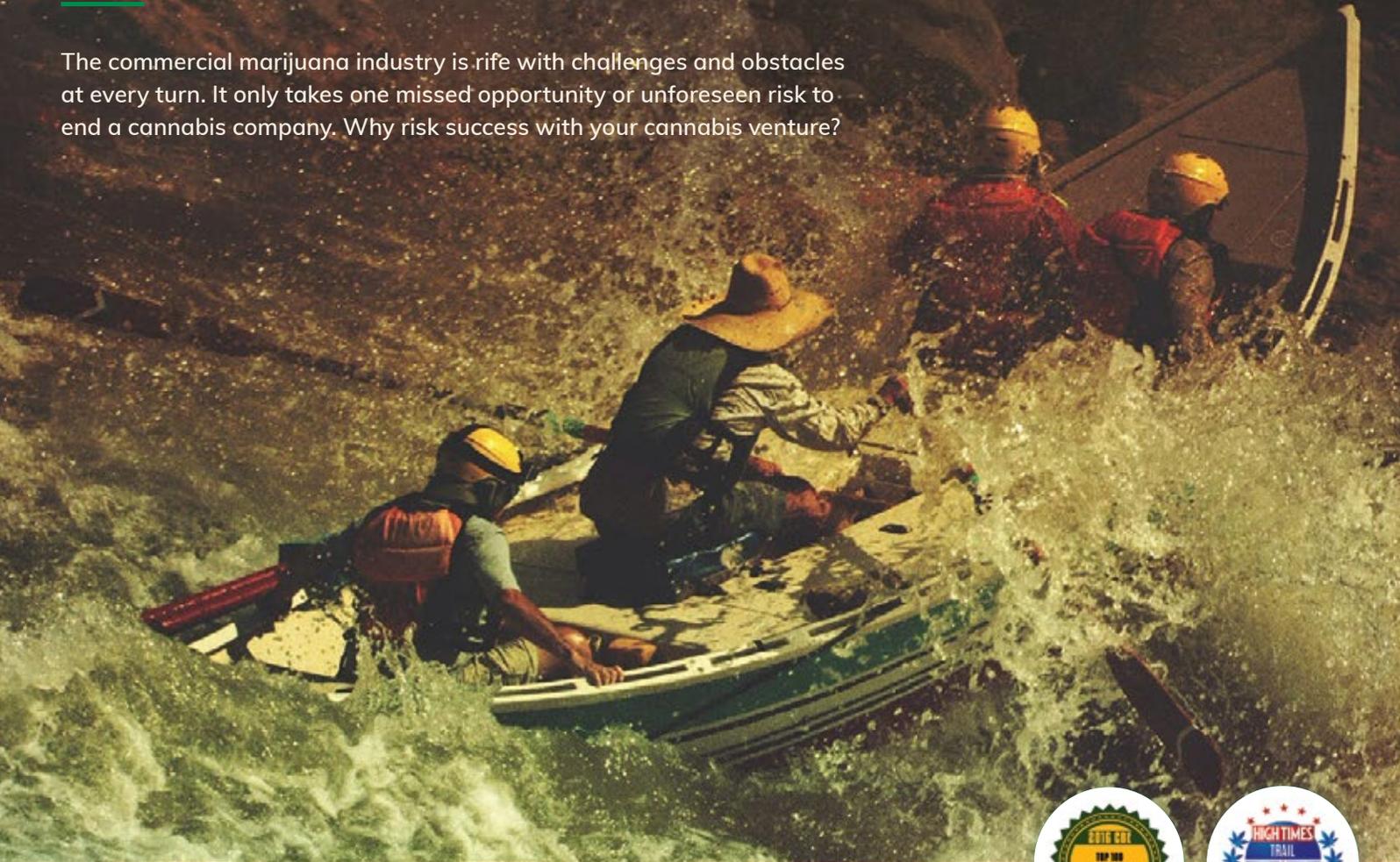


Moe Asnani

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Many retailers, however, were not prepared and shut for days, losing thousands of dollars in business.

Create the Forms

Retail store owners said it's not hard to create a backup plan.

Steve White – CEO of Harvest Inc., which owns two stores in Arizona and has stakes in two dispensaries in Nevada – learned from previous experience.

“We've had (the system) go down before, so we were prepared,” said White, whose locations all use MJ Freeway. “You must prepare for those eventualities because sometimes things happen.”

After the first time it happened, “we decided it was irresponsible to be reliant on somebody else to provide service to our customers,” White said. “So we developed our own internal redundancies that would allow us to operate if it went down again.”

White and his team developed a strategy under which employees can record sales manually using calculators, pens and papers. This process involves creating backup paperwork that staffers can fill out if the electronic system crashes.

The forms are not hard to create and typically are no more than one page, retail owners said. The kind of information you need to record on your form can be retrieved from the online system that is being used, or gleaned from state regulations. Some states, like Nevada, even provide guidance on what dispensaries must do in case of a power outage or system failure, including the type of information that needs to be recorded.

Given that regulations vary significantly by state, entrepreneurs with businesses in multiple markets won't be able to use the same template for different locations. Still, most states have pretty standard requirements.

“We've had (the system) go down before, so we were prepared. You must prepare for those eventualities because sometimes things happen.”

Another backup strategy includes implementing recordkeeping policies that go above and beyond what the state wants, while some dispensaries and rec shops ensure they keep backups of important information used to analyze their businesses.

Denver Relief Consulting, for example, advises its retail clients to track batch numbers, product count, exact weight, names of budtenders involved in the transactions, employees' check-in and checkout times and other information.

“Those forms will guide employees in a checklist format to ensure they are covering everything that's required,” said Kayvan Khalatbari, a founding partner of Denver Relief Consulting.

Employees and Training

Once a backup program has been established, the next step is to teach employees how to implement it.

Many companies that have a plan incorporate it in the training that employees receive at the beginning of their tenure. The problem with that is the program may not be needed for many months or even years. And by the time the technology does crash, most people have forgotten how to execute it.

“What we typically do in that instance, if we know there's an issue, people get to work early. We go back over that process. People have calculators, and it's very old school,” White said.

Asnani acknowledged it was a challenge for his employees to adapt after the business went manual following MJ Freeway's crash in January.

“We were training as we went,” Asnani said. “It was hard for employees to react.”

One problem is the sheer amount of labor involved in recording sales manually. For example, Asnani's store has over 300 sales items, but prices aren't written out on them. Rather, the products have bar codes.

“It's a pain to punch in a 20-digit alphanumeric patient ID number and batch number, producer ID, supplier ID,” Asnani said. “It's easier to copy and paste these numbers rather than write them by hand.”

For example, Asnani said his transaction times went from two to three minutes to five or six minutes per sale.

Still, it beats the other option. “The alternative is shutting your doors and closing for the day,” Khalatbari said. ♦



Steve White



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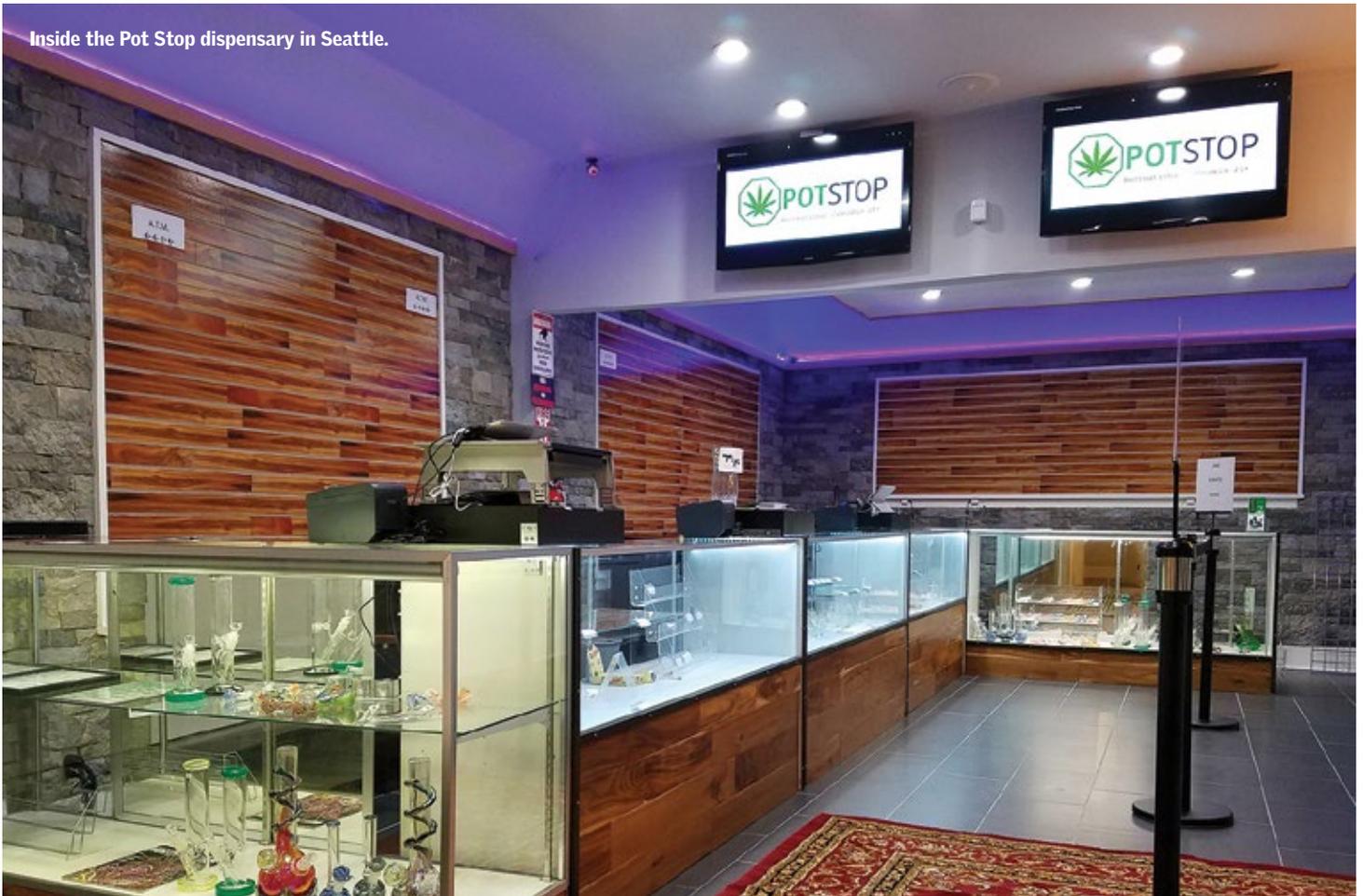
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A street view of the Pot Stop dispensary in Seattle.
All photos courtesy of Pot Stop



Inside the Pot Stop dispensary in Seattle.

Entrepreneurs can use delays in new marijuana markets to their advantage

CAPITALIZING ON DOWNTIME

by Bart Schaneman

A DELAY IN THE launch of a new marijuana market doesn't have to cripple your business.

Quite the contrary: If you plan accordingly and use the time wisely, it can be an opportunity to research, prepare and educate yourself about the ins and outs of your company and the market. You can also use the downtime to develop a clear vision for your business' future.

It's a good idea to plan ahead for the possibility of setbacks, as a growing number of new markets — from Massachusetts to Hawaii — have rolled out more slowly than anticipated due to regulatory, legal and political issues.

Entrepreneurs who overbuild, overstaff and overspend can quickly find themselves struggling to stay afloat. So it's important to expand your staff and operations slowly in accordance with your financial situation and the market's actual rollout. And keep your investors informed along the way.

Phoenix-based Giving Tree Wellness Center, which operates two medical cannabis dispensaries, is a case in point.

Co-founder Lilach Power watched some competitors drop out while she waited out a year-long delay in Arizona's medical marijuana market caused by regulatory issues and legal challenges. She and her team used the time to learn more about the state's new MMJ industry, which came about after voters approved a ballot initiative in 2010.

"While the market was on hold, we were able to take the time to actually learn the business," Power said. She also used that period to hone the company's business plan.

"When (regulators) said, 'OK, go,' we were ready to go," Power said.

“ While the market was on hold, we were able to take the time to actually learn the business.”

Take the Time to Learn and Plan

Power and her business partners used the delay to focus on several fronts.

For starters, they got to know each other from a business standpoint. They also developed their mission and values statements and worked on developing the protocols and procedures needed to comply with the state's regulations.

In addition, they had more time to discuss whom to hire, and when to bring them on.

"There are so many shapes and forms for licensing and delays, people should take it as a blessing in disguise," Power said. "Use it to work in every aspect of your business."

Be Well-Capitalized

If you think it's going to take a certain period of time for the market to come online, add 20% to that and shore up 20% more money, industry executives advised. That will give you a buffer in case, say, it takes the state and individual cities longer than expected to award licenses or grant necessary approvals.

Karl Keich, who owns the cannabis retail store Pot Stop in Seattle, said every cannabis business owner in a new market should prepare for additional expenses beyond what they initially expect.

"These things do happen," Keich said. "Failing to prepare is preparing to fail." Starting small, growing slowly and



Pot Stop in Seattle sells a variety of cannabis products.



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“This is a great industry, and you have to know that delays will happen. It’s not going to happen the way you want it.”

keeping a budget are the “right way to do this,” Power said. “You never know how the long the delay is going to be.”

It also could take a lot longer than you thought to climb into the black once your business launches.

People who think they’re going to get rich quick should temper their expectations, said Charlie Bachtell, CEO and co-founder of medical cannabis cultivation and processing company Cresco Labs, based in Illinois.

“This is a business just like any other industry,” he added. “You’ve got to watch

costs. The building will always cost more than you think it will to build.”

It’s important to anticipate a market’s gradual growth.

“Programs do not start with 100% patient participation Day One,” Bachtell said. “You will not be profitable Day One. All of your harvests will not be perfect. You will not have 100% buy-in. Being well-capitalized is important.”

Talk With Your Investors

Keich recommends business owners help investors set their expectations

properly and explain to them the cannabis market is a long-term play.

Even with that long-term mind-set, there are going to be changes along the way in terms of the political climate, regulations and other factors.

“Everything changes,” he said. “The only thing for sure in this business is change.”

Power recommends being open and communicating with your investors so no one is surprised if things take a little longer than planned.

“Look for investors that are the right

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ones for you," she said. Find those who share your vision and will be a good support system, she added.

"If there's a delay and you're stressing about it, this is when your investors can be your support system," Power said. "They could say, 'Hey, we knew this is going to happen. Let's all calm down and enjoy this.'"

Staff Slowly and Carefully

"Manpower is probably the most expensive part of our business," Power said. "It's always 'hire the right people,' but here it's 'hire slowly.'"

If you build staff up too quickly and you have a team of growers hired, but you can't start selling product, "you're kind of in trouble," she said.

Keich recommends recruiting workers from existing retail industries, which can provide leeway if there are delays.

If he sees someone at the local shopping mall who provides excellent

customer service, for example, he might approach that person and make a job offer contingent on a position becoming available. By recruiting people who are already employed, a business owner can wait until the market is ready to put that person to work.

Consider Other Business Opportunities

One way to build your brand as you wait for a market to come online is to sell ancillary marijuana products. Keich suggested starting a head shop in your retail space to start generating revenue off of your property.

If you're in cultivation, you could work with another crop until the cannabis market is ready.

"You could grow tomatoes if you have to," Keich said.

If you think you're going to need 100,000 square feet, build a 20,000-square-foot cultivation

operation and master that first, Power said. It doesn't cost you as much to maintain the smaller space and can save you incurring large expenses if something does happen.

She also advised that perseverance will pay off and to expect that the big players will likely leave and put their money somewhere else if there's a delay.

"Remind yourself that it will be positive," Power said. "This is a great industry, and you have to know that delays will happen. It's not going to happen the way you want it."

Bachtell reminds new entrants to the MMJ market to remember why they got into the business.

"Make sure you're getting into this for the right reasons," he said. "It's patients first. It's increasing someone's quality of life. It's developing something within your community that the community can get behind. It's not to get rich quick. That will not happen." ♦

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Wheelin' & Dealin'

Recent deals, acquisitions and other announcements from cannabis companies



Christian Sederberg is partner and founding member of Vicente Sederberg law firm, which has launched an international cannabis practice group.

Photo courtesy of Vicente Sederberg

Vicente Sederberg Goes International

Vicente Sederberg, the marijuana-focused law firm that is based in Denver and has a presence in four states, has launched an international cannabis practice group. As part of that effort, it announced a partnership with its Spanish counterpart, Madrid-based **Soriano Fernández Abogados** (S&F Abogados). Vicente Sederberg and S&F Abogados aim to facilitate international business transactions, such as technology transfers and imports and exports of industrial hemp. They also want to assist governments considering cannabis legalization and regulation. Vicente Sederberg also launched a website for Spanish speakers in the United States.



CannaKorp will put portions of its \$4.1 million Series A capital raise in January toward the CannaCloud system the company is rolling out this year. *Photo courtesy of CannaKorp*



Brett Rentmeester's Singularity Capital Management assisted in CannaKorp's capital raise.

Photo courtesy of Singularity Capital Management

Vaporizer Company Raises \$4.1 million

CannaKorp, a Stoneham, Massachusetts-based company that produces a single-use, pod-based marijuana vaporizing system, announced in January a \$4.1 million Series A capital raise. The company also raised \$1.6 million in another Series A round last year. The deal was led by **Singularity Capital Management**, a canna-centric investment firm founded last year by Brett Rentmeester in Naperville, Illinois. CannaKorp will use the funds for manufacturing and forming partnerships with cultivators and dispensary owners as well as activities related to the North American rollout of its CannaCloud system in 2017.

CanniMed IPO Raises \$45 Million

Licensed medical cannabis producer **CanniMed Therapeutics** completed an initial public offering on the Toronto Stock Exchange, raising about 60 million Canadian dollars [\$45-million]. The company, based in the central Canadian province of Saskatchewan, sold five million shares for CA\$12 a share, according to a press release. It is only the second cannabis company to list on the TSX, the only major North American exchange that lists cannabis-touching companies.

Headset Closes \$2.5 Financing Deal

Headset, a Seattle-based cannabis industry analysis firm, has closed \$2.5 million in financing from **Hypur Ventures**, a venture capital fund in Arizona, and **Salveo Capital**, a Chicago-based private-equity fund specializing in cannabis sector investments. In a press release, Headset said the funding “will help close the information gap that has hampered companies in this emerging industry.”

Canadian Cannabis Consumer Brand Nets \$2.25 Million

A Toronto-based cannabis, coffee and clothing business, **Tokyo Smoke**, secured 3 million in Canadian dollars (\$2.25 million) from investors, claiming it's the first marijuana-related consumer brand in Canada to raise capital. The company, which describes itself as a premium cannabis-oriented lifestyle brand, said in a news release the first-round raise was oversubscribed and the amount was more than 50% above its initial target.

Aurora Obtains License to Sell Cannabis Oils

One of Canada's biggest federally licensed marijuana cultivators, **Aurora Cannabis** in Vancouver, British Columbia, obtained its license to sell cannabis oils in January. The company initially received its license to produce cannabis oils early last year.

Terra Tech Opens Dispensary in Reno

Terra Tech, a cannabis holding company in Newport Beach, California, has opened a Blüm dispensary in Reno, Nevada, its fourth in the state. Terra Tech also owns **Medi-Farm**, a cannabis cultivator in Nevada; **IVXX Inc.**, a cannabis concentrates manufacturer whose products are sold in California, and ancillary companies.

Phoenix Dispensary Rising

The owners of the **Emerald Gilbert** medical cannabis dispensary in Gilbert, Arizona, have opened a second location, **Emerald Phoenix**, in the state's capital city.

Hydroponics Store, Data Group Partner to Target Cultivators

Grow Generation Corp., a Denver-based chain of hydroponic and organic gardening equipment, is partnering with **New Frontier Data** of Washington DC to assist cultivators. GrowGen will provide historical and real-time sales data to New Frontier to create a “State of the Ancillary Market” report that will be released in the first half of 2017. This report will enable growers to understand product trends and identify opportunities to improve performance by

benchmarking their cultivation inputs. GrowGen recently opened its 11th store, in Las Vegas. It has nine stores in Colorado and one in California.

Canadian Cultivator Acquires Chain of MMJ Clinics

Mettrum Health Corp., a federal licensed Canadian cannabis cultivator in Bowmanville, Ontario, has acquired **Bodystream**, a chain of 14 medical marijuana clinics across Ontario. Mettrum paid CA\$1 million [\$760,000.]

Extraction Laboratory Goes Mobile

BudCube Cultivation Systems – a subsidiary of **Cherubim Interests**, a construction and real estate development company in Bedford, Texas – and Denver-based venture partner **United Cannabis Corp.** have built their first mobile testing and extraction laboratory. The extraction laboratory was deployed in January to Jamaica, where United Cannabis Corp. is partnering with **Cannabis Research & Development** on a pilot program in collaboration with the **Rastafari Studies Centre for Cannabis Research** at the University of West Indies, Mona.

Oregon Real Estate Company Plans Major Grow Site

Grow Condos Inc. of Eagle Point, Oregon, plans to build a nearly 50,000-square-foot cultivation facility in Eugene, Oregon. The company bought the land for the site last year for almost \$327,000 and plans to divide the space into 32 grow rooms at 1,500 square feet each. Each room will be offered at \$150,000-\$175,000.

Marijuana Business Association Launches in New Jersey

A group of marijuana business professionals, former politicians, medical cannabis patient advocates and others have formed the **New Jersey Cannabusiness Association**. The new group hopes to help marijuana-related businesses navigate New Jersey's cannabis industry laws and regulations and to promote networking between marijuana businesses.

Research to Chew On

AXIM Biotechnologies, a New York-based cannabinoid research and product development company, will be launching a research study with investigators at **Wageningen University** in the Netherlands. The study will explore the efficacy of a CBD-infused chewing gum in treating irritable bowel syndrome. The clinical trials for CanChew Plus will include 40 subjects, 18-65 years old. Each piece of gum will be infused with 50 milligrams of CBD oil, and patients can take up to six pieces of gum per day. ◆

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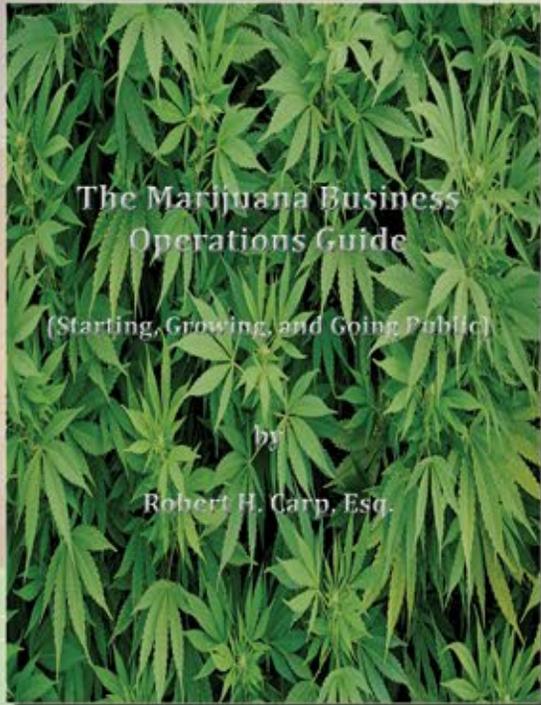
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Movers & Shakers

A look at some recent hiring moves in the marijuana industry

by Omar Sacirbey

DPA Chief Steps Down

Ethan Nadelmann, founder and executive director of Drug Policy Alliance, announced he is vacating his post, though he'll remain on the job until late April. "I've decided that the time has come for me to step aside as head of DPA. My extraordinary colleagues are ready to take us into the future!" Nadelmann said via Twitter. Derek Hodel, former deputy executive director of the organization, will become the interim executive director until a permanent replacement is chosen.



Michel Robichaud

Company's Addition to Focus on Infused Products

In a posting that signals the growing importance of cannabis-infused products in the Canadian market, OrganiGram Holdings, a federally licensed medical marijuana producer, hired **Michel Robichaud** as director of edibles and extraction. The senior-level management position will play "a key role in the

company's leadership vision within the Canadian cannabis landscape," according to a news release.

Robichaud is a trained chemist with more than 20 years of senior business leadership experience who most recently oversaw projects with JD Irving, a Canadian holding company

with many business units that include agriculture, food and transportation. Robichaud has also managed laboratory operations with Rio Tinto, an international mining company.

In his new post, Robichaud will lead a team that will work closely with TGS Colorado, a vertically integrated cannabis company that cultivates, processes and sells marijuana products under The Green Solution moniker. TGS has licensed its extraction intellectual property to OrganiGram, based in Moncton, New Brunswick. Robichaud also will spearhead the construction of a modern extraction and edibles production facility.

"We've definitely chosen a strategy to be a significant player in the oil and edibles market," OrganiGram CEO Dennis Arsenault said.

A major incentive to enter that market is the looming launch of Canada's recreational market, which will likely include cannabis oils and infused products, Arsenault said. He called Robichaud's appointment "one more step in ensuring OrganiGram does the groundwork now to ensure full preparedness for the recreational marketplace."

Arsenault predicted in an interview that oils and infused products will make up 30% of the Canadian cannabis rec market when it launches and, in five years, could represent as much as half the cannabis products sold. He also predicted the biggest portion of that non-flower market will be vape pens and oils.



Laura Harris

Colorado Cannabis Group Taps Ex-MJ Enforcement Chief

The Colorado Cannabis Chamber of Commerce appointed a former head of the state's Marijuana Enforcement Division, **Laura Harris**, as its executive director.

Harris worked more than 30 years with the Colorado state government, finishing her tenure with the Marijuana Enforcement Division, from which she retired in

2013. Since then, she has worked as a consultant.

"Colorado's cannabis industry is the gold standard nationwide," Harris said, "and I am eager to begin working with industry stakeholders, regulators and elected officials at the state and local level to help ensure this dynamic industry continues to thrive."

Harris replaces Tyler Henson, who recently took a job with the International Premium Cigar & Pipe Retailers Association in Washington DC.

CO Regulators Start Own Firm

Andrew Freedman, Colorado Gov. John Hickenlooper's outgoing director of cannabis coordination, announced he is leaving government to co-found a consultancy with another outgoing state employee: **Lewis Koski**, a deputy senior director of enforcement for the state department

of revenue and former director of Colorado's division of marijuana enforcement. **John Hudak**, a senior fellow at the Brookings Institution, rounds out the team as the firm's senior adviser.

Changes Atop American Cannabis Company

Denver-based American Cannabis Company, a business-to-business consultancy and seller of ancillary products to the cannabis industry, promoted COO **Terry Buffalo** to the position of principal executive officer. He will lead the company in that role.

American Cannabis Company co-founder and outgoing CEO **Corey Hollister** will remain a director and serve as co-chairman of the company's board of directors. He will transition to a client services position and also will be charged with establishing a company office focused on developing new business in the Eastern states that have passed medical or recreational cannabis programs.

Strain-Development Business Appoints Director

Veritas Pharma, a Vancouver, British Columbia, company that seeks to develop and commercialize strains of medical



Terry Buffalo



Corey Hollister

cannabis to treat specific ailments, appointed **Linda Sampson** as a director. Sampson had served as president of Marapharm Ventures, a publicly traded medical marijuana company with operations based in British Columbia and dealings in Nevada and Washington state as well.



Dr. Robert Ritch

Glaucoma Expert Joins CBD Research Firm's Board

AXIM Biotechnologies, a cannabinoid research and development firm in Toronto, added Dr. **Robert Ritch** to its advisory board. Ritch is surgeon director emeritus and chief of Glaucoma Services at New York Eye and Ear Infirmary of Mount Sinai in New York.

Ritch will advise the company on developing cannabis-based products for glaucoma and xerophthalmia, or dry eye. Ritch is a fellow of the American Academy of Ophthalmology, American College of Surgeons, International College of Surgeons, Royal College of Ophthalmology, Association for Research in Vision and Ophthalmology, and New York Academy of Medicine.

LED Company's CEO Promoted Quickly

The board of directors of Heliospectra AB, an LED lighting company, elected **Ali Ahmadian** as CEO. Ahmadian joined Heliospectra, which has offices in Göteborg, Sweden, and San Francisco, last November as Chief Commercial Officer. Before Heliospectra, Ahmadian was part of the global senior leadership team at Tetra Pak, a multinational food packaging and processing company.



Ali Ahmadian

Heliospectra's previous CEO, **Staffan Hillberg**, has joined the Wood & Hill investment firm, also in Göteborg, where he will focus on real-estate investments and advising international high-tech companies seeking to raise capital. Hillberg joined Heliospectra in 2010, and has been retained by the company as a consultant.

Inventory, Distribution Pro Switches Gardening Companies

GrowGeneration, a specialty retail hydroponic and organic gardening store chain with locations in Colorado and California, has hired **Joseph Prinzivalli** as inventory controller. Prinzivalli previously worked at another Colorado-based gardening store, Way to Grow, as an inventory manager from July 2014 to December 2016, overseeing inventory movement and managing analytical and reporting functions. He also coordinated the shipment of goods to stores and customers with third-party shippers and suppliers and managed distribution operations. From July 2011 to June 2014, Prinzivalli served as Way to Grow's distribution center manager.

MassRoots Hires VP of Business Development

MassRoots, the Denver-based canna-centric social networking platform with more than 900,000 users, has hired **Daniel Droller** as vice president of business development. Droller will focus on creating partnerships and exploring merger and acquisition possibilities. Droller previously served as director of business development at Chartboost, which offers a platform for mobile-game developers to get players and generate money.

Hoban Brings Hemp Specialist Aboard

The Hoban Law Group has hired attorney **David Bush**, who will join the industrial hemp business practice in the firm's Denver office. Bush previously had his own practice that focused on hemp.

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**Conservation Group
Appoints Standards Committee**

The Resource Innovation Institute, a Portland, Oregon-based group that aims to promote and better understand energy and water conservation in the cannabis industry, has created a 29-person technical advisory committee to develop energy and water use standard for the industry. The committee draws from seven specialties. The members are:

- Cultivation – **Jesse Dodd**, Biovortex [California]; **Jacob Freepons**, Kanna Botanicals [California]; **Nick Hice**, Denver Relief Consulting [Colorado]; **Jeremy Plumb**, Newcleus [Oregon]; **Casey Rivero**, Yerba Buena [Oregon]
- Manufacturing – **Eric Brandstad**, Forever Flowering Greenhouses [California]; **Dan Peltinov**, Drygair [Israel]; **Steve Perry**, Adaptive Plastics [Oregon]; **Bill Whittaker**, Priva [Canada]; **Neil Yorio**, BIOS Lighting [Florida]
- Design and Construction – **Jim Brown**, URBANADD Architects [Washington]; **Matthew Gaboury**, Calyx King Consulting [Washington]; **Ian Gordon**, GroTec Builders [Oregon]; **Josh Stephenson**, MacDonald-Miller [Oregon]

- University Research – **John Lea-Cox**, University of Maryland [Maryland]; **Filip van Noort**, Wageningen University [Netherlands]
- Public Agency – **Barb Anderson**, Washington State Department of Ecology [Washington]; **Duane Jonlin**, city of Seattle [Washington]; **Michael Thomas**, Denver Water [Colorado]
- Energy/Utility – **Chris Cloutier**, Cloutier Sustainability Group [Minnesota]; **Theresa Haskins**, Portland General Electric [Oregon]; **Bryan Jungers**, E Source [Colorado]; **John Wilson**, public utilities [Oregon]
- NGO – **Jeremy Del Real**, Center for Sustainable Energy [California]; **Massoud Jourabchi**, Northwest Power & Conservation Council [Oregon]; **Alexi Miller**, New Buildings Institute [Oregon]
- Environmental Engineering – **Catherine Drumheller**, Oak Services LLC [Colorado]; **Kathy Lombardi**, Maul Foster & Alongi [Oregon]; **Josh Long**, E4E Solutions [Georgia]; **David Berlin**, Hydrologic Purification Systems [California] ♦

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Insights From a Cannabis Investment Heavyweight



Five Questions With Privateer Holdings CEO Brendan Kennedy

by Bart Schaneman

Brendan Kennedy knows the ins and outs of marijuana investment. The CEO of Seattle-based Privateer Holdings holds the reins of an influential private equity firm that recently raised \$122 million to invest in marijuana businesses. In doing so, Privateer became the first cannabis-centric investment firm to drum up more than \$100 million. Privateer's current holdings include:

- Leafly, an online strain and dispensary guide
- Tilray, a federally licensed Canadian medical cannabis producer that has been positioning itself as an overseas exporter of medical cannabis
- Marley Natural, the official marijuana brand of reggae legend Bob Marley

Marijuana Business Magazine spoke with Kennedy about big institutional investors and cannabis, investment opportunities in Canada and around the globe, and how he thinks the MJ industry will fare under President Donald Trump.



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What will it take to get prominent Wall Street investment firms to start pumping money into cannabis companies?

We secured the first institutional investment in 2015, and Cowen and Company became the first Wall Street investment bank to initiate coverage of the cannabis industry. So, in many respects, this has already started. But cannabis is still a very nascent industry that is operating largely in isolation from the rest of the global financial system. That's finally beginning to change.

Investors are becoming more sophisticated, representing larger pools of capital from more traditional sources. We're still waiting to see an influx of large institutional investors into this space. But that will change when the banks get more comfortable. That will happen as our industry continues to develop and professionalize.

While many marijuana businesses are focused solely on the burgeoning U.S. market, you've spent a lot of time exploring opportunities in other countries. What are the most promising international markets from an investment and business perspective?

We are already seeing the emergence of an international medical cannabis industry. We project the global medical cannabis industry to be a \$100 billion total opportunity within the next several decades.

In particular, Germany – the second-largest health care market in the world after the United States and a nation of 80 million people – is in the process of implementing a medical cannabis program in the first half of this year.

Meanwhile, I think we are about a decade away from international exports and trade for recreational cannabis. Canada is set to introduce its framework for recreational legalization later this year, becoming the first G-7 nation to do so. That will be a real victory for the legalization movement that should reverberate around the world.

How should U.S. cannabis companies determine whether they should focus on the domestic market or expand outside of the country?

Last year Tilray became the first company to export medical cannabis products from North America to the European Union. That accomplishment required months of preparation involving dozens of people navigating complex regulations on multiple continents. Companies that are interested in international expansion need to do due diligence and consider all of the factors involved before they decide to take their businesses abroad.

“ We project the global medical industry to be a \$100 billion total opportunity within the next several decades.”

How do you think the industry will fare under Trump, and has Privateer or any of its portfolio companies shifted plans as a result of his election amid the uncertainty?

We are hopeful President Trump's administration will respect states' rights to set their own cannabis laws, as well as the will of the voters in states that have decided to legalize cannabis for medical or recreational purposes. Cannabis legalization measures won by a wide margin in both Republican and Democratic states, demonstrating that legal cannabis is a mainstream issue supported by Americans around the country and across the political spectrum. It would be politically unwise for the new administration to roll back reforms.

How are you positioning your medical marijuana cultivator/distributor Tilray in the Canadian market ahead of recreational marijuana legalization? How big do you think the Canadian market will become?

Canada has the most sophisticated medical cannabis program in the world, with robust quality-control requirements overseen by experienced regulators. Tilray is and will always be a medical brand – we are committed to partnering with universities, hospitals and other research institutions to advance our knowledge of the science behind medical cannabis. Any recreational opportunities Privateer Holdings may pursue in Canada would be new brands. We estimate Canada's medical market to be a \$1 billion opportunity, while the recreational market already is a \$6 billion illicit market. ◆

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Industry Snapshot: Banking-Related Services

Data, trends and challenges

by John Schroyer

Perhaps the biggest logistical obstacle facing many cannabis businesses today is the reluctance of most financial institutions to serve the industry. Because of marijuana's status as a Schedule 1 controlled substance, banks and credit unions remain vulnerable, at least theoretically, to criminal charges from the Department of Justice if they cooperate with plant-touching companies.

Members of Congress have introduced bills for years to try to solve the banking problem, which they view as a public safety hazard because many state-legal marijuana businesses are forced to do business in cash. But those attempts have failed, and the lack of banking services remains a top problem for the cannabis industry.

In response, a small but significant subsector of companies has emerged that focuses on connecting marijuana-related businesses with bank accounts and related services, such as the ability to accept electronic payments.

While the number of companies trying to solve the banking issue is sizable – the industry directory at MJBizDaily.com lists dozens of “banking and payment processing” companies – many are not reputable or simply don't work.

“Effectively, there are only two ways to solve this problem. You can solve it overtly, or you can solve it covertly,” said Mark Goldfogel, executive vice president of Fourth Corner Credit Union in Colorado, which is mired in litigation with the Federal Reserve over its desire to serve the marijuana industry. (In 2015, the Federal Reserve Bank of Kansas City denied the credit union a master account needed to access the nation's banking system.)

“Overtly,” according to Goldfogel, means cannabis business executives being up-front and honest about their business operations when attempting to land banking services. “Covertly,” by contrast, means disguising the actual



PayQwick's team, shown at the 2016 Marijuana Business Conference & Expo in Las Vegas, has contemplated strategies for expanding into additional states. Photo courtesy of PayQwick

business dealings – for example, a cannabis cultivator tells a bank that it's in agriculture but doesn't specify the plants that are grown and sold.

While there are many snake oil salesmen who promise the sky when it comes to cannabis banking, at least a handful of reputable companies are making inroads with financial institutions.

Over 300 banks in the U.S. are working with cannabis-related companies, according to federal data released last spring. However, many of those banks only provide temporary or limited services to cannabis companies that are in the process of obtaining state or local business licenses.

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"In Pennsylvania and California, we've got a few new banks that we're working with, but they're only open to establishing capital accounts," said Lance Ott, CEO of Washington state-based Guardian Data Systems, which helps cannabis businesses obtain financial services. "So it's a holding company, while they get ready to apply [for business permits]. But I can't guarantee that those accounts will remain open once these folks become an active cannabis business."

Steve Schain, a Pennsylvania attorney with the Hoban Law Group, said that by his count only 38 banks nationwide are working hand-in-hand with marijuana-related companies. There could be more than that, he said, but probably not a lot.

That means there's a huge demand for anyone with a solid business plan on how to deal with the banking conundrum, and plenty of companies are actively working on just that.

Market Dynamics

No two banking or payment solution companies offer the same services. Some are extremely selective about their client base.

For example, Link to Banking, which is a partner of California-based Kind Financial, exclusively serves financial institutions that want to work legally with marijuana companies. That means it won't take on clients such as the thousands of medical marijuana dispensaries in California.

"Link to Banking works with financial institutions in setting up their cannabis compliance, and secondly, we provide a software solution that gives the banks the necessary information they need in order to be in an over-compliant situation [with federal guidelines]," said David Dinenberg, founder and CEO of Kind Financial.

Dinenberg hopes that work will help make more banks comfortable enough to begin granting accounts and other services to marijuana businesses.

Other companies in the marijuana banking business – including Guardian, Tokken and PayQwick – take a different approach in helping cannabis companies obtain financial services.

California-based PayQwick, for example, has put together what its executives describe as a PayPal-like system: Cannabis clients – such as growers, retailers or other plant-touching businesses as well as MJ consumers – establish accounts through which they can pay each other.

"Picture a funnel, and at the top of the funnel you've got all the money from marijuana transactions," said PayQwick CEO Ken Berke. "The stem of the funnel is our compliance program. When the money goes through the stem of the funnel ... when it comes out the bottom, it's essentially safe to deposit into any financial institution in the country."

In this system, Berke said, PayQwick relies on its own



PayQwick's platform removes cash from marijuana transactions and allows consumers to pay using a smartphone.

Photo courtesy of PayQwick

bank accounts and connections to support all the cash that client companies use in their accounts.

"Our platform works exactly like PayPal. If you buy something on eBay, instead of sending the person a check or a credit card, you just send the money from your PayPal account to their PayPal account. Our platform works exactly the same way," Berke said.

Denver-based Tokken works in a similar fashion.

"It's a banking interface ... to allow our banking partners to extend services through us," CEO Lamine Zarrad said.

As of mid-January, Tokken was working with four banks, including two in Colorado and two in Puerto Rico. PayQwick was working with two banks in Washington state and one credit union in Colorado as well as cultivating possible banking connections in Oregon and Florida. Guardian Data Systems, which has been operating in the space for much longer than Tokken and PayQwick, was working with 21 banks. And Link to Banking was affiliated with four banks.

All the companies, however, are swamped because of the demand for their services.

PayQwick's Berke said "we are processing millions of dollars a month" in financial cannabis transactions. The company gets a small percentage of those transactions, again similar to PayPal's model.

Guardian's Ott said he's overwhelmed with the demand as well.

"Right now, what we're doing is scaling internally to meet the external demand," Ott said in January, adding that he's booked through March. "I'm having a hard time taking on more business right now. It's that good."

Costs for cannabis companies that want to engage the services of companies like Guardian, Tokken and PayQwick can run the gamut depending on what they want or need. For example, Ott said he'll provide a free initial consultation. But when it comes to hooking up companies with banking services, his fee will typically run about \$5,000



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– with half up front and the rest due once the company lands a bank account, plus a six-month guarantee.

“I’ve never had a client declined [by a bank],” Ott said. “I’ve been very lucky there. I even got one client a \$1.5 million line of credit, from my bank in Illinois.”

PayQwick, meanwhile, is free to set up an account, Berke said, because the company turns a profit from the transaction percentages that it processes.

Tokken works the same way. The company said it has already landed roughly 75 clients in the marijuana industry even though it was founded only last year.

These are just a portion of the services offered by those three companies, however.

Many also dabble in cash management, mobile wallets, compliance consulting and other related areas. Tokken, for example, recently got the green light from Colorado to begin accepting state tax payments for cannabis clients, Zarrad said.

“That’s huge problem-solving for the [industry], but we’re also problem-solving for the state,” Zarrad said.

Business Hurdles

One of the biggest obstacles for these firms is getting their foot in the door of a cannabis business.

“In the industry, the biggest obstacle is skepticism,” Zarrad said. “If you’re a business owner, you’re bombarded with 30 or 40 vendor offers a day, and some of them are those dubious credit card-processing offers, and others are offshore banking options. So a lot of business owners are very skeptical.”

PayQwick’s Berke said one of the most common questions he gets is, “How are you getting around federal banking laws? Aren’t you doing something illegal?”

“We’re not getting around the federal laws. That’s not our goal,” he said. “We are complying with federal banking laws and state law, and that’s what makes the platform work.”

“There’s so much misinformation out there about banking and the industry in general that it’s a challenge to get our message out, that we’re not breaking laws, that we’re actually complying.”

And it’s not just skepticism among marijuana companies. Financial institutions also remain wary of anything related to federally illegal drugs.

“There’s a lot of misinformation out there, and a lot of things that aren’t necessarily true that people believe,” Kind Financial’s Dinenberg said. “The reality is that, between the Cole Memo and the FinCEN Memo ... there’s an outline of ways that financial institutions can work with the cannabis industry. So if you’re interested in participating as a financial institution, you have to learn [the guidelines], and you have to learn how the [cannabis] industry works. So misinformation is one of the biggest hurdles.”

Federal and local politics can also be a roadblock, Ott said. For example, he said two banks in California that were ready to begin doing business with Guardian Data Systems put the deal on hold because of uncertainty over the new Trump administration’s cannabis policy.

“One actually opened an account for one of my bigger clients and then temporarily suspended their program pending the outcome of the inauguration and confirmation hearings,” Ott said.

Trends to Watch More Solutions on the Way?

While the banking situation overall remains murky and problematic, many in the space expect that even more highly competent firms will tackle the problem head-on. That means more competition for clients, but it also means there will likely be more widespread banking solutions in coming years, even without action by Congress.

“We’ll certainly have more competitors. People are already watching what we’re doing,” said PayQwick’s Berke.

Ott is further convinced more banks will be working with those in the cannabis sector as time goes on.

“We’ve already picked up banking in Pennsylvania, and we’ve got more banks reaching out to us all the time,” he said.

Dinenberg said he’s “bullish” on the future of partner company Link to Banking and believes more banks will come on board with the cannabis industry as they realize there are legal and compliant ways they can serve marijuana businesses.

Political Obstacles

Optimism over potential expansion in the cannabis banking business isn’t universal, however.

Tokken’s Zarrad pointed to the same political wariness about cannabis that Ott identified, saying that will have a twofold effect in coming years. First, it will stunt the growth of banking-oriented cannabis companies. And second, it will likely make banks more reluctant to work with MJ companies, because they’ll be concerned about further attention from federal regulators under the Trump administration.

“Currently, there are 300-plus banks that offer services, but I don’t see that number exploding, certainly not in the next four years. What I see is enhanced scrutiny from the federal government,” Zarrad said. “I think banks are going to start becoming a lot more careful in offering services, and they’re going to start looking at platforms that can extend those services through them and manage some of that risk at arm’s length.”

Zarrad has inside experience in such matters: He worked as a bank examiner for the Office of the Comptroller of Currency in Washington DC for almost two years before founding Tokken.

Time will tell whether his prediction bears fruit. ◆

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What's Happening:

National and State News Developments



National

- Whether they know it or not, America's four largest banks have held accounts for marijuana businesses, in contrast to public pronouncements that they avoid the cannabis industry. An analysis by RB Monitor, a Chicago firm that pinpoints the risks financial institutions might face working with the cannabis industry, found that 29 of 84 applicants for marijuana business licenses in Massachusetts had an account with one of the nation's big four banks: Bank of America, Citigroup, JP Morgan or Wells Fargo.
- Guam began accepting applications from entrepreneurs who want to participate in the U.S. territory's new medical marijuana program. Under Guam's MMJ law, business owners can apply for commercial licenses for dispensaries, grow sites, production facilities and testing labs.
- Medical marijuana dispensaries began opening for the first time in Puerto Rico and are poised to serve tourists visiting the island. The U.S. territory adopted regulations two years ago to allow for the cultivation, manufacturing and distribution of medical cannabis.



Alaska

Alaska collected its initial batch of tax proceeds from the first full month of retail sales under the state's new adult-use cannabis program. The state took in \$81,100 from seven growers. For now, Alaska taxes marijuana only at the cultivation stage. The cultivators paid most of the taxes in cash while some used checks.



Arizona

Medical cannabis patients in Arizona bought a record 29 tons of cannabis products in 2016, a 53% increase over the 19 tons purchased in 2015, according to a state report. The sales surge could be attributed to an increase in medical marijuana patients. The program had 114,439 patients registered at the end of 2016 compared with 88,500 at the end of 2015. That's a patient increase of 29%.



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Arkansas

The Arkansas Medical Marijuana Commission will issue 32 licenses for medical cannabis dispensaries, with the application fee set at \$7,500. Unsuccessful applicants get half of their fee refunded. Hoping to achieve geographic diversity and to ensure dispensaries won't be too far from patients, commissioners ruled that each of the state's four congressional districts would get eight dispensaries.



California

Two top cannabis regulators in California said the state remains on schedule to have a formal state permitting system up and running by January 2018 for both medical and recreational marijuana. The move is a positive sign, given that most states suffer from delays in setting up a regulatory infrastructure for cannabis businesses.



Colorado

Wholesale prices of medical and recreational cannabis fell precipitously in Colorado last year, highlighting the difficulties faced by cultivators looking to maintain their profit margins in one of the nation's most mature marijuana markets. The average asking price for a pound of marijuana dropped by 38% in the recreational market and 24% in the medical market in 2016, according to data provided by Cannabase, a Colorado-based online wholesale platform where many of the state's growers and retailers buy and sell cannabis.



Connecticut

A panel of physicians urged the state to add four more conditions to the list of ailments that qualify patients to receive medical cannabis. If the recommendations are accepted by the Connecticut Department of Consumer Protection and a committee of state lawmakers, then shingles, rheumatoid arthritis, muscular dystrophy and fibromyalgia will be added to the MMJ qualifying condition list – bolstering the market for licensed cannabis businesses.



Florida

State regulators proposed to give the seven companies currently licensed under Florida's CBD-focused program entire control of the larger medical marijuana market. The draft rules would, in effect, close off the state's MMJ industry to new growers and dispensary operators hoping to capitalize on the passage of a bill last November legalizing full-strength medical cannabis for a broad swath of patients. Meanwhile, state Sen. Bob Bradley introduced a bill to increase the number of licensees by an additional 20, on top of the existing seven; but the number of registered MMJ patients would first have to top 500,000.



Hawaii

The state health department's seed-to-sale tracking software was deemed ready to go live Feb. 1, meaning that licensed medical marijuana dispensaries finally could begin growing MMJ. Hawaii's new program has been delayed while the health department attempted to link its tracking system with the software used by the eight companies approved to grow and sell medical marijuana. Hawaii awarded the seed-to-sale contract to BioTrackTHC in November, and growers had been waiting since then for the software to go online.

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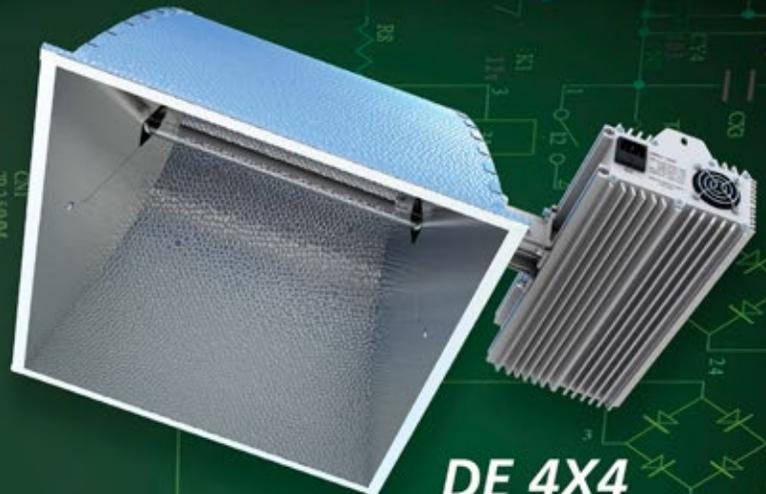
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Illinois

The state's medical marijuana market shook off a slow start and by the end of 2016 was posting record month-to-month gains across a number of categories, according to year-end data. Illinois' 49 medical marijuana dispensaries recorded more than \$36 million in retail sales last year, while cultivation centers amassed total wholesale sales of \$21.9 million. For the month of December alone, dispensaries sold a total of \$5.3 million in product.



Maine

Maine's legislature unanimously approved a three-month delay in the start of recreational marijuana sales. The bill lawmakers backed stipulates that the earliest adult-use cannabis sales can begin is February 2018 instead of late this fall. The legislature backed the bill with total support from lawmakers in both chambers, who all agreed the state needs additional time to write industry regulations.



Maryland

Twenty growing and processing license winners formed a medical cannabis trade association tasked with improving patient access and slashing bureaucratic red tape. The Maryland Wholesale Medical Cannabis Trade Association [MedCan] is made up to 20 firms: Seven of them won both growing and processing licenses, seven won only processing licenses and six won only cultivation licenses.



Massachusetts

State lawmakers pushed back the opening of recreational marijuana stores by six months, dealing a blow to Massachusetts' adult-use industry and raising concerns about the possibility of additional delays. Under a legalization measure approved by residents last November, the first rec shops were slated to open in January 2018. But House and Senate lawmakers voted to postpone the industry's launch until June 2018 to give the state more time to set up the regulatory framework.



Minnesota

Unionized employees at Minnesota Medical Solutions – one of the two licensed medical marijuana businesses in the state – unanimously ratified a three-year contract with the company. MinnMed is a unit of MMJ business Vireo Health, which in September signed what it claimed was the first agreement with organized labor in New York. These cannabis-related labor contracts join a growing number in states that also include California, Colorado and Oregon.



Nevada

A security researcher discovered that the personal information of more than 11,000 medical marijuana dispensary applicants in Nevada could be accessed online, a revelation that caused the state to shut down its online MMJ portal.

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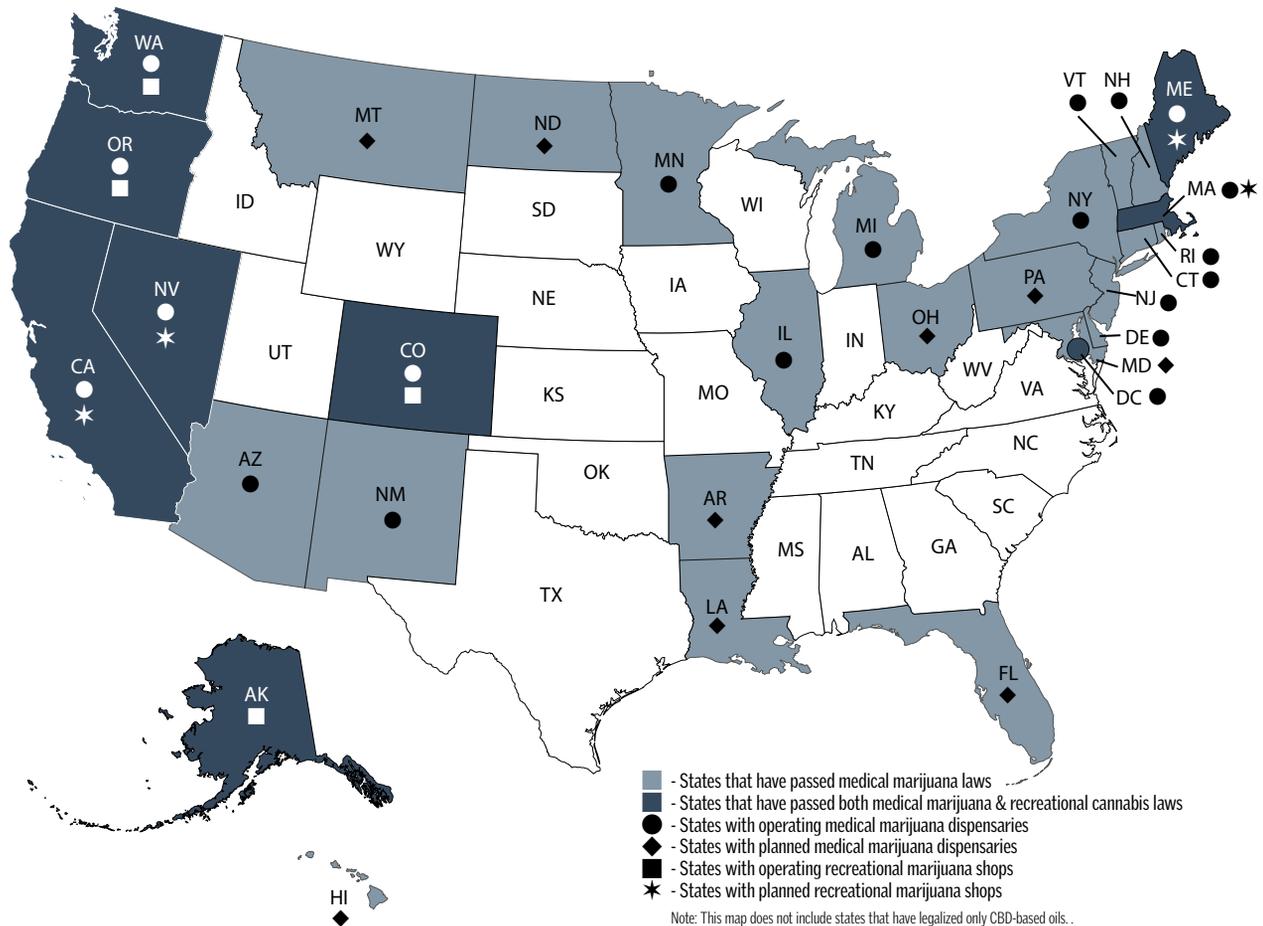
The state's four fledgling medical marijuana dispensaries racked up a combined \$740,000 in sales during their first few months of operation last year, indicating that the companies have a long way to go before breaking even. The sales haul was dwarfed by the \$10 million the companies collectively spent to get their dispensaries up and running. A state health official acknowledged that startup costs for dispensaries in the state are "huge" but said regulators are not concerned about the long-term viability of the companies.



New Jersey

As of early January, more than 450 people suffering from post-traumatic stress disorder had enrolled in the state's medical marijuana program since mid-September, when Gov. Chris Christie agreed to add PTSD to the list of treatable conditions for MMJ. The PTSD enrollees amounted to about 4% of the 10,800 MMJ patients who legally buy medical cannabis from one of New Jersey's five dispensaries. The increase adds further momentum to New Jersey's medical cannabis program, which has had to overcome numerous obstacles.

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New York

MedMen, a California-based marijuana management and consulting firm, acquired Bloomfield Industries, a financially troubled New York cannabis business license holder that had been unable to pay vendors and was seeking new investors. A New York Health Department spokeswoman emphasized that Bloomfield would not be transferring its license to MedMen, a move that is prohibited under state cannabis business laws. Rather, she described the transaction as a change in ownership, which is permitted.



North Dakota

Gov. Doug Burgum signed legislation delaying the rollout of the state's medical marijuana program by several months to give lawmakers and regulators more time to iron out the details. The law originally took effect Dec. 8, 2016, when state health regulators were to begin drafting regulations governing areas such as licensing and enrolling. But the newly signed measure suspends parts of the program. In particular, it delays the North Dakota Department of Health from issuing applications for MMJ dispensaries and receiving applications as well as handing out certificates of registration. The program's suspension lasts until whichever date occurs first: July 31, or the start date stipulated in any new measure enabling the sale and use of MMJ. Lawmakers were beginning to draft such legislation as of late January.



Ohio

A majority of doctors in Ohio said they will be reluctant to recommend medical marijuana for their patients once the state's MMJ program launches, which could create a tough business climate for licensed companies. Roughly 30% of the physicians who participated in a State Medical Board of Ohio survey said they will not recommend medical marijuana as a treatment, and more than 40% said they are unlikely to recommend MMJ. A dearth of doctors could limit the patient pool, which in turn could hamper MMJ sales.



Oregon

The agency that governs the state's recreational marijuana industry was swamped with nearly 2,000 adult-use business license applications in 2016, far above the 800-1,200 it expected. The Oregon Liquor Control Commission received 1,907 total applications last year. Of those applications from retailers, growers and other types of businesses, 762 had been approved by the department to begin operating.



Pennsylvania

The state's department of health released application forms for companies seeking permits to grow or dispense medical marijuana. Applications are due back by March 20. The cultivation application fee is \$210,000, and applicants must have proof of \$2 million in capital on hand, though \$200,000 will be refunded if an applicant doesn't win a license. Dispensary applicants must pony up \$35,000 for the application, \$5,000 of which is refundable if a permit is not granted, and they'll also have to have proof of \$150,000 in capital.



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Rhode Island

Rhode Island awarded the state's first commercial medical cannabis grow licenses to three companies in the city of Warwick. They will be allowed to sell medical marijuana to the state's three existing dispensaries. Those dispensaries are all vertically integrated but still buy about 40%-60% from other growers. Last year, regulators adopted a law prohibiting the more than 2,800 caregivers in the state from selling product to dispensaries amid fears some of that medical cannabis was entering the illicit market. To avert a shortfall, regulators created the new grow licenses.



Washington state

Washington's two top-selling cannabis retailers were put up for sale. Main Street Marijuana owner Ramsey Hamide and Uncle Ike's owner Ian Eisenberg, who own three storefronts apiece, teamed up in an attempted joint sale of both companies. The asking price for all six shops: \$50 million.

Roger Fillion

Note: Entries sourced from Marijuana Business Daily and other national and local news outlets. These developments occurred before this magazine's late-January publication deadline, so some situations may have changed.

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Maine

After surviving a razor-thin vote margin and opposition-led recount efforts, Maine officially legalized recreational marijuana in early January. State lawmakers, however, quickly approved legislation stipulating that February 2018 is the earliest that adult-use cannabis sales can begin - instead of late this fall as originally intended. Until now, opportunities for new businesses have been limited, as all of Maine's medical cannabis licenses were awarded long ago. But the legalization of adult-use marijuana opens the door for numerous business opportunities in the near future, given that Maine's adult-use market could bring in \$250 million-\$350 million once it's fully matured.



Main measure	Ballot Question 2 (cultivation and possession); Question 5 (nonprofit dispensaries and voluntary registry); Question 1 (legalization, regulation and taxation of recreational marijuana)
Year passed	Question 2: 1999 Question 5: 2009 Question 1: 2016
Cannabis business regulations (medical)	Heavy. The state strictly limits the number of permitted dispensaries to one in each of eight predefined geographic areas. Dispensaries must also obtain several other types of permits and licenses and cultivate their own cannabis. The state has implemented production caps as well. Regulations cover all conceivable aspects of operations, and dispensaries are subject to inspections by the state. Of note is Maine's large number of caregivers, many of whom make a living off of growing a limited number of plants for patients. Caregivers are not required to register with the state. Maine is in the process of developing regulations for its rec market, which will be strict as well.
Patient Registry	Voluntary, but patients who do not register must still obtain a written recommendation from an in-state physician and otherwise abide by the program rules in order to be protected under the law.
Sampling of state medical marijuana licensing fees (rec still being hammered out)	Application: \$15,000 License: \$12,000 Change of location: \$4,000
What to watch	<ul style="list-style-type: none"> • In January, Gov. Paul LePage signed legislation delaying the start of rec sales until Feb. 2018 at the earliest, instead of late this fall as originally intended. The law is intended to give the state more time to create a regulatory system. • MMJ dispensaries are supporting legislation that would allow them to begin selling adult-use cannabis while regulations are being drafted for the new rec market, similar to how recreational sales began in Oregon.

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Envirotech Cultivation Solutions.....	5	Paxiom Group.....	87
Gavita Holland.....	55	Precision Extractor Solutions.....	21
Greenlane Dispensary Services.....	1	SIVA Enterprises.....	Back Cover
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Growers Supply.....	79	STULZ.....	99
HempTech Corp.....	35	Suluxlight Lighting Co., Ltd.....	80
Hortilux.....	Inside Back Cover	Surna.....	29
Hydraulics International Inc.....	59	Tecogen.....	19
Hydropods Inc.....	93	The Arcview Group.....	57
Hydrotek.....	103	Total Grow Control.....	69
IMEX Packaging.....	71	Treez.io.....	48 and 49
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What They're Saying



“Someone’s going to get the primary government contract for that, presumably in California, since we’re requiring that.”

– Amanda Conley, co-founder of Branch & Branch law firm and the National Cannabis Bar Association, on the lucrative business prospects for seed-to-sale tracking and other technology in the California marijuana industry.

Source: *Marijuana Business Daily*

“Previously, turning a profit was almost a given, but not so much anymore.”

– Erik Romero, director of data and finance for wholesale marijuana platform Cannabase, on the plight of cannabis cultivators in Colorado, where the price for a pound of flower in 2016 dropped by 38% in the recreational market and 24% in the medical market.

Source: *Marijuana Business Daily*



“Well-trained employees are more likely to stick with you, and they save you money by delivering better care, bringing repeat business and making fewer mistakes.”

– Shaleen Title, a partner with the THC Staffing Group in Boston, on the importance of business owners providing employees with adequate training.

Source: *Marijuana Business Daily*



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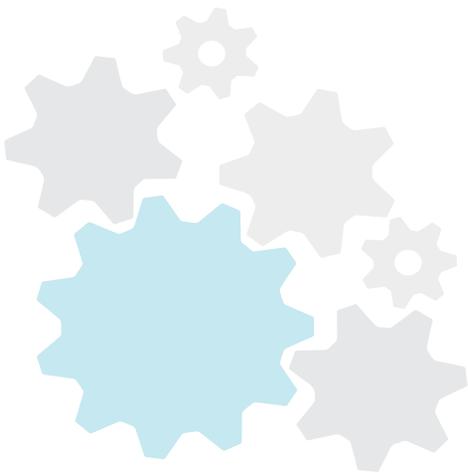
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