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# HIGH TIMES

February 517

## SPECIAL HYDRO ISSUE

**CULTIVATING  
THE FUTURE**

**COCO  
COIR**  
**MAXIMIZE  
YOUR YIELD**

## POT & SEX

**CANNABIS IN  
THE BEDROOM**

**OREGON  
PRICE DROP**  
**SUPER SURPLUS**

**CBD GOES  
MAINSTREAM**  
**EXCLUSIVE REPORT**

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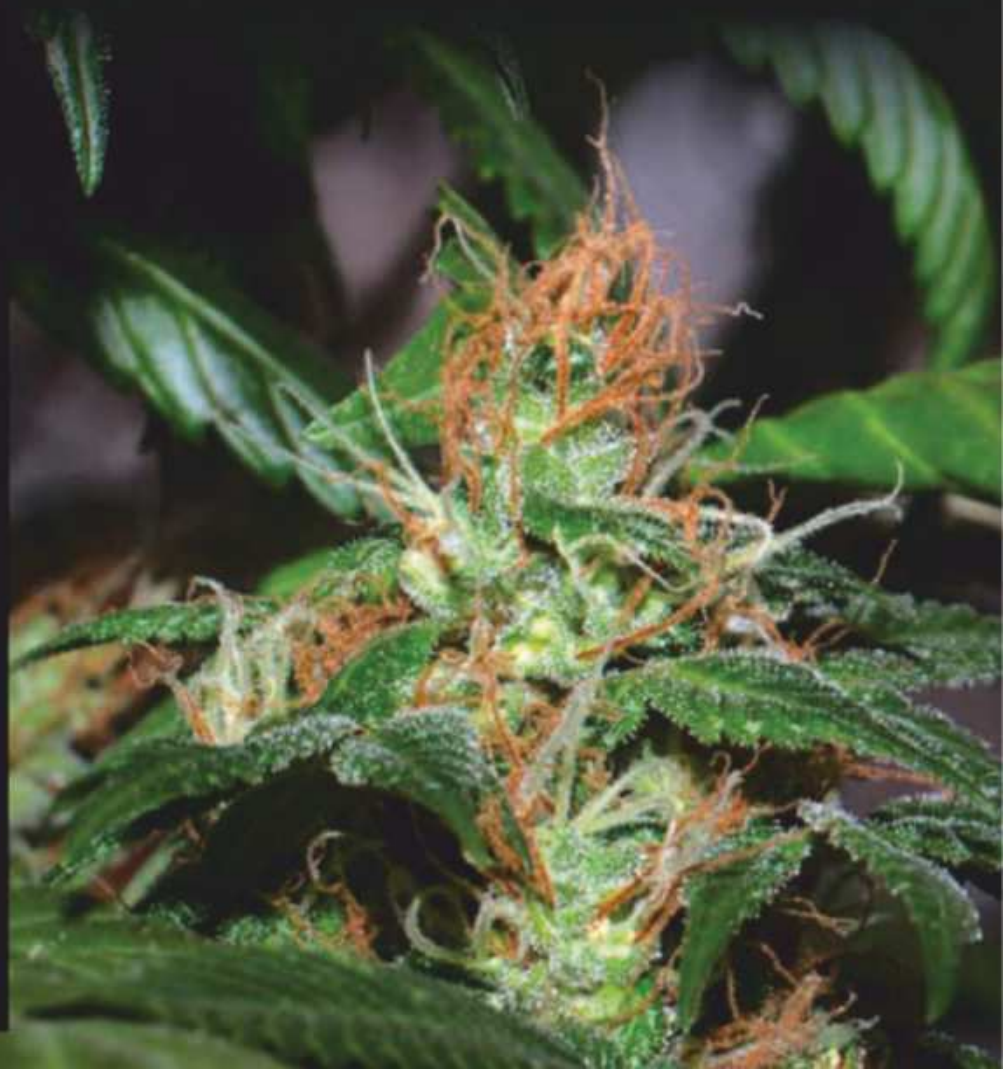
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73,000

71,200

22,078





# BC Bud Depot

BC GOD BUD



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INDICA

8-9 WEEKS

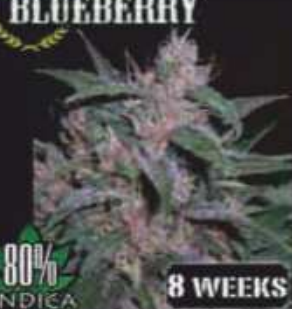
THE PURPS



HYBRID

7-8 WEEKS

BLUEBERRY



80%  
INDICA

8 WEEKS

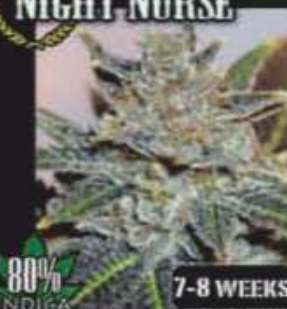
GIRL SCOUT-COOKIES



HYBRID

9-10 WEEKS

NIGHT NURSE



80%  
INDICA

7-8 WEEKS

SWEET GOD



70%  
INDICA

6-8 WEEKS

THE BLACK



90%  
INDICA

8-10 WEEKS

CHD GOD



INDICA-DOMINANT

8-9 WEEKS

GOD'S GIFT



80%  
INDICA

8-9 WEEKS

THE BIG



MOSTLY  
INDICA

8-9 WEEKS

SHIATSU KUSH



HYBRID

8 WEEKS



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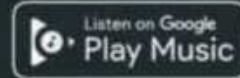


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# HIGH TIMES FEBRUARY



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**44 OVERPRODUCTION IN OREGON**  
 A surplus of cannabis has thrown Oregon's legal  
 pot growers, processors and retailers for a loop.  
 How did they respond to the glut and how will it  
 affect the surrounding legal marijuana landscape?  
*By Danny Danko*

**55 CANNABIS IN THE BEDROOM**  
 Marijuana has long been considered an  
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 connect to your lover and bring about a happier,  
 healthier sex life. *By Melinda Misuraca*

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 Growing cannabis plants without soil requires an  
 understating of the fundamentals, techniques and  
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 down the drippy details. *By Erik Biksa*

**78 GROWING WITH COCO COIR**  
 The latest alternative growing medium is  
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*By Todd Tilth*

**88 CANNABIS 101: GETTING STARTED**  
 This excerpt from the new book, *A Woman's  
 Guide to Cannabis*, breaks down the basics for  
 cannabis newcomers, including budtenders'  
 frequently asked questions. *By Nikki Furrer*

**99 THE MAINSTREAMING OF CBD**  
 CBD is currently enjoying some time in the  
 spotlight as a catchall for every ailment  
 imaginable. We separate fact from fiction in  
 this detailed look at the new *it* cannabinoid.  
*By Chris Parker*





*Cannabis*



*Art*



*Culture*

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# HIGH TIMES

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## THIS IS A PIPE

Fire it up!



In 2003, the federal government decided to crack down on the epidemic of super cool smoking accessories proliferating throughout the country. The DEA's Operation Pipe Dreams ultimately took down 50 people on charges of trafficking illegal drug paraphernalia. Famously, Tommy Chong got caught up in the sting and went to prison for nine months on paraphernalia charges. Fortunately, the world has changed quite a bit over the last 15 years. Now, some of the pipes and bongs that incurred the wrath of the feds are being celebrated

in the increasingly mainstream marijuana scene. Some are even selling for hundreds of thousands of dollars.

A new book called *This is a Pipe* pays tribute to these functional works of art—from impossibly elaborate pirate ships to badass gun replicas that actually shoot flames! The heady coffee table book features the most inventive work by 50 of the most important glass blowers of all time. Learn more about this exciting new release and see more of these incredible pipes at [hightimes.com](http://hightimes.com).



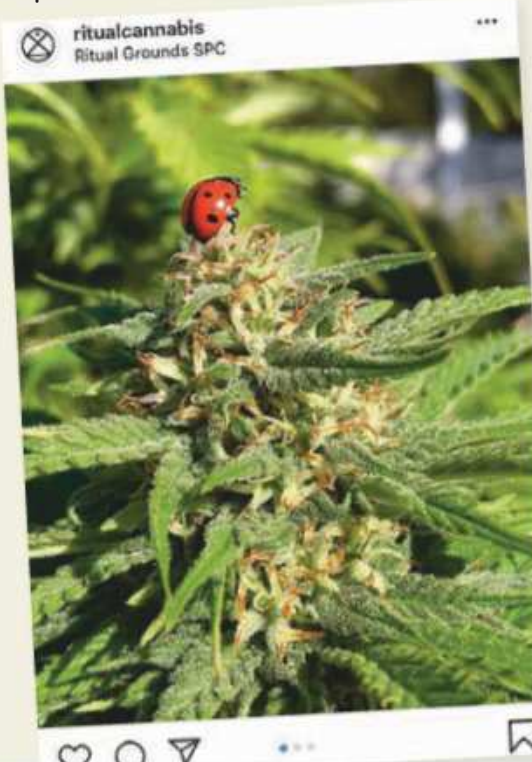
Sometimes a pot detox is necessary...

## HOW TO SUCCESSFULLY DETOX THC

While we rue the day, we acknowledge that sometimes a cannabis detox is necessary. Whether you're prepping for a job-related drug test or just want to lower your tolerance so you get a little more bang for your buck when you toked, we've got you covered. Our guide to successfully detoxing THC has everything you need to know to get started and complete a successful detox. Detoxing from cannabis doesn't include some of the incredibly unpleasant aspects of detoxing from addictive narcotics like opioids. But for regular smokers, it can be difficult. Our guide provides various methods you can follow for your detox, as well as helpful tips on how to combat sleeplessness and irritability, and info on how to speed the whole process up. If you're considering a break from cannabis, we won't judge! Visit [hightimes.com](http://hightimes.com) and learn how to successfully detox from THC.

## ON INSTAGRAM

Every cannabis crop is at risk of infestation. Attentive growers look for the telltale signs of unwanted pests. However, growing great ganja means not corrupting your crop with potentially dangerous pesticides. Fortunately, nature provides a solution. Ladybugs are the heroes of the growroom, protectors of crops everywhere! These amazing insects feast on the nasty pests that can destroy your precious plants. And as @ritualcannabis can attest, they keep your grow infestation-free without the use of pesticides.



## WE WANT TO HEAR FROM YOU!

Tweet your best high observations and comments our way (@HIGH\_TIMES\_Mag) for a chance to be featured on this page! And be sure to follow us on Facebook: (Facebook/HighTimesMag) and Instagram: (@hightimesmagazine) for all the latest news as it's happening!

@Kawasaki\_Davie: @HIGH\_TIMES\_Mag Man I'd love to have some shrooms right now!!

@Rajonez: @HIGH\_TIMES\_Mag Great! We've got FL OG & we can't legally smoke it in FL. What a shame. So sad

@john84481270: @HIGH\_TIMES\_Mag I had some nice bongs but they got knocked over and broke i now vape all the time everything is better vaping I can go old school though for old times sake

@timkrukowski: @HIGH\_TIMES\_Mag Everything is twice or more expensive on the east coast (DC)

@Karhods54: @HIGH\_TIMES\_Mag With the potency of cannabis today, you don't need to choke on it to enjoy it...less is more... HELLO...?

@DomInDaOcean: @HIGH\_TIMES\_Mag Best pre-roll is the one you rolled last night of what you grew yourself

@vegashoney33: @HIGH\_TIMES\_Mag I'm so glad I invested, thank you for making it possible. GoD Bless!!

@Doucette82: @HIGH\_TIMES\_Mag Zombie Haze sounds amaze-ballz. I'll have to try that some time. Same with Sunrocks and Moonrocks. I know, I know i'm missing out.

@grow\_can: @HIGH\_TIMES\_Mag Eventually the "black-market" suppliers & growers should be able to privatize into a legitimate business. Would drive economy even further. Just need to work out better regulations ... as we are still in infancy.

@Bilemonx: @HIGH\_TIMES\_Mag Dont mix tobacco with the sweet leaf.





# DOSI Sherbet

2 Scoops (Grape Sherbet x Orange Sherbet) x Dosidos

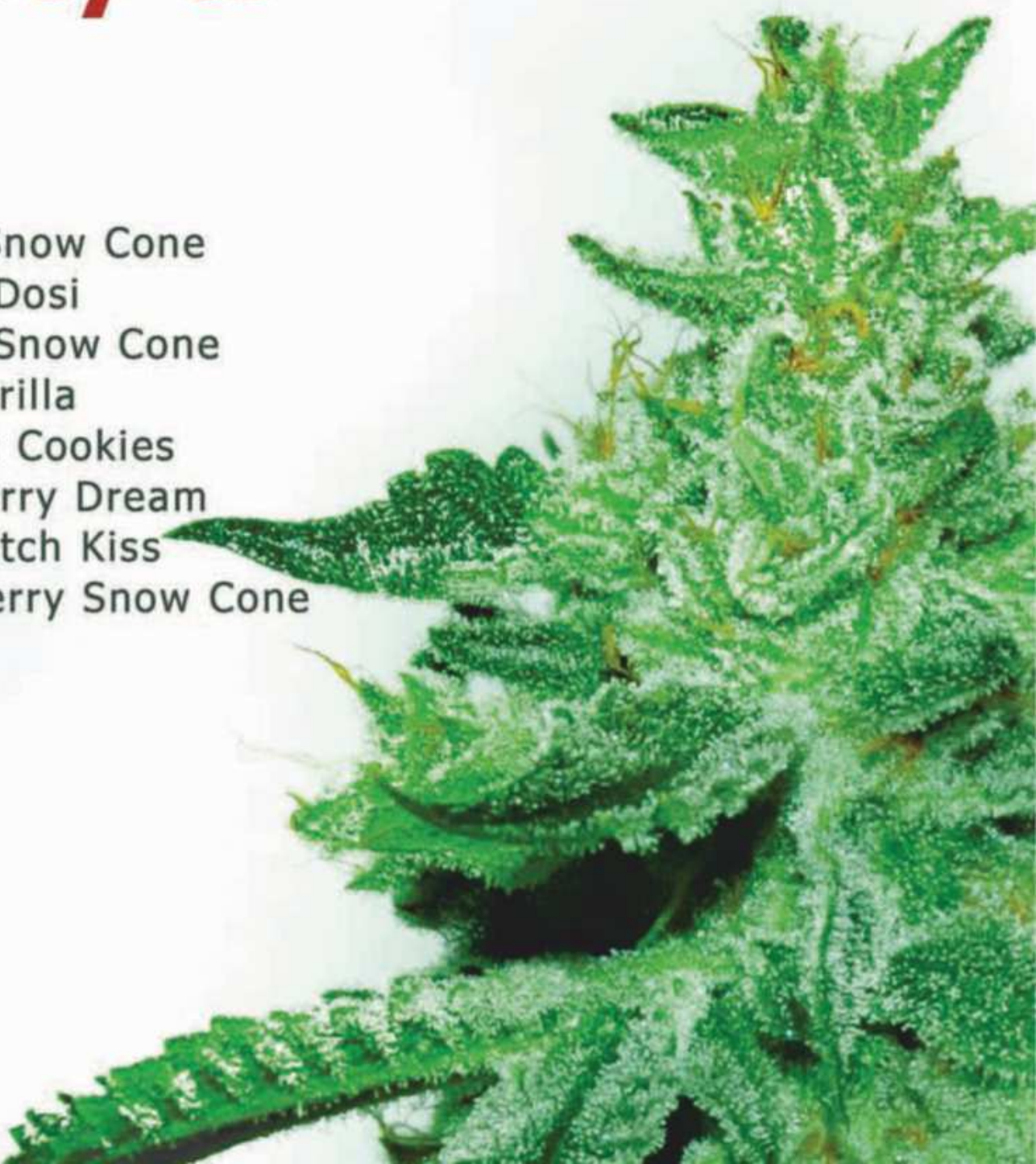
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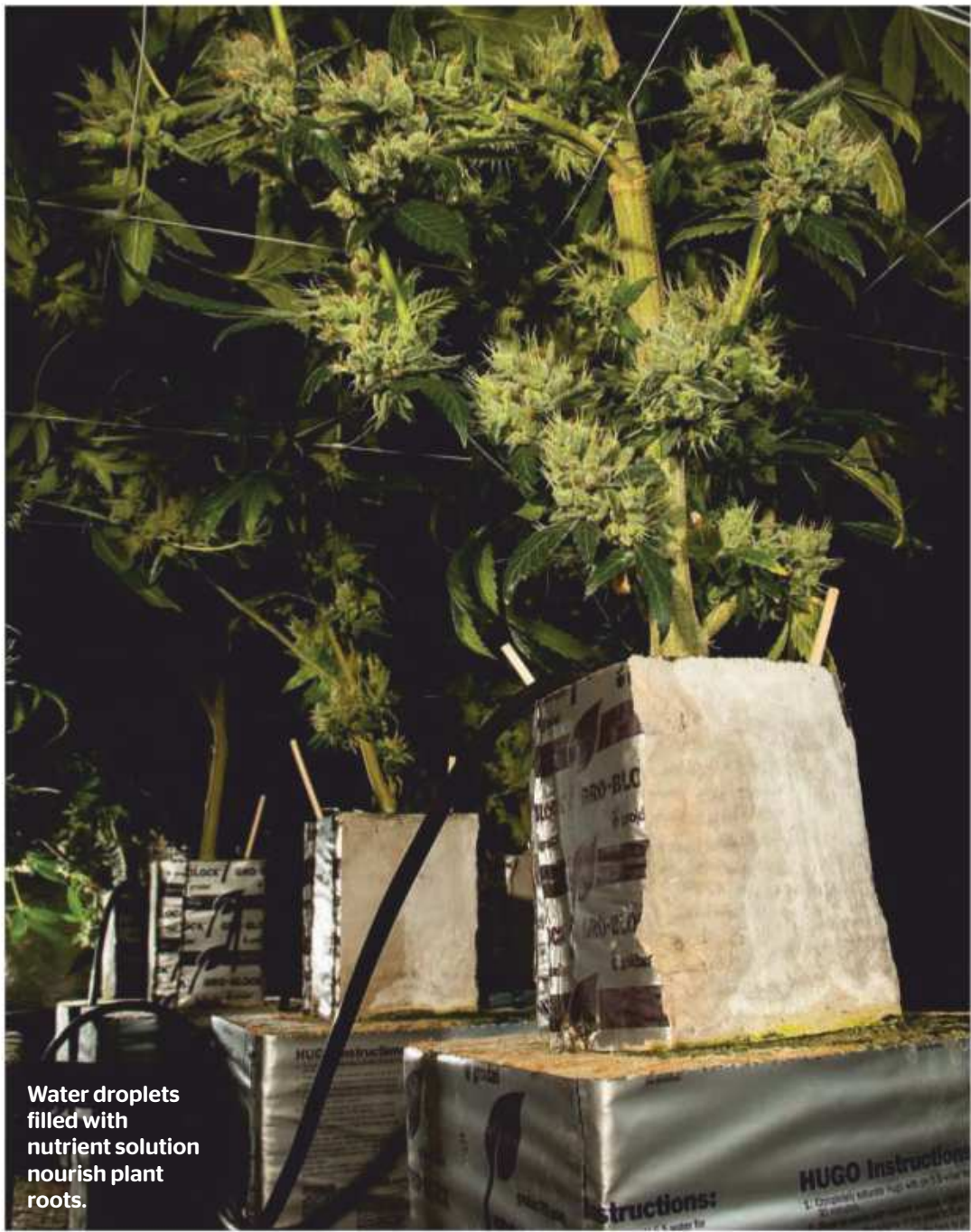
Grape Snow Cone  
Lemon Dosi  
Lemon Snow Cone  
Pink Gorilla  
Sherbet Cookies  
Blackberry Dream  
Sour Patch Kiss  
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# H<sub>2</sub>O 101

**PLANTS GROWN HYDROPONICALLY** reward savvy indoor farmers with explosive growth rates and massive yields of fantastic frosty flowers. Other advantages to soilless gardening include sophisticated automation, increased cleanliness in the growing space and much heavier harvests than those produced with traditional soil-based mediums. But the level of precision needed to dial in your watering system and nutrient solution requires a deep understanding of the fundamentals of aquatic horticulture.

Our annual “Hydro Report” focuses on the top techniques and most innovative new equipment for improving and perfecting the aroma, flavor and potency levels of your pot. Hydro expert Erik Biksa also shines a bright light on products that amplify the volume of your plant’s roots and their ability to absorb the food and oxygen that power and promote healthy flowering and essential oil production.

Also in this pot-packed issue, we break down some cannabis basics for those new to the marijuana scene, including insightful answers to frequently asked questions about how medical pot can improve people’s lives. Plus, we take an in-depth look at the horticultural benefits of growing cannabis in coco coir, we explore the mainstreaming of CBD (cannabidiol) and we delve into the role that pot can play in the bedroom for those looking to enhance their sex lives. Additionally, I report on the dramatic drop of pot prices in Oregon and the implications to cultivators, retailers and consumers worldwide.

Enjoy the issue and kindest regards.

*Danny Danko*  
SENIOR CULTIVATION EDITOR

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## THE FIGHT CONTINUES

Like many women, I suffer from horrible PMS and periods. For years I suffered through this pain, even losing multiple jobs because I could barely get out of bed for a week at a time. Marijuana has been my saving grace and has given me the ability to function regardless of how bad my period is. When I lived in [a legal state], I could easily acquire the types of weed that helped me. A few years ago my husband and I moved to [the Midwest]. Getting weed out here is not only incredibly hard but also dangerous. I've known many people who have ended up in jail for only having a gram and a pipe on them.

*H.D.*

## DRUG TEST

I recently moved from a weed tolerant area—New York City—to a weed intolerant area—Tennessee—and to my chagrin I have found that three separate sources have given me pot that makes me sick when I smoke it. Symptoms are intense heartburn, an unusual burning sensation in the throat and a less than high high. (For what it's worth, yes, I have stopped smoking it.)

The interesting question to me is, what the hell did I just smoke? How does one get their herb tested? I don't think it is paraquat but I do think it is chemical, maybe pesticide or fertilizer. God forbid they are adding K2 or other synthetic drugs to the stash to weigh it down.

Whatever it is, with the new legal markets and rules I would think there are labs that I could access.

*Mark  
Tennessee*

Part of the problem with prohibition is that it doesn't allow for a regulated market, meaning there is no oversight for the products you purchase on the black market. While standardized lab testing for cannabis products sold at dispensaries is an important part of state-sanctioned medical and recreational pot programs, consumers in prohibition states like Tennessee have no such protections. It's yet another reason—along with ending violence and preventing people from going to jail—that we cannot stop fighting for marijuana law reform until we succeed in legalizing nationwide.

## FIRE ON THE MOUNTAIN

The raging fires in Northern California last summer almost took down our permitted cannabis farm. The farm is in Mendocino County. We saw smoke on



## THE FIRE ENDED UP BURNING ALL THE WAY TO THAT BREAK AND ONLY A FEW HUNDRED FEET FROM OUR CANNABIS PLANTS.

July 27, 2018. It started small and from our perspective looked like something that could easily get under control, but we were wrong. Things heated up as the fires crossed the ridge, one road from our farm and house. My husband and our farm workers stayed up on the farm looking out at what was happening and preparing for the worst.

Things got more serious two days later and it was time for anyone that wasn't a professional to get out of the way and get safe. I knew my husband and our friends were up there, and was wondering when they would leave. My sister, son and I were watching from our house 15 minutes from the farm down the same road. We watched the fire creep down the last ridge before our farm, which took a whole day. As the fire reached the valley, it quickly ignited up the ridge leading to our farm. This time it took only minutes. Black smoke exploded into billowing clouds, planes quickly dropped flame retardant. From our angle we had no idea if our farm was saved, or if my husband was okay. Fortunately, everyone evacuated safely. However, my nerves

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were shot.

Later that day, we were mandatory evacuated. One of our workers stayed to show Cal Fire useful backroads for them to use to fight the flames. Thankfully, Cal Fire was able to put fire breaks in on a ranch road right before our farm. The fire ended up burning all the way to that break and only a few hundred feet from our cannabis plants.

We are eternally grateful to Cal Fire, our local heroes, working tirelessly and dangerously, keeping people and homes and farms as safe as possible.

*Molly McClellan  
California*

## FIRST WORLD PROBLEMS

Hey Gov. Brown, I have been buying marijuana on the black market for 25 plus years. I stopped when we made it legally available. Then they taxed the hell out of it. Gotta get money for them programs. That's cool, I still like being legit. But then you idiots had to regulate it, driving up the prices to around \$50-\$60 an eighth. But that's not the worst part. There is not any selection. The shelves are bare. My vape pen tips cost \$15-\$20 bucks more apiece.

Jerry Brown, you had us at legal. We would have given you your hundreds of millions in taxes this quarter. But you fucked with our selection. So we went back to the way it was before.

I can get a quarter oz. for 40 bucks. It's everywhere and it is legal to grow. I just put it in my "legal" child proof jar I got from the shop. How are you gonna know?

If you want your taxes, stop looking a gift horse in the mouth. Stop trying to squeeze every little bit of cash out of it and be thankful for what you have.

*Jason  
California*

Keep in mind, people across this country are still being harassed, arrested and jailed for consuming cannabis. They're unable to find safe, legal access to medicine to treat illnesses. California certainly has some kinks to iron out in its recreational program but perhaps you should be thankful for what you have.



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**Sour Sorbet**

Sour Diesel x Sorbet



**Blood Orange Sorbet**

Tangie x Sorbet



**Sorbet #4**

GG#4 x Sorbet



**Sorbet Stash**

Headstash x Sorbet



**Sorbet Dreams**



Kush Dreams x Sorbet



**Banana Sorbet**

Banana OG x Sorbet

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**2019 HYDRO REPORT** Growing cannabis plants without soil results in explosive growth rates and huge yields. Learn all about the futuristic tools and techniques used to produce prolific pounds of hydroponic pot on page 62. *Photo by Justin Cannabis*







**CONTACT  
HIGH**

**OREGON OVERDRIVE** Cannabis farmers in the Beaver State are producing far more pot than residents and visitors can consume. Learn how the growers, processors and retailers are responding to this ganja glut, and also what other states and countries can glean from it, starting on page 44.







CONTACT  
HIGH

**CANNABIS 101: GETTING STARTED** If you're new to the marijuana scene and want to learn more, look no further! We explain the best ways to consume cannabis as well as how pot can improve your life, from relieving pain and easing insomnia to boosting creativity and increasing energy! Get started with some cannabis FAQs on page 88.







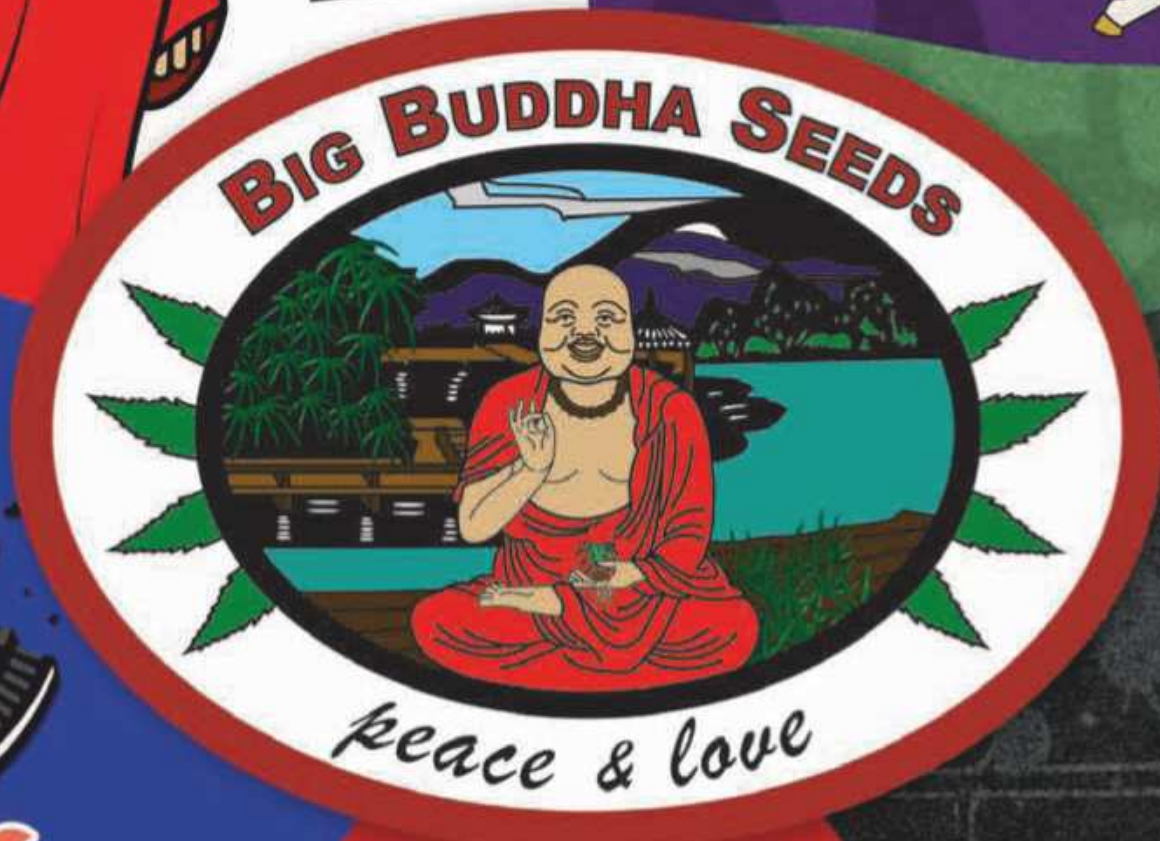
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# HIGHWITNESS NEWS

THE  
TRAILER PARK  
BOYS ON  
LEGAL WEED



## NEWS

### BROWNIE POINTS

A Michigan cheerleader thought pot brownies would help her win homecoming queen. p.26



## ENTERTAINMENT

### RIOT GRRRL

Kathleen Hanna discusses her charity work and how pot helped her cope with Lyme disease. p.34



Flag of  
freedom

## LEGALIZED IT!

AT THE STROKE OF MIDNIGHT ON OCTOBER 17, 2018, CANADA LEGALIZED MARIJUANA NATIONWIDE. IT WAS A DAY OF JOY AND LIBERATION A LONG TIME COMING, AND IT IS ONLY THE BEGINNING. BY MIKE DIPAOLA

**FROM THE MOMENT** Canada legalized it, we knew we'd reached another milestone in the long-running war against the War on Drugs. Legalization of cannabis for adults in the Great White North marks a pivotal moment in the green revolution, and its effects will surely influence policy beyond Canadian borders.

By all accounts, legalization is popular.

The e-merchant Shopify Inc. recorded an average of 100 orders for weed per minute on the first day of sales. Ontario, the most populous province with more than 14 million citizens, tried to meet demand online, but customers who logged onto the Ontario Cannabis Store were warned that "Due to extremely high demand... delivery times may be longer

than expected." The province will have actual retail shops open in the spring.

Outside Ontario, as brick-and-mortar stores opened their doors to long queues of eager customers, some locales ran out of product by day two. In Quebec, cannabis stores couldn't keep up, and many decided to close down for three days per week to let their shelves catch up with demand.

Many Canadians were quite pleased with the turnout. "It makes me feel good about my country, proud to be a Canadian," a happy Tommy Chong said on opening day in Kelowna, BC. "We are the first among the Western countries to come to our senses." (Uruguay was first, in 2017, so it depends how one defines "Western.")

While the rollout was exciting, it was merely a soft launch, which is to say that the legal market will grow, a lot, as individual jurisdictions sort out details for their respective regulations. Only 85 physical stores across the country were

open on day one, though that number was expected to triple by year's end, according to Statistics Canada. There should be around a *thousand* by the end of 2019.

For now, the total worth of the cannabis market for 2018, legal and black market combined, is reckoned to be around US \$6.6 billion, according to New Frontier Data. For comparison, that's around double what the carbonated-beverage market is worth, and will soon rival California as the single largest cannabis market in North America, and indeed the world.

Ontario Senator Tony Dean, who helped shepherd the Cannabis Act through the Senate, believes that the new market will grow and evolve at a



reasonable pace, perhaps a testament to the care and deliberation that policymakers had put into the cause. “The impact is going to be counted in years more than in months,” he told *Marijuana Business Daily*. “Then, over the next two to three years, we will be able to start looking at how consumption patterns are changing, who’s using cannabis, how they’re using it, and the shift away from smoking to ingestibles and vaporization.”

As might be expected, the rollout churned up some fake news. For the record, Canada did *not* pay off its entire federal debt after one day of cheeba sales, nor did Tim Hortons run out of doughnuts in a nationwide munchie frenzy—two myths the fact-checkers at *Snopes* felt necessary to debunk.

Most of the real news was in fact good news. Ottawa announced it would draft legislation to pardon those convicted of possessing small amounts (30 grams or less) of weed, a sweeping corrective that could affect half a million Canadians. Unfortunately, the government will not expunge (effectively erase) those criminal records, as that process is reserved for violations that are deemed unconstitutional.

## CANADIANS WHO WORK IN THE CANNABIS INDUSTRY COULD BE DENIED ENTRY TO THE UNITED STATES, EVEN IF THEY ARE TRAVELING WITHOUT THEIR STASH AND EVEN IF THEY ARE FLYING DIRECTLY TO A POT-LEGAL STATE.

It is hard to say how legal weed will affect tourism, if at all. It may well affect cross-border travel, however. Canadians who work in the cannabis industry could be denied entry to the United States, even if they are traveling without their stash and even if they are flying directly to a pot-legal state. US Customs and Border Protection spelled it out in statement: “A Canadian citizen working in or facilitating the proliferation of the legal marijuana industry in Canada, coming to the U.S. for reasons unrelated to the marijuana industry will generally be admissible to the U.S. however, if a traveler is found to be coming to the U.S. for reason related to the marijuana industry, they may be deemed inadmissible.”

Of course, investors were very interested in the new market. Generally, cannabis stocks surged in the lead-up to the grand opening, then lurched in the other direction right after the launch.

Ticker-tape watchers saw headlines like “Marijuana Stocks Are Crashing—Here’s What to Do Now” (*Motley Fool*), “Plunging Marijuana Stocks May Have Further to Fall” (*Investopedia*) or “Marijuana Stocks Fall in Worst-Ever Day for the Sector” (*MarketWatch*).

Finally, it should be noted that Canada’s big event has not pleased everyone. Longtime anti-pot crusader Kevin Sabet set up a website he thinks will be a watchdog on the cannabis industry. “October 17th, 2018 will be a day we look back on as a dark day in our history,” he lamented to supporters in an email (apparently misspelling “dank”). Sabet’s intrusion into an otherwise joyous occasion is a reminder that we can never let our guard down because dorks will be with us always.

Nevertheless, congratulations, Canada. Go forth and do good; the world is watching. ✨

HIGH FIVE BY FRANK GREGORY

## CANNABIS AND PHARMACEUTICALS

WHAT ARE THE RISKS OF COMBINING MARIJUANA WITH PRESCRIPTION MEDICATIONS?



### ANTIDEPRESSANTS

There isn’t much data to indicate how antidepressants and cannabis interact. However, researchers point out that concurrent use makes it difficult for doctors to dial in the correct dosage for patients being treated with antidepressants. Cannabis can also mask the side effects of the medication, making it harder to establish the best treatment. However, most studies indicate a low to moderate risk when combining cannabis with selective serotonin reuptake inhibitors (SSRIs) and serotonin and norepinephrine reuptake inhibitors (SNRIs).



### ANTIPSYCHOTICS

While cannabidiol (CBD) on its own has shown intriguing results for treating schizophrenia, there can be adverse reactions when combining cannabis with antipsychotic medications. These medications are broken down and metabolized by cytochrome P450 enzymes in the liver. Cannabis can alter this metabolic process, and potentially cancel it out. The metabolic interaction between cannabis and antipsychotics can lead to potentially intensified side effects and adverse reactions. Always check with your doctor before using cannabis to treat mental-health issues.



### OPIOIDS

The current opioid crisis in America has led to an increased interest in cannabis as a potential substitute drug that could be used to wean addicts off of addictive painkillers. Researchers have also found evidence that combining cannabis with opioids could allow for lower doses of the powerful narcotic, thereby reducing the risk of dependency and dangerous side effects. A study by researchers at the University of California, San Francisco, indicated that using cannabis as an adjunct to opioid therapy is safe and effective.



### SEDATIVES

Sedatives such as benzodiazepines (e.g., Xanax, Ativan, Valium) are prescribed to reduce anxiety, produce a calming effect and even induce sleep. Certain cannabis strains can produce similar effects and can be used in conjunction with sedatives to keep dosages lower for those seeking a more natural remedy. However, certain strong *sativa* strains can create the opposite effect, increasing anxiety and making it difficult to sleep. Selecting the right strain to use in conjunction with sedatives is essential, and can reduce the amount of medication required.



### STIMULANTS

Prescription stimulants such as Ritalin, Adderall and Dexedrine are used to treat attention-deficit/hyperactivity disorder (ADHD). A high-CBD strain can help relieve some of the anxiety associated with these stimulants, and cannabis is a good option for relaxing in the evening and getting to sleep. As with sedatives, it is essential to find a strain that works with the medication. A strong *sativa* could increase anxiety and restlessness. A 1:1 THC-to-CBD ratio is likely the best option.





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Clampdown rising

## ARRESTING DEVELOPMENT

Marijuana is increasingly legal from coast to coast in the United States, yet marijuana arrests are increasing under the Trump administration. According to a recent Federal Bureau of Investigations report, police made 659,700 arrests for pot-infused violations in 2017, the second straight year arrests were up, following a decade of decline.

Understandably, the FBI's "Uniform Crime Report" raised hackles in pot-activist circles. "Actions by law enforcement run counter to both public support and basic morality," NORML political director Justin Strekal said in a statement. "In a day and age where twenty percent of the population lives in states which have legalized and nearly every state has some legal protections for medical cannabis or its extract, [it's] time for lawmakers to end this senseless and cruel prohibition that ruins lives." The uptick in arrests was uniform across the Northeast, Midwest and Southern US states, while the West—home to most of the legalized jurisdictions—suffered the least from cop overreach.

## I WANT CANDY

The state of Washington is moving toward banning medicated candies, maybe. In October, the Washington State Liquor and Cannabis Board (LCB) announced that it would put the kibosh on candied edibles, which it says present a dangerous temptation for kids. "Marijuana products that are especially appealing to children are prohibited," the LCB declared in October. "Products such as, but not limited to, gummy candies, lollipops, cotton candy, or brightly colored products, are prohibited." The backlash was fairly swift, understandably, as edibles account for 9 percent of the overall cannabis market in Washington. Little more than a week after the initial announcement and following "conversations with industry members," the LCB put the brakes on their ban, at least for now. The board said it would take a breath for 30 days, asking "a coalition of industry organizations to bring forward alternatives for the agency to consider." At least they're listening to stakeholders. Let's hope they pay heed.

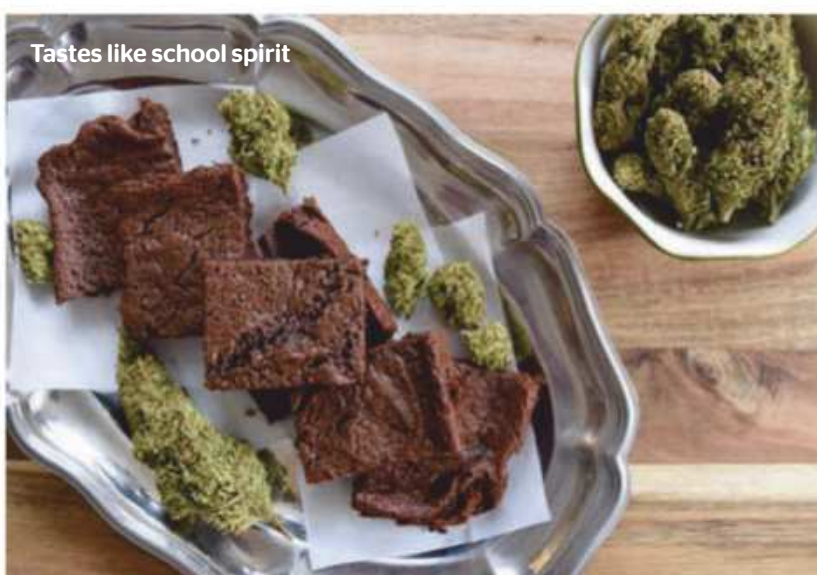
INSIDE  
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Best buds

## TRAILER HASH

The lovable scamps from Nova Scotia who comprise the *Trailer Park Boys*—Bubbles, Ricky and Julian (Michael Smith, Paul Tremblay and Robb Wells)—have some thoughts on the recent launch of legal cannabis in Canada. While they were pleased that their home country would become more like Amsterdam, a city the boys take to with uncommon enthusiasm, the master grower of the group, Ricky, struck a gloomy note. "It's going to put me out of a job, which will kind of suck," he told *MetroUK*. That attitude echoes the lads' 2014 big-screen film *Don't Legalize It*, wherein our heroes fought to keep prohibition in place in order to protect their primary source of income. "I don't work, so we're going to have to think of something," Ricky continued. "I don't want to get a job." In truth, they already have thought of something: their own line of legal weed—Trailer Park Buds—in partnership with OrganiGram. Decent.



Tastes like school spirit

## BROWNIE POINTS

"We have confirmed that brownies laced with marijuana were brought into the school and distributed to several students," wrote Hartford, MI, school superintendent Andrew Hubbard in a Facebook post. Allegedly, a dozen medicated treats were handed out by a cheerleader attempting

to garner votes for herself for homecoming queen. "You always think you've heard it all and seen it all, and there is always something new to surprise you," investigating patrolman Michael Prince told WWMT. "We are investigating two things. Number one, some were put in goody bags for [football] players. Also, they were used to obtain votes for the queen contest." Hubbard had been informed of the treats-for-votes ploy by the State Police, who had in turn been tipped off by a student using OKAY2SAY, a statewide app used by students to report schoolyard wrongdoings. We can only agree that it is very wrong to influence an election with bribery.





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## SPIRITUAL GUIDES

Where does the Mormon Church, otherwise known as the Church of Jesus Christ of Latter-Day Saints, stand on medical marijuana in Utah? It's complicated. Officially, the church is anti-Prop. 2, the initiative to make medical pot legal in the Beehive State. But the church has said it would nevertheless support the use of medical cannabis prescribed by a doctor and dispensed by a pharmacy. Prop. 2's more ardent opponents have been instructed by the church to "de-escalate" their opposition. One former Mormon, the chill State Senator Jim Dabakis, did the Lord's work by driving to Vegas to sample an edible for himself. "I have never tasted, smoked, eaten or shot up marijuana in my life," he declared in a much-watched video. After his pleasant dining experience, he advised everyone to "mellow out," noting that the people afraid of weed have likely never tried it. "Vote for Prop. 2," he concluded.

## SMART COOKIE

In a familiar story about the entrepreneurial spirit of youngsters, a Canadian Girl Guide—Brownies division, natch—sold all her cookies by targeting cannabis consumers on the first day of legal sales in the country. Nine-year-old Elina Childs told CTV News Channel that it was her dad's idea to purvey her wares outside of an Edmonton pot shop. Young Elina worked the line outside the shop and around the block—a queue said to be a four-hour slog for eager customers—and sold out her entire stash of 30 boxes in 45 minutes. Elina and her dad, Seann Childs, later sat for a number of interviews with news outlets. Childs told the *Canadian Press* that the experience helped teach Elina about weed. "Just to show her people of all ages and all walks of life are doing this and it's legal in Canada now, just demystify it for her so it's not a big deal for her."



Big pinch of herb

## OREGANO HEIST

Teenagers do dumb things. Four of them in Colorado stole a van (dumb), plowed it through the storefront of a Colorado Springs dispensary (dumber), then stole what they thought was pot but turned out to be oregano (idiotic). The Native Roots dispensary said that no real weed was lifted in the 1 a.m. smash-and-grab, as the dummies did not get through to the locked bud room, just to the bogus display samples. Besides the herb, the teens did steal some actual T-shirts, then bolted from the store and van and sped off in a getaway car. They remain at large, and might end up as persons of interest in this and related crimes in the area, which had been subject to similar heists recently—of both dispensaries and other types of shops. The police might want to keep their eyes open for four morons, not at all high, wearing matching tees.



The doctors are in.

## EURO STASH

Lithuania is about to become part of the green revolution. The Baltic state of 2.8 million people has just passed a law that will allow doctors to prescribe medical marijuana. The Lithuanian Parliament voted 90-0 to make this happen (with three abstentions), and now it's up to President Dalia Grybauskaitė to sign it into law. If she does, the law will come into effect May

1, after which the sale of medical pot will require a license from state regulators. "It is an historic decision to ensure that patients can receive the best possible treatment," said lawmaker Mykolas Majauskas, who had introduced the bill. "Of course, it does not mean cannabis will be available to get at a drugstore to smoke before going to a nightclub," he added, unhelpfully. One company in position to gain from the new law is Alberta-based Aurora Cannabis, which had recently acquired a pair of large Lithuanian hemp companies.



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# REBEL GRRRL

KATHLEEN HANNA TELLS US ABOUT TEES4TOGO, HER RELATIONSHIP WITH CANNABIS AND HER (POSSIBLY) UNHEALTHY OBSESSION WITH INTERNET SOLITAIRE. BY KYLE EUSTICE

**KATHLEEN HANNA HAS** been screaming “Girls to the front!” for the better part of three decades. As the founder of the punk-rock feminist band Bikini Kill, the riot-grrrl pioneer inspired a generation of young women to start kicking ass and taking names. In 2018, Hanna is still fighting the good fight.

Most recently, Hanna teamed up with a nonprofit called Peace Sisters for the Tees4Togo line. For each \$40 T-shirt sold, an African girl in Dapaong, Togo, is able to afford school for an entire year.

Hanna’s own educational experience led to her first taste of mentorship and taught her the value of a quality education.

“I was a straight-A student until I was 9 years old, and then things started going awry,” she explains. “I didn’t get very good grades, and I actually got in trouble at school and was suspended. I’m not gonna say why, but it was bad enough that I had to do community service.”

“I chose to work at this place that helped kids who were in trouble or kids who needed tutoring or whatever,” she continues. “That was the first time I realized how lucky I was to have the education that I had in public school. It’s sad I was 15 before I really recognized that.”

Despite her academic challenges, Hanna enrolled at Washington’s Evergreen State College, where she was inspired to form her first band, Amy Carter.

“I started learning stuff and

was like, ‘Oh, I wanna share this with other people,’” she says. “There’s so many people who are super-smart who just don’t get the book list because they’re not in college. I wanted to share these ideas. I’ve just become very passionate about sharing the education that I’ve gotten with other people.”

But Hanna’s journey hasn’t been paved in gold. She’s been fighting practically her entire life. Growing up with an abusive father, Hanna and her mother had to hide their strong feminist ideals until her parents finally divorced. Her reputation for being an outspoken, politically minded radical feminist was essentially ingrained from her upbringing.

In 2014, Hanna was sidelined with what was eventually diagnosed as Lyme disease. She’d been living with the ailment for six years. The once-explosive woman

was suddenly barely able to walk, and she had to retreat from music altogether. Marijuana was the only thing to help with the pain.

“I was actually given these marijuana pills that my doctor called Marinol, and they changed my life,” she says. “They made my life bearable for a certain amount of time, so I’m definitely pro-legalization, especially if there are people who have chronic pain and chronic illnesses. I just don’t want the government to come in and wreck everything [*laughs*].”

Even recreational marijuana once had its place in Hanna’s life.

“I used to have a thing when

I got angry, I would smoke a little pot and my anger would go away, and I would write in my journal about it,” she says. “Like, ‘Why am I angry?’ and I would learn from my anger instead of putting it in the wrong direction, and it was something that kind of helped me emotionally as well.”

“But it’s like with anything,” she adds. “You can get addicted to the internet, you know what I mean? It’s like, I play a lot of solitaire on the internet when I get stressed out. I should probably be smoking pot [*laughs*]. But right now, it’s just a lot of solitaire.” ✨

Hanna found relief from Lyme disease with pot.



## RIOT GRRRL & BEASTIE BOY:

Kathleen Hanna has been involved with Beastie Boy Adam “Ad-Rock” Horovitz since 1997. They were married in 2006, and she thinks he’s “still pretty cute.” The two appear together in the 2013 doc *The Punk Singer*.





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## THE FUTURE IS FUCKED

THE BOYS ARE BACK WITH A TALE OF NUCLEAR WAR, SEX ROBOTS AND AN EVEN STUPIDER PRESIDENT—DONALD TRUMP JR.

**GOOFY ENFANTS TERRIBLES** Tenacious D bring their signature whimsical wit and brotherly enmity to bear on the futuristic dystopia genre with their rock opera *Post-Apocalpypto*. The combination cartoon musical/album borrows liberally from such movies as *Mad Max*, *The Clan of the Cave Bear*, *Terminator*, *Elysium* and *Flesh Gordon*. That's no typo, because the duo take full advantage of their cartoon milieu to showcase their ribald side, sexing up both postapocalyptic babes and full-service robots. Indeed, the robot's fellatio skills provide a crucial distraction when battling the power-mad, evil-orb-channeling future president Donald Trump Jr.

Unlike the band's movies, which also usually begin with the duo playing video games on the couch, the cartoon doesn't add to their lore, oper-

ating more as a shaggy-dog one-off. While the episodic hour-long plot's sorta thin, it doesn't matter too much because Tenacious D's output has always relied more on the winning chemistry of the pair and their off-again, on-again relationship.



**TENACIOUS D**  
*Post-Apocalpypto*  
(Sony Music)

In this case, after traversing the post-bomb world on cycle together, Jack Black heads into space, leaving behind Kyle Gass and their dog, Hope (who immediately bails on Gass and only reappears when Black returns). Black did the charming low-rent drawings that are less animated than classic Hanna Barbara, but like *South Park* work thanks to a wry, understated visual wit. The music is classic D, mixing bombast with tenderness, between interstitial scenes from the cartoon.

Their humor's all over tracks like "Fuck Yo-Yo Ma," where the space-station-inhabiting Black enjoys 24/7 orgies but still laments in his best Michael McDonald growl that without Gass around, "all my orgasms will be tainted," or the flute-laden folk-rock tolerance tune "Colors," which ends with the threat "One last time or you're gonna fucking die." A welcome return a half-dozen years since their last release. *Chris Parker*

## MUSIC RECOMMENDATIONS



**THE BEATLES**  
*The Beatles (White Album)*  
(Apple Corps Ltd./Capitol/UMe)

On the heels of last year's 50th-anniversary edition of *Sgt. Pepper* comes a similar treatment of 1968's *The White Album*. Available in three formats, the biggest set (seven discs) is accompanied by a gorgeous hardcover book and is the primo choice for the faithful Fab Four freak. The remix

is a revelation: Previously unheard instruments and lyrics magically appear with striking clarity, as do songs unreleased by the group. The extended sets contain 27 Esher song demos. Fifty session outtakes are included in the big box, including future singles "Lady Madonna" and "Hey Jude." *Michael Simmons*



**JOHN LENNON**  
*Imagine—The Ultimate Collection*  
(Geffen/UMe)

John Lennon's 1971 solo classic has been reissued in various formats, most sumptuously as *Imagine—The Ultimate Collection*. The six-disc box set features the refurbished original album, extended mixes, outtakes, interviews and chatter. A film collection (*Imagine/Gimme Some Truth*) and

coffee-table book are available separately. The music herein portrays Lennon as gritty rocker, as well as big-hearted balladeer and social visionary. Ultimately *Imagine*, like *The White Album*, is a testament to talent, intelligence, wit and imagination that remains unparalleled a half-century later. *MS*



**YOKO ONO**  
*Warzone*  
(Chimera Music)

Thirteen songs from Ono's catalog spanning 1970 to 2009 get a remodeling for pointed relevance in 2018. Ono is brutally direct in both her calamitous proclamations and her yearning for simpler times past. Her castigations of our complacency on "Woman Power" and "Hell in Paradise" pile

on the bleak amid the bare-bones yet oblique sonorities, her famously "other" voice adrift in jarring electric guitars. While Ono's quirky warmth peeps through in other tracks, she closes with a pensive take on "Imagine," whose dreamy plea for hope becomes more bittersweet than ever. *John Payne*



**CAT POWER**  
*Wanderer*  
(Domino)

The first Cat Power release in six years encapsulates the pop, folk and country fodder that has enlightened singer-songwriter Chan Marshall's music to date. Tenderly blanketed in stately piano, modest guitar strums and the odd shimmering electric piano, her dusky, characterful voice

is Appalachian trad-style on the brief intro title track. There's an ineffable charm to songs like "Horizon" and "Stay." Dolly Parton, Dusty Springfield and Tony Joe White have a singing baby on the stripped-down Southern funkiness of "You Get," mesmerizing in its loping groove. *JP*



**THE WHIPS**  
*City Wide Special*  
(Self-released)

Sub the word "album" for "song," and the lyrics to "Hot Tone," the opening track on these Cheesesteak City sleazesters' second full-length effort, describe my feelings about this hot, nasty record perfectly: "I keep listening to that new song in my headphones through my cellphone." Okay, most of the

album; there are a couple of '50s-tinged needle skippers that will undoubtedly please fans of the Cramps. Overall, this is dirty, stomped-out, glammy, fist-in-the air garage rock done right. It may not be new, but it roars like the Nascar version of their namesake, and that's good enough for me! *Polly Watson*



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# TESTING PATIENCE

HOW LOCAL COMPLIANCE TESTING IS AFFECTING THE SUPPLY OF LEGAL CANNABIS PRODUCTS.

J.J. McCoy is Senior Managing Editor for New Frontier Data



**T**HE ONLY CONSTANT in cannabis is change. Even before last fall's midterm elections, a handful of states which had passed new medical and adult-use legislation in November 2016 had begun implementing their programs, and last October our neighbors to the north opened Canada's nationwide adult-use program, meaning that roughly 4,000 miles of shared border (not even counting Alaska's 1,500 miles) has one or both sides enjoying legal cannabis.

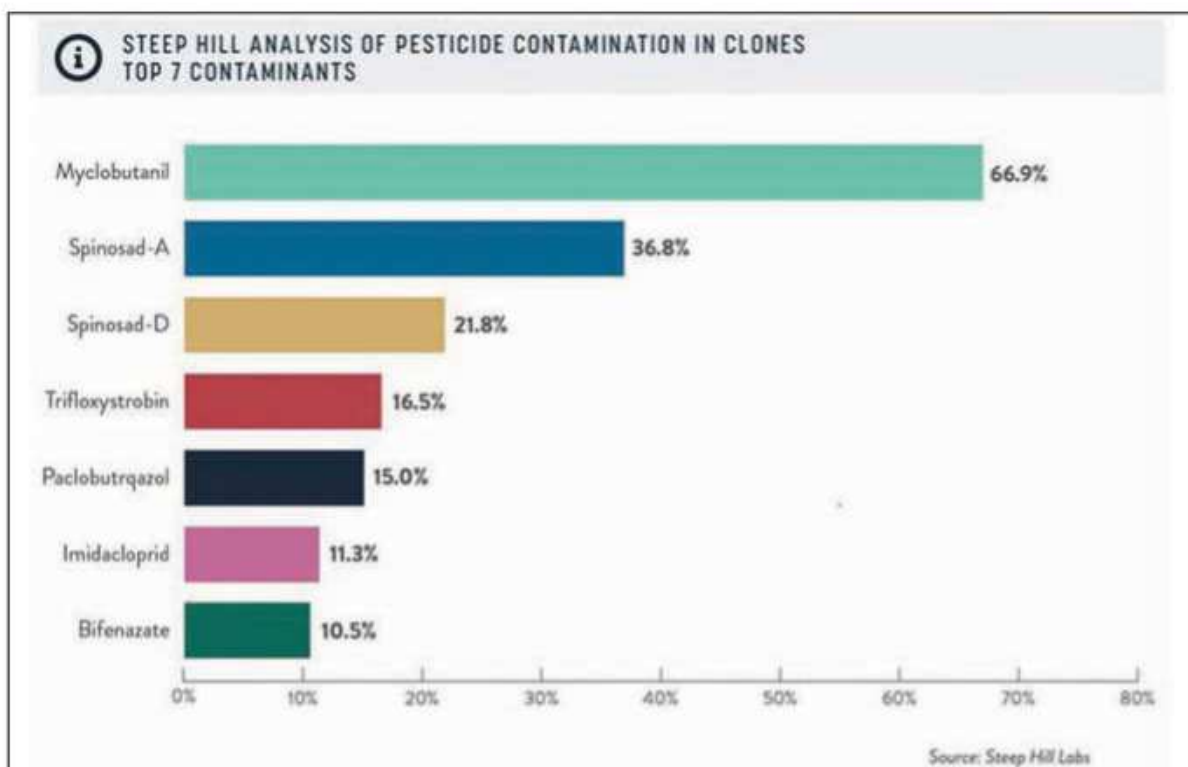
Yet, while similarities exist between regulatory approaches, no two states' provinces' or territories' programs are the same, and they have adopted widely varied approaches on issues from business licensing to consumer access. One of the biggest challenges is product-quality testing; many jurisdictions have implemented regulations requiring cannabis to be tested for potency, contaminants and adulterants, yet they've not sufficiently provided for labs to quickly test and turn the products around for timely sale.

Typically, during compliance testing labs check for potency (THC levels), pesticides, heavy metals, microbial contamination (including mold) and residual solvents.

While the technology and science of laboratory testing keeps improving, testing-related procedural delays and bureaucratic obstacles often disrupt individual states' supply chains and negatively impact their markets. Oregon, California and Massachusetts have each served as cautionary examples.

Oregon's legal market suffered a product bottleneck in late 2016 and early 2017, when too little product passed the new regulations for extracts and edibles, thereby pushing prices too high and creating shortages of both products, and ultimately driving consumers back to the illicit market.

Similar problems arose for the legal adult-use market in California. Since July 2018, only lab-tested cannabis products have been permitted in licensed



retail dispensaries. While the state's fully regulated industry had been in operation since January 1, 2018, the state had allowed a transition period which let businesses sell untested cannabis. Upon the July deadline for certification, the industry subsequently suffered a shortage of testing services, long waits for results and delays in product approvals.

An estimated 50 to 60 California labs are needed to ensure a smooth, uninterrupted supply chain, but as of October 2018, nearly a year after the market launched, the state's Bureau of Cannabis Control had issued only 36 temporary licenses for testing labs. Too few labs were not the only issue: Some of them were well prepared for the testing launch, but too many of the labs with temporary licenses were either not fully operational or not prepared for the high level of initial demand, further exacerbating the supply disruptions.

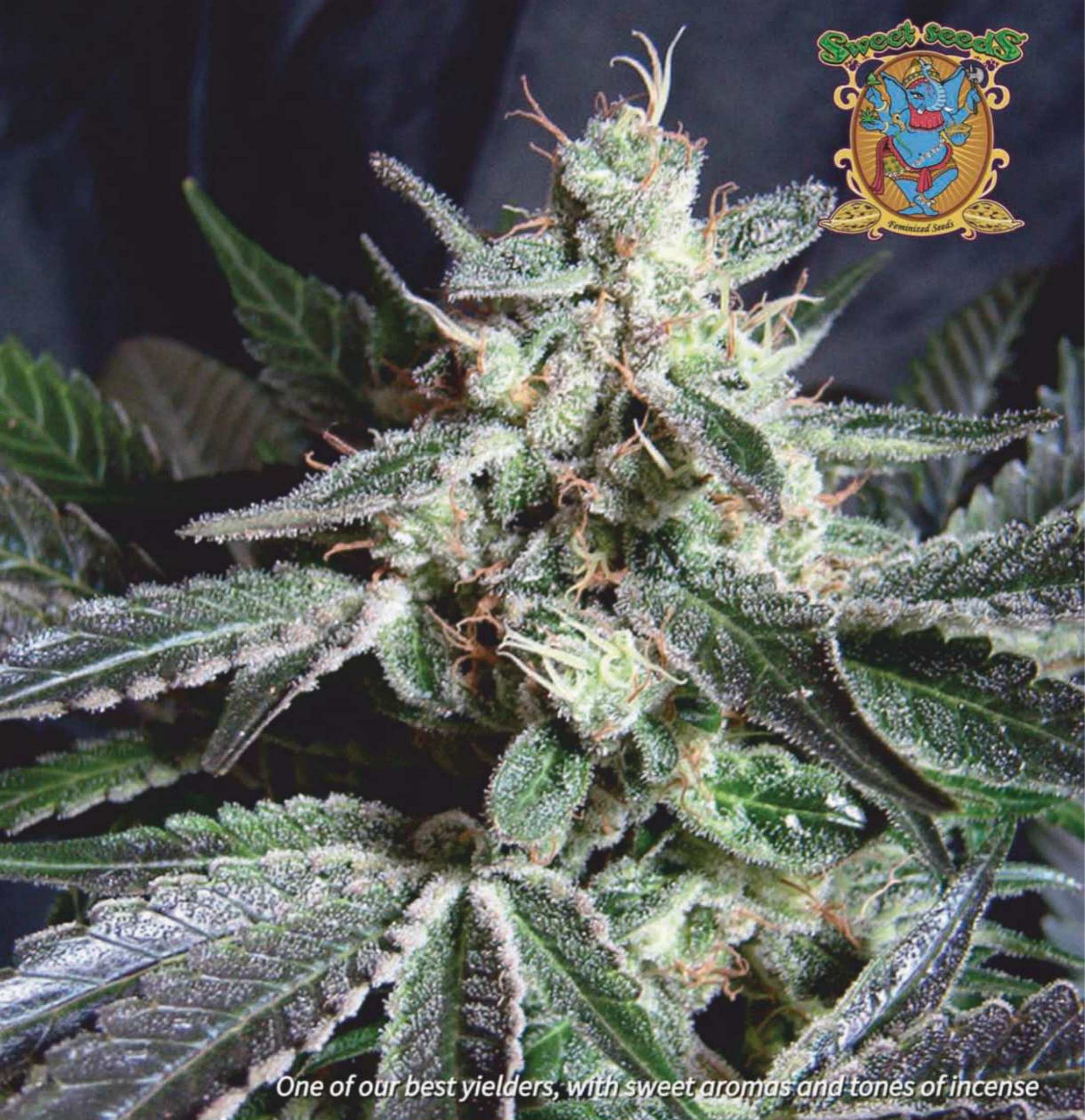
Now more than two years since Massachusetts voters mandated that state's adult-use program, no sales have been made, largely due to a bureaucratic disconnection: In the Bay State, labs that test medical cannabis are certified by the Massachusetts Department of Public Health, while labs that test products for adult use have to be certified by the

state's Cannabis Control Commission. As of last fall, the CCC had not completed the certification process to allow such labs to begin testing.

The struggle, in part, begins at the local level. Many facilities face challenges in obtaining local approval for testing licenses even before receiving their temporary state licenses. Such delays in getting products to store shelves only serve to disrupt the legal supply chain and push consumers to the illicit market.

In a cooperative effort to remedy such problems, in 2017 New Frontier Data joined with Steep Hill, the industry standard for cannabis testing and scientific analysis, for a strategic alliance to offer technological and scientific expertise to governmental agencies in European Union member countries. The New Frontier Data–Steep Hill alliance assists local-, regional- and national-level regulators and legislators with establishing safe and beneficial cannabis policies. Both companies have extensive experience with the opportunities and the potential pitfalls that regulators have encountered in the United States, Canada and other countries, and consequently aim to identify best practices for a functional cannabis industry. 🌿





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3 2

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(Mimosa)

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MARKET ANALYSIS

Prices by the ounce

All indices, with the exception of the Eastern Index, finished February above their previous month's average, bucking a trend for the Southern and US Price indices. The Eastern Index continues to fall and could soon dip below \$300 per ounce, putting it on par with the national average. Crowd favorites Gorilla Glue, Girl Scout Cookies and OG Kush were the top three submitted strains in February.

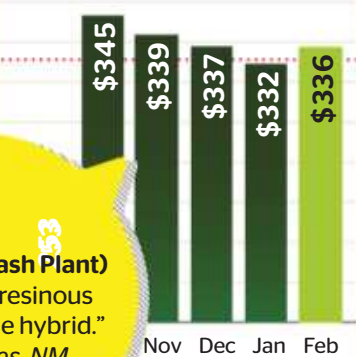
US Price Index  
YTD Average: \$299



Eastern Index  
YTD Average: \$311



Southern Index  
YTD Average: \$334



Western Index  
YTD Average: \$250



**(Pineapple Hash Plant)**  
"A complex, resinous and affordable hybrid."  
-Las Cruces, NM

TRANS HIGH MARKET QUOTATIONS

STATE	CITY	STRAIN	PRICE
ALABAMA	Montgomery	OG Kush	260
ALASKA	Juneau	Cypress Hill OG	400
ARIZONA	Phoenix Tucson	Crème Brûlée White Widow	190 160
ARKANSAS	Fayetteville	Bubble Gum	420
CALIFORNIA	San Diego San Francisco	OG Kush Diesel Glue	200 368
COLORADO	Aurora Englewood	Gorilla Glue #4 Chemdog	150 215
CONNECTICUT	Hartford	Skywalker OG	390
DISTRICT OF COLUMBIA	Washington	Girl Scout Cookies	370
FLORIDA	Miami	Gorilla Glue #4	440
GEORGIA	Suwanee	Girl Scout Cookies	310
HAWAII	Honolulu	The Gift	220
INDIANA	Fort Wayne	Headband	220
KANSAS	Wichita	Gelato	240
KENTUCKY	Edmonton	Cherry Pie	400
LOUISIANA	Lafayette	Green Crack	250
MAINE	Fort Kent Solon	Girl Scout Cookies Juicy Fruit	200 165
MARYLAND	Columbia	Gorilla Glue #4	380
MASSACHUSETTS	Bridgewater	Mimosa	320
MICHIGAN	Daggett	Chemdog	325
MISSISSIPPI	Starkville	OG Kush	440
NEBRASKA	Lincoln	Loud Dream	550
NEVADA	Laughlin	Blue Zkittlez	300
NEW MEXICO	Las Cruces Roswell	Pineapple Hash Plant Flo	225 335
NEW YORK	Bronx New York City	NYC Diesel Strawberry Cough	400 380
NORTH CAROLINA	Traphill	White Widow	300
NORTH DAKOTA	Bismarck	Trainwreck	330
OHIO	Columbus	Blue Dream	300
OKLAHOMA	Tulsa	Blue Dream	350
OREGON	Oregon City Portland	Bubble Gum Gorilla Glue #4	160 210
PENNSYLVANIA	Philadelphia	Cheese Quake	315
RHODE ISLAND	Providence	Lemon OG Kush	290
SOUTH CAROLINA	Charleston	Bubble Gum	280
TENNESSEE	Nashville	Zkittlez	320
TEXAS	Dallas Houston	Skywalker OG Pineapple Express	335 200
VIRGINIA	Newport News	Lemon Haze	400
WASHINGTON	Bremerton Clarkston	Fruity Pebbles Quantum Kush	210 175
WISCONSIN	Oshkosh	OG Kush	320
WYOMING	Gillette	Girl Scout Cookies	450
INTERNATIONAL			
CANADA	Toronto	Tahoe OG	C\$210
EGYPT	Nasr City	Sinai	\$336
ICELAND	Akranes	Riger (High Quality)	\$840

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# OVERPRODUCTION IN OREGON

POT GROWERS IN THIS PACIFIC NORTHWEST STATE HAVE PRODUCED AN ABUNDANCE OF CANNABIS. WITH PRICES DROPPING TO UNPRECEDENTED LOWS, WHAT CAN OREGON FARMERS, AND THE REST OF THE INDUSTRY WORLDWIDE, LEARN FROM THIS OVERSATURATION? *BY DANNY DANKO*









Lower quality cannabis must be processed into concentrate.  
Inset: The CGDC crew

## DROUGHTS AND GLUTS

The law of supply and demand rules economics as a fundamental concept, and markets must act accordingly. But in the cannabis world, we've traditionally always had way more demand than supply. There have been plenty of droughts over the years (tokers from the '80s know all about this), but never a glut—until now.

In the absence of the risks associated with marijuana prohibition, Oregon growers have produced way too much cannabis for the state's residents and visitors to consume. Over a million pounds, or roughly a quarter pound of weed for each and every one of four million Oregonians per year, have been grown, and more is on the way. Ounces of flower are selling for \$20 in some cases to get customers in the door, and the average retail price for a gram of pot has plummeted to under \$7 statewide.

So how does a fledgling and overregulated industry respond to such a "crisis," and what can other states or countries learn from it? What happens to the black market when legal businesses can't survive aboveground in the light? As different forms of marijuana-law reform make their way across the United States

and the globe, how can newly legal locations avoid the pitfalls and shorten the learning curve? Will what's happening in Oregon be a cautionary tale or a sign of more problems to come in a legalized landscape?

## CUT THE COST OF POT PRODUCTION

The Center of Gravity Distribution Company (CGDC) specializes in helping local growers navigate through the many state regulations and choose from the many products available for farming. As a distributor of wholesale agricultural supplies for the cannabis and hemp industry, CGDC is trying to keep the mom-and-pop spirit of Oregon cannabis cultivation alive and thriving.

Jason Stelle, founder and CEO of CGDC, says, "Right now, growers here in Oregon are running a race to the bottom. Cultivators are responding to falling prices by growing more, but the truth is, you can't grow your way out of this problem. Instead of trying to grow more, grow better! Increase the quality of your cannabis by focusing on fundamental growroom concepts such as environmental control, organic inputs and soil fertility."

## GROW BETTER POT, NOT MORE POT

The crew at CGDC prides themselves on being a part of a company run by farmers for farmers. In fact, CGDC's motto is "Anyone can grow. We farm." The company seeks to rival outside corporate distribution channels such as Sunlight Supply, recently purchased by a subsidiary of the Scotts Miracle-Gro Company. Stelle explains: "We sell only products we personally approve, and we stress vertical integration to all our partners. As co-ops, we have to look out for and protect ourselves while competing with the black market that doesn't have to deal with the bureaucracy involved in zoning laws, etc."

Farmers are learning some interesting techniques as they fight for tinier and tinier margins. Adding LED full-spectrum lighting, utilizing BPA-free fabric pots and customizing their growrooms for efficiency purposes gives them more ammunition in the price war. To this end, CGDC provides the Canna RX natural plant optimizer and CannaGenesis organic plant accelerator in order to increase the fertility of soil for healthier root zones and bigger yields. As Stelle says, "Farmers who research ways to cut costs are still



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Kate Guptill and Jesse Peters are the “mom ‘n’ pop” at Eco Firma Farms.

succeeding. We haven’t heard of any great growers going out of business. It’s mostly the people who can’t, or won’t, adapt to the changing times.”

### ECO FIRMA FARMS

At Eco Firma Farms, founded in 2012 in Canby, OR, the quest to save money while creating craft-quality cannabis has inspired the company to strive to be entirely carbon-neutral.

Husband-and-wife co-founders Jesse Peters and Kate Guptill, as well as head grower Clint Harris, lead an all-LED light production grow that’s perpetually harvesting 80 pounds of dried flowers every 10 days from six separate rooms. Eco Firma Farms is a member of the Craft Cannabis Association (CCA) and a founding member of the Oregon Cannabis Association (OCA) and retails its products in over 50 Oregon adult-use dispensaries.

Eco Firma utilizes 100 percent wind-powered renewable energy to power Fluence Bioengineering commercial lighting and a Rhythm drip-feeding system. In one year alone, the farm purchased over 235,000 kilowatt-hours of clean energy to power its operations. Excess nutrients go outside and are fed to native plants in the area, and almost all materials used in the grow are recycled or repurposed. Pest, mold and mildew managements are all organic, and in 2017 Eco Firma received Green Mountain Energy Gold Certification from Portland General Electric, and the company is on track for Platinum certification this year.

### PEST CONTROL WITHOUT PESTICIDES

Eco Firma Farm cultivation director Harris has developed an interesting integrated pest management (IPM) system utilizing cleanliness for prevention and predator insects when necessary. “Keeping the space clean and the environmental conditions stable goes a long way to preventing infestations,” Harris says. “We avoid cross-contamination in our spaces and maintain healthy plants by ensuring the soil is fertile and properly maintained.”

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*Montel Williams*





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As Peters explains during my tour of the facility, “The general rule in Oregon is ‘no pesticides.’ There are only a few things you can use, and if you’re a state coming online like California, you should look closely at this and start working toward this type of system. When you spray things on cannabis like myclobutanil, Avid or Eagle 20 to prevent powdery mildew, it becomes a neurotoxin, and you’re actually poisoning people. We use beneficial bugs and don’t spray anything, ever.”

### GROWING ON SOLID GROUND

At Eco Firma Farms, a total of six growrooms are separated into two levels each for 12 different grow chambers. The rooms are 10 days apart in the flowering stage, and each level holds 100 plants to produce 30 to 40 pounds of cannabis flowers per level. Grower Stephen Baluch does the genetic work to ensure that Eco Firma is cultivating stable and productive strains, and CO<sub>2</sub> injection further increases yields. Varieties grown

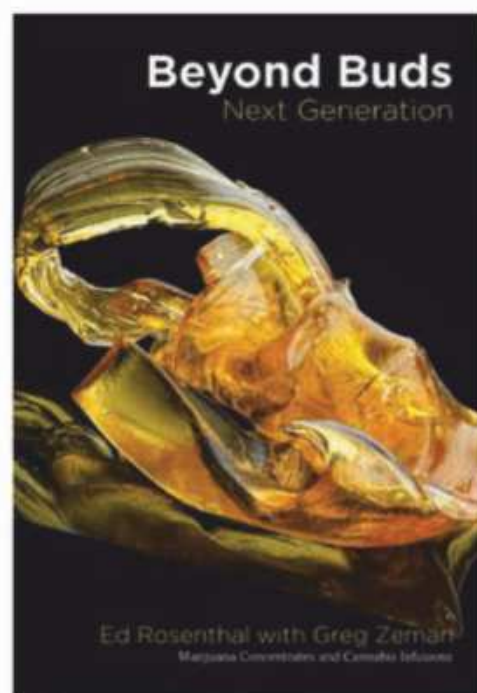
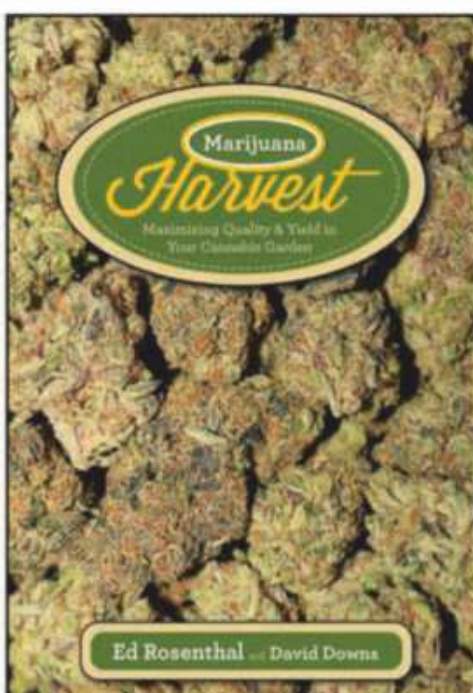
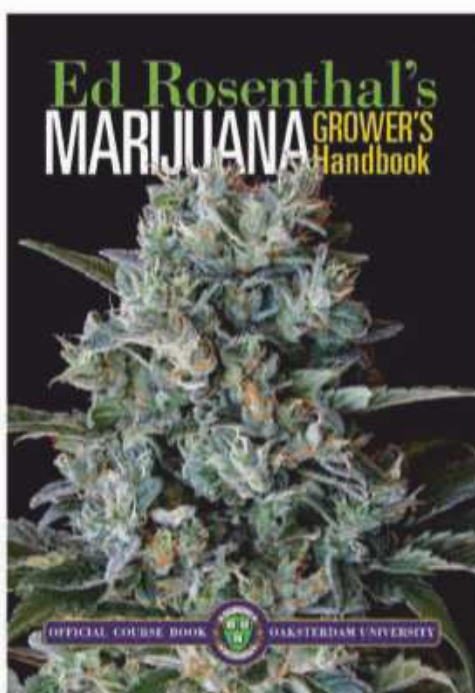
here include Animal Cookies, Crockett’s Dawg, Cherry Pie, Chem 4, Platinum Girl Scout Cookies, Skywalker OG #1 and Eco Firma’s own Canbyland.

One of Eco Firma’s products, Pachecos, is a premium handcrafted smoke line made entirely from the farm’s sustainably grown flowers. Unlike some pre-rolls, Pachecos are cotton-filtered, eliminating the harshness of unfiltered brands. Sold in four styles, each contains a proprietary mix of terpene profiles and unique ratios of THC and CBD that enable customers to more accurately pinpoint their desired experiences. Furthering the farm’s commitment to sustainability, all Pachecos products are packaged in 100 percent recycled material using vegetable-based inks.

Co-founder Peters is also a retired United States Marine Corps veteran and a firefighter as well. The discipline he learned in the military over his more than 21 years of service reflects in the structure and methodology of how Eco Firma runs its agriculture operation. Everything, from the layout of the various growrooms to the comfort of the facility workers and trimmers, is planned out for maximum efficiency. Eco Firma’s expansion plans include solar-panel arrays on the roof that will allow the farm to sell excess wattage back to the state.

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## TURN TRASH INTO HASH

Yet another solution for the abundance of flower is to turn that biomass into something more desirable in the marketplace. Concentrates such as butane hash oil (BHO), rosin and CO<sub>2</sub>-extracted oils are still in heavy demand, and distillates can be turned into edibles, topicals and more. The new Oregon hemp-growing industry also needs simple ways to turn its abundant harvests into CBD isolates for the medical marketplace.

Enter Claywolf Extracts, a veteran-owned company licensed to do hydrocarbon extractions. Originally founded in 2012 in Washington State as Fox Hollow Farms, Claywolf relocated to Clackamas, OR, to work with the local farmers to turn their flowers into extracts using butane, CO<sub>2</sub>, ethanol and more. As the first licensed processor in the state of Oregon, Claywolf serves cannabis and hemp farmers by producing shatter, live resin and crumble (wax) in its state-of-the-art laboratory.

Joel Klobas, chief of operations for Claywolf, explains the company philosophy as I watch their massive extraction machines create some concentrates. “We love working with local farmers, many of whom are suffering these days along

with the rest of the industry,” Klobas says. “They are our partners, not our clients or customers.” Claywolf works with testing labs to provide its growers with information on product potency as well as the combination of flavonoids, terpenoids and cannabinoids in the product.

To that end, in 2014 Claywolf developed its “Flavor Wheel” to qualify and quantify different terpene profiles with their scents, flavors and effects. (You can see it online at [claywolf.com/flavorwheel](http://claywolf.com/flavorwheel).) All of Claywolf’s packaging emphasizes the unique composition of various strains. Because growers in Oregon aren’t allowed to use any pesticides, the company’s Clean Green Certified products reflect the true essence of its flowers.

## DISPENSARY DANK

Along with the suppliers, growers and extractors, I wanted to speak directly to some retailers to find out the situation on ground level. My last stop on this visit was to the Portland location of Stoney Only, run by Mike Mullins and Jennifer Valle, which advertised ounces for \$28. Their advice to all pot growers: “Diversify!”

Mullins explains: “You need to have a

market already in place as a grower long before you harvest. Keep it local and have some patience. You need a long-term plan. Growers can’t be in this for easy money. Those are the ones whose farms we see up for sale on Craigslist. The people who are in this for the duration understand what needs to be done to succeed no matter how low the prices go.”

Mullins and Valle also run Stoney Girl Gardens in order to stock their shelves and avoid paying too much for their product. They’ve also started Portland-sterdam University to teach prospective pot farmers how to create their own safe and effective medicine. “One of the important things we teach people is that monocultures are dangerous,” Valle says. “Outdoor farmers need to improve their soil year after year using organic inputs, cover crops and compost.”

On my way out the door, I ask Mullins if he has a message for the government of Oregon. “You can’t wipe out the black market by punishing the people that want to be compliant,” he says. “If you make it easier for us to operate, you eliminate the need for consumers to go back to the street for their meds. The solution to our problems isn’t more regulations—it’s less!” 🌿

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# CANNABIS IN THE BEDROOM

FOR THOSE SEEKING TO SPICE THINGS UP SEXUALLY,  
CANNABIS COULD BE THE ANSWER. FIND OUT HOW POT CAN HELP  
YOU ACHIEVE A HAPPIER, HEALTHIER SEX LIFE.

BY MELINDA MISURACA





**A**SHLEY MANTA CALLS herself a “cannasexual,” a word which she defines as “anyone who mindfully and deliberately combines sex and cannabis to deepen intimacy and enhance pleasure.” A gregarious, body-positive sex educator, Manta likes to post Instagram selfies picturing her relaxing in a bubble bath or wearing lacy undergarments in front of an unmade bed, as likely to be found

can help, Urman says. “The THC in cannabis stimulates the part of our brain that produces dopamine, which in turn gives us a relaxed sense of well-being and changes our sense of time. It promotes slowing down, helping people focus more on their sensations and feel more at ease—as a result, their orgasms are much more probable.” Urman feels that a cannabis-enhanced release of a woman’s inhibitions and guardedness

the book *Cannabis and Culture*, edited by Vera Rubin, early Europeans used marijuana to promote happy, pleasurable marriages. In one courtship ritual, Ukrainian girls leapt over haystacks with pot seeds in their pockets, taking off their shirts and running around the house three times naked while singing magical incantations meant to allure boys: Andrei, Andrei / I plant the hemp seed on you / Will god let me know / With whom will I sleep? In Central Asia, lamb’s fat was infused with weed and spices to make a potent aphrodisiac meant to ease a new bride’s discomfort on her wedding night.

From the late 1800s to the 1940s, cannabis held a prominent place in the US Pharmacopeia and the US National Formulary. Weed-infused elixirs were commonly prescribed by doctors and pharmacists to treat a number of women’s ailments, from menstrual irregularities to “sexual torpor” (a.k.a. “not being in the mood”). Yet in the late 1930s, the first Federal Bureau of Narcotics commissioner, Harry Anslinger, declared that weed turned women into nymphomaniacs who fell prey to “Satanic jazz and swing” and sought “sexual relations with Negroes and entertainers.” Doctors around the country called foul. At a hearing on newly imposed heavy taxes and restrictions on medical-cannabis use, even the prestigious American Medical Association balked at this overreach. But racism, sexism and reefer madness conspired with the feds, and a couple of decades later, cannabis was deemed a Schedule I narcotic in the Controlled Substances Act of 1970—more dangerous than oxycodone, cocaine and meth.

Although American attitudes have shifted since the propaganda heyday of yore, there exists a lingering cloud of suspicion surrounding a woman-and-weed alliance. Perhaps it is rooted in the societal unease around female sexual desire. Peggy Orenstein, researcher and author of *Girls & Sex: Navigating the Complicated New Landscape*, speaks to the troubling lack of permission young women feel to ask for their own pleasure, while a 2017 study published in the *Archives of Sexual Behavior* showed that straight men still outnumbered straight women in achieving orgasms, three to one. This “orgasm gap,” combined with a musty stigma against acknowledging and exploring the sensual properties of cannabis, creates a grim outlook. And yet, there’s hope. It’s not surprising that the aforementioned study also found

“[THC] GIVES US A RELAXED SENSE OF WELL-BEING AND CHANGES OUR SENSE OF TIME. IT PROMOTES SLOWING DOWN, HELPING PEOPLE FOCUS MORE ON THEIR SENSATIONS AND FEEL MORE AT EASE—AS A RESULT, THEIR ORGASMS ARE MUCH MORE PROBABLE.”

holding a vape pen as a vibrator. Manta teaches people how to include weed in their most intimate moments.

“Cannabis, when used intentionally,” says Manta, “can help increase self-compassion around shame and worthiness, release limiting beliefs, and transmute pain and contraction into possibility and expansion.”

San Francisco sex therapist Diana Urman agrees. She finds that many of her female clients are anxious and struggle to feel pleasure. “They aren’t able to be fully present in their bodies,” she explains. “They feel distracted during their sexual experiences.” Weed

leaves room for an “internal permission” to ask for and receive what she wants, despite “society telling us we are unworthy of receiving pleasure.”

Until recently, few studies have examined the effects of weed on female sexual pleasure, despite the fact that for centuries the herb has been noted to help increase female arousal, sensitivity and ability to climax. An article published in the *Journal of Psychedelic Drugs* details the use of cannabis in tantric sex rituals, beginning in India around the seventh century and later becoming a popular Hindu folk medicine known for its aphrodisiac properties. According to







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**TIMES**



that women who climaxed the most had sex that included open communication and mutual, playful, often-experimental behavior. Perhaps these women and their lovers took the kind of intoxicating spin where one might invite cannabis along to ride shotgun.

A recent Stanford University study shows a positive association between cannabis usage and sexual frequency, and this is what happened to Anna M.

often not enough on its own. To fully address the difficulties women face in claiming their rightful feel-good quotient, she believes more work needs to be done both at the individual level, through therapy and mindfulness practices such as meditation, and at the societal level, by shifting unrealistic standards and stereotypes that don't leave enough space and acceptance for every woman's right to her own unique

Cannabis can help increase pleasurable sensations in a few ways. "For new or low-tolerance consumers," says Manta, "I suggest starting with topicals. They're nonpsychoactive and you can still enjoy the physiological benefits without the high. Applying it directly to the vulva and vagina allows the cannabinoids to absorb into the tissues. This can bring more blood flow to the area and promote pleasurable sensations while reducing discomfort."

Cannabis sex topicals have come a long way since the hidden-under-the-bed jars of homemade green glop that left one's lady parts smelling like bongwater. Many of the new, modern elixirs are created by women like Gretchen Kiskanu, an herbalist and entrepreneur who has worked in the Humboldt County cannabis industry for more than 20 years. Kiskanu formulates organic, sun-grown cannabis-infused body products, including a "sensual lubricant" enhanced with calendula, whose vasodilating properties Kiskanu says can help women who have problems reaching climax. While there are cannabinoid receptors in the vagina, no studies have yet been conducted showing topical cannabinoids increase sensitivity in the area. Still, anecdotal reports abound.

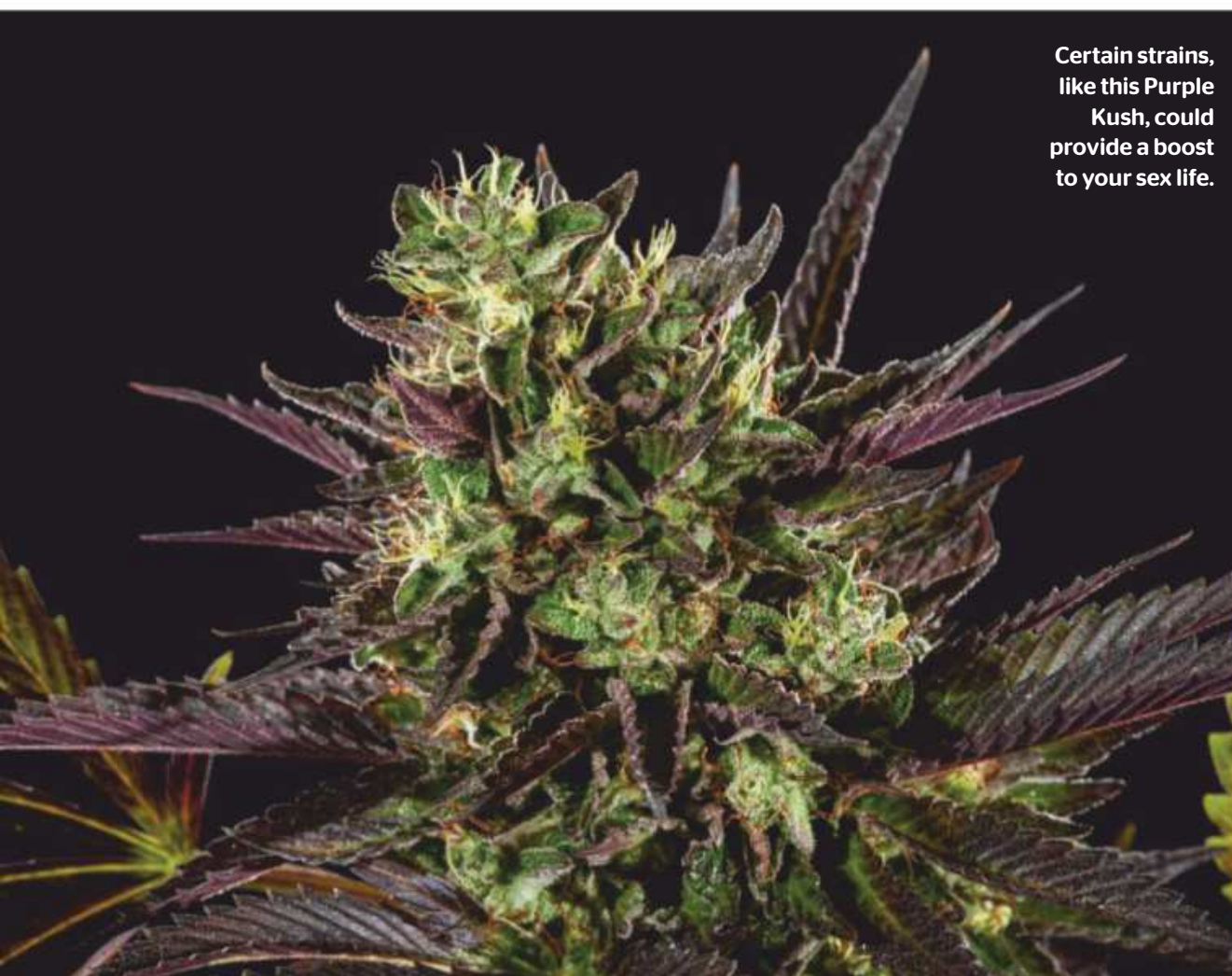
"Many women find that a cannabis topical helps them feel more stimulated," says Kiskanu. "I use it, and it works for me."

In her sex-therapy practice, Urman also recommends cannabis topicals, like the insanely popular and well-hyped Foria Pleasure, which contains an odorless, terpene-stripped high-THC CO<sub>2</sub> cannabis extract diluted in MCT coconut oil. A 30-milliliter bottle will set you back about \$75—a lot of clams to shell out, but if it gets you where you want to go, it's priceless.

## SEX POT

What strains of cannabis are helpful for sex? Relying on the recommendations of others is one possible starting point. Strains known in the "cannasphere" for their sex-enhancing properties include Love Potion #1, Purple Panty Dropper, Alaska Thunderfuck and Voodoo. Other highly touted varieties include Green Crack, Girl Scout Cookies, Flo and Blueberry. One female user on a weed grower's discussion board gushed that Purple Kush consistently helps her enjoy "the best orgasms I have ever had."

For a more nuanced approach to choosing a cannabis strain, it helps to



Certain strains, like this Purple Kush, could provide a boost to your sex life.

STRAINS KNOWN IN THE "CANNASPHERE" FOR THEIR SEX-ENHANCING PROPERTIES INCLUDE LOVE POTION #1, PURPLE PANTY DROPPER, ALASKA THUNDERFUCK AND VOODOO. OTHER HIGHLY TOUTED VARIETIES INCLUDE GREEN CRACK, GIRL SCOUT COOKIES, FLO AND BLUEBERRY.

of Occidental, CA. A newly returned-to-the-fold weed fan, Anna describes her pre-pot life as a sexual desert. "Menopause killed my libido," she explains. "It was hard on my husband. He tried everything, but I just couldn't get there anymore. It all felt like a hassle." Then a friend nudged her to try pot. Anna was reluctant. She hadn't smoked a joint since college, but she gave it a go. "Cannabis saved my sex life," she says. "I hadn't even noticed what I was missing! I look forward to sex now. I enjoy the creativity and closeness. I feel sexier, more energetic. Life is good."

According to Manta, marijuana is

desires. Cannabis, she says, can be "a powerful tool that can assist on both of those levels for those who are willing to commit."

## PICKING YOUR LOVE POTION

How does one begin to use cannabis in the bedroom (or in the back seat, or on the picnic blanket)? Choosing a cannabis strain and delivery method may take some time, and this is best approached with an open, experimental attitude. "The effects of cannabis," says Manta, "are entirely subjective, due to factors like individual tolerance, dose, mind-set, setting, body chemistry, etc."





# IT ALL STARTED WITH AN APPLE..

Most people who have used the main ingredient in our product have experienced the rewarding sensation of successfully converting an everyday apple into an apparatus that can blast you into a state of blissful tranquility. We thought a lot about that idea; there's something so nostalgic about it that it's almost poetic. More than anything else, the apple is and was something that's reliable, trustworthy, and consistent. We set out to create products that hold those ideas as our highest values.

## HIGH QUALITY

### Hard Facts About Our Oil and Terpenes

We specialize in high quality organic oil with strain specific terpene profiles modeled after real world genetics to produce true effects. Our strain specific profiles use organic terpenes found naturally throughout the planet. No synthetics are used in our high-quality blends. Our all natural cannabis oil contains a consistent 80 to 90% THC content.

### VAPES



Our newly designed cartridges are available in Gold and Silver feature a metal casing with beautiful finish. See our flavorful collection of vapes and cartridges that fit your needs.

### OILS



Our essential oil collections are packed with flavors for all types of preferences. Our all natural, non GMO and unique blends bring out tasty flavors and scents.

### TINCTURES



Like our oils, we carefully mix our oil base to create amazing topical products for relief of stress, pain or anxiety. These are one of the best ways to enjoy CBD products.



consider what sensation or mood you are after. Do you want to relax and slow down, perhaps ease some pain? Or feel energetic and adventurous? All of the above? Manta cautions against relying on the old “black-market stereotypes” claiming “*sativas* are energetic and creative” and “*indicas* are sleepy and relaxing.” These days, she says, most strains are hybrids, each with a unique combination of compounds and effects.

A fun, cannabis-geek method is to analyze the cannabinoid and terpene profiles of individual strains (this info is typically available in dispensaries or can be obtained from a cannabis-testing lab) and determine what properties one is after, compared to what a strain has to offer. CBD-rich varieties are less psychoactive and can be perfect for people who want to relax without the

high, while terpenes such as myrcene, linalool and caryophyllene tend to be sedating, and limonene and pinene more stimulating.

Caution should be exercised when embarking on a cannabis-infused lovemaking encounter. Less is often more. Too much, and the session could backfire: For new users, paranoia and anxiety from THC overload might ensue, while seasoned heads could succumb to just plain couchlock, rather than a fun and frisky couch-bouncing. Some women report that the cotton mouth one can get from smoking, vaping or ingesting pot can manifest in their more delicate mucous membranes as well; others say that such dryness is not a problem. If it does occur, adding coconut oil or another lubrication into the mix can relieve this side effect. One last note: Sensual topicals often contain high amounts

of THC, something to keep in mind when “tipping the velvet.”

Manta recommends that women try whatever they’re planning to use (flower, oil, edible, topical, etc.) on their own at first and study the effects—whether they feel more or less turned on, if it’s easier or harder to climax. She suggests taking notes and looking for trends or patterns, and adjusting doses accordingly.

“In relationships,” Manta says, “cannabis can be an interesting variable. If both partners are consumers, it can be incredibly connective and intimate. If one partner has judgment about the other partner’s cannabis use, that can cause conflict.”

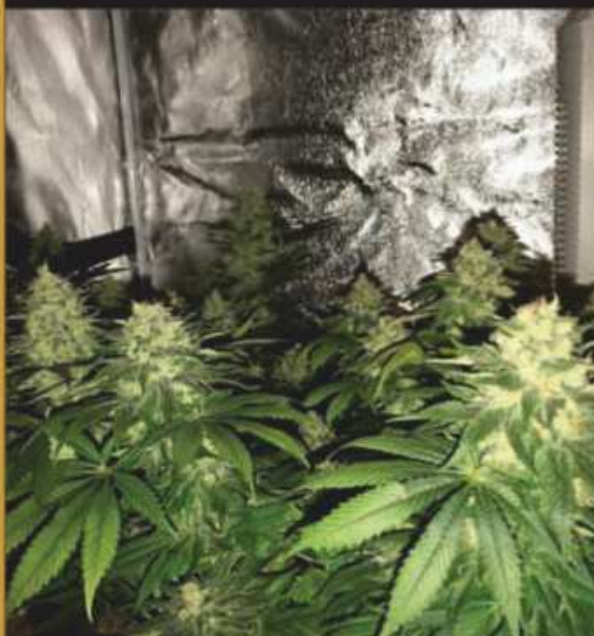
Urman concurs. “Cannabis can have both positive and negative effects on relationships,” she says. “It can increase our ability for pleasure and improve our sex drive,

[help us] feel more connected to our partner and ourselves. But negative aspects are also possible: It can impact our judgement and our ability to make rational decisions, which is an imperative when it comes to relationships.”

Kiskanu feels that using cannabis together with a partner is a way to pay closer attention to the body’s sensations and share the responsibility for mutual pleasure, practices that can increase connection and intimacy.

Just as food, candles and music can help set the mood for sexual magic, cannabis stirs an alluring spice into the mélange. Who wouldn’t appreciate more awareness, relaxation, creativity, spontaneity and euphoria in the bedroom? (Nobody, nowhere.) Sex and cannabis can create an adventurous love cocktail. No two concoctions will be the same, and that’s delicious. ✨

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# 2019 HIGH TIMES HYDRO REPORT

ANOTHER YEAR FLASHES BY AND WE ARRIVE BACK TO THE ANNUAL *HIGH TIMES* HYDRO REPORT—A PLACE OF LEARNING FOR THOSE INTERESTED IN GROWING CROPS OF BUDS WITHOUT SOIL AND FOR THOSE ALREADY EYEBALL DEEP INTO CANNABIS WATER CULTURE. *BY ERIK BIKSA*





Large plants grown hydroponically need trellising for support.

### WHY GROW IN WATER?

Say what? Of course plants need water. Yes, but they don't need soil! In hydroponics, an inert growing medium—if any is used at all—replaces the soil. All of the necessary elements or nutrients that a cannabis plant uses to complete its life cycle are supplied in a nutrient solution.

The word “hydroponics” is from ancient Greece, and it literally translates to “growing with water,” or, in this case, with a nutrient solution.

There are plenty of advantages to growing with water. Here are just a few.





## INCREASED OXYGEN LEVELS FOR ROOTS

Cannabis roots love oxygen, and the more they can get via dissolved oxygen and ambient levels, the faster and bigger the plants will grow. Modern growers are just beginning to unlock the potential of increased  $O_2$  levels and are making some amazing discoveries. For example, crops can grow bigger with less fertilizer when they have higher  $O_2$  levels at the roots.

Furthermore, the aerial portion (the upper green parts) of the crop can still grow and thrive in less-than-perfect conditions (e.g., high humidity in a greenhouse) when there is more  $O_2$  for the roots.

Note that a nutrient solution can hold considerably more oxygen than soil or a grow substrate, which makes growing with water a natural choice for amping up  $O_2$  to supercharge crops of heavy and healthy buds—naturally!



Unencumbered roots expand rapidly in deep-water culture systems.

## THERMODYNAMICS FOR EFFICIENCY

Water, the main component of a hydroponic nutrient solution, is a much better conductor for heating and cooling than air. That's why most combustion engines are liquid-cooled instead of air-cooled—fluids do a better job of trapping and transferring temperature differences between the engine and the air.

It is far less efficient to cool or heat the air in an environment like a greenhouse or growroom than it is to cool or heat a nutrient solution. In reality, the plants don't care what the air temperature is; they care what their core temperature is—the leaf temperature.

Think of sinking your feet into a cool stream on a hot summer day—or placing a cold cloth on your forehead if you are feverish. This does a great job of cooling your whole body by lowering your core temperature. It's the same thing for cannabis plants: If you cool or heat the nutrient solution that the





Rockwool cubes allow plenty of oxygen to reach roots.

roots are immersed in, you effectively raise or lower the temperature of the whole plant. This keeps photosynthesis humming along when it may otherwise slow or halt due to warm or cold air temperatures.

## ELIMINATE OR LOWER REPLACEMENT COSTS BETWEEN CROPS

Lugging out old root-balls of dirt or medium from previous crops is messy and costly, to say the least. Furthermore, there are costs associated with disposal and replacement—and these will occur every time you want to replant. With hydroponic methods like NFT, DWC/RDWC, aeroponics, etc. (see “The ABCs of Cannabis Hydroponics Systems”), there is essentially little to no growing medium to replace; the plants only require mechanical support, as the roots are actually growing in the nutrient solution. This means that a five-foot-round bush might only need as much growing medium, like grow rocks, as would

fit in a large-size soda-fountain cup. Compare that to a 20-gallon nursery pot then multiply by the number of plants and you may quickly realize the benefits here. Besides the cost of materials, this means a fast crop turnaround between harvest and planting. The system can be drained, scrubbed and replanted within hours instead of the days required by traditional methods, with very little if anything at all to haul away and dispose of.

## HYDROPONIC SYSTEM BASICS: RECIRCULATING VS. DRAIN-TO-WASTE

These are the two basic classifications of hydroponic systems. A recirculating system can also be referred to as an active system. Here, the nutrient solution is reused, circulating through cannabis-plant roots via an active water pump or air pump.

When water falls or moves through the air, it absorbs oxygen. A further benefit of recirculating systems is that they conserve water and fertilizer, reducing the environmental footprint of any cannabis garden. Note a well-sealed (covered) recirculating hydroponic system uses around 50 percent less water than is used in conventional soil growing and irrigation methods (watch dirt growers squirm a bit when you talk about water use).

Drain-to-waste hydroponic systems may still use a water or air pump to distribute the nutrient solution; however, the main difference here is that the solution is not recaptured back into a reservoir after reaching the plant roots and then reused. After each irrigation cycle, the nutrient solution is collected as waste. Thoughtful growers will find other uses for spent nutrient solution, such as irrigating orchards where trees or shrubs are happy to drink up the extra water and nutrients.



Provide enough room for hydroponic plants to increase in size dramatically.





Drip systems use emitters to feed plants individually.

## THE ABCs OF CANNABIS HYDROPONICS SYSTEMS

### AEROPONICS

In an aeroponic system (the method was pioneered in Israel for performance and water conservation by Dr. Hillel Soffer), plant roots are sealed underneath a light-tight lid, with the upper part of the plant exposed to light. The bare plant roots are intermittently or continuously sprayed with a nutrient-solution mist.

One of the advantages of aeroponics is a very fast growth rate due to the large surface area generated by misting roots, which spurs oxygen absorption. A drawback is that misters are subject to clogging without lots of care and attention.

### DRIP SYSTEM

There are countless variations on the drip-system setup. Essentially, individual plants are irrigated via top feeding of nutrient solution at the base of each plant with “spaghetti” tubing, usually around a quarter-inch diameter. The spaghetti tubing is typically connected to a wider-diameter tube that is supplied by a pump from a reservoir or injector system with



Aeroponic roots dangle in a mist of nutrient solution.

gate valves. These systems can be operated as recirculating or drain-to-waste. A bucket system is a type of drip system, as are drip trays (or modified flood tables—see page 72).

The advantages of the drip system include very precise moisture management with timers or sensors. This system can also easily be

scaled up or down depending on how many plants you may have in the garden area at any given time. Clogged emitters or lines are a disadvantage, as are the routine inspections required to make sure they are flowing freely to the thirsty cannabis plants they are supplying.



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## DEEP-WATER CULTURE (DWC)

This is perhaps the first modern hydroponic growing method, and it's still widely used today. When using this method, a plant is supported by a collar or net pot in a light-tight container, like a black bucket or tote with a sturdy lid. A depth of nutrient solution is maintained just below the bottom of the net cup or stem supported by the collar. The nutrient solution is aerated or "bubbled" by an air pump (aquarium air pumps and stones are often used).

DWC has the advantage of being very inexpensive and easy to set up. Its drawback is that the air stones or bubblers don't draw much oxygen into the system.

## FLOOD & DRAIN (OR EBB & FLO)

In this system, shallow water-tight trays with grooves in the bottom leading to a drain/fill hose connection holds grow cubes, slabs or pots (sometimes trays are simply filled with medium). Beneath the supported flood table is a reservoir containing nutrient solution with a pump and timer connected to the fill/drain hose. Periodically, the pump fills the tray with a shallow depth of nutrient solution, fertigating (fertilizing and irrigating) the cannabis crop. When the pump shuts off, the solution drains back through the hose and into the reservoir, drawing fresh air into the growing medium for the roots.

The main advantage with this system is that it can be forgiving with power outages, inexperienced hydro-system management and other missteps. There are very few moving parts here for an active system. Its main disadvantage is that larger amounts of inert growing medium are usually required for its operation than in other systems.

## NUTRIENT FILM/FLOW TECHNIQUE (NFT)

Pioneered in the United Kingdom, NFT is a well-proven and widely adapted system favored by commercial veggie and fruit growers all over the world. The basic concept utilizes shallow troughs or channels with lids (or as one-piece tubes) that have holes drilled or punched on top, usually at a fairly close spacing, arranged on a gentle slope. At the high end of the trough, a nutrient-solution emitter (such as spaghetti tubing) delivers a continuous flow of nutrient solution.

The solution flows as a shallow film down the length of the channel across plant roots, drawing air into the solution. The plants are placed into the channel through the holes on the top of the tube or lid. At the lower end, the solution is captured and redirected back to a reservoir, where it is pumped back to the high end of the system for continuous recirculation via emitters.



This method's advantage is that a large-scale system can be set up easily and quickly, as there are few parts to contend with. Furthermore, the system can be very productive, and it's well suited for mechanization.

Some might find the higher planting density (which is best for shorter plants) to be a disadvantage, and if there is a power outage there won't be much nutrient solution in the root zone to keep plants sustained for significant periods of time.

## RECIRCULATING DEEP-WATER CULTURE (RDWC)

A modernized and amped version of the DWC system, RDWC takes advantage of all the proven principles of DWC and adds the otherwise missing recirculation component. While that's an oversimplified way of putting it, recirculating the solution greatly improves crop performance and the practical layout potential of the system, making it highly suited to commercial-scale cannabis growing. The amount of dissolved oxygen that can be achieved in a RDWC setup is very tough to beat. Oftentimes, growers are able to run their RDWC systems with quarter-strength nutrients while still growing huge and lush cannabis plants compared with conventional nutrient-solution concentrations due to the superior DO levels achieved.

## IMPORTANT TERMS & PRINCIPLES IN HYDROPONICS

### DO

Dissolved oxygen refers to the level of oxygen that has been dissolved into the nutrient solution that is available to plant roots. Cannabis plants thrive in aerobic (oxygen-rich) conditions. Anaerobic conditions, those lacking oxygen, can be detrimental and promote poor nutrient absorption and increase the potential for root rot.

### EC

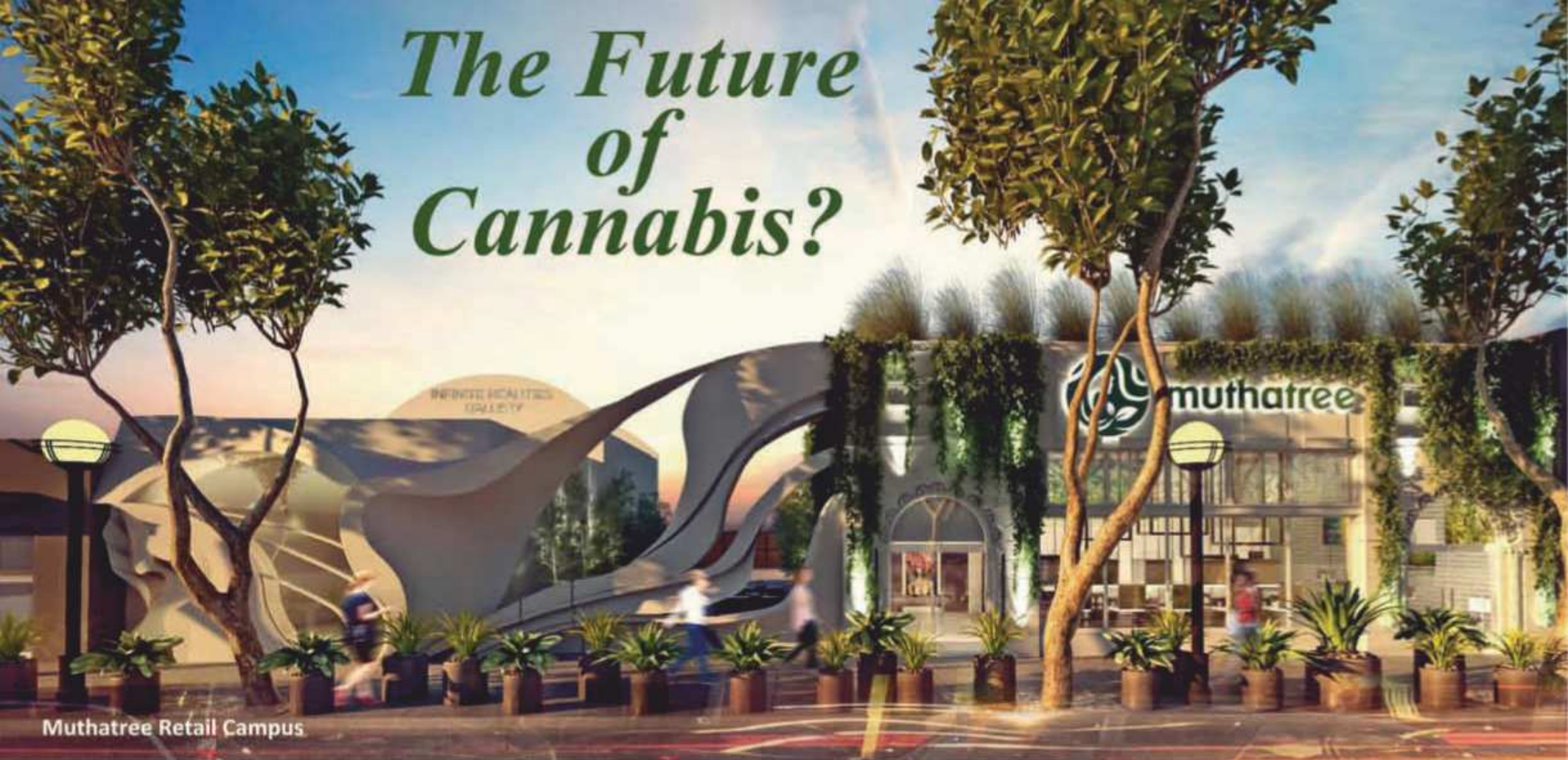
Electrical conductivity, which also is the base value for readings like total dissolved solids (TDS, measured in parts per million, or PPM), refers to the fertility load or potential that is measured within the nutrient solution. For example, the more soluble fertilizer you add to the solution, the higher the value becomes.

### pH

pH is a measurement that refers to the relative acidity or alkalinity of substance, in this case a hydroponic nutrient solution. Different nutrients are more available at different pH levels, so it's important that an optimal range, or "sweet spot," is maintained. Usually a pH of 5.8 to 6.2 is good for most hydroponic garden types.



# The Future of Cannabis?



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Cannabis of Los Angeles (COLA) is the first of its kind brand and enterprise development company. It was created to incubate urban entrepreneurs and to accelerate the development of social equity cannabis related companies within a vertically integrated production facility and retail ecosystem.



Our Muthatree retail campus is designed as a dedication to those seeking the highest quality cannabis products and the purest of lifestyle indulgence. It is a multidimensional place to explore cannabis-inspired exhibits and experiences of narrative, visual and creative art and an open space for interconnective engagement of our souls, thoughts and intellectual discoveries. It will emerge as a co-branded experiential partner with iconic brands and social equity entrepreneurs symbiotically welcoming the adventurous, curious, socially conscious and seekers of well-being.



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Current Culture systems grow enormous plants.



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## FUTURE HYDROPONICS

To get an idea of where hydroponic technology is heading and what it means for growing cannabis in the days to come, we caught up with some of the leading minds involved in the field.

Christian Long, co-founder and co-developer of Current Culture H<sub>2</sub>O ([cch2o.com](http://cch2o.com)) Under Current systems and related technologies, had a few new tools to share that are now available to growers as well as some insights into what the future of growing buds with water culture may hold.

For the everyday hydroponic grower using recirculating reservoirs or applying aeration to systems via air pumps, CCH<sub>2</sub>O's new AirReg and Add Back Kit are very useful tools in getting the most out of your hydro system.

The AirReg Kit allows growers to create a measurable amount of aeration through their systems with a bleeder, valve and gauge (measured in inches of water). What's significant here is that anything over 25 on the dial

means that you could actually be oxidizing nutrients—too little and you may not be getting all the air to your cannabis roots that they can use. The Add Back Kit uses a venturi injector that works with any water pump rated at over 500 gallons per hour. Instead of dumping pH adjusters or nutrient concentrates into the system, which can shock plants, the kit provides an attachment to your system pump that siphons up concentrates and adds them to the system at a steady and gradual rate that you control. It's very handy and does not require any additional power.

Long was very excited to talk about CCH<sub>2</sub>O's automatic dosing system. The new doser can be preprogrammed to grow perfect cannabis crops, using ratios and values the company has researched and developed over many years with the help of growers from around the world. The programming adds the right amount of each component in the Cultured Solutions feeding program at the right times. No more guessing what's

optimal or trying to remember how much of what part you added the time before—this keeps your hydro system dialed in 24/7 to optimal pH, EC and ORP (oxidation reduction potential) levels.

SOPs (standard operating procedures) are a big deal with the new generation of legally sanctioned cannabis mega-producers; they are essentially the “playbooks” for their grows. Some of the trends that are emerging and undergoing further development from industry leaders like CCH<sub>2</sub>O and EZ-Clone incorporate SOPs into technologies like controllers used to run these cannabis mega-farms.

Here's some of what Billy Blackburn, CEO of EZ-Clone who recently joined forces with GrowLife Inc. and is also now heading GrowLife product development, had to say on the subject:

“While SOPs are invaluable to professional growers, there still needs to be a level of thinking and intelligence making the day-to-day or even moment-to-moment decisions that affect the growing environment.

“For example, when growing on a large scale, consistency is really important—something we know very well in developing aeroponic systems that automate and speed up the cloning process. That's why we are working with experts in their respective fields in developing controls and sensors for grows that allow us to give them a level of thinking or intelligence—AI [artificial intelligence], more specifically.

“Taking years' worth of data based on real cannabis growing and incorporating that into how a controller behaves or makes decisions in a complex growing environment is now emerging over the horizon and we are really excited to be a part of that—empowering cannabis growers of every scale to produce the best crops possible while freeing up some of their time and lessening the worry or risk in their endeavors.”

As part of the SOP growing trend, EZ Clone's Commercial Pro System can be supplied with a comprehensive SOP guide to cloning and mother plants—we are talking about stuff far beyond the basic and rudimentary here. For example, how to avoid creating genetic drift in your valued genetics that may occur over time with successive cloning, and what percentage of a mother plant is acceptable to cut for cloning and how often. The SOP guide will help you quickly understand and utilize information that took many years of hands-on experience and feedback from countless cannabis propagators to develop.

While hydroponics is not a new technology, there are exciting and new technologies from other fields that are crossing the stream and finding their way into growing hydroponic crops of buds—better, stronger, faster! 🌿





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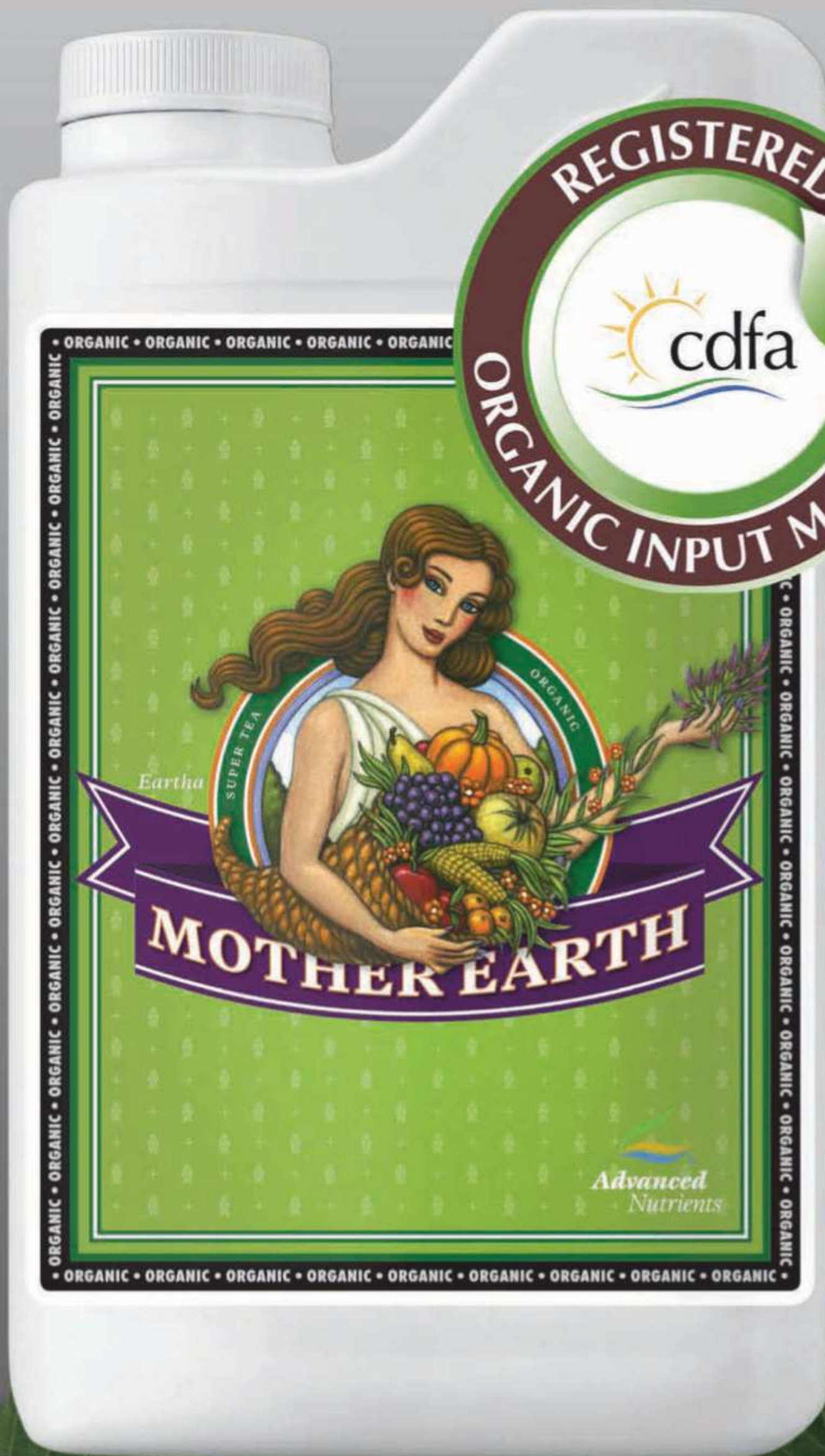
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# GROWING IN COIR

EVERYTHING YOU NEED TO KNOW TO GET GROWING IN THIS SUSTAINABLE,  
BENEFICIAL MEDIUM. STORY AND PHOTOS BY TODD TILTH

**A**S STATES AND COUNTRIES are finally legalizing cannabis to be grown and smoked for medical and recreational use, the demand for our beloved plant is exponentially on the rise. Small home grows have morphed into 30,000-square-foot warehouses. Growing mediums are being sold and used in what once was thought to be unimaginable quantities. Living in Washington, a legal recreational- and medical-marijuana state, I've watched the local hydro stores go from selling a few bags of planting medium to witnessing whole pallets disappear. The fact is, as cannabis laws change and more people begin growing the plant, the amount of growing medium used is only going to increase, and the one you choose may impact our future.

## PEAT AND OUR PLANET

Peat moss has been the "go-to" soil amendment for many years. It provides a good air/water ratio for soil and soilless growing mixes. Unfortunately, due to overwhelming demand, peat is being mined from the earth at record rates.

Peat bogs are delicate ecosystems and have many valuable uses. They're home to

rare wildlife, and they control flooding, filter water and preserve a record of history; most importantly, they are earth's most efficient and vital carbon sink. Just like trees, peat bogs have the ability to absorb carbon dioxide from the atmosphere and retain it like a sponge, filtering our air of excess carbon emissions. Peat bogs store about twice the amount of earth's excess carbon as trees do. In theory, a peat bog is like a small A/C unit for our planet. Let's look at using alternatives to peat, for peat's sake!

## THE COIR ALTERNATIVE

When grown properly, a tall coconut palm tree will start bearing fruit a minimum of six years after planting. After roughly 15 years, the tall coco palm will reach peak production, yielding up to 75 coconuts a year for up to 90 years. That's what we call a sustainable resource. After production of the coconuts, we are left with the coconuts' husk. This is what's used to create coco coir. From trash to treasure, coir has gone from being just heaping mounds of unusable byproduct produced by the coconut industry to the crown jewel of the horticulture industry.

For coir to actually grab a foothold in the

plant-medium market, it needed some R&D. Now, after years of development, you can experience coir in all of its brown spongy glory, and, after using it, you won't go back to any other medium.

## PURCHASING COIR

When deciding which coir mix you want to purchase, don't skimp! Buy the best you can find—it will be worth its weight in buds. Seek out a product that carries an RHP certification; that way, you'll know it will be flushed, buffered and free of pathogens, pests and weeds.

Search the coir bag for numbers indicating the pH and EC/PPM levels (acidity/alkalinity and nutrient-concentration levels, respectively), and ensure that it says the buffering process was performed. Avoid the unknown with coir, or it may contain a boatload of unwanted salts or other harmful plant substances.

You can also purchase compressed coir bricks, which are light, compact, stealthy and ideal for transporting to guerrilla grows or other hard-to-access gardens. To rehydrate these rock-solid bricks, simply follow the package's directions for the correct amount of water to add and then toss them into a garbage can or bucket and they will expand rapidly.



Lavender goes  
coo-coo for  
coco coir!







Coco chips



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coir.

## SPECIAL NUTRIENT NEEDS

Coir has a high cation-exchange capacity. This means that it has negatively charged ionic surfaces that attract and “adsorb” positively charged ionic elements, such as calcium, magnesium, potassium and sodium. The ionic complex not only clings onto these specific elements, but it can also release the needed nutrients when the plant requires them. The downside to this is when coco coir is sourced, it contains high levels of positively charged elements, most notably potassium and sodium, which must be flushed and buffered. This buffering is done by soaking the coir in a calcium bath for 24 hours, which locks in the much-needed calcium and displaces the unwanted elements. The coir is then washed to flush away excess sodium and potassium. Your final coir product is now safe for plant use, flushed and supercharged with calcium.

When feeding plants in coir, you can cut down on your nutrient shopping list, saving you lots of time, space and money. Most nutrient programs for other grow mediums require up to five base nutrients to get you through your entire grow. We’re talking grow A+B and bloom A+B solutions and a bottle of micronutrients—and that’s before purchasing any supplements. With coir, you only need to purchase coir-specific A+B base nutrients to get from seed/clone to harvest. To be a successful coir grower, you must purchase a quality A+B base nutrient designed for coir use; it will contain adjusted levels of macro- and micronutrients. You will need less potassium, more chelated iron and more Cal-Mag. Decent results can be obtained by adding 150 to 200

parts per million (PPM) of Cal-Mag to almost any base nutrient lineup.

When mixing up a nutrient reservoir designed for coir use, follow these important directions: First, fill your reservoir up with filtered, pH-stabilized, dechlorinated water that has a total-dissolved-solids (TDS) level of 100 PPM or lower. Then add a coir-specific A base nutrient and let it circulate for at least 15 minutes. Next add an equal amount of a B base nutrient and mix well. *Do not* mix A and B together in their concentrated forms. Doing so will allow some nutrients to bind and they will fall out of your nutrient solution, making them unavailable to your plant.

A great tip for increasing your plant’s calcium uptake when growing in coco coir is to add L-amino acids, such as L-glutamic and L-glycine. Make sure you add plant-ready L-amino acids, derived from enzymatic hydrolysis. These L-amino acids will chelate calcium, clawing into it and transporting into plant roots millions of times faster than regular osmosis. When adding amino acids to your mix, your Brix (plant sugar) levels should increase too, which can help your plant become almost invisible to most insects.

Some cheaper alternatives to buying store-bottled supplements include brewer’s yeast or aloe juice. They are both loaded in B vitamins, amino acids and a lot of other goodies that will make your plant explode in growth! Aloe juice also contains salicylic acid, “nature’s aspirin,” which will help augment your plant’s immune system by activating its SAR (systemic acquired resistance). Recent findings show that raising your plant’s SAR level could also increase resin production.





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These plants have another week of flushing left before harvest.



The pot on the right needs water but the left one does not.

## WATERING AND FLUSHING COIR

The most popular watering methods for coir are automatic drip systems, hand watering and drain-to-waste runoff. You can use coir with a fabric container and create flood-and-drain or bucket systems. But most coco growers opt out of recirculating hydroponic methods because of the salt-clinging abilities of the coco coir structure. If you want to try recirculating your nutrients, I highly recommend using reverse-osmosis (RO) water.

There are many variables to knowing when to water your coir: air/water ratio, environment, genetics, plant size, container choice and watering methods. Your best bet for watering intervals is to lift or

tilt your plant container to feel if it's light. As you gain experience, you'll be able to visually know when to water your plant. This is done by simply inspecting the coir at your plant's base to check if it's dark brown (wet) or light brown (dry). Don't ever let the coir dry out so much that your plant's leaves droop! Always let the top two inches of the coir dry completely, though; this will help keep fungus gnats and root aphids at bay.

Under most high-intensity discharge (HID) lighting units, I recommend starting with a 1-to-3-gallon fabric pot for veg growth and, based on plant size, a 3- or 7-gallon fabric pot for flowering. Use the "feed less but more often" technique and provide a light nutrient mix with every watering. Water the plant until about a 10 to 20 percent runoff is achieved (this will help release excess salts that tend to bind to the coir) and then let it drain to waste. You will find that smaller plants need water every other day, and bigger plants need it daily. In the end, you get the dankest buds if the medium is allowed

to dry out properly, bringing in lots of air daily.

Do you want to duplicate a commercial-style rockwool grow? Simply use small 1-gallon fabric containers filled with coir, or purchase some of the new coir blocks on the market which are designed to replace rockwool blocks. Then set up a "zoned irrigation drip system" running short water sessions multiple times a day, every day. You will get faster growth with less frequent nutrient issues because the plant has constant access to what it needs.

If you use RO and ultraviolet (UV) filtered water with nutrients and supplements at less than 800 to 1,000 PPM, you shouldn't need to use plain water until it's time to flush, in the last two weeks of growth.





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Humidity domes were just removed from these clones rooted in coir.

## STARTING CLONES AND SEEDS IN COIR

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### CLONING STEP BY STEP:

For quick, successful cloning, prepare your mother plant 1 to 2 weeks ahead of time by flushing it, spraying it with a kelp mixture and feeding it a low-nitrogen nutrient formula. You can even choose the branches you wish to take cuttings from and pre-top them. Once rooted and in vegetative growth, they will rapidly build a bushy plant.

Take your clones from your mother plant, put them into cups of room-temperature distilled or RO and pH-balanced water and let them sit for 1 to 24 hours.

Fill your party cup, small pot or plug/seedling tray with un-amended (no perlite, grow stones, etc.) coir and poke a small hole in the middle with a bamboo skewer or similar item. If using party cups or small square pots, you can typically fit 10 cups per tray with a humidity dome on top. If using a plug tray filled with coir, you can produce many clones depending on



Prepare supplies in advance.

your needs. If using a plug tray, carefully remove the clones after rooting, squeeze lightly around the sides of the square and push a pen through the drain hole and ease the rooted clone out to then be transplanted.

Cut your clone's stem at a 45-degree angle with a sterile razor blade to leave the tissue clean and uncrushed.

Dip your fresh cutting in cloning gel, AZOS (beneficial bacteria product that helps provide nitrogen and IAA, a natural hormone, to your plant) or raw organic honey.

Lightly insert your clone into the premade hole and then pack down the coir so it grabs and supports the stem.

Add a light cloning nutrient mix low in nitrogen—you can use diluted base nutrients at 150 to 250 PPM. Keep the pH at 5.5 to 6.5.

Put your newly planted tray of clones on a heat mat (if needed) and set the thermostat to 78°F. Put a humidity dome on top of the tray and open the vents just a bit to allow some airflow. Maintain humidity at 75 percent or more and "burp" the dome daily—like curing buds in jars, to allow a quick exchange of oxygen and CO<sub>2</sub>.

Set lights to 18 to 24 hours; you will have the best results keeping the light schedule the same as it is with the mother plant. If your environment is ideal, your clones should initiate rooting in about 5 to 7 days on average. A light tug on the stem will give you an idea of your plant's rooting progress. Remove your humidity domes when you find that the roots have fully initiated. Transplant them when you start seeing new rapid growth occurring or when roots are showing out of the drainage holes.



Seedlings growing strong

### STARTING SEEDS

If you want to start seeds with great success, soak them in a glass of room-temperature RO or distilled water, add a couple drops of 3 percent food-grade H<sub>2</sub>O<sub>2</sub> or a few drops of fulvic acid. Let the beans sit for 24 hours in a warm spot with no light. After the soaking, fill a seed tray with coir, barely bury the seeds in the coir and water with RO or distilled water. Throw a humidity dome on top and set the heat mat (if needed) to 78°F. Once the beans sprout, remove the humidity dome. Seedlings come with a small cache of nutrients of their own, so don't feed them until they have two sets of true fan leaves!

### REUSING COIR

Coir has a unique structure, and if you purchase some that is properly treated and non-steamed, it will last a long time. Some dedicated growers reuse their coir for up to three years before tossing it out. For the best of luck, add enzymes to all your nutrient feeds when planning to reuse.

Now that you are armed and loaded with the knowledge to grow in coir, don't be afraid to pull the trigger and give it a try. Some of the world's best buds, even High Times Cannabis Cup winners, are derived from plants grown in it. So if you don't want buds that are a bore, it's time to try coco coir! ✨



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# CANNABIS 101: GETTING STARTED

AS CANNABIS LEGALIZATION SPREADS, MORE AND MORE AMERICANS ARE TURNING TO MARIJUANA FOR THEIR MEDICAL AND RECREATIONAL NEEDS. LEARN MORE ABOUT SOME CANNABIS BASICS AND HOW WEED CAN IMPROVE YOUR LIFE! BY NIKKI FURRER

## WAYS TO TAKE CANNABIS MEDICINE

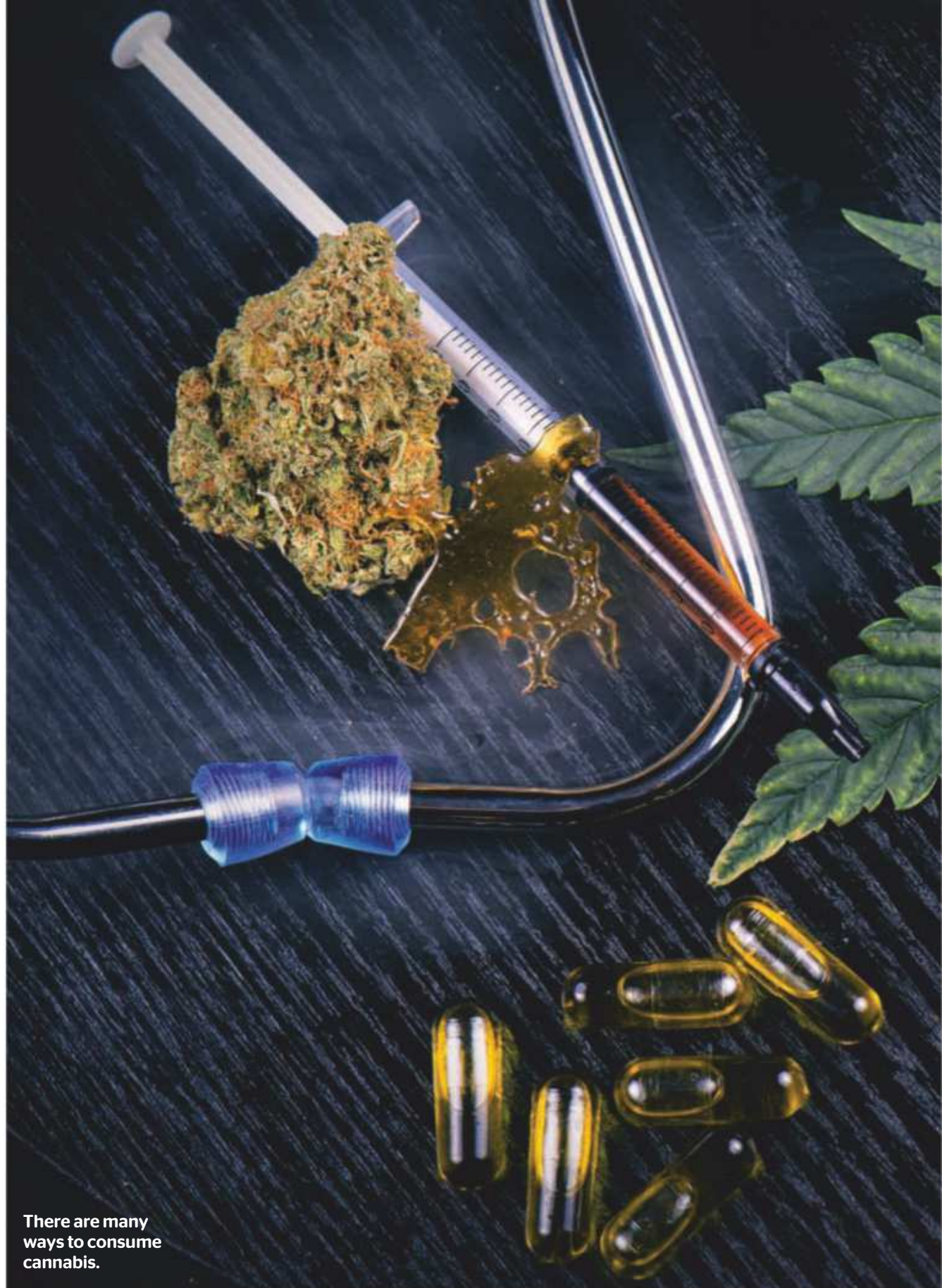
Just a few short years ago, dispensaries offered marijuana flower and poorly made marijuana-infused candy. That was pretty much it. But now, we can buy transdermal patches, mouth sprays and suppositories in dispensaries. Cannabis medicine makers are constantly developing new products, and they're focused on making medicine that not only gets us high, but also makes us feel better.

*Mode of administration* is the unsexy term for how medicine enters the body. Inhaling marijuana is one mode of administration. Eating it is another. But we can also consume marijuana with a sublingual, rectal, transdermal or topical application. Each one has its own benefits, onset and duration of effect. Some are more effective than others, and some are more fun. But it's important to know them so you know which mode of administration is best for you. A cannabis-infused cream isn't going to touch anxiety, but a 50-milligram edible could be too much THC and increase anxiety.

**INHALING** is the most well-known way to consume cannabis, and one of the most popular. Smoking or vaping marijuana has the fastest onset of effects, which means we get high quickly—usually within about 15 minutes—and it can last from two to four hours. It also means we can easily control how high we get.

When marijuana is inhaled, about 10 to 15 percent of the THC, CBD and other medicinal compounds are absorbed and used by the body. Because inhalation avoids the digestive system, it is especially effective for anyone dealing with nausea or digestion issues. We inhale by either smoking or vaping, and we can smoke or vape cannabis flowers as well as cannabis concentrates.

**RECOMMENDED FOR** *anyone who wants to feel the effects quickly and control the intensity of the high.*



There are many ways to consume cannabis.

**EDIBLES** are a popular method of consuming cannabis, because while not everyone likes to smoke, just about everyone likes to eat. When cannabinoids pass through the digestive system, they are released into the bloodstream and locked into receptors in the endocannabinoid system; we feel high, but not right away. It can take an hour or two for the THC in a brownie to produce a euphoric effect, but that effect will last much longer than the effects of inhaling. On average, an edible dose lasts twice as long as an inhaled dose, so the high can last from four to eight hours. It's not easy to adjust the dose of an edible because it takes so long for them to begin working, so it's important to remember to start low and take it slow. If you have never tried a marijuana edible before, start with five to 10 milligrams of THC. Don't

take more until you know how five to 10 milligrams affects you.

Eating an edible has a bit more bioavailability than inhalation; around 20 percent of the medicine will be absorbed and used by the body. There is no difference between 10 milligrams of THC in a cookie and 10 milligrams of THC in a gummy. Eat the one that tastes good to you.

**RECOMMENDED FOR** *anyone looking for a longer effect and who can wait an hour or two before effects are felt. Edibles include capsules, food and drinks.*

**SUBLINGUALS** are marijuana in liquid form that are absorbed by placing a few drops under the tongue. When cannabis is absorbed in the mouth rather than swallowed, the body absorbs more of the milligrams because the digestive system





doesn't get involved. Cannabinoids that are absorbed in the mouth don't pass through the liver as edibles do. The liver reduces the number of milligrams that get into the bloodstream and get us high. Almost 50 percent of the cannabinoids in a sublingual are absorbed by the body. A sublingual application will take 10 to 20 minutes for effects to be felt, and effects continue to rise for about four hours until a peak is reached, which means pain relief lasts for hours. It's also a great mode of administration for anyone who has trouble swallowing. When my brother is in the middle of a seizure, it's a sublingual application that I reach for, either a tincture or a spray.

**RECOMMENDED FOR** *nonsmokers, anyone with digestive issues or anyone who can't wait for an edible to work. Sublingual products are oils, tinctures, hard candy,*

*mints, lozenges and breath sprays. Anything that goes in the mouth but isn't swallowed.*

**RECTAL APPLICATIONS** are cannabis-infused suppositories. They are the most efficient way to consume marijuana. As the suppository melts—it is most often made of cocoa butter—the cannabinoids are absorbed by veins in the rectum and quickly enter the bloodstream, which means the effects are felt much faster than with an edible. And because the marijuana doesn't pass through the stomach and liver, cannabinoids are not wasted on the first-pass digestion, which means more marijuana is available for the body.

Fifty to 70 percent of the cannabinoids in a suppository are absorbed and used by the body, and the effects of a marijuana suppository are felt for four

to eight hours. The best thing about a marijuana-infused suppository is that the high is much milder than with any other method of consuming marijuana. Eating 50 milligrams of THC might send you into a 12-hour power nap, but a 50-milligram suppository is simply relaxing.

**RECOMMENDED FOR** *anyone with digestive issues or a lot of pain.*

**TRANSDERMAL APPLICATION** means that cannabis enters the bloodstream through the skin. Transdermal patches, similar to nicotine or opioid patches, allow cannabinoids to sink through the skin and into the bloodstream, and we get high. Very high, as I discovered when I applied my first patch to my arm. It sent me on a dog walk that lasted for hours because I couldn't find my way home. After that, I began recommending for patients to cut the patches in half. The next time I tried a patch, I had a throbbing broken toe, and it almost immediately eliminated the pain and kept it at bay all day. Transdermal patches are calorie-free, the effects kick in quickly—faster than with edibles but not as fast as with smoking/vaping—and last for six to eight hours.

**RECOMMENDED FOR** *anyone who needs a strong dose that lasts a long time.*

**TOPICALS** are applied to the skin but do not enter the bloodstream, so we don't get high. Instead, cannabinoids and terpenes lock into the endocannabinoid system receptors that are located in the skin. Considering how effective cannabis is at healing the rest of our bodies, we shouldn't be surprised at the miraculous things it does for our complexion. Creams, lotions and oils infused with cannabis relieve pain and inflammation without a psychoactive high. Pain relief can be felt within an hour of applying a topical and can last for several hours. Arthritis responds wonderfully to marijuana topicals, since the cannabinoids and terpenes reduce both inflammation and pain. Sore muscles and nerve pain are also reduced with cannabis creams. Topicals work for more than just acne, psoriasis, dermatitis and eczema. Rubbing marijuana oil on your temples can help relieve a headache. We aren't as concerned about the number of milligrams per dose in topicals, because there is no high.

**RECOMMENDED FOR** *localized muscle pain, arthritis and other inflammation issues.*





Budtenders are there to help so don't be afraid to ask questions.

## BUDTENDER FAQs

**EVERY GOOD BUDTENDER I KNOW LOVES HIS OR HER JOB. THEY LIKE TO ANSWER QUESTIONS AND BE CREATIVE. THEY LIKE TO LEARN FROM THEIR CUSTOMERS AND TO LISTEN AS MUCH AS ADVISE. HERE ARE SOME OF OUR MOST FREQUENTLY ASKED QUESTIONS.**

### How can I relieve my fibromyalgia/chronic pain/nerve pain?

When your pain level creeps up the chart and becomes debilitating, you may need more THC and CBD than your regular daily dose. Moderate to strong pain may need 20 milligrams for beginners, and some patients need even more than that. Nerve pain is fierce and difficult to treat without very high doses of THC. I've met people with cerebral palsy who have

seen amazing benefits with cannabis, but they didn't find relief until they started taking 100 milligrams or more a day of THC. I would recommend 20-plus milligrams of THC and 20-plus milligrams of CBD, taken by inhalation, edibles, sublingual or topical, depending on location of pain and severity.

### I'd like to sleep better, solidly, and wake up refreshed.

For most people, a couple of inhalations of a heavy *indica* strain is enough to get to sleep. CBN is a minor cannabinoid that acts as a strong sedative, and sometimes I find CBN-specific products, like transdermal patches, at the dispensary. Ask your budtender if they have any CBN-rich products. For me, edibles get me to sleep—always. But everyone is different.

I recommend a strain with 20 milligrams of THC, low to no CBD. Look for *indica*

strains and products with CBN and myrcene. Take it in any form, but remember how long it takes for each to become effective. Edibles can take 45 minutes to an hour, so account for that time before you crawl into bed. And remember that, generally speaking, a high-THC blend is not that conducive to reading, if that's what you're used to doing before falling asleep.

### What can I take for menstruation/menopause symptoms?

Medicating with marijuana when Aunt Flo comes to town can relieve bad moods and abdominal pain before they start. I have severe cramps, so one day a month, I eat a high-THC edible and take a long nap, and then I smoke a CBD-rich strain throughout the day for a few days to manage my abdominal pain. You might need more or less. Consider layering your cannabis medicine—inhal

for immediate relief while eating an edible for slower-acting, longer-lasting relief. I recommend a 20-milligram-THC/20-milligram-CBD blend. For severe cramps, a 1:1 THC/CBD suppository is very effective, and a THC tincture or edibles at night increase relaxation, relieve stress and promote good sleep.

Your own ideal dose should address most menopause symptoms. Keep a vape pen handy for quick inhalations to relieve acute symptoms like night sweats and mood swings. THC lowers body temperature and will keep you from sweating through the sheets.

### I work at a creative job and would like to use cannabis to enhance my performance.

Sometimes taking the edge off at work will not only allow you to make it through the day, but it just may give you new ideas and a fresh



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## BUDTENDER FAQs

Find the strain that's  
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perspective. Obviously, you should not smoke in the office—don't overdo it, smell like weed or be careless. Bring a vape pen to discreetly medicate during the day. *Sativa* is the route to go at work, as it keeps you sharp. Choose a 1:1 THC/CBD strain to reduce stress and boost creativity, or choose a CBD-only strain to stay clearheaded and focused. If your job is chronically stressful and anxiety-inducing, consider keeping a package of low-dose cannabis-infused edibles—such as five-milligram mints—in your desk.

**I would like to consider other ways than psychopharmacology to address my anxiety and depression.**

If you are taking any kind of prescription medication, you must, I repeat *must*, discuss your desire or intention to change medication with your doctor. That said, I have many customers who have found relief from their depression and anxiety symptoms with cannabis. For many people,

the commonly prescribed ideal dose of 10 milligrams of THC and 10 milligrams of CBD is also the right dose for mood management. Too much THC often increases anxiety, so keep that THC dose low. CBD is a powerful antidepressant, so look for CBD strains and edibles to increase your happy without getting high.

**Is there a role cannabis can play in my regular exercise workout and recovery?**

I quit roller derby after two practices because I hurt myself the first time I fell down. The women that stick with roller derby amaze me with their athleticism and their bruises. When women push their bodies that hard, they need a recovery plan, and cannabis can help. Out-of-shape exercisers are athletes, too. Walking a mile can be a great achievement, but it can also make you sore as hell if you're starting out with a new exercise routine. If you are working hard, treat yourself like an athlete, no matter how fast or far you go. Rub a



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cannabis-infused pain cream into sore feet, ankles, knees, hips, backs, shoulders and neck. I recommend a low-THC/high-CBD strain before and during workouts, and the ideal dose (10 milligrams THC/10 milligrams CBD) for recovery. Take it by inhalation or sublingual tincture to avoid extra calories in edibles, plus a topical pain cream to rub into sore muscles.

### **I've heard cannabis can be a sexual aid, too. Is that true?**

Cannabis is thought to be an aphrodisiac, and we can use it in a few different ways to live our best sex life. Use a vape pen for an inhalation or two of an *indica*, body-high blend for relaxation and a good mood, or plan ahead and share an edible for dessert, so the effects are felt by the time you get to the bedroom. When you get there, use some cannabis-infused massage oil and lubricant for extra tingle.

### **I don't want to get high around my kids, but I wish I could manage the feelings of overwhelming frustration I sometimes have around them.**

You're right. You do not want to be high around your kids, and you want to be ready to handle any emergency that might come up. But a high-CBD blend of *sativa* allows you to care for yourself and your kids and still keep everyone safe. Parenting has gotten more stressful, more time-consuming and more labor-intensive. Mommies are often on edge and need the relaxation of cannabis more than anyone. CBD-rich vape pens and edibles keep Mommy calm and happy and *not high*, so she can handle any emergency that comes her way. I recommend five-milligram THC/10-plus-milligram CBD taken by vape pen or edibles.

### **What can I use to help with**

### **dementia, tremors and seizures?**

THC is wonderful for dementia, tremors and Parkinson's symptoms in adult patients, but dosing is critical. The problem is that older patients are more sensitive to the negative effects of THC (anxiety and short-term memory loss), but serious tremors or pain may require a higher dose of THC, or more frequent doses throughout the day. I know one woman with Parkinson's who couldn't calm her tremors until she started eating a five-milligram-THC/five-milligram-CBD candy every two hours throughout the day. A 20-milligram candy increased her anxiety, but when she split the dose in half, she was able to find the sweet spot that relieved her tremors without increasing her anxiety.

Most of the seizure patients whom I've met, including children, need

a dose of THC with their CBD to keep seizures at bay. Scientists are still studying the effects of cannabis on the brain, but they have found that both THC and CBD are important for brain health. ✨



*This excerpt from A Woman's Guide to Cannabis: Using Marijuana to Feel Better, Look Better, Sleep Better—and Get High Like a Lady was edited for space. Order this highly recommended cannabis primer at [workman.com](http://workman.com) or [amazon.com](http://amazon.com).*

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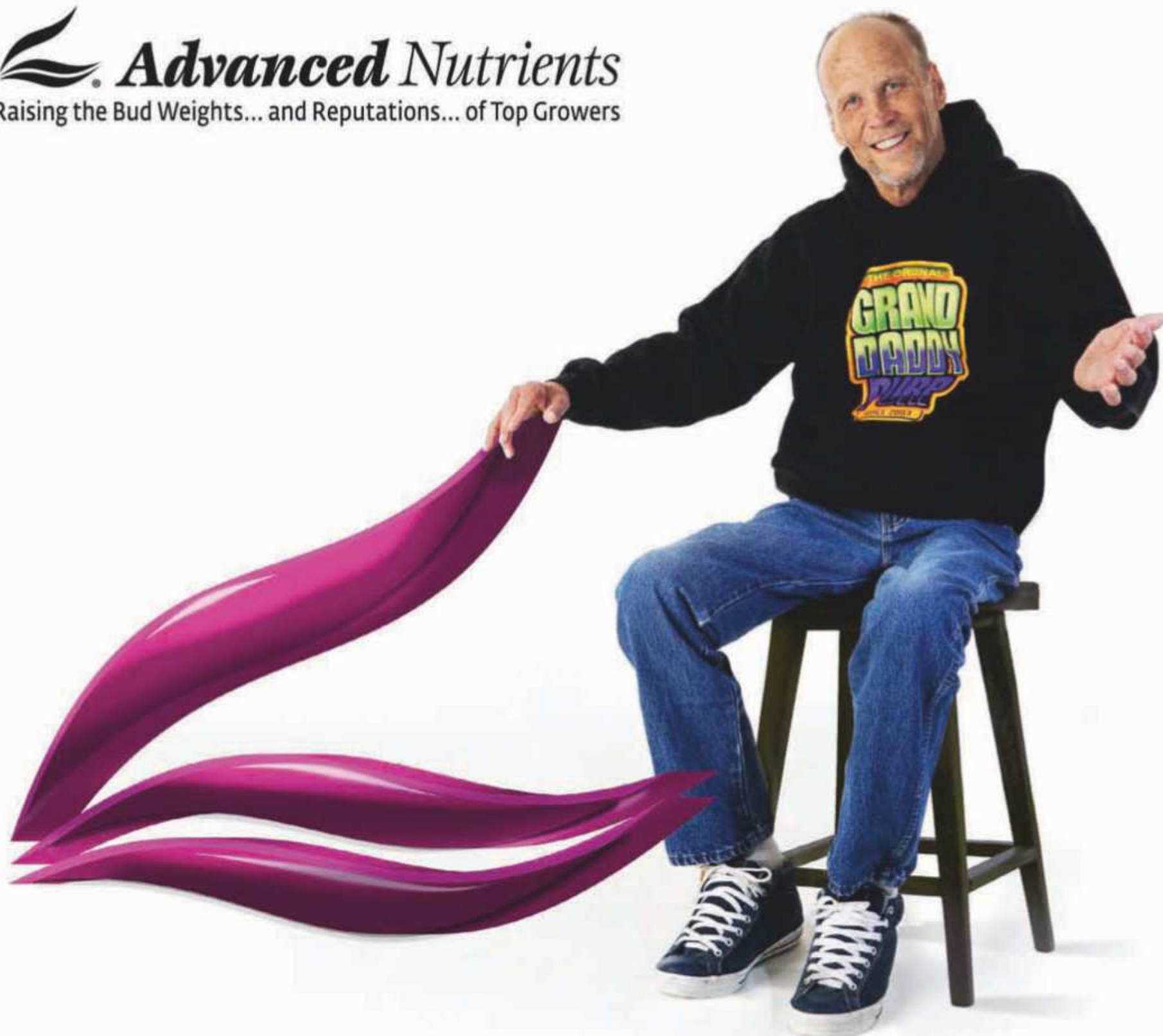
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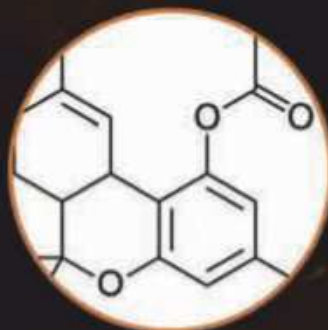
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# THE MAINSTREAMING OF CBD

WILL GROWING MARKETING HYPE IMPERIL CBD'S SERIOUS MEDICAL PROMISE?  
WE EXAMINE THE SCIENCE BEHIND THE TRENDY CANNABINOID. *BY CHRIS PARKER*

**THERE'S GROWING PROOF** that cannabidiol, or CBD as it's more commonly known, can be effective in treating a variety of maladies.

In August, a study at King's College London of 33 young people indicated that a single dose of CBD can reduce brain-function abnormalities seen in people with psychosis. Another study at the University of São Paulo in Brazil found CBD to sustain an antidepressive effect for seven days and activate repair mechanisms in the prefrontal cortex and hippocampus.

In October, GW Pharmaceuticals raised \$345 million after receiving approval from the FDA for the CBD-based drug Epidiolex, which treats childhood epilepsy. The company had already commercialized Sativex, a CBD-based drug used to treat symptoms of multiple sclerosis, in 28 countries outside the United States.

It's an exciting time for someone like Dr. Daniele Piomelli, a professor of anatomy and neurobiology at University of California, Irvine, who published his first paper on cannabinoids in 1994. Back then, there were several dozen papers a year; now there are upward of a thousand.

"They are throwing CBD at every wall hoping that it sticks," says Piomelli. "And I'm not against that. I think it's great; research is important as long as it is done rigorously and published."

There's been a flurry of research on all manner of cannabis-related chemicals, from the more traditional, such as treating chemo-related nausea (with THC-based derivatives) and neuropathic pain, to promising research on neurodegenerative conditions (like Alzheimer's, Parkinson's and Huntington's disease), brain tumors and even insomnia.

Piomelli says the King's College study was small, but encouraging. He notes that studies have repeatedly affirmed pot's anxiolytic (or antianxiety) and antidepressive effects in treating post-traumatic stress, generalized social anxiety and schizophrenia.

"There are indications that something might be going on, but we need two things: much larger, well-controlled studies, and, number two, I think we need to try to understand how CBD works," Piomelli says.

For all the study that's gone into finding diseases it can treat, we still don't know very much about how CBD works, even in the case of Epidiolex, the already approved childhood-epilepsy drug. This might seem odd, but many medicines are approved without scientists understanding exactly how they work—such was the case with acetaminophen.



CBD oil is a popular treatment for a variety of ailments.



## CBD JOINS THE HOT LIST

The emergence of legal cannabis has dovetailed with the healthy-living movement, a related plunge in the commercial-beverage industry and the growth of cannabis-related edibles. Suddenly, and slowly, big commercial brands are dipping their toes into the CBD spring.

In November 2017, Constellation Brands—the third-largest beer company in the world and maker of Modelo, Corona and Pacifico—invested \$191 million in Canopy Growth

## FOR ALL THE STUDY THAT'S GONE INTO FINDING DISEASES IT CAN TREAT, WE STILL DON'T KNOW VERY MUCH ABOUT HOW CBD WORKS.

Corporation, a Canadian cannabis grower. Then in August, Constellation committed to investing another \$4 billion, increasing its ownership share in the company to 38 percent.

That's not the only beer company getting in on the action. This past summer, craft brewer

Lagunitas—owned by the Dutch beer conglomerate Heineken—unveiled Hi-Fi Hops, a sparkling water infused with either THC or a combination of THC and CBD. Keith Villa, the creator of Blue Moon, has announced his Colorado brewery, Ceria, is working with the cannabinoid research company Ebbu

to develop a THC-enhanced nonalcoholic beer with three different strengths. CBD-infused coffee is another growing trend in local coffee shops across the nation, following the flood of CBD oils and lotions appearing on retailer shelves as businesses rush to get in on the burgeoning multibillion-dollar market.

But by far the biggest sign of the mainstreaming of CBD is news in late September that Coca-Cola was in talks with Canadian cannabis producer Aurora Cannabis to develop beverages.

“We are closely watching the growth of non-psychoactive CBD as an ingredient in functional wellness beverages around the world,” wrote Coca-Cola spokesman Kent Landers in an emailed statement to *Bloomberg News*. “The space is evolving quickly.”

## SCIENCE YOU CAN TRUST

Dr. Piomelli is one of a small number of researchers with clearance to study marijuana. Cannabis and its chemical derivatives are considered a Schedule I drug, which is defined as having “no accepted medical use and a high potential for abuse.” That’s the same level as heroin, ecstasy and LSD, and more restricted than deadly opiates like Dilaudid or fentanyl.

Piomelli’s experimental supplies come from the only government-approved facility, in Mississippi, but its range of strains is so narrow (and the potency so poor), he wonders how relatable it is to typical consumption patterns in the wider world.

“The paradox is this [drug scheduling] law is supposed to be protecting public health,” Piomelli says, chuckling ruefully. “But we researchers cannot answer fundamental questions... How does cannabis impact kids, old people and pregnant women or those



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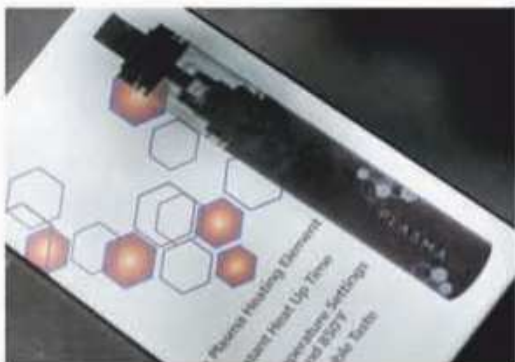
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## THE MAINSTREAMING OF CBD

nursing? We have so little information and we cannot get a study.”

The difficulties, limits and expense of cannabis studies thanks to the federal drug schedule leads in an even more pernicious direction. Piomelli worries that surging interest in CBD from consumer brands could lead to marketing outstripping the science. He’s concerned CBD could quickly become a kind of nebulous lifestyle accessory like so-called “vitamin water.”

“They’re putting it in beverages, they’re putting it in food and they’re selling it almost as a vitamin,” Piomelli says. “Like if you take a little bit of CBD a day you’re going to be young and happy forever. And that is really not what it is. I’m not saying it’s dangerous, just that we don’t have data to say either way.

“I’m concerned that there isn’t great will to understand the mechanisms of something like Epidiolex because CBD has become almost a lifestyle use,” he adds. “And that is not something conducive to deep and uncontroversial research.”

Such research almost by nature has to occur in the public sector, by scientists employed by universities and given grants by the federal government. Big businesses have historically proven to be lousy stewards of safety studies within their industries, as evidenced by infamous products like thalidomide, the Ford Pinto and tobacco.

In his studies, Piomelli frequently works with purified CBD or THC, which is derived from the plant, but can be created in a number of ways, ranging from extracting it from hemp or cannabis to chemically deriving it. Recently, the Boston-based company Ginkgo Bioworks secured a \$100 million deal from Canadian growers Cronos Group to make THC and CBD from yeast. “Once you make THC or CBD, it’s the same. The only difference is if you use the plant, because then you’re not only using THC—the plant has all these other components,” Piomelli explains.

“By and large, scientists agree that CBD actually counters some of the effects of THC,” he continues. “For example, cannabis that has high levels of CBD tends not to cause as much paranoia or panic. Also, there’s evidence for if you administer THC and [CBD] to animals in adolescence, the combination of the two has fewer

symptom effects as the animal becomes an adult. This is animal data, and it’s early, but it suggests use of the plant as a whole is different than these byproducts alone.” Then, of course, there are the many other cannabinoids and terpenes found within the plant that contribute to the overall whole-plant experience, also known as the “entourage effect.”

## CANADA AND ISRAEL PICK UP THE SLACK

If there’s an upside to the federal government’s repressive approach to cannabis, it’s that other countries aren’t so uptight. Israel and Canada in particular are already making progress in studying cannabis and its 120-plus chemical constituents.

“Unless we solve the discrepancy between federal law and state law, we won’t be able to achieve our [scientific] potential,” Piomelli says. “I don’t want to sound too nationalistic, because [Canada and Israel] are great countries and doing wonderful jobs, but there isn’t another county in the world that can put as much effort in science as we can.”

Beyond national pride, there’s also the issue of how much you can generalize the results given the different cultures. Piomelli notes how many diseases, from sickle-cell anemia to diabetes and alcoholism, bear an ethnic genetic imprint, making the study of America’s distinct population important.

“We know our own cannabinoid system—made out of the body’s naturally occurring cannabis molecules—controls body weight and energy metabolism and appetite. That’s why we get the munchies when we use cannabis, because it mimics our own cannabinoid system,” Piomelli says. “So I’m really looking forward to the Canadian data because they are much closer [to us] in habits, diet and ethnic background.”

As a scientist, Piomelli comes down hard on the side of more data instead of less. Rather than trying to limit access to cannabis for research, we should be trying to understand how marijuana works, and go from there.

In the meantime, a whole bunch of anecdotal evidence will become available as capitalism does its thing and companies compete to bring more and more CBD products to market. ✨



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## INTERVIEW

We went to visit an up-and-coming facility in Colorado that has really caught our attention by disrupting the current clone market. We had a chance to sit down with the owner, John Paul, in order to learn more about this rising company.



**INTERVIEWER: So what is Klone?**

JP: Klone is a genetic facility that is focused on high-end cultivars. We started it because we realized there wasn't a place in Colorado that could provide commercial clones that were clean and healthy. We noticed there was a large gap in the genetic marketplace and we knew we could be the ones to fill it.

**INTERVIEWER: Why do facilities turn to you for their genetic needs?**

JP: We have all types of clients. Some are trying to revamp their genetic catalog, while others are just

getting started and need a jump start to hit their canopy needs. Some companies don't have a propagation department of their own, so that is where we come in.

**Interviewer: How many Klones can you produce a month?**

JP: We can produce up to 40,000 clones per month.

**INTERVIEWER: I see you have an excellent lighting setup, can you talk a little bit more about what you are using?**

JP: We use mixed spectrum lighting here at Klone. We

currently have the Sun System DE Boss reflectors being used in concert with Sun System commercial LEC 315w fixtures in order to provide both UVA and UVB. We use SS1 controllers with this equipment, which allows us to go from 180-850 PPFD. We love this setup as it allows us to give our plants the lighting they want throughout all stages of growth.

**INTERVIEWER: Where did you source your equipment from?**

JP: We get all of our equipment from Agron.io. They have the best prices and excellent customer service.



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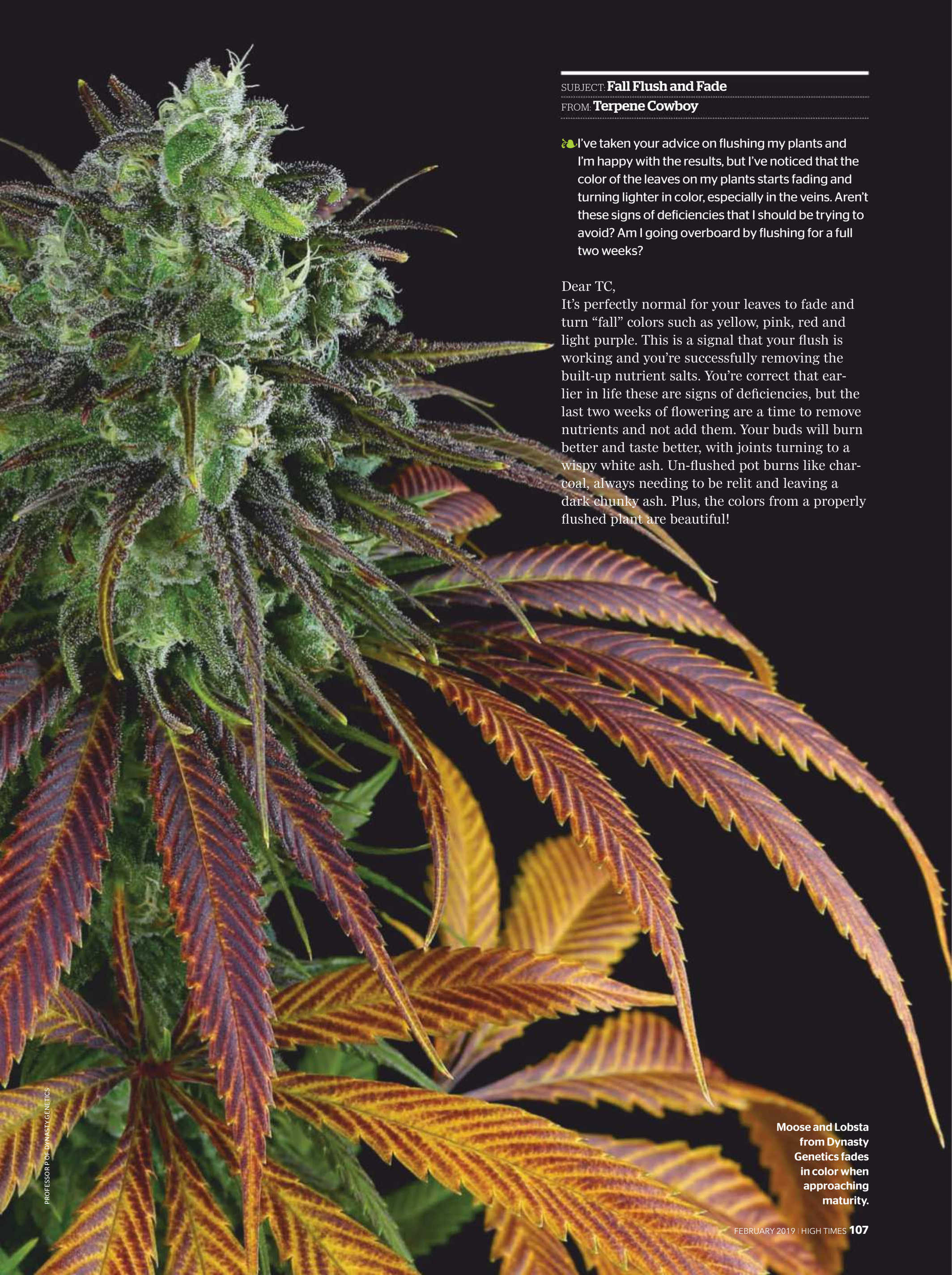
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SUBJECT: **Fall Flush and Fade**

FROM: **Terpene Cowboy**

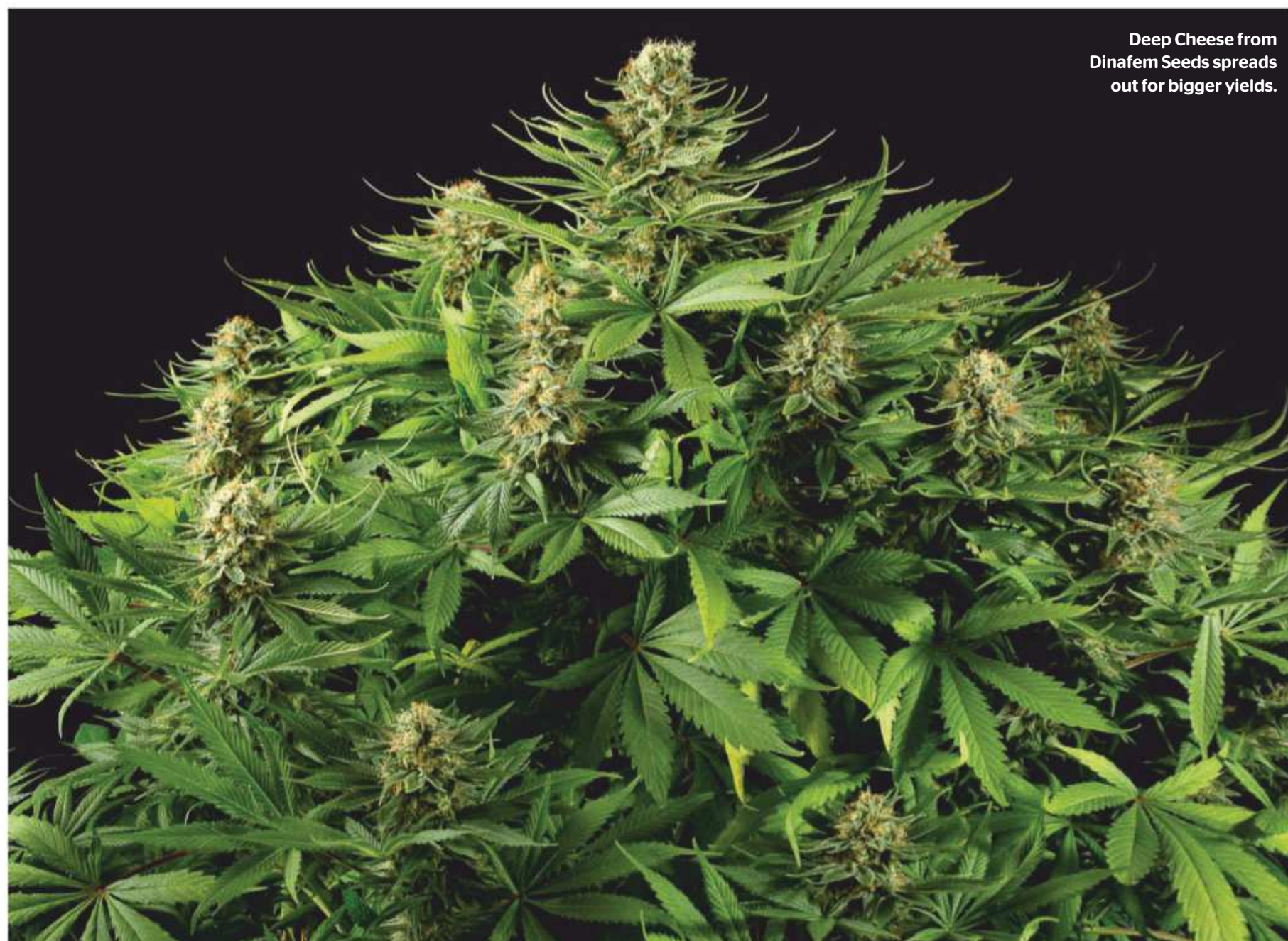
🌿 I've taken your advice on flushing my plants and I'm happy with the results, but I've noticed that the color of the leaves on my plants starts fading and turning lighter in color, especially in the veins. Aren't these signs of deficiencies that I should be trying to avoid? Am I going overboard by flushing for a full two weeks?

Dear TC,  
It's perfectly normal for your leaves to fade and turn "fall" colors such as yellow, pink, red and light purple. This is a signal that your flush is working and you're successfully removing the built-up nutrient salts. You're correct that earlier in life these are signs of deficiencies, but the last two weeks of flowering are a time to remove nutrients and not add them. Your buds will burn better and taste better, with joints turning to a wispy white ash. Un-flushed pot burns like charcoal, always needing to be relit and leaving a dark chunky ash. Plus, the colors from a properly flushed plant are beautiful!

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*Danko Tip:* Wet trimmed material that's frozen after harvest works better for hashmaking than dry, room-temperature trim.



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SUBJECT: **Wider Plant**

FROM: **Jenn M.**

🌿 This is the first time after four tries that I actually got a plant into the vegetative stage. I live in New York and I don't have the funds to build or buy the supplies needed for indoor growing right now. The first year, my germinated seeds were eaten by a bird. The next year, I moved and my plant didn't like it, and last summer I ended up with a boy. I'm fairly certain I have a girl right now, but my plant is not growing out so much as it is growing tall. I know from experience that it's not a boy because there are no balls growing. How can I fatten her up before the summer comes to an end? Also, do I have no other choice than to bring the plant inside and make a small growroom to better control the flowering stage? And one more thing: What do I do with the plant after I harvest the buds? Does it get tossed out, or can I use the same plant over and over again?

Dear Jenn,

If you want your plant to get wider, you have several options. The first is to top or train the plant so that it spreads out. This entails cutting off or bending the main stalk of the plant in order to get the other branches to grow bigger. Think of your plant's natural tendency to grow like a Christmas tree, with one main stem and smaller secondary ones. When you remove or lower the main top branch, the other ones become main branches, and your plant will have many tops instead of just one. This will dramatically increase your overall yield come harvest time.

You do not have to bring the plant indoors to flower unless your area is threatened by frost. Plants in most of New York State can remain outside until early to mid-October, and most strains (aside from extremely long-flowering *sativa*-dominant ones) should be finished flowering by then. If you think they may get too cold before they're finished

flowering, bring them inside or cover them with a hoop house or greenhouse structure of some kind for the duration.

After you harvest, discard the rest of the plant and start over in the spring. It's possible to keep your plant alive through the winter and regrow it again, but it's best to begin again with new seeds or clones. Cannabis is an annual, meaning it's naturally meant to grow from seed in one season, producing seeds that will fall and emerge to grow out for the next season.

SUBJECT: **Flower Fast**

FROM: **Andrew P.**

🌿 In an indoor grow, when do you think is the earliest that I could flower a plant? Is the proper timing based on height or age—or both? This question is for either feminized plants or those from regular seeds (not auto-flowering). There seems to be a lot of conflicting information online.



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## DEAR DANKO

*Danko Tip:* Plants that grow crowded together are far more likely to develop molds and diseases.

Dear Andrew,

Indoors, a plant will flower solely based on how much light you give it per day. Even a newly rooted cutting or a seedling that's only recently emerged from the soil can be forced to flower under 12 hours of light per day. The problem is, without much of a root system to sustain growth and aid in cell development, the yield from these plants will be minuscule. I usually recommend at least a 2-week period of vegetative growth (under 18 hours of light per day) before forcing flowering. The longer the vegetative period, the bigger the root system can grow and the bigger the plants will get, which will give you a much larger harvest in the end.



SUBJECT: **Light Switch**

FROM: **Regina**

🌱 I was wondering if I can start off my pot plants under a T5 fluorescent light during the vegetative stage and then put them under mercury/high-pressure sodium lights. They are only seedlings about 2 inches tall. A friend told me I wasn't using enough light.

Dear Regina,

Absolutely! Many people do this to save money on electrical costs and because they can lower the fluorescents closer to their seedlings and vegetating plants. Young plants are sensitive to the intense heat given off by HID (high-intensity discharge) lighting such as MH (metal halide) and HPS (high-pressure sodium). You can even flower under fluorescent lighting, but you won't get yields as big as you would with HID (as long as you're able to remove heat and create the ideal environmental conditions for your plants).

SUBJECT: **Charcoal-Filtration Frustration**

FROM: **Bitaddict**

🌱 My question has to do with charcoal filters. How long do they typically last, and is there a way to replenish or recycle them?

Dear Bitaddict,

The life of charcoal filters varies greatly based on size and usage, but a good rule of thumb is not to use them for more than 2 years. Most manufacturers recommend changing them every 18 to 24 months no matter what, but if you have a big room with an exhaust fan blowing through the filter 24 hours a day, you might want to replace the filter every calendar year. The pores of the activated charcoal eventually become filled





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## DEAR DANKO

*Danko Tip: Thick organic mulch protects outdoor plants from drying out too quickly and keeps weeds from competing for sunlight.*

with odor particles, moisture, dust and other particulates, limiting the charcoal's ability to clean the outgoing air.

Rather than replacing and repacking the new activated charcoal yourself, I recommend purchasing a replacement filter and installing it according to the manufacturer's instructions. Unless you're an expert in how to pack the filters properly without creating air pockets, do yourself a favor and stick with a replacement filter.

SUBJECT: **Feeding Schedule**

FROM: **Justin S.**

🌱 Are there certain times during a plant's life in which it wants to be fed more nutrients, or should you always feed about half of what the label says? I've heard so many differing opinions, and I'd like to get a definitive answer.

Dear Justin,

Yes, plants have different nutritional requirements at different times during their life cycles. During its vegetative stage, a plant will need more high-nitrogen food after a few weeks of growth than when it first goes into its container. As the plant develops a bigger root system and the stem, branches and leaves grow larger, it will require higher levels of nutrients added to the solution with which you're feeding it.

During the flowering stage, the plant will need more food from week 2-5 or so, depending on the flowering time of the strain you're growing. The early stage of flowering is a transitional phase, during which not much food is required. Once flowers begin forming and growing larger after a couple of weeks, you've reached the time to boost the high-phosphorus and high-potassium nutrient levels in your feeding solution. Cut back around the 6th or 7th week of flowering, depending on your strain's total flowering time, and begin the flushing process of watering with plain water only. This ensures that any remaining built-up nutrients are leached out of the plant matter and the resulting buds will burn properly and taste the way they should.

SUBJECT: **Green Rockwool**

FROM: **Rucko**

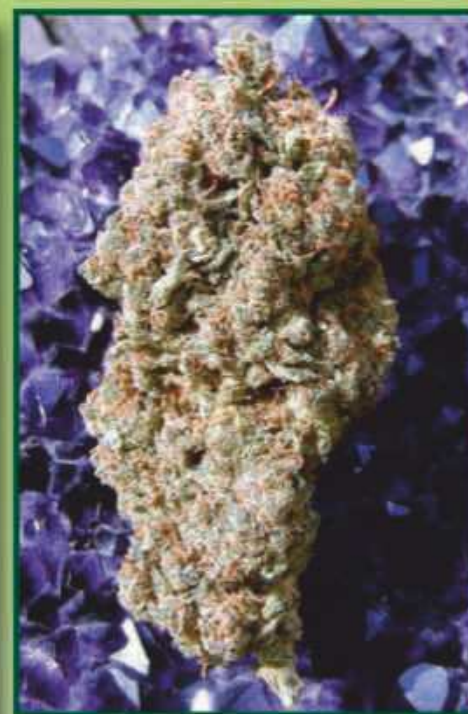
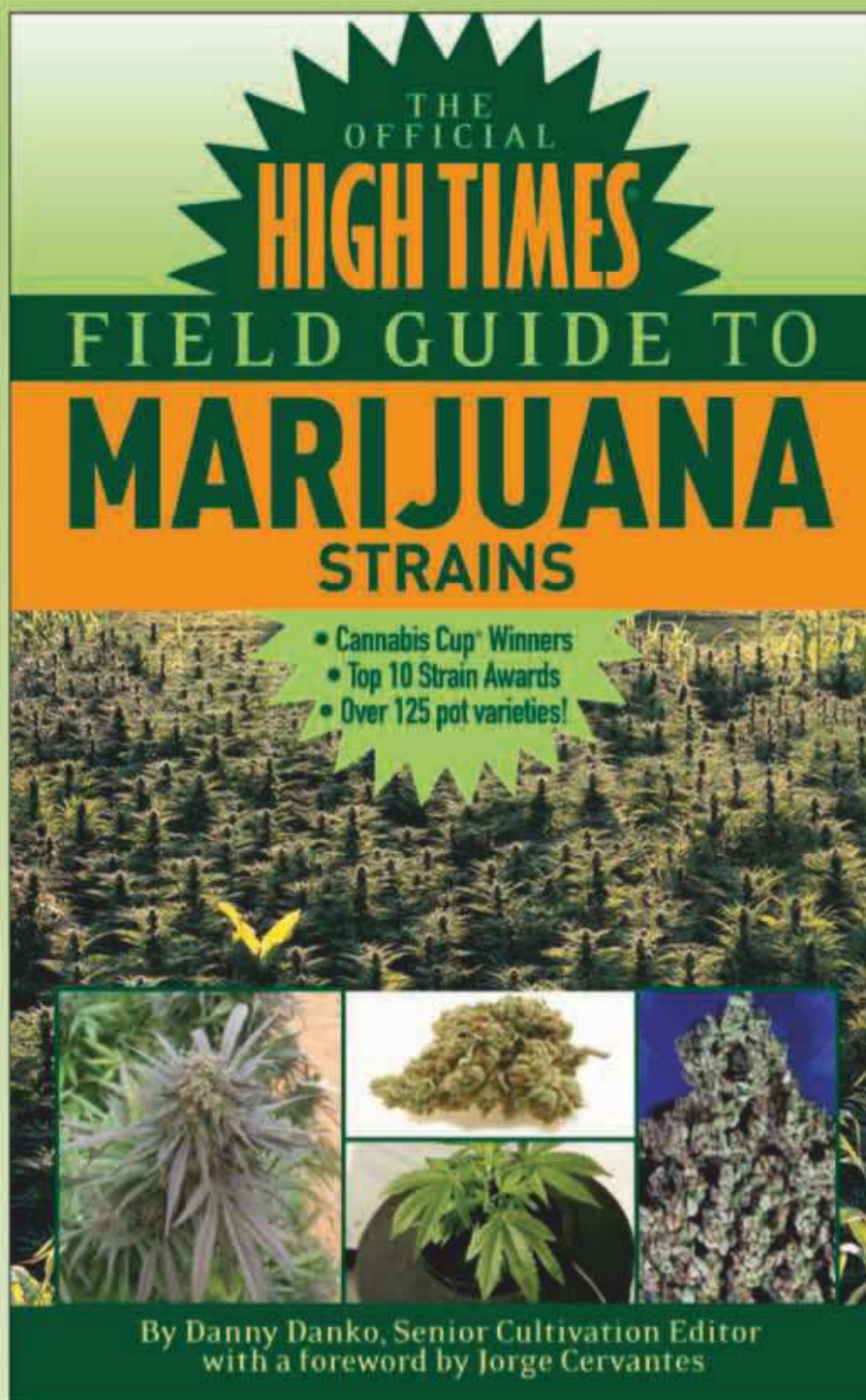
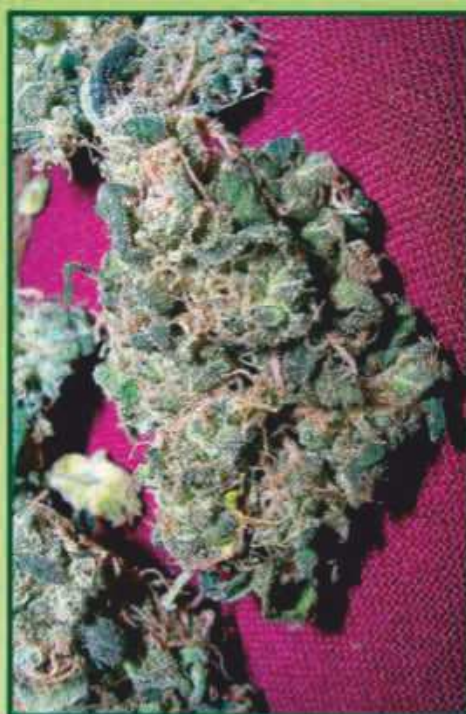
🌱 A friend of mine started some clones with rockwool and noticed mold developing on top of the medium after a few days. How can this be prevented?

Dear Rucko,

One of the advantages of using rockwool as a growing medium is that it stays wet, yet allows oxygen to reach the roots. This can also cause mold and algae to build up on the surface of your cubes, and they in turn begin to compete with your plants for your nutrient solution. Luckily, they need light to live, so if you simply cover the tops of your rockwool cubes with an opaque surface, you'll eliminate most algae and mold growth on your medium. Some companies make products specifically for this purpose. One that comes to mind is the Cubecap ([cubecap.ca](http://cubecap.ca)). Covering your cubes also has the added benefit of discouraging annoying fungus gnats as well. 🌱



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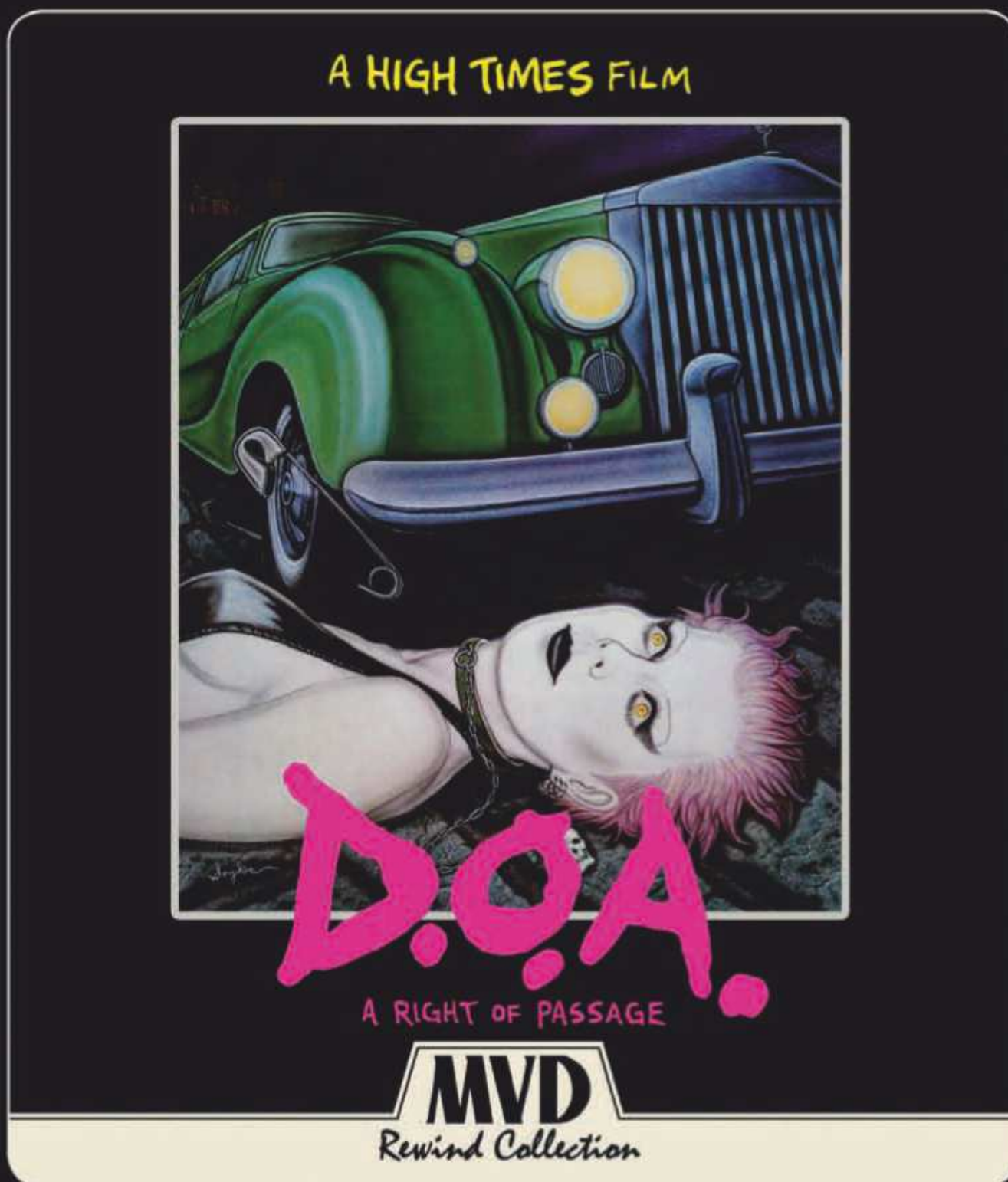
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WIN YOUR VALENTINE'S HEART WITH THIS HEADY TAKE ON A CLASSIC ROMANTIC TREAT. BY JOANNA O'BOYLE

**THIS IRRESISTIBLE, EASY-TO-MAKE** recipe for infused-chocolate-covered strawberries is a perfect way to show your Valentine how much you care. Best of all, it can be tailored to the tastes of even the pickiest paramour.

Simply select the desired fruit, melt your favorite type of chocolate, mix in the right amount of hash oil and then sprinkle with your choice of topping—from mini marshmallows to crushed Butterfingers. Get creative and let someone know just how much you care with this romantic and elevating treat. ✨

### INGREDIENTS

1½ bars of chocolate, chopped,  
or ¾ cup mini chocolate chips  
1 gram of Rick Simpson Oil (RSO) or the activated/  
decarboxylated cannabis concentrate of your choice  
¼ tsp. liquid sunflower lecithin  
(add more if needed)  
½ lb. fresh strawberries, washed and dried

(or your favorite fruit)

*Toppings: Get creative! Tailor to your Valentine's taste (crushed peanuts, walnuts, pistachios, chopped-up candy, sprinkles, toasted coconut shreds, etc.)*

### DIRECTIONS

Prep your ingredients. Put the toppings in individual bowls for easy dipping. Place a sheet of parchment paper on a baking sheet for setting the strawberries after they've been dipped and topped. Chop the chocolate as necessary. Wash and dry the strawberries or your fruit of choice (be sure to dry the strawberries and fruit thoroughly, as water will make the chocolate seize and get lumpy).

Melt the chocolate slowly in a heat-proof bowl. Keep it warm using a bain-marie or a double-boiler, or by simply placing the bowl snugly over a smaller saucepan that's filled with a few inches of steaming water. Wear

heat-resistant gloves to protect your hands and forearms, and take care not to burn yourself on the hot outside of the bowl.

Gently and thoroughly whisk one gram of RSO (or other prepared cannabis concentrate) along with ¼ teaspoon liquid sunflower lecithin into the chocolate while it's still liquid.

Dip the strawberries (or other fruit) into the infused melted chocolate, wiping the excess drips of chocolate off on the side of the bowl as you remove the berries or fruit.

Let the freshly dipped strawberries cool for a moment before lightly sprinkling them with your desired topping (like crushed peanuts, gummy worms, graham-cracker crumbs, chopped pistachios or chocolate sprinkles).

Place the decorated berries on the parchment-paper-lined baking sheet, then refrigerate for 20 to 30 minutes.

This treat is ready to be served immediately once the chocolate has hardened.



Photo © 2007 PETA Communications Ltd./Max Vadukul

Many years ago, I was fishing,  
and as I was reeling in the poor fish,  
I realized, "I am killing him—all for  
the passing pleasure it brings me."  
And something inside me clicked.  
I realized as I watched him fight  
for breath, that his life was as  
important to him as mine is to me.



I AM PAUL McCARTNEY, AND I AM A

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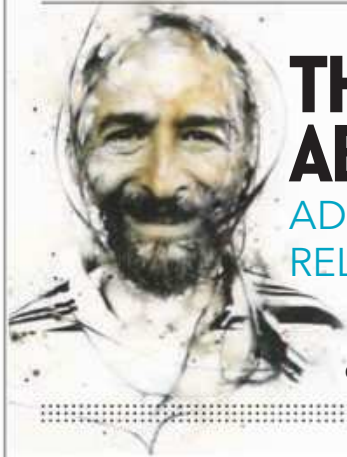


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Why don't you give THC to rats  
and see if it's addictive?

*M. Maus*

Mr. Maus,  
Decades of research reveal that rodents don't like THC. Rodents receiving cocaine or heroin will usually go to the same spot in the cage where they got it, as if they want some more. It's called the "conditioned place preference paradigm." Those who received THC don't seem interested. I don't notice anyone turning to a life of crime to support a cannabis habit lately, either.

While  
helpful,  
CBD is not a  
panacea.



I take CBD before I give presentations at work, but it doesn't calm me down. HELP!

*Abbot B. Fired*

I'm worried that I'll gain weight  
if I start medical-cannabis treatment. Any suggestions?

*Hugh Jass*

Hey Hugh,  
Studies keep confirming that regular cannabis users have lower body-mass indices (the ratio of their weight and height). It's all been correlational so far, but researchers point out that higher doses might inhibit appetite (despite stereotypes!) or alter metabolism. If you keep healthy food in the house and exercise regularly, it need not be a problem.

Hi Abbot,  
Data suggest you'd need 300 milligrams of CBD an hour before the presentation, which could get pricey. Cognitive therapy is great for this kind of anxiety, so a self-help book or a few sessions with a coach or therapist might be cheaper in the long run.

Your buddy Shen Nung used to prescribe marijuana for constipation in 2800 BC. So much for ancient wisdom!

*Knoll Itall*

Are there more songs on the  
radio about the plant now than  
there were back in the 1980s?

*Falco Taco*

Howdy Falco,  
Yes. Opiates and alcohol get significantly more play, too. I'm not sure what to make of it, but I don't miss Rick Astley.

Hello Knoll,  
Although vaping the plant sure won't help, an ounce of hemp seeds (with the hulls) has four grams of fiber, which ought to get things moving. 🌿

*Dr. Mitch Earleywine, PhD, is the author of Understanding Marijuana and The Parents' Guide to Marijuana.*





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# SUPPORT OUR TROOPS

CONGRESS AND THE VA CONTINUE TO DENY  
EQUAL ACCESS TO MEDICAL CANNABIS FOR  
OUR NATION'S VETERANS.

*Tyler McFadden is a NORML Junior Associate. Visit [norml.org](http://norml.org).*

**O**UT OF THE more than 18 million veterans living in the United States today, more than nine million are served by Department of Veterans Affairs (VA) hospitals every year. Despite the best efforts of the VA, thousands of those veterans go unseen and underserved.

I watched firsthand as my partner, a disabled veteran, waited for more than a year to be processed and seen by a mental-health specialist before being approved for physical therapy after his honorable discharge from the US Navy. He was constantly visiting the local VA hospital during that long year, sometimes to demand answers on the status of his backlogged claims and sometimes to visit the ER in the middle of the night, in so much pain from his service-related injury that he could barely walk.

Since then, he's been prescribed several different medications for his ailments and, because they were caused in the course of his duties while he was in service, the VA is required to cover the medical costs associated with them. But what happens when the best medicine for those ailments is marijuana?

This story is all too familiar to veterans across the country. An American Legion poll recently found that nearly one in four veterans of the US military self-reported using marijuana to treat a mental or physical ailment, which reflects a much higher rate of use when compared with those in the general population. Despite medical marijuana becoming increasingly available in states across the country, this self-medicating is often done extralegally and leaves veterans at risk of arrest and incarceration simply for attempting to treat service-related ailments.

Though the VA currently allows its physicians to discuss medical marijuana with veterans, they are not allowed to recommend marijuana or help veterans complete paperwork for participation in state-regulated medical-cannabis programs because of pot's continued status as a Schedule I

drug. Some members of Congress want to fix that.

The Veterans Medical Marijuana Safe Harbor Act, introduced by Senators Bill Nelson (D-FL) and Brian Schatz (D-HI), and the Veterans Equal Access Act, introduced by Representative Earl Blumenauer (D-OR), would allow VA physicians to recommend marijuana to veterans in the 31 states (and the District of Columbia) that have a regulated medical-cannabis program, effectively lifting the prohibition of medical-marijuana use by veterans.

Cannabis can help millions of people suffering from ailments like chronic pain, anxiety disorders and PTSD when used under the supervision of a qualified physician and in conjunction with other therapeutic methods, but that hasn't stopped Congress from denying veterans equal access to this potentially life-saving medication.

Congress's refusal to move aggressively on this issue or even allow for debate about the benefits and possible pitfalls of giving veterans equal access to medical marijuana according to state law is a direct affront to the promise our country made to our men and women in uniform: that the US government still has their backs when they return home after serving.

Forcing congressional action on allowing veterans access to medical marijuana is an important first step in providing medical equity to vets struggling with service-related ailments, but it cannot be the last. We must not forget the millions of military veterans who live in the 19 states without legal medical-cannabis programs or veterans who may not be able to afford the sometimes exorbitant costs of this medicine. Prioritizing the health and well-being of all veterans, regardless of their state of residence or socioeconomic status, is of paramount importance to our country's social fabric.

Support our troops and give them equal access to the medicine they need and deserve. ✨



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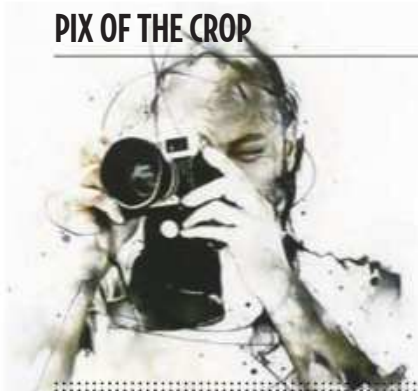


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PAUL KIRCHNER



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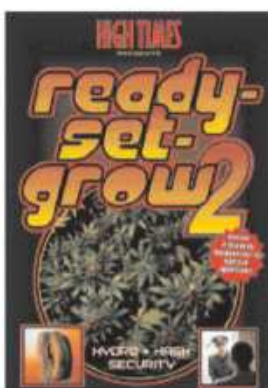
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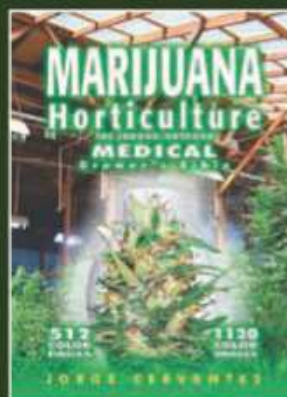
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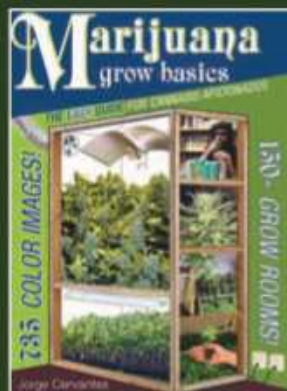
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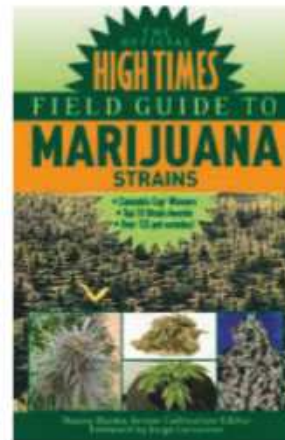
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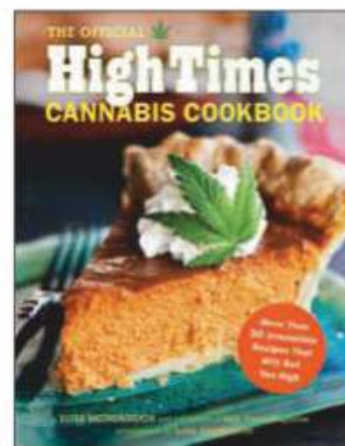
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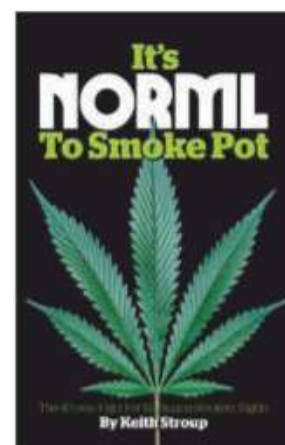
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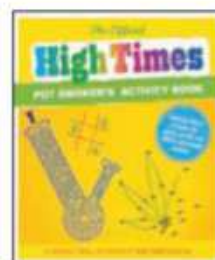
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