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### **HIGHTIMES** FEBRUARY



## The Revolution team focuses on growing beautiful high-quality flowers that receive even light from all sides.

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**45** An Irie Immersion

We brought the first-ever Live Cannabis Experience to San Bernardino, featuring tours of an on-site growroom, hash-making and bud-trimming seminars, a topicals massage spa, edibles demos, a dab-rig exposition and so much more! *By Mary Jane Gibson* 

#### 57 Under the Humboldt Sun

Autumn is the perfect time for another epic visit to the outdoor pot fields of Northern California. Check out the magnificent greenhouses, expansive gardens and luscious buds that were harvested in 2016. By Samantha Nicholas

#### **68** Illinois Grow Revolution

Take a tour of a massive, state-of-the-art medicalmarijuana-production facility outside of Chicago, where a team of cultivation and extraction experts produce high-quality cannabis. *By Danny Danko* 

#### 81 Onward, Christian Stoners

Does cannabis enhance your sense of spirituality? Although Christians once believed that cannabis was the "devil's weed," many are now embracing it in order to feel closer to the Creator. *By Josiah Hesse* 

#### **90** How-to Hydro, 2017

Hydroponic grow systems are now the standard when it comes to indoor cultivation. Here are three easy hydro setups for beginners, plus an advanced customized system and all you need to know about mediums and nutrients. *By Nico Escondido* 

#### 99 The High Times Interview: Carlos Santana

Over the course of half a century, Carlos Santana has become internationally recognized as rock's top guitarist. Santana discusses why he thinks cannabis can profoundly change our world for the better. *By Dan Skye* 



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#### Glass Artist of the Month:

Bill Burroughs

A native Oregonian, Bill Burroughs resides in a small town called Veneta, just west of his hometown of Eugene. The Northwest has long been a mecca for glass artists, and with friends in the industry, Bill naturally became intrigued by glass and functional art.

He first turned on a torch in 1999 as a pipe artist at Sketchy Glass, using techniques like wrap-and-rake, along with fuming. He soon learned other styles and patterns, including sculpting, line work and welding multiple sections. Many of his current projects feature UV highlights, due to amazing advances in the color industry.

A love of the outdoors and a passion for hard work enabled Bill to forge his own style, which can be seen in the pieces for his personal brand, Habitat Glass, including a line of Ents—spirit protectors of the woods in folklore and in Tolkien—that masquerade as pipes. "The great trees of the Pacific rainforest inspire me," Bill says. He also sculpts different species of fish.





#### On Instagram

As the temperatures drop, foliage hunters flock to the wooded areas of New England and the Pacific Northwest to take in the leaves changing color during fall's magnificent annual display. Sadly, most will never witness a sight quite as stunning as this foliage captured by @slanted\_house. This beautiful bouquet of greenhouse-grown Yeti OG truly pops in front of a crop of Black Cherry Soda, which makes up the background.

#### **Smoking Poll**

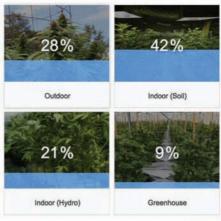
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As noted in our annual Hydro Report, hydroponic growing is now the most popular cultivation method in the world. However, the pot-growing process is very personal, and every cultivator has a unique set of circumstances that influence their preference for a particular method. After all, what works best for someone in a legal state with a fair climate may be less than ideal for a grower in a cold-weather state with harsh pot laws. So we decided to ask our readers: What's your favorite method for growing great cannabis?

Hydro might be the world's preferred method, but *High Times* readers overwhelmingly chose growing indoors in soil (42 percent). Growing outdoors under the sun came in second with 28 percent of the vote, while indoor hydroponic growing took third with 21 percent. Not surprisingly, greenhouse growing, which requires both land and a standalone structure, came in last with just 9 percent of the vote.

Take our latest poll online at hightimes.com!

#### What's Your Favorite Method of Growing Weed?



1,965 Votes



#### 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/HIGHTIMES-Mag) and Instagram (@hightimesmagazine) for all the latest news as it's happening!

**@Yaccafella:** I got my #blunt and #coffee @high\_times\_mag I'm ready to do my dizzle

@roadieric: @HIGH\_TIMES\_Mag #Cannabis has proven to be a wonderfully effective and totally benign form of antidepressant & stress relief.

**@chicaneery:** @HIGH\_TIMES\_Mag hoping this weed legalisation fever reaches Scotland someday soon

@BreakingBiff: @HIGH\_TIMES\_ Mag Critics should keep in mind that some patients ARE children and it makes more sense to give them a lollipop versus a spliff.

**@THR3BULLETS:** Marijuana should not have to be made legal in the first place. Weed should not be illegal period!

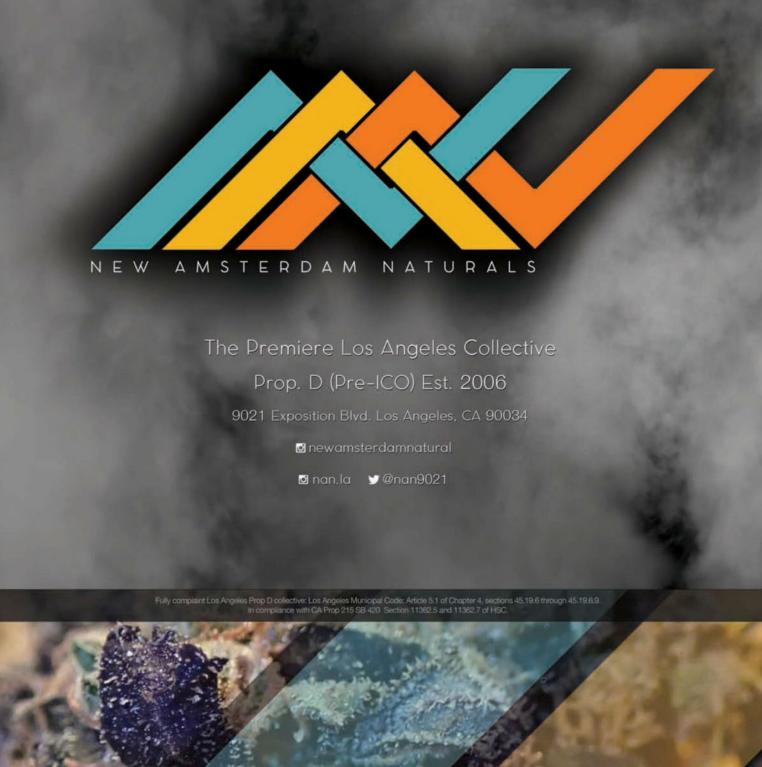
**@et\_jo\_ha:** @HIGH\_TIMES\_Mag The War on Drugs was never about "drugs"

@VeteranDan124: @HIGH\_TIMES\_ Mag I use cannabis in place of 6 psych meds given 2 me by the VA for PTSD, Anxiety, Depression, nausea, migraines and sleep!

@BiggSean66: @HIGH\_TIMES\_ Mag Got to try something new. Incarceration has been a colossal failure in dealing with addiction; they need help, not jail

@zigzaggazzz: @HIGH\_TIMES\_ Mag @SnoopDogg Snoop doesn't appear to have aged much, the power of #weed

@dorkface16: @HIGH\_TIMES\_Mag
I'm with u but that's just stoner
bs. Creativity doesn't require
cannabis.





**12 Editor's Letter** High Times February 2017



### To 'Dro or Not to 'Dro?

That is no longer the question. Today, the hydroponic cultivation of cannabis is, unquestionably, the most popular grow method in use around the world, including both indoor and greenhouse operations. Further, hydro growing is one of main reasons for the spectacular rise in high-quality, high-potency marijuana, second only to advances in the breeding of elite genetics.

High Times puts together its annual Hydro Report—now in its 19th year—to showcase the immense benefits of and latest technologies for growing hydroponically. This year, we aim to bring hydro growing right into your home by detailing the easiest and most effective setups available for home growers and medical patients, with an added look at hybrid hydro systems—a recent development that indicates where the future of hydro might be headed.

Also in this issue, High Times visits Northern California's famed Emerald Triangle for an inspection of this year's outdoor harvest; grow guru Danny Danko takes a trip to Illinois to check out a massive, stateof-the-art medical marijuana grow op; and Mary Jane Gibson chronicles HT's final Cannabis Cup event of 2016, our first-ever Live Cannabis Experience in San Bernardino, California. Rounding out this issue is one of our best interviews of the year, with music legend Carlos Santana, who's been a huge supporter of cannabis for decades and has more than a little bit to say about his favorite plant.

So throw Abraxas on your Spotify app, twist one up, sit back and enjoy the latest issue of High Times. And, as always, keep growing... and help the world grow, too!

Thanks for reading and stay well, amigos!

NICO ESCONDIDO

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Georgia: Not So

**Peachy** 

#### **Irish Green**

In the hills of Donegal, an Irish cannabis movement was born with the creation of Weedstock Ireland, a collaboration between the LegenDerry Cannabis Club and the Donegal Cannabis Social Club.

We held our first private awareness event in those same hills with over 30 people in attendance. It was clear we were in for a night to remember, with a buzz in the air and passion shining in people's eyes. Over the next few hours, we had fun raising awareness and sharing stories about cannabis and how it has helped us lead normal lives.

We wanted to do it all over again, only this time bigger and better. The Irish Church of Cannabis kindly agreed to host the next one in Wexford, with help from the Irish Cannabis Club Union. We had an amazing day weatherwise, with good music and great discussions continuing long into the evening.

With Weedstock gaining momentum, we'll be holding more private events and public awareness nights to share our knowledge. There is an immediate need for legal cannabis in Ireland so we can put an end to the cannabis-oil scammers and take control away from the criminals who currently control the market. We want regulations put in place to safeguard the sick and make it harder for children to get their hands on cannabis.

I can see that people's attitudes are changing, and I'm in constant amazement of the public support we get. But we still find it difficult to get sponsors from businesses in our community, which is a shame because it only takes one to break the mold.

The prohibitionist propaganda against cannabis has been scientifically and medically disproved. We want to show the people of Ireland, north and south, the amazing benefits of the cannabis plant. We have had help and support from Canada, all over Europe and the mainland UK, proving that this is a global movement that grows stronger every day. We will not stop until cannabis is legalized.

Tony McColgan

#### **Potnip**

I've been a *High Times* subscriber for years and recently read "Creature Comforts" (May '16). My dilemma is that I have a cat named Scooby Doo who always accompanies me when I'm tending to my plants. Scooby has to have a leaf every time or he throws a tantrum.



#### We want to show the people of Ireland, north and south, the amazing benefits of the cannabis plant.

Now that I've read this article, I'm concerned. I've never noticed any adverse effects or sickness, only more affection. Any insight you might have would be greatly appreciated.

Mick

A single leaf poses no real harm to your kitty, but we hope your garden is outdoors: Cats who visit indoor grows invariably leave cat hair, which winds up on your buds and isn't very healthy.

#### **Burning Question**

I've been a reader of High Times since the very first issue. I started smoking at the age of 21, back in 1964. My wife and I are planning to move to Nevada after the November elections, in the hopes that it will finally be legal there. We are both law-abiding citizens, and we'd love to be in a happy place with our marijuana. It's our medicine, and we use it for our well-being.

Our government has shown that it doesn't care about the well-being of our soldiers or citizens. How much money do politicians receive to keep this wonderful plant illegal? All they care about is filling their own pockets with money from under-the-table entities. Who knows who these entities are?

Fenwick Bob

#### Feedback c/o High Times, 250 West 57th St., Suite 920 New York, NY 10107 Email: hteditor@ hightimes.com

Send your letters to

I'm a 55-year-old white male living in middle Georgia. I don't want much out of life anymore: I just want to go to work and work hard, and when I get home, I want to roll a joint and relax. But it seems like every employer is doing drug screens-hair and urine. I have roots here, family and friends, so I can't just pull up and move to Colorado. I have thought about it, but my wife won't hear of it. Plus I don't have a job there-and any new employer, even in Colorado, would probably drug-test as well. Wife says: "So sad, too bad." What's a middle-aged guy to do?

Get involved as an activist today! Join NORML. As far as drug-testing goes, employers can still opt to test regardless of legalization. Of course, this makes no sense: Alcohol consumption is endorsed across this great country of ours, and no employer thinks anything of an employee knocking back a few

beers after work. We know that millions of people use cannabis every day and still function perfectly. Despite this fact, its acceptance is still a matter of slow evolution.

#### **Drive-Thru Dank**

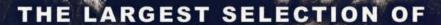
When, if ever, will the first drive-thru dispensary open in a legalized state? I have some great ideas for how this could work. The weed could be placed by an attendant directly into the trunk of the vehicle in a sealed, childproof bag. Or ATM tubes could be used, like at the bank. New Orleans already has drive-thru liquor stores that serve frozen liquor beverages in Styrofoam cups with merely a small cap of paper on the straw. If that doesn't encourage intoxicated driving in a place where temperatures routinely hit 100°F, I don't know what does! Drive-thru weed dispensaries seem much safer to me.

Eric Betts

Actually, drive-thru dispensaries aren't new. Green Life Oregon in Gold Beach, OR opened in February 2016 but was shut down a month later. There are several operating in Michigan.

#### **ERRATTA**

In out January 2017 centerfold the name of the strain is "Glory Daze," not Glory Days. Oops!



# THE ATTITUDE

THE WORLD

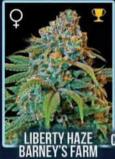
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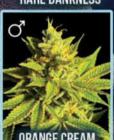














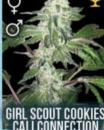






























































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#### Contact High

AN IRIE IMMERSION San Bernardino played host to the final High Times Medical Cannabis Cup of 2016 and the event, dubbed A Live Cannabis Experience, produced some of the tastiest winners of the year! Read all about this incredible Cup on page 45. Photos by Lochfoot





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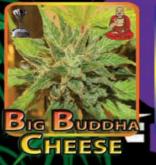








#### **FEMINISED SEEDS**

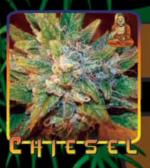










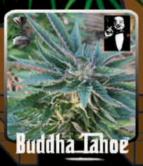




















#### **AUTOFLOWERING SEEDS**











#### Style High Style

Vintage glass is given new life as a crafty designer creates multifunctional smoking devices. p.28

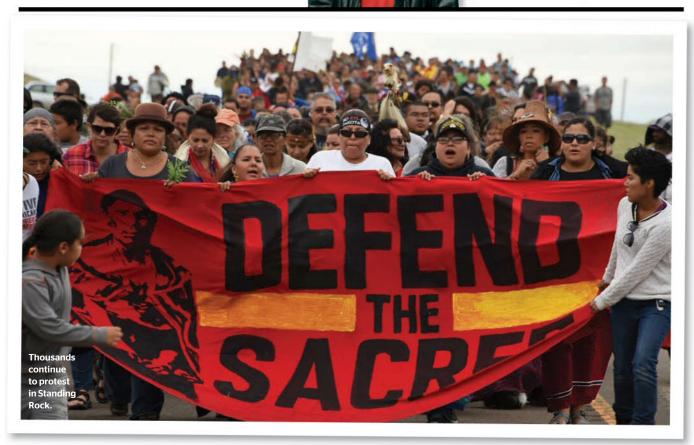


#### Entertainment

Reggie Watts

Our favorite surrealist comedian Reggie Watts discusses cannabis and creativity. p.32





## Killers of the Black Snake

Native opposition to the Dakota Access Pipeline shows no signs of weakening. By Dan Skye

It will stretch from North Dakota all the way to southern Illinois—a 1,172-mile, 30-inch-diameter pipeline set to carry approximately a half-million barrels of crude oil a day. According to Energy Transfer Partners, builders of the Dakota Access Pipeline (DAP), the project will enable domestic oil "to reach major refining markets in a more direct, cost-effective, safer and responsible manner."

The DAP's builders also call it "the safest mode of transporting crude oil." However, the protesters at the Standing Rock Indian reservation in North Dakota call it something else.

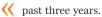
In fact, the pipeline's construction eerily mirrors a long-time Lakota prophecy: that one day a black snake will rise from the earth, leaving sorrow and destruction in its wake. Perhaps a long, slithering pipeline carrying highly toxic tar-sands oil across the heartland fits this foretelling.

Active resistance to the pipeline got underway this past summer, but the Standing Rock Sioux have been battling it since early

2015—first in the courts, filing a lawsuit to block its construction. With the pipeline slated to cross the tribe's reservation several times, even passing beneath the Missouri River just a half-mile from its borders, the Standing Rock Sioux are justifiably worried about the dangers posed to their drinking water, as well as the destruction of ancient burial sites. The DAP will eventually cross 209 rivers, creeks and tributaries, potentially impacting the land of other Indian tribes as well as acres of agriculture.

A Natural Resources Defense Council report states that tarsands oil is 3.6 times more likely to spill than regular oil. That's what's being extracted from the Bakken Shale Play, located in eastern Montana and western North Dakota. Oil derived from tar sands is heavy, black and viscous—impossible to clean up. Of course, Kelcy Warren, the CEO of Energy Transfer Partners, claims that the water-safety concerns are "unfounded," disregarding the 200 crude-oil spills that have been recorded worldwide in just the

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High Times Pebruary 2017



Throughout 2015, the concerns of the Standing Rock Sioux—as well as those of many other Native American tribes—were repeatedly ignored, leading the Standing Rock Tribal Historical Preservation Office to accuse the US Army Corps of Engineers, the federal agency in charge of the nation's waterways, of deliberately circumventing the legal process required for determining impacts to ancestral lands. In December, the Environmental Protection Agency, the Department of the Interior and the Advisory Council on Historic Preservation all filed letters critical of the Corps.

Still, in April 2016, the Army Corps of Engineers brazenly declared that no historical sites or ancestral lands would be at risk. The planned construction met with instant, angry resistance. Thousands began to gather at the confluence of the Missouri and Cannonball rivers near Fort Yates, North Dakota, in August, erecting teepees and tents on the adjacent flatland. Now the flags of many tribes and peoples line the paths of this sprawling encampment. It's a historic event: the largest gathering of indigenous nations in modern American history. And even with the brutal Dakota winter approaching, the spirit of the camp has only strengthened.

The Dakota Access Pipeline represents a tipping point for these tribes. Historically, the American Indian has been silenced or ignored, rendered invisible to most of the country. But the growing protest movement against the DAP and the increased media attention that it's receiving have both fortified the resolve of the protesters and reinforced their pride in their identity.

"I love the fighting warrior spirit amongst the people," says Olowan Sara Martinez, an Oglala Lakota from Pine Ridge, South Dakota. "It's a blessing to be a part of it. It's so strong and so spiritual."

A banner stretches across a hillside within the encampment. It reads: "We Are Peaceful." Unfortunately, the police and private security forces arrayed against them are another story.

On the front lines of the pipeline's construction, protesters have been maced, pepper-spayed and set upon by attack dogs. As for those assurances that tribal property would escape damage, in early September bulldozers plowed a 150-foot-wide path through a sacred burial ground. (At the time, the site was still awaiting review by the State Historic Preservation Office.)

The police presence has been constant, and hundreds of protesters have already been arrested. Members of the media have regularly been barred from covering the confrontations between protesters and the police. When *Democracy Now!* host Amy Goodman reported on the use of attack dogs against the protesters by private security contractors, a warrant was issued for her arrest. The charge? Rioting—a charge that was ultimately dismissed. But

despite the continued efforts to stamp out press coverage, guerrilla journalists have vigilantly covered the growing protest, providing social-media posts and on-the-scene video reports.

"A lot of people are trying to criminalize what we're doing and bring negativity to the encampment, but the underlying spirit is too strong," says Martinez, who was arrested along with more than 20 others after locking herself to construction equipment on one of the pipeline's access roads in September. "We're all here to protect sacred water. It's no longer just a Standing Rock issue; this is a global issue."

Meanwhile, the pipeline's construction is still being contested in the courts. On October 9, a US District Court denied the Standing Rock Sioux's request for an injunction to stop the pipeline's path through treaty-protected sacred burial grounds. But the next day, a joint statement was issued by the Justice Department, the Department of the Interior and the US Army requesting that construction cease until the issues raised by the tribe are reviewed.

Will the onset of winter diminish the size and scale of the protests? I ask.

"Not a chance," Martinez replies. "We are indigenous people; we thrive in these conditions. It's a time for training, to renew our survival skills. It brings out the best in us

#### HIGH FIVE

#### **Seeking the Spirit**

The origins of many religious practices are often rooted in the use of cannabis and psychedelics.



#### **Grounation Day**

Rastafari's unique holy day—in which mass quantities of ganja are consumed—is Grounation Day, celebrated on April 21. It commemorates Rasta messiah Haile Selassie's 1966 visit to Jamaica, legitimizing the once-marginal religion and changing the tiny Caribbean nation forever.



#### Yule

As reported by Moxie McMurder, the UK's "High Priestess of Cannabis," winter-solstice weed rituals—dubbed "Yule" by pagans and Wiccans—are individual decisions. Some celebrants burn buds or place flowers upon altars. Germanic pagans linked weed with the Norse goddess Freya and reveled at the aptly named "High Festival."



#### Hola Mohalla

This annual Sikh poetry and martial-arts festival in the Indian holy city of Anadpur Sahib marks the first day of Chett, the Sikh New Year, usually in late March. Hola Mohalla translates to "charge of the army." It celebrates the Nihang warriors, who won military victories while high on sukha, a sacramental potion brewed with cannabis.



#### **Native American Church**

Members of the Native
American Church can
legally use peyote in
ceremonies. It's a fleshy,
primordial hallucinogenic
cactus that initiates spiritual
transcendence. The peyote
is consumed during all-night
ceremonies, usually held in
a teepee, which incorporate
singing, prayer and a ritual
fire.



#### Christmas

The Euro-pagan roots of Christmas were influenced by the psychoactive *Amanita* mushroom. In Siberia, the mushroom was once gifted by jolly old shamans to tribal villagers for winter solstice. Fresh shrooms induce nausea, so the fungus was dried and strung across the fireplace—much like Christmas decorations.





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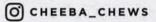
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Inside the Wide World of Weed



#### NFL Bans Synthetic Pot

The National Football League has updated its drug policy to include synthetic marijuana as a banned substance. The decision to begin testing for synthetic pot—commonly known as K2 or Spice—came during the annual drugs-and-steroids policy negotiation between the NFL and the Players Association. Synthetic marijuana now joins cocaine, PCP, cannabis, opiates, opioids, MDMA and amphetamines on the NFL's standard drug-testing panel.

Two high-profile incidents involving NFL players and synthetic marijuana may have led to the policy change. Last October, former Seattle Seahawks fullback Derrick Coleman admitted to smoking Spice prior to a hit-and-run accident that left the other driver with a broken collarbone. And in January, former New England Patriots defensive end Chandler Jones was briefly hospitalized after a bad reaction to synthetic weed caused him to wander into a police station shirtless and disoriented.

The new testing policy sets the synthetic-cannabinoid threshold at 2.5 nanograms per milliliter of blood. As with other substances banned by the NFL, a failed test can lead to mandatory enrollment in an intervention program, fines and suspension.

At the same time, the NFL refused to change its position on actual cannabis, despite pleas from medical professionals and players who believe that marijuana could be invaluable as an alternative to addictive pain killers, and that its neuro-protective potential could benefit players at risk for chronic traumatic encephalopathy (CTE).

BUSTED IN BALI



A 48-year-old
Australian man
faces life in prison
after getting busted
with just over seven
grams of hash in Bali.
The island is part of
Indonesia, a country
with some of the
harshest drug laws
on the planet.

Police in Bali's southeastern town of Sanur discovered the hash in a suitcase at the home of Giuseppe Serafino, who has resided in Bali for five years. The cops convinced Serafino to name the person who sold him the hash, a 54-yearold retired British journalist identified only as "DM," who was later arrested by authorities with 10.09 grams.

Both men have been charged under Article 112 of Indonesian law with possession of a Category 1 narcotic, which carries a minimum penalty of five years and a maximum sentence of life in prison. Bali has become infamous as the place where Schapelle Corby, an Australian woman, was busted with pot in her body-board bag in 2005. Corby served nine years of a 20-year sentence.



#### Cell Block 420

Reggae star Damian Marley will team with Ocean Grown Extracts to transform a prison into a medical marijuana grow space and extract-processing plant. As reported in the July 2016 issue of *High Times*, Ocean Grown wants to grow weed in the Claremont Custody Center in Coalinga, California—a 77,000-square-foot former state prison.

Marley expressed a sense of awe at the symbolic significance of growing marijuana for dispensaries in an oppressive institution that once housed inmates convicted of cannabis-related crimes. "Many people sacrificed so much for the herb over the years who got locked up," he told *Billboard* magazine.

The prison was purchased by Marley and his partners for \$4.1 million. The sale also benefited Coalinga, as it relieved the city of \$3.3 million in debt.



#### Montana's Meth Problem

While some media outlets have chosen hysteria over facts when reporting on driving under the influence of weed, newly released data from the Montana Department of Justice provide a legitimately

disconcerting look at which controlled substance is being used most often by people arrested for impaired driving. According to Montana's Forensic Science Division, methamphetamine surpassed cannabis as the most common narcotic detected in DUI blood tests in 2015.

While alcohol remains the most prevalent substance detected in DUIs, meth outpaced marijuana for the first time, according to a recent report from the state crime lab. In 2015, meth accounted for 294 DUI cases in Montana—up from 73 in 2011. The crime lab also noted significant spikes in positive meth tests for parolees and in postmortem drug screens.

While the increase in methamphetamine DUIs doesn't mean that more people are using crystal meth than weed in Montana, it does suggest that driving while tweaking is far more hazardous than driving while stoned, with some studies suggesting that pot contributes to a more cautious handling of the wheel.



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#### **Bud Barter Gone Bad**

While marijuana is legal in Oregon, there are apparently limits: For example, for some reason, you can't trade a pound of pot for a snowmobile. That was the lesson learned by Jason Owen, 29, who attempted to set up the recreational-pot-for-recreational-vehicle barter via *Craigslist*. Unfortunately, Owen didn't realize he was proposing the trade to a state trooper.

Rather than laugh off Owen's offer, the overzealous trooper opted to take it to the agency's drugenforcement office. The state police decided to set up a sting involving an unmarked car to monitor the phony trade. Several troopers swarmed Owen after it was confirmed that he had the cannabis.

Owen, who was ultimately busted with over a pound and a half of pot, was cited for adult possession and adult delivery of marijuana. Although he wasn't taken to jail, his vehicle was impounded. So not only did Owen *not* get the snowmobile, he also lost his own ride—and his weed.

#### **Prison Nation**

A sobering report released by Human Rights Watch estimates that one person is arrested for personal drug possession every 25 seconds. Nationwide, police make more arrests for possession than any other crime, and with each passing minute, at least two people in America have their lives permanently altered for getting high.

The report, Every 25 Seconds: The Human Toll of Criminalizing Drug Use in the United States, incorporates over 365 interviews with those arrested and prosecuted for drug use, as well as with attorneys, officials and activists. Human Rights Watch found that more than one out of every nine arrests made by state law-enforcement agents are for possession, totaling more than 1.25 million drug busts each year. In all, four times as many people are arrested for simply having drugs as for selling them.

This report is a crucial and necessary reminder that the War on Drugs is far from over, despite the current widespread support for marijuana legalization. OREGON'S TRAIL OF CASH



Oregon voters legalized recreational marijuana in 2014. However, 2016 was the first full year of legal cannabis retailand a cannabis sales tax. So how are things going 10 months into the Beaver State's retail-pot program? According to officials, the state is raking in so much cash that it may have to create a separate regulatory agency just to manage the income. Through September 2016, the Oregon Department of Revenue took in more than \$40 million in THC taxes. Since recreational sales began in October 2015. Oregon has averaged \$4.46 million in tax revenue per month.

Currently, medical marijuana dispensaries charge a 25 percent tax on recreational pot. While that rate will expire at the end of the year, licensed retailers of legal pot must charge a base tax of 17 percent. The \$40 million-plus collected by Oregon so far is nearly twice as much as analysts predicted prior to the start of legal sales.



#### **High Tide**

In less than a month, Customs agents have found hundreds of pounds of pot with a street value of more than \$300,000 floating off the coast of Florida. The washed-up weed has been discovered along the Sunshine State's eastern seaboard and as far south as the Florida Keys.

Over a period of 27 days, from mid-September to mid-October, agents collected roughly 400 pounds of castaway cannabis. According to the US Customs and Border Patrol, it's part of a growing trend: There have been 95 similar seizures in 2016—up significantly from 49 in 2015.

The agency attributed the rise in drugs washing up on Florida's shores to both a potential change in smuggling methods by criminal organizations and improved partnerships among law-enforcement agencies, including the Coast Guard.

Authorities also warned folks to think twice about taking home any pot they might find on the beach or in the ocean, as "violent criminal networks will attempt to recover their narcotics."

#### Monkey THC, Human Do?

The DEA's latest rejection of a petition to reschedule cannabis under the Controlled Substances Act came in August of 2016. However, the US Food and Drug Administration weighed in a year earlier, providing the DEA with its own recommendation in 2015. Now, thanks to reporting by *Vice*, we know why the FDA argued against removing pot from Sched-



ule I, the most restricted category of drugs: because monkeys like to get high.

Information obtained by  $\it Vice$  through the Freedom of Information Act revealed the FDA urging that pot remain in the same category as heroin because a 2003 study found that squirrel monkeys really like THC—which somehow creates an "abuse liability" for us hairless apes.

Oh, also, the 13-year-old study was bankrolled by the National Institute on Drug Abuse, a hotbed of pot prohibition.

Interestingly, the documents also showed the FDA rejecting marijuana's medicinal value due to concerns that pot causes "increased merriment and appetite" as well as "heightened imagination."





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## Sticking It to the Man

As cannabis legalization continues to sweep the nation, there is no better time to represent your proud love of the leaf. Seizing upon this sinsemilla synergy, High Times is rolling out a new apparel line that gives sartorial voice to the pro-marijuana movement. New York magazine has already heralded it as "possibly the most brilliant, timely collection to drop in ages."



Now every fan of

the herb can incorporate into their wardrobe the authentic voice that has been fighting pot prohibition since 1974, providing a platform for growers, activists, tokers, smugglers and canna-sseurs—anyone who has exercised their freedom of expression to stick it to the Man.

Original media badass Thomas King Forçade, the founder of *High Times*, inspired much of the line, which will drop a new collection each season. Tom did exactly what he wanted and fought for what he believed in—always with incredible style. The first High Times collection pays homage to the magazine's irreverent reputation with a play on *Reefer Madness*. For years, pot smokers have delighted at the absurdity of *Reefer Madness*—and now, at long last, the rest of the country is getting in on the joke.

Cannabis culture is flourishing, with advocates for legalization appearing in every facet of society. High Times recognizes the need to celebrate the activists, the street soldiers, the tokers and dabbers and everyone who loves weed worldwide. Find your own freak flag to fly with High Times apparel!

Visit shop.hightimes.com



#### **sPOT**LIGHT

#### **Pixel Squad**

Pixel Squad was founded out of a love for video games, comics, and all things retro and nostalgic. The group began customizing smoking accessories in 2010. Today, its catalog of items includes an amazing array of butane-torch and lighter covers, mats, rolling trays, and commissioned art pieces. Order your own handmade piece from a Pixel Squad member with your favorite character or logo customized on a functional piece of art. Prices vary; etsy.com/ shop/pixelsquad



#### Vintage Glass for Grass

Some time ago, Doreen Sullivan picked up a beautiful Venetian vase on one of her antiquing outings and was inspired to repurpose it as a water pipe that would discreetly fit in with her home decor. "Products for a more refined smoking lifestyle are rare—it's an underserved market," Sullivan says. "I wanted to create something that would appeal to an aesthetically savvy consumer—something discreet and nicely designed that didn't scream 'bong.""

Vintage vases and refined glass come in all shapes and sizes, and Sullivan broke many beautiful pieces before perfecting the art of repurposing these treasures into smoking implements. Her creations turned out to be wildly popular among her friends, and she soon saw that they appealed to all sorts of people who appreciate beautiful design. That's when she realized she could turn her crafting into a business. Now Sullivan runs My Bud Vase, which offers everything from carefully selected pieces of Murano and Blenko art glass, to hand-thrown clay vessels, to the funky glass of the '50s, '60s and '70s, all turned into smokable art. Sullivan encourages her customers to appreciate the vintage nature of each piece and to embrace the slight imperfections from their previous lives. Each one is an original, retailing anywhere from \$75 to \$500.

"My pieces have personality," Sullivan says. They come with flowers that help camouflage the bong and can also be used as pretty pokers to clear the residue. My Bud Vase pieces blend into any home's decor—easily mistaken for a fabulous flea-market find, or a valuable vase that you inherited from a great-aunt. *Visit dankstop.com* 













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## **My First Dab**

Stand-up comedian and writer Mike Glazer recalls his very first encounter with a mad dab scientist. For more of Mike's weird thoughts and stoned ideas follow him on Twitter @GlazerBooHooHoo. By Mike Glazer

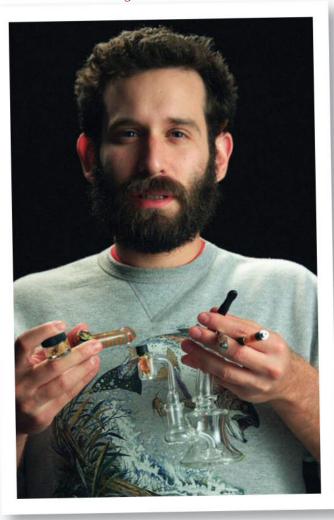
After My first dab, I sat in a Burger King for three hours drinking only orange soda in a sweaty plastic cup because I was too high to know what to order. Everything sounded great—fries, burgers, one of them long-bun chicken sandwiches. But I couldn't handle choosing food. I was lost in my own thoughts at that Burger King table. That dab made me see the world's math.

I could've written math equations with my finger on the window,  $a + b \times 2(y^z) - 1 = p$ , like the math genius in some movie, and you'd swear I knew what I was doing. Lost in my head cracking codes about my life—that kinda high.

My day started at the Cannabis Cup being lit. If you've never been, picture the best carnival ever crossed with the dopest farmers' market and populated by super-chill people. I was smoking spliffs and meeting strangers like the married couple who told me they take edibles before doing mad-kinky shit. I ripped bongs made out of Hennessy bottles with two dudes in Luchador masks. Only thing I had beef with was a Chihuahua. I don't like Chihuahuas. They shake like they're scared to be alive. Like they owe everybody money.

After three hours of smoking, buying buds and chatting, I get a text from my girl Jen. She has a surprise for me—my first dab. I'm geeked! Finally, I'm gonna try what I've heard is the *only* way to smoke, plus she says the dude who's gonna teach me how it works is a Cannabis Cup judge with a PhD in smoke. A scientist who dabbles in masterful dabs.

I walk into this guy's nectar



"I could've written math equations with my finger on the window like the math genius in some movie, and you'd swear I knew what I was doing."

lab. This place is stacked with strains from the greatest creators in the Cup. He's backlit by the booth lights, so all I see is his shadow and purple smoke as he exhales, saying, "You're never gonna forget this." (Cough, cough.)

Side note: I love embracing all weed-centric situations with positivity and excitement, but when he said that, my first thought was: "Bullshit. I get lit and I stay

lit." I was skeptical as hell.

Side note number two: I was wrong. I never *will* forget it. It was incredible.

The dabmaster sparks his torch while explaining the proper amount of heat that a perfect dab needs. Everything is happening on a cellular level. Every motion he makes is exact, precise, and I wholeheartedly trust him because science is fact and facts make trust.

Then he sets a kitchen timer so we'll know the right time to take the perfect dab. By now, my mouth is watering. That dab goes oozy-gooey, ready to pull. Kitchen timer goes off. The temperature is perfect. I rip that motherfucker, clearing the chamber of icy, smooth smoke. That smoke is so clean, so pure, it feels like I'm inhaling that time during the fall when you're wearing a hoodie on a crisp nighttime walk.

Then my head goes insane. People are talking to me, asking about how I like it, but my dome is fogged over in dewy resin. You know when you keep your leg underneath you for too long, and it falls asleep feeling kind of like an old-fashioned TV with a screen full of static? My brain is static. I need music, and I need chill.

I thank Master Scientist for giving me a moment I'll honestly never forget and leave his lab. Say endless thankyou's to Jen with my mouth while in my head I just sing Chance the Rapper's "You don't want no problems, want no problems with me, bih!" over and over and over.

Somehow, I walk to my car. I'm not sure if my legs are my legs or my mind is controlling a robot being kind enough to carry me. Open my car door, put on my seatbelt, start my engine, and *nope* turn that shit off. Ain't no way I'm driving. I'm already time traveling. No need to do it at 60 miles per hour.

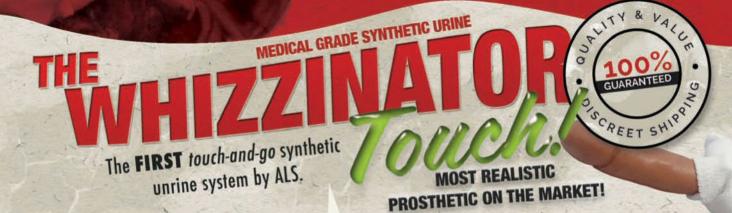
So I walk toward a tall, bright, hamburger-shaped Burger King sign down the street, get a Fanta, sit down and just vibe with my own mind. Enjoying the clarity that comes with alternative thoughts. I loved my first dab; it made my mind wink. It was the best thing I've ever smoked, hands down.

Science is cool. So is orange soda. ¥

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## **Keeping It Weird**

Reggie Watts knocks it out of the space park with his latest Netflix comedy special—an improvised, wide-ranging, one-of-a-kind surrealist adventure. By Mary Jane Gibson Photos by David Lee Dailey



# stoned. And they're like, 'Of course, we understand—you're a sensible person." "SOMEWHERE NEAR THE Vega

"I just want to go

and get a little bit

into a nice teashop

star system... "A hulking, hooded figure, crackling with purple light, glides onto the stage of a darkened theater. An eerie blue glow pulses from its cloaked face. A sonorous voice intones over ominous music: "The vestibule has been opened. And all of us continue to exist as though nothing will occur..." The reverberations from the announcement barely mask the giggles of the audience as the figure fades into the shadows-but not before depositing a silver-skinned space nymph from beneath its robes, who unfurls into a kinetic dance. So begins Spatial, the delightfully weird comedy special from comedian and musician Reggie Watts

Watts's off-kilter brand of absurdist humor, coupled with his killer original music-which he creates solo. using a looper-has won him diehard fans across the globe. They love his work fiercely, in an "I discovered him first" kind of way. If you're turned on to Reggie Watts, then you are one of "those who know." Watts's profile was raised even higher last year when he was appointed bandleader on The Late Late Show with James Corden, a gig that Watts jokes is "terrible-every time I go to work, I feel like I'm cheating somehow. Like I cut a corner that I wasn't supposed to, and

#### Obscurely Elevated

"I have friends that I've known for a very long time, and they can't tell if I'm high or not," Watts says. "I love that, because I never want to be like, 'Uhhhh, duuude...' If I'm really high, I want to use as much energy as possible to normalize myself."



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now I'm here. It's kind of a cool feeling."

But Watts has plenty going on outside his mainstay gig. He plays regularly with his Late Late Show band (unofficially known as Karen) at the Los Angeles hotspot El Cid. He travels the world to perform, occasionally jet-setting off to break new comedy ground-he recently went live in a virtual-reality comedy club hosted by tech pioneers AltspaceVR. And he completely improvised Spatial, which premieres December 6 on Netflix, in front of a live studio audience.

The show weaves multiple strands of music and comedy together. Special guests Kate Berlant and Rory Scovel vamp with Watts in *The Crowe's Nest*, an extemporaneous '80s-style sitcom. He creates a beat-box-layered paean to the pharmaceutical effects of Benadryl and leans into every single bit of weirdness during the hour-long show. "This is not for the faint of heart," he announces at one point. It's playtime. It's *fun*.

Watts's musings on marijuana comprise a satisfying chunk of the special (*Spatial*, get it?). Legalizing weed is a good idea, he declares: "Ask Colorado why they have too much money for their schools and roads." The rapt, beanbag-ensconced audience howls in agreement.

On a crisp, clear afternoon this fall, Watts visited *High Times*'s Los Angeles office for a rooftop photo shoot, where he demonstrated his telekinetic ability to make weed levitate, begging the question: Is there *anything* this man can't do? After partaking of a 5 mg Kiva Terra Bite—Watts prefers to microdose his THC these days—he sat down for a freewheeling discussion on creativity, productivity and all things pot.

Watts firmly credits cannabis with helping hone his creative process. "When you're improvising, you can't



#### "I want to reach the edge, whether I'm straight or on cannabis, of where reality, essentially, is forming."

be thinking too much about what you're doing," he avers. When the "right" high is achieved, "you can reach an optimal observer state, which allows you to be open to all possibilities."

Munching on an ahi tuna Niçoise salad, Watts affirms his desire for "consistent edibles." His rant on the subject is one of the highlights of *Spatial*—like when he goes to a dispensary and finds that everything is way too strong: "This cookie is the size of a normal cookie, but it's meant to be shared by 22 people!" He chuckles to the studio audience that he looks forward to the day he can

order "a 2.5 mg elixir that's mixed in with St. John's wort so it lifts your mood... I just want to go into a nice teashop and get a *little* bit stoned. And they're like, 'Of course, we understand—you're a sensible person.'"

At this point in his life, Watts says, he performs both straight and high, about a 50–50 ratio. "It's kind of a constant, experimental life relationship that I have with the plant," he continues. Has he ever performed while a bit *too* high? "I've performed on mushrooms, really high on hash, smoking weed," Watts recalls. "I've done a dab and then performed, which

I wouldn't recommend. I wouldn't recommend people doing dabs at all, actually—it's too much. But I think you have to go beyond that point [of comfort] to know what it is. I want to reach the edge, whether I'm straight or on cannabis, of where reality, essentially, is forming."

He likens that edge to being in a video game: "If you're moving at a slow pace, the processor can create the environment that looks like, 'Oh, I'm in a cityscape—I can see the streets ahead.' But if you get ahead too quickly, you can start to see the computer rendering the graphics. And I try to get to that point, or even past it, so you're on the bleeding edge of where reality is just starting to form in the chaos layer. In that space, anything is possible.

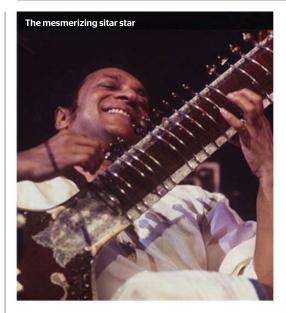
"Cannabis sometimes puts me in a state where I really just have to let go and allow what's happening to come in for me to craft it in the way that I do," he adds. It's worth any potential discomfort: "I think the idea of being able to remain calm in intense situations is kind of the secret... On a purely mental level, being able to remain quiet and calm and composed in the midst of something that feels chaotic is a great skill."

Watts's calm awareness, warmth and empathy for humankind are brilliantly showcased in the closing number of Spatial. "This is a song about apples," he announces, and then launches into a wistful yet joyous number about insecurity in relationships, doing everything with love, understanding the darkness, realizing how every person is an opportunity to learn more about yourself-and though we won't give it away here, by the end, Reggie Watts truly, completely reveals himself. \*

Spatial premieres Tuesday, Dec. 6th 2016 on Netflix.



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### **Hollywood High**

#### Ravi Shankar's Tinseltown tonic.

The Late Sitar sovereign Pandit Ravi Shankar was modern Indian classical music's chief architect and most iconic star, credited with "legitimizing" the sitar and Indian classical music in the West, thanks especially to his performances at the Monterey Pop Festival in 1967 and at George Harrison's benefit Concert for Bangladesh in 1971.

Pristinely remastered from the original magnetic tapes, this fascinating document (in double-LP vinyl, CD and digital formats) presents four new- and old-style ragas by Shankar, accompanied by fleet-fingered *tabla* master Alla Rakha and *tanpura* player Kamala



**Ravi Shankar** In Hollywood, 1971 (Northern Spy)

Chakravarty. The music was recorded live in a private concert at Shankar's home in Hollywood for an invitation-only audience that included Harrison.

The two-hour concert focuses on morning ragas (which per Indian tradition consider "morning" as a mood or aspiration and so may be performed at any time of day). "Hollywood Raga Vibhas"

and "Hollywood Raga Parameshwari" are seductively calming yet nimbly experimental pieces that introduce Shankar's probing discoveries within the mysterious kernels of the various raga forms—innovations that, as Shankar's wife Sukanya tells us in her excellent liner notes, only have lasting value if the new raga moves the listeners and not just the composer.

Along with the "light classical" style of "Hollywood Raga Sindhi Bhairavi" comes the mesmerizing and then fierily urgent "Hollywood Dhun," which Shankar introduces with a spoken dedication to Bangladesh, at the time suffering the aftermath of Hurricane Bhola; it is said to have been an inspiration for Harrison and Shankar's hugely successful Concert for Bangladesh.

#### **MUSIC** RECOMMENDATIONS



Dark Era
Dark Era
(self-released)

Whip-fast, intense, anxiety-inducing d-beat crust punk of the highest order from northern outliers who proclaim their homeland of St. John's, Newfoundland "the edges of the earth." From that icy precipice, Dark Era deliver brutal, pit-opening crust that combines the noirish,

walls-closing-in angst of '90s greats Born Against with the noisy, unfettered speed of peak-era Japanese power-violence heroes Fuck on the Beach and Bay Area fastcore stalwarts Vöetsek. The female vocals are incredible: raw, powerful shrieks that evoke a universal human suffering. *Polly Watson* 



Survive RR7349 (Relapse)

About 90 seconds into Survive's RR7349, it becomes obvious why two members of the band—Kyle Dixon and Michael Stein—were tapped to create the retro-synth score for Netf-lix's hit sci-fi series Stranger Things. The Austin, Texasbased group's predilection for warm '80s tones, deep

synth drama and pulsating beats calls to mind every John Carpenter film worth mentioning. From the palpitating ascension of "Other" and the extraterrestrial bump-and-grind of "High Rise" to the bass groove of "Wardenclyffe," *RR7349* delivers a dark synth fix like no other. *J. Bennett* 



Wyldlife
Out on Your Block
(Pork)

Ten tracks of straight-up candy-crushing rock'n'roll, like if Johnny Thunders had pumped his veins fulla azúcar instead of dope. Snot-nosed vocals hot with youthful attitude whine and brag about cigarettes, senoritas and sleeping on Mom's couch over crunchy, speeding guitars and a rhythm section that delivers

a stone-solid chug. Top track: "Bandida," with its chiming guitar intro that devolves into sweet two-string power-pop downstroking before paying homage to the Biters' "Melody for Lovers" and erupting into a Mike Campbell-style solo. Honorable mention: the breathless, yowling "Contraband." Polly Watson



Willie Nelson
For the Good
Times: A Tribute
to Ray Price
(Legacy)

Like the old saw goes,
Ray Price could sing
the phone book and find
beauty. Price spearheaded
at least two major countrymusic movements: the Texas
shuffle with its walking bass,
and the balladry of countrypolitan. Willie Nelson
began his career as Price's
bass player, and the pair

remained friends until Ray's death in 2013. (Their mutual affection for the herb probably didn't hurt.) At 83, Willie remains in strong voice, bouncing between Ray's styles and nailing 'em all-and still breaking hearts with his singular understated phrasing. Maybe it's the loco weed. Michael Simmons



GRIZ
Good Will Prevail
(All Good Records)

Sexy retro horns ring in GRiZ's somber and celebratory new album, with the DJ searching for saviors and signs over stadium-ready electronics blended with an old-fashioned sense of songcraft. GRiZ's raveready drops ornament the soulful gospel melodies to create swaggering pop with

strong nods to the past and an ear toward the present. "Can't Hold Me Down" could pass for a sweaty Black Keys jam with a mid-song dubstep drop. GRiZ's stylistically omnivorous production palette makes for cathartic booty-shaking, so light up some GRiZ Kush and let the good prevail. Ira Gamerman

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Raising the Bud Weights... and Reputations... of Top Growers

### The Ever-Changing Cannabis Landscape

Key developments in 2016, the cannabis industry's most consequential year, will greatly impact the shape of cannabusiness to come.

John Kagia is executive vice president of industry analytics for New Frontier Data



N MARCH 2016, New Frontier cited the top 10 cannabis trends to watch in its annual "State of Legal Marijuana Markets" report. The 10 trends were selected in collaboration with leading industry operators, investors and legalization advocates.

Let's revisit those trends to see what has changed since the report's publication. Given the wide range of important developments occurring over the past year, herewith are the four trends with the most impactful changes.

### Congressional/Federal Action on Cannabis Laws

The DEA announced that it would not reschedule cannabis under the Controlled Substances Act in response to petitions from the governors of Washington and Rhode Island. In its response, the agency cited insufficient scientific evidence for the medical value of cannabis. While the DEA's decision maintains the status quo, the agency also called for more research and announced that it would begin accepting applications from academic institutions and other research organizations that wish to grow cannabis

for federally approved research projects. Currently, the University of Mississippi is the only institution allowed to grow cannabis for the federal government, which has limited the availability of the phenotypes some researchers want to study.

The steep price drops foreshadow the commoditization of cannabis that we expect to see in the years ahead.

### Spotlight on Energy Use in Indoor Cultivation

The expansion of legal markets has led to greater scrutiny of energy use in cannabis cultivation. Indoor cultivation has been long favored both for its security and the control it gives cultivators over ambient conditions in the growroom.

However, the intensive energy use of indoor cultivation, driven by the electricity required to operate high-powered grow lights for up to 18 hours a day, in addition to the cooling, humidity-control and carbon-dioxide systems required to maintain optimal conditions, all result in dramatically higher energy costs than greenhouse or outdoor facilities. We've already begun to see a transition from indoor to greenhouse production in markets like Colorado, and with the expansion of legal cannabis into new states and the increase in competition within those markets, indoor producers will be at a growing operational-cost disadvantage against greenhouse and outdoor producers.

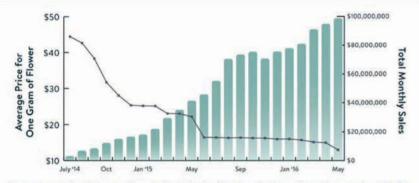
### **Price Wars and Competition**

The decline in prices in adult-use markets has continued since the beginning of the year, fueled by growth in the number of licensed producers and in the size of production facilities. In Colorado, where 20,000 square feet was once considered large for an adult-use grow, operators are now building facilities 10 times that size and larger. The steep price drops foreshadow the commoditization of cannabis that we expect to see in the years ahead.

### Advances in the International Legalization Debate

In April 2016, the United Nations held its first Special Session on the Issue of Drugs since Uruguay and a number of American states began to legalize the adult use of cannabis. Notably, at the conference, Mexican President Enrique Peña Nieto, an avowed drug warrior, proposed allowing the medical use of cannabis in Mexico as well as increasing the decriminalized possession limits from 5 grams to 1 ounce. At the same conference, Canada announced that it would release its plan for adult-use legalization by the spring of 2017. Three months later, in July, the Italian Parliament began to debate legalization-a first for the country. \*

### Steeply Falling Prices Cause Sales to Soar in Washington



The average cost of a single gram of flower in Washington has fallen dramatically over the past two years, from \$44.43 in July 2014 to \$12.95 in May 2016. These declines have been fueled by two main factors - the rapid increase in the number of cannabis producers in the state, of which there are now over 1.000, resulting in more market competition, and the increasing size of the producers, enabling them to capture more economies of scale. This decline in prices has been matched by a similarly strong growth in monthly sales, which approached \$100 million, as an ever greater proportion of cannabis users transition from the illicit market into the increasingly cost-competitive legal market.

For more insights like this, go to: www.frontierfinancials.com

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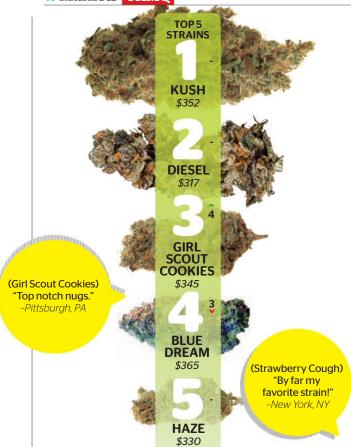
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40 Markets THMQ
High Times February 2017



### MARKET ANALYSIS Prices by the ounce Readers of this section likely know that, for years, we divided our "markets" into indices dubbed "Kind," "Mids" and "Schwag." Those three indices combined provide the US Price Index. This approach is terribly outdated as price is no longer an indicator of quality. Starting with this issue, we will track regional price trends while also keeping the US Price Index. **US Price** Index Eastern Index YTD Average: \$323 YTD Average: \$340 Sep Oct Nov Dec Jan Feb Sep Oct Nov Dec Jan Feb **Southern** Index **Western** Index YTD Average: \$363 YTD Average: \$276 (OG Kush) "Sweet as candy! Blows your head off!" -Spencer, IA Sep Oct Nov Dec Jan Feb Nov Dec Jan Feb

STATE	CITY	STRAIN	PRICE
ALABAMA	Mobile	Sour Diesel	\$360
ARIZONA	Phoenix	Blue Dream	380
ARKANSAS	El Dorado	Girl Scout Cookies	360
CALIFORNIA	Los Angeles	LA Confidential	260
COLORADO	Boulder	Goji OG	300
CONNECTICUT	Hartford	Blue Dream	400
DELAWARE	Newark	Juicy Fruit	360
FLORIDA	Boca Raton	Girl Scout Cookies	200
GEORGIA	Atlanta	Green Crack	380
HAWAII	Maui	Skywalker OG	320
ILLINOIS	Chicago	Death Star	400
INDIANA	Indianapolis	Master Kush	375
IOWA	Spencer	OG Kush	450
KENTUCKY	Florence	Skunk	400
LOUISIANA	New Orleans	Deadhead OG	380
MAINE	Bangor	Snow Cap	260
MARYLAND	Baltimore	Super Snowdog	375
MASSACHUSETTS	Boston	Super Silver Haze	350
MICHIGAN	Grand Rapids	Jesus OG	280
MINNESOTA	Minneapolis	White Widow	360
MISSISSIPPI	Jackson	Critical+	360
MONTANA	Helena	Headband	250
NEVADA	Las Vegas	Space Bomb	400
NEW JERSEY	Hoboken	Bubba Kush	375
NEW YORK	New York	Strawberry Cough	400
NORTH CAROLINA	Raleigh	OG Kush	400
OHIO	Columbus	Lowryder	350
OREGON	Portland	Three Kings	180
PENNSYLVANIA	Pittsburgh	Girl Scout Cookies	250
RHODE ISLAND	Providence	Tangie	350
TENNESSEE	Memphis	Gorilla Glue	380
TEXAS	Austin	JillyBean	360
UTAH	Salt Lake City	G-13	360
VERMONT	Burlington	Chemdog	300
VIRGINIA	Richmond	Northern Lights	400
WASHINGTON	Seattle	Guava Chem	180
WISCONSIN	Madison	Girl Scout Cookies	375
INTERNATIONAL			
CANADA	Winnipeg	Pink Kush	C\$180
		Bubba Kush	200

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(Skunk)
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-Florence, KY

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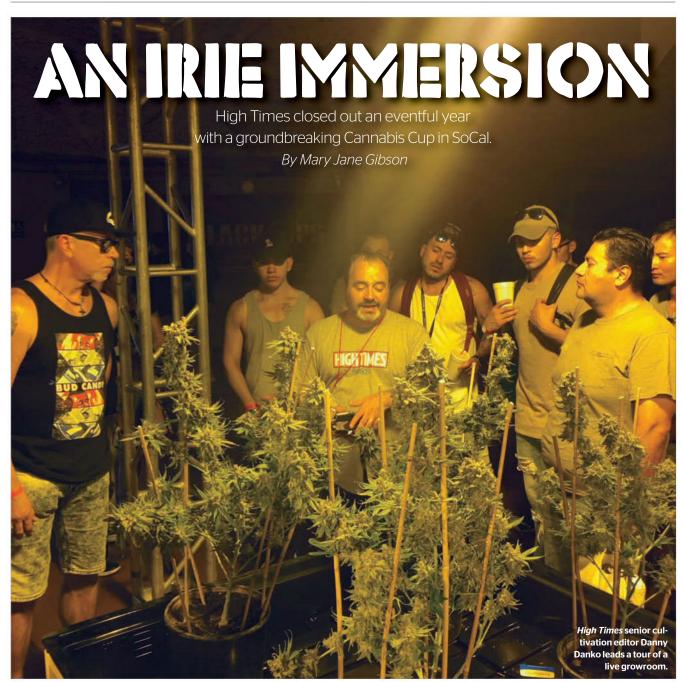






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February 2017 High Times



What a year 2016 was! High Times hosted more events than ever before, expanding both the scale and the scope of our Cannabis Cup celebrations. The very first Medical Cannabis Concentrates Cup took place in July; we threw our first Cannabis Cup Country Fair in August—and in October, we brought the first-ever Live Cannabis Experience to San Bernardino, California.

There was so much to see, it was hard to pick where to start. One super-popular spot was the Advanced Nutrients live growroom, where HT senior cultivation editor Danny Danko and Cannabis Cup competition director Nico Escondido offered tours and grow advice to eager attendees. The enormous space was filled with plants in varying stages of growth under the glow of an impressive bank of NanoLux lights. Knowledgeable staffers were on hand at the Advanced Nutrients booth to tell folks about all the options for feeding a healthy cannabis crop.



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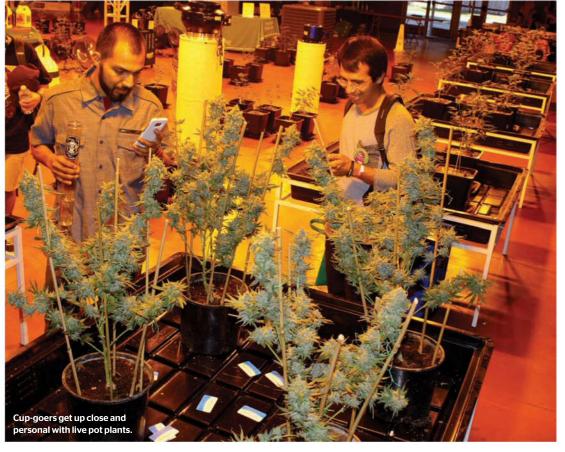


Just outside the live cannabis growroom, a wealth of options was available for Cup-goers hungry for weed wisdom, entertainment and enjoyment. The Magical Butter Edibles Village was an exciting place to be on Saturday afternoon, as top cannabis chefs went head to head in the first-ever "Taste of Cannabis" Chef Competition, an Iron Chef-style contest conceived and hosted by *HT* edibles editor Elise McDonough.

The chefs were provided with a stocked kitchen (including cannabis infusions), and a style of cuisine for the challenge was pulled from a hat. Then they got cooking with 40 minutes on the clock, working down to the very last second to produce pot-infused haute cuisine to impress the celebrity judges. The first contest featured chefs Justin Snyder

and Marcus Lentz, and then Christopher Yang cooked against DJ chef Fred Nesbitt. On Sunday, the victors from the previous day battled it out, with Yang edging Snyder for the title of Top Cannabis Chef. Rapper Lil Debbie was on hand as a judge and declared herself a "huge fan" of the competition (and potatoes). Look for the "Taste of Cannabis" Chef Competition at Cannabis Cups in 2017-it's thrilling to watch the chefs in action.

Not to be outdone by the edibles area, Rosin Tech held dominion over a hash-making zone, offering ice-waterextraction seminars and rosin-press and dry-sift demonstra-



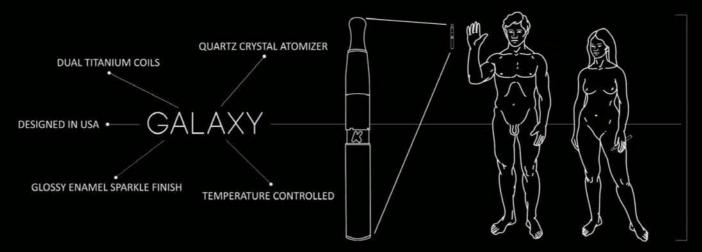


AWARDED 2016 BEST VAPORIZER BY HIGHTIMES



MAGAZINE

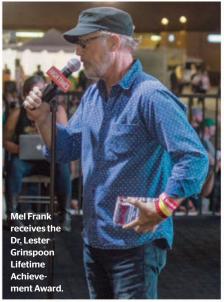




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48 An Irie Immersion High Times February 2017









tions. Attendees were invited to press their own flowers to experience the ease of creating solvent-free dabs, and they crowded around to listen to extracts master Nikka T offer up hashy knowledge. Across the way, inside the cool shade of the Citrus Building, Honey Pot set up an impressive spa, offering free professional massages with its Cannabis Cup-winning topicals. Pot smoke mingled tantalizingly with the fragrance of Honey Pot Bear Balm as folks lined up to take a relaxing turn on the tables, overseen by proprietress Cori, who took home yet another Cup for second place Best Edible the very next night with her Tea Pot Sencha Green Tea.

As always, the VIP High Society
Lounge was filled with happy folks
stocking up on munchies, sharing
smoke and taking free dabs from a dab
station overseen by Mario from I Bud
You. Wind Pouch provided plenty of
inflatable hammocks for tired tokers,
and comedian April O'Connor hosted a
stony lineup of comics to entertain them
as they lounged. Edibles by MaGooch,
Starfire Edibles and Boomshaka Cupcakes provided samples, reminding folks
to always "go low and slow"—a crucial







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piece of advice for anyone just getting started in the wonderful world of cannabis-infused foods.

At the center of the event, hundreds of vendors set up magnificent booths with demos, giveaways, raffles and plenty of gorgeous buds, concentrates, edibles and merch to go gaga over. In the midst of it all was the main stage, sponsored by California Herbal Remedies and LA Kush. The incredible lineup of musical artists included DJ Snoopadelic spinning chill vibes, powerhouse rapper Juicy J, and 2 Live Crew, who blew the crowd away. On Sunday night, High Times took over the stage for the final Cannabis Cup awards of 2016 (see the list of winners on page 52), as well as to honor cannabis icon and author Mel Frank with the High Times Lifetime Achievement Award.

Frank gave an impassioned acceptance speech, urging California voters to legalize cannabis on November 8. This message was repeated by the many activists and speakers on hand all weekend at the "Roll to the Polls" pavilion, who worked tirelessly to persuade folks to get out and vote this year. As we go to press, we're barely a week away from Election Day; here's hoping that as you hold this issue in your hands, we'll be living in a brave new world of legal cannabis in many states, with many more yet to come.  $\checkmark$ 





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### **BEST SATIVA FLOWER**

1st Place Strawberry Lemonade by Cannabiotix 2nd Place Dragon Haze by Zeki Farms

3rd Place Blueberry Cheesecake by Roll with Bert / LAK / California Herbal Remedies

### BEST HYBRID FLOWER

1st Place Sunset Sherbet by Greenwolf LA and Jungleboys

2nd Place Kosher Dawg by Canna-Star with DNA and New Amsterdam

3rd Place Mega Glue (Nameless Genetics) by Kind Center

### BEST INDICA FLOWER

1st Place Snoop Master Kush by Cannabiotix 2nd Place Kush Company OG Kush by Kush Company 3rd Place Sophisticated Lady

### by MassCannabis BEST CBD FLOWER

1st Place Cali Cure by Hermosa Seeds

### **BEST TOPICAL**

1st Place Michigan Organic Rub powered by Loyalty Extracts by Herbal Solutions / Michigan Organic Rub 2nd Place CBD Bear Balm by Honey Pot 3rd Place Honey and Goat Milk CBD/ THC Medicated Body Lotion by Baked Bees Honey with Gold Drop Co.

### Cannabis Cup Results

### **BEST VAPE PEN CARTRIDGES**

1st Place Triple OG by Gold Drop with Blue River 2nd Place Cali-O by 710 Kingpen and Greenwolf LA 3rd Place Lemon OG by Los Angeles Kush / Flight Farms / **Bubbleman Blue River** 

### BEST MEDICALLY INFUSED PRODUCT

1st Place Cookies & Cream Terp Slerpee by Exotic Genetix 2nd Place Cookies N' Cream Dry Sift Pre-Rolls by Wizard Wands 3rd Place Atomik Diamond Special Edition by Atomik & Natures Labs

### **BEST NON-SOLVENT HASH**

1st Place Big Smooth Drysift Rosin Wax by Exotic Genetix 2nd Place Banana Pie Extra Virgin Rosin by The Clear and DNA Genetics 3rd Place Strawberry Banana Full Melt Hash by New Amsterdam and Professor Sift

### **BEST CBD CONCENTRATE**

1st Place Goji D.C. by MX710 **2nd Place** Cannatonic Oil by Gold Drop with Blue River

3rd Place Harle-Tsu CBD Sap by Charming Farming with CE Solutions

### BEST CBD EDIBLE

1st Place CBD Lemon Chocolate Bar hy FlavRx

2nd Place Vanilla Macaroons by Utopia Farms with Los Angeles Kush and CHR 3rd Place Baked Bees Medicated Honey - Terpene Series Artisan Edition - with Gold Drop Co. by Baked Bees Honey with Gold Drop Co.

### **BEST EDIBLE**

1st Place Spiced Apple Cider by Ganja Grindz and The Clear 2nd Place Tea Pot Sencha Green Tea by Honey Pot 3rd Place Habit Sparkling Kiwi by Habit Sparkling Beverage

### **BEST SATIVA CONCENTRATE**

1st Place Mega Queso by Nameless Genetics and Gold Coast 2nd Place Green Dragon Budder Live Resin by Chilly's Gardens 3rd Place The Farm by Cali Kush Farms / Kind Center / Unregistered Extracts

### **BEST BOOTH**

1st Place Los Angeles Kush / Trap of Diamondz / CHR 2nd Place Dabstars TIE - 3rd Place FlavRx TIE - 3rd Place Gold Drop

### **BEST HYBRID CONCENTRATE**

1st Place Strawnana by Greenwolf LA / Moxie / Zeinstein Gardens

2nd Place CO2 Clear Distillate by Zeki Farms

3rd Place Strawberry Lemon Twist by CannaStar with DNA and Crockett Family Farms

### BEST INDICA CONCENTRATE

1st Place 727 OG

by CannaStar with Moxie 2nd Place Nameless OG Live Resin by Nameless Genetics and Gold Coast Extracts

3rd Place Sour Diesel Nug Run Shatter by Rich Extracts

### **BEST PRODUCT**

1st Place Trap Juice by Trap of Diamondz and Los Angeles Kush 2nd Place 710 Life Enail by 420Life.com **3rd Place** King Moses Ocean Genetics

### **BEST VAPORIZER**

1st Place Kind Pen Dream 2nd Place Paragon by Cloud Pen 3rd Place Jupiter by L.A. Kush

### **BEST GLASS**

1st Place Los Angeles Kush / High Tech Glass / CHR









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Step-by-step tutorial videos, white papers, efficacy reports, and informative scientific articles allow any grower with an Internet connection to hone their skills and help produce their best harvest yet, free of charge.

### Why Marijuana Growing Education Is a Top Priority for Advanced Nutrients

The medical marijuana industry is growing every minute. Legal marijuana is the fastest-growing industry in the U.S. and a slew of other businesses are jumping on the bandwagon as well. At present, 23 U.S. states allow medical-marijuana use, while 7 have legislation pending to issue licenses for it.

4 states and Washington, D.C. have legalized cannabis outright, while another California referendum in 2016 will allow recreational use in a state that was the first to permit medical marijuana use way back in 1996. It is estimated that medical marijuana is already a multibillion-dollar industry (without counting recreational sales).

While a great deal of information and misinformation appears daily on the Internet, novices and more advanced growers alike are always looking for a source of reliable information which can serve to improve their yields, both in terms of quality and quantity. A whole community of growers inhabit the growers forums and are always looking to perfect their growing skills, without having to wade through hours and hours of irrelevant or misleading forum posts.

GMU is a bold step in a better direction, and by elevating the general level of education among growers, the quality of marijuana, especially as medicine, will skyrocket worldwide. This isn't just for connoisseurs. It's for children with epilepsy, as well as adults suffering from the effects of chemotherapy, chronic pain, and glaucoma. Thousands of YouTube videos help document the impressive results of therapeutic cannabis use.

Grow Med University is a course representing the cumulative experience of scores of the most competitive growing experts. From day one, it was envisioned as a community-driven resource, providing much needed knowledge to the medical-marijuana community. If you have a passion for hydroponics and growing marijuana to help patients get rid of illness and pain, then Grow Med University is for you.







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February 2017 **High Times** 



58 Under the Huboldt Sun High Times February 2017



evolutions don't cause change; it's the other way around. As the philosopher Eric Hoffer stated: "Change prepares the ground for revolution."

In Humboldt County, California, Raj has seen the changes. He arrived here in 1970, a product of Santa Ana in Orange County, one of the countless clone-like suburbs of Southern California. But Raj didn't come to Humboldt specifically to grow cannabis. He attended the College of the Redwoods in Eureka and envisioned a career as a builder—though he definitely liked pot.

Back then, if you were a pot smoker, seeds were part of the bargain. Everyone's stash had seeds. A \$20 ounce of Mexican invariably contained hundreds. They certainly weren't prized: '70s-era stoners usually just threw them away. But ordinary seeds like these were the progenitors of the first pot crops in now-legendary Humboldt County. When Raj set down roots here, he brought along his seeds, a personal cache of unknown Mexican genetics.

Life in Humboldt was harsh in the pre-cannabis days. The recession of the 1970s hit the region hard, and the timber industry, which the county had long depended upon, was faltering. In this rugged coastal region, other industries were almost entirely absent.

"We brought a bit of the counterculture along with us," Raj recalls. "We were underground at first. Land was cheap. I rented a log cabin for \$25 a month—with utilities! But we were outsiders. The locals didn't like us and they didn't like the pot scene. But it didn't take long for people to recognize that a small piece of land could keep the banks off their backs."

Cannabis united the county. A spirit of cooperation began to take hold. Growers learned together and shared their knowledge. One of the tales that's been handed down through the decades is that of a Hawaiian grower who visited Humboldt and was aghast to find that the locals weren't pulling the male plants from their gardens. That fundamental nugget of information spread fast, and sinsemilla production soon flourished. With the arrival of fresh genetics, which in turn were widely shared, Humboldt County pot reached near-mythic proportions.

It has now been 46 years since Raj arrived in Humboldt County. He never stopped building: His dream house stands less than 100 feet from his gardens, which boast a sizable greenhouse full of Angel Food Cake and a radiant crop of DoSiDo (OG x Girl Scout Cookies x Kush Breath) just outside the greenhouse door. Raj raised his family in the rambling, rustic house and watched the cannabis scene evolve here. He's now one of the growers who make up Safier Family Farms, one of several networks of growers intent on establishing a viable brand-name identity in the cannabis marketplace.

The area's cool coastal climate is often cited as the key to the quality of the cannabis grown here, along with the soil itself. But all proficient growers amend their soil. Fundamentally, Humboldt became an ideal place to grow because the gardens were so hard to find.

Also, you didn't have to grow a huge pot garden in order to supplement your income. Twenty-five years ago, an ounce of Humboldt cost \$300 or more, which meant that the wholesale price of a pound ranged from \$3,500 to \$4,000. And no one asked what the strain was; the name "Humboldt" was all that mattered.

Today, many households in Humboldt can point to three generations of growers. Of course, the cannabis market has expanded exponentially—and so have the gardens. Consequently, the current generation of Humboldt County cultivators faces questions that its forebears in the garden hardly contemplated, including legalization and commercialization.



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60 Under the Huboldt Sun High Times February 2017





'm traveling with Adam Lustig in the standard Humboldt ride—a truck-like, four-wheel-drive hunk of metal that can ably handle the rough roads that connect the county's farflung residences. Adam has been living here since 2007, and he *definitely* came to grow. "I've been a grower my entire adult life," he says.

We're driving through the Mattole River Valley. It's only a few miles from the ocean, but you'd never know it. The road jerks through narrow valleys, hugs steep ridges in the forests and bounces us relentlessly. It's as wild as the state gets, an area essentially nonexistent in the minds of most Californians and not remotely a tourist destination.

Adam is the executive director of the Southern Humboldt Cannabis Collective, and his first four years in the county were spent working his legal garden. "Well, as legal as it possibly could be," he adds with an ironic laugh. "Even though we've had legal medical marijuana in California for 20 years,

plenty of people have gotten busted."

As the demand for concentrates rose in the state's dispensaries, Adam shifted his focus to their production in 2011, spending months perfecting a product that he himself would want to ingest. This past July, he launched his own brand: Higher Vision Super Oil, a solvent-free pure cannabis oil that has found instant success.

"It's a truly remarkable product," Adam says. "It's dabbable, smokable, vapable, edible, and it can be used as a topical." Higher Vision Angel Food Cake Super Oil grabbed third place for Best Vape Pen Cartridge at the 2016 High Times Medical Cannabis Country Fair Cup in Michigan.

"Here in Humboldt County," Adam explains, "we're all in a transition. We're going from a model where we were required to work with a patients' collective to a for-profit model. It's important that we start to brand ourselves, make ourselves distinct in the industry."



MOST AWARDED CARTRIDGE IN THE HISTORY OF HIGH TIMES





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t the bottom of a long decline, four corridor-like greenhouses are situated on a flattened expanse surrounded by thick woodland. The greenhouses are overflowing with thousands of OG Kush buds just days from harvest.

These plants belong to the cofounder of True Humboldt, a network of cannabis farmers who, like Adam, are branding their cannabis to take advantage of a fully legal marketplace.

"We've lived here an average of 25 years," True Humboldt's co-founder tells me. "We raise our families in Humboldt, and we run our businesses throughout this county. Our aim is to work together, lower the costs of production, and establish standards for superior consistency and quality control. This is becoming a competitive, branded market, and we want to preserve our heritage."

Thankfully, the Humboldt County Board of Supervisors has been outstanding in addressing the concerns of local growers. Earlier in the year, the board passed the Commercial Medical Marijuana Land Use Ordinance, which establishes regulations for both existing and new commercial cultivation, manufacturing, and processing facilities. The ordinance allows up to 10,000 square feet of new outdoor cultivation, up to one acre of existing outdoor cultivation, up to approximately a half-acre of outdoor mixed-light grows, and up to 10,000 square feet of indoor grows, depending on the parcel zone. The ordinance also creates a program to incentivize growers to relocate their grows from what the county deems unsuitable cultivation sites to more appropriate ones, such as agricultural zones, in exchange for leaner permitting requirements.

"The board realizes that the county is completely dependent upon the marijuana economy," Adam says. "They understand that the cannabis industry needs a safe, legitimate standing in the community. It's key to everyone's survival."





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Perhaps the most frustrating thing about being an outdoor grower in California is the fluctuating price of pot. Over the past decade, growers have seen a steady decline in price. In the early 2000s, getting \$2,500 a pound was still possible, but right now \$1,500 is the going rate.

A number of factors have affected earnings. Many growers claim that dispensaries have created a bias against outdoor bud, characterizing it as not as potent or as "clean" as indoor weed due to its exposure to the elements.

Both contentions are dubious. *High Times* has covered this territory before—and, to be sure, there are devout proponents on either side of the debate. But a fundamental part of the problem is that most dispensaries can't handle a 50-pound delivery of bud—for one thing, where would they store it? And if a shop thrives on variety, overstocking isn't part of the plan.

"Actually," Adam tells me, "2015 was a pretty good year price-wise.

Supply took a big hit—there were some big raids and fires—and we were getting \$2,200. But this year, there was light law enforcement and no fires, and everybody's growing more than ever before. So the price has dropped back down to \$1,500."

Of course, if the legal market was extended beyond California's borders to the millions of Americans who crave great cannabis, there would be a bit more stability in the value of a crop. Those days are certainly coming. And as viewpoints change and legal cannabis becomes the norm, the industry must be poised to meet the challenge.

"Growers have to be better," Adam says. "They have to produce great product as cheaply as possible. There's no room for error anymore." \( \sqrt{\psi} \)



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### **START A REVOLUTION**

Deep in the farmlands of central Illinois sit two identical medical marijuana facilities owned and operated by Revolution Cannabis. Each one boasts an enormous 75,520-square-foot footprint on 10 acres of farmland. Revolution Cannabis-Delavan, located in a town of less than 2,000 residents, is by far the largest and most technologically advanced indoor medical-marijuana-cultivation facility I've ever seen. And it has the ability to expand!

Its sister facility, Revolution
Cannabis-Barry, is located over
130 miles from the Delavan site.
With a combined total of more
than 150,000 square feet of
cultivation and laboratory space,
these facilities make Revolution
Cannabis the single largest
grower in the state by square
footage. Both facilities are named
after the towns in which they're
located, paying homage to the
communities that welcomed
Revolution with open arms.

Founder and president Tim McGraw tells me that his goal from the start was to bring a new level of professionalism to the medical-marijuana-production industry. From Revolution's initial applications for cultivation licenses, to the buildout of its facilities, to the dedication of its staff, McGraw has left nothing to chance. The folks who showed me around the Revolution Cannabis-Delavan facility beamed with pride at what they've been able to do so far. "I started Revolution with a desire to advance the science of cannabis and create the cannabinoid medicines of tomorrow—and that's what you see being accomplished here today," McGraw says.

Typically, growing on this scale would mean serious compromises in the quality of the finished product, since the prevailing wisdom holds that it's impossible to produce excellent cannabis in such large amounts. But the experts at Revolution Cannabis have managed to prove this adage wrong: The flowers they cultivate so lovingly are simply amazing, and the concentrates produced in their labs are clean, potent and pure.

"Patients need safe and efficacious cannabis medicine," McGraw says, adding that there are stringent quality controls in place at every step of the process to ensure product integrity. "We take our responsibility as a cannabis-business licensee very seriously. We are producing medicine that, for many patients, can improve their quality of life."

### THE FLOWERS THEY CULTIVATE SO LOVINGLY ARE SIMPLY AMAZING, AND THE CONCENTRATES PRODUCED IN THEIR LABS ARE CLEAN, POTENT AND PURE.

### **SPECS-TACULAR!**

What sets Revolution Cannabis apart from other large-scale grows? Each of its two facilities is now capable of producing over 20,000 pounds of cannabis per year when fully operational. There are multiple layers of security in place here; it felt more like I was visiting a power plant than a marijuanacultivation site. All visitors are required to wear head-to-toe scrubs to ensure cleanliness and keep all areas free of pests or any other contaminants that could compromise the health of the plants.

The state-of-the-art environmental controls are completely automated, enabling the growers to manage, track, record and analyze temperature, humidity, CO<sub>2</sub> levels and lighting in each cultivation room and even access that information in real time via smartphone. This allows them to see the history of each room down to the second and eliminate any

micro-environment problems that might be tough to track otherwise. This attention to detail ensures that they're creating consistent and reliable medicine for Illinois's patients. "We're utilizing the latest technology to create tightly monitored environments, which allows us to maximize each plant's genetic potential," McGraw tells me.

All of the water used here is carbon-filtered and deionized and goes through reverseosmosis (RO) filtration, followed by ultraviolet (UV) filtration as well. The Revolution growers also have the ability to recycle all of their cultivation-room runoff (gray water) and HVAC condensate through the filtration system. Close to 70% of the water used at Revolution Cannabis is recaptured, making this a much more environmentally sustainable operation than many others. "We engineered our facilities to have as little waste as possible," McGraw notes.





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### **DIVIDE AND CONQUER**

Each of the 20 cultivation chambers is sealed off and sanitized individually. This compartmentalization fosters cleanliness and keeps any potential issues isolated to one area. The rooms are 20 by 80 feet, for a total of 1,600 square feet, and lit with 45 1,000-watt double-ended E-Papillon high-pressure sodium (HPS) bulbs to evenly cover the canopy with an emphasis on indirect crossover lighting. All of the cultivation rooms are protected with 1,200-pound magnetic locks and automatic door closers.

For the medium, the Revolution growers use an enriched semi-soil mix made in-house that includes perlite. coco coir, organic soil, humus and worm castings. The medium is fed with compost teas to enhance the health of the plants. The philosophy is to utilize the soil microbiome to work synergistically with the plants' root structure, because a happy plant below ground is typically a happy plant above ground. Revolution operates one of the most advanced grow labs on the planet, but nothing beats the science of evolution and what has been perfected over the millennia by Mother Nature. The Revolution team maintains precise control of the environment to mitigate pests and disease; everything else is as nature intended.

The plants here spend anywhere from four to 10 weeks in the vegetative stage, depending on the strain. Then flowering is induced and, as the plants approach ripening, they receive a thorough flush. Chief operations officer Dustin Shroyer tells me, "Flushing is of utmost importance to quality. We use nothing but 0 ppm [parts per million] water for several weeks leading up to harvest."

I ask about the use of pesticides. "What I love most about the Illinois program is that pesticides are greatly restricted and only allowed in the vegetative space," Shroyer replies. "We only use living organisms and have grown very fond of various types of nematodes. Nothing is ever sprayed on a plant, and that's the only way to ensure there is no residue on the final product. After all, cannabis isn't intended to be washed off like fruit, and it's pretty evident when crops get treated even with natural pesticides-anything from sulfur to neem-that they degrade the quality of the final product."





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### **LAB REPORT**

Each Revolution Cannabis extraction and formulations lab has over 3,000 square feet of space. The company produces a variety of refined cannabis products through multiple processes that include sifting, low-temperature pressing, and the use of supercritical-fluid CO<sub>2</sub>, butane, propane and ethanol. The Revolution team can further process extractions through fractional distillation to create ultra-refined cannabinoid and terpenoid concentrates and remove any residual solvent. "Our analytic capabilities mirror the pharmaceutical industry and ensure purity, efficacy and consistency in the finished product," Shroyer says.

The extracts, edibles, sublingual sprays and topicals made here are produced by experts in the fields of chemistry and microbiology. All Revolution Cannabis products are also sampled and tested by an independent lab to ensure the absence of pesticides and other impurities, including residual solvents, which are legally required to be below 10 ppm in Illinois.



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Every piece of cannabis that is not fresh-frozen for live resin is hang-dried and cured on the stem for seven to 10 days before hand-trimming and inspection. After slow-drying, each batch of cannabis is cured for at least four weeks, and the moisture level of the cannabis inflorescence is closely monitored the whole time.

Once the final moisture content is achieved in week four, every batch is sampled by the third-party lab and tested for mold, mycotoxins, pesticides and other contaminants, as well as a plethora of cannabinoids and terpenoids, prior to being packaged and released for final sale. The entire process can take up to six weeks, and sometimes longer, for particular strains to achieve their finest quality.

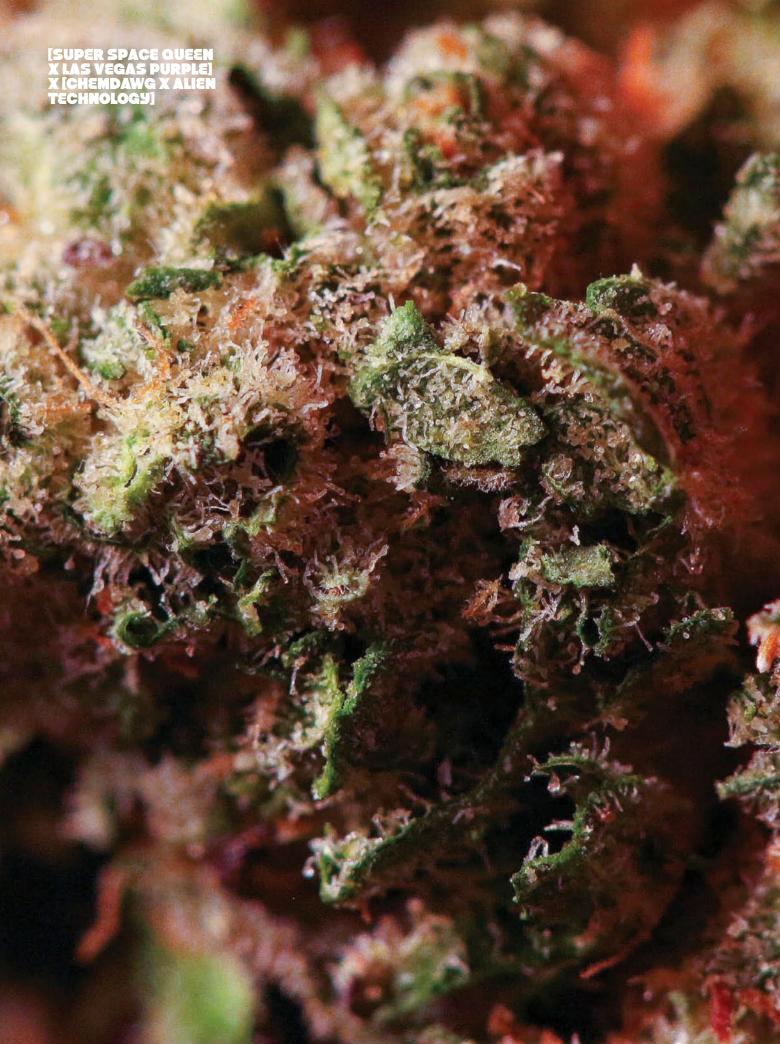
#### **BREEDING THE FUTURE**

Revolution Cannabis specializes in rare and high-quality genetics with maximum potency and unique cannabinoid profiles. Because the focus is on pleasing patients' palates and achieving the best medicinal effects, Revolution works with a broad spectrum of cannabis varieties. While I can't mention specific strains due to state advertising rules, some of the favorites here include OGs, Kushes and high-CBD varieties. "We're continuously breeding in-house to upgrade our lineages and create new elite varieties," Shroyer tells me. "We plan to create over 200 F2 crosses and F1 hybrids in our first year of the program."

Clones are readied for the futur

The air curtains at each breeding room's entry point are controlled by motion sensors. Multiple small rooms are used, each with its own HEPA filtration, benching and double-ended lighting to resemble a scaled-down version of the main growrooms. The replicated environment allows for the selection of genetics that thrive in conditions similar to the larger rooms, while trapping pollen to avoid cross-contamination.

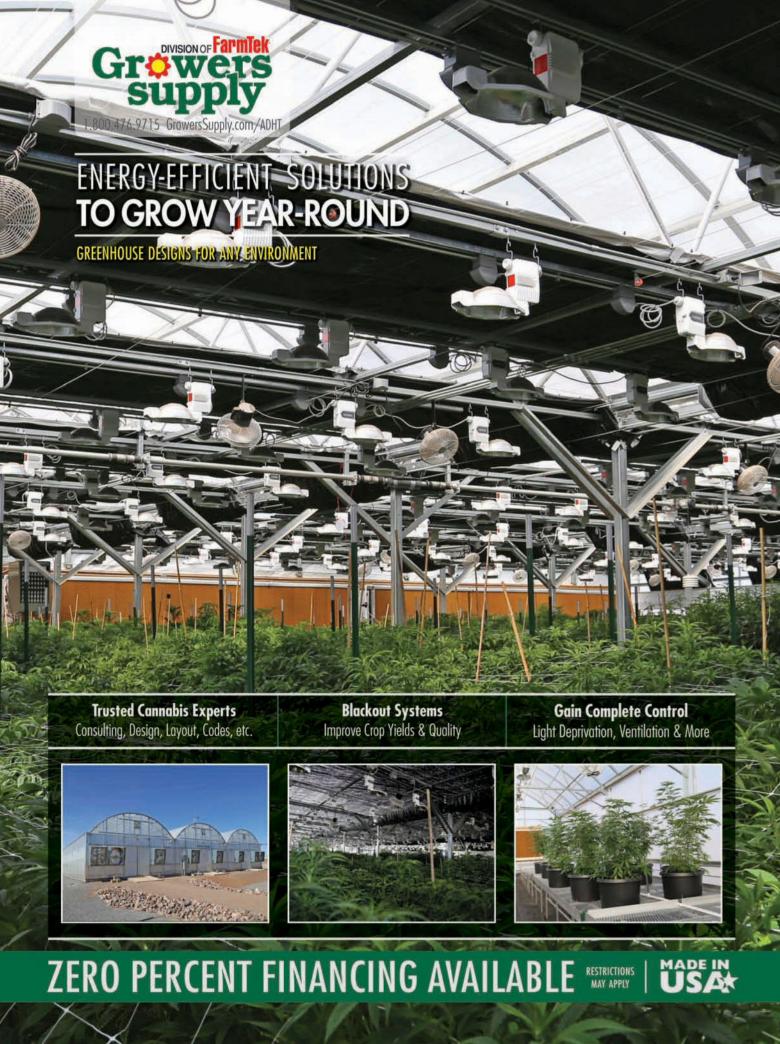
"We don't grow pounds; we grow eighths," Shroyer says. (This is my favorite Dusty quote.) Revolution isn't about growing huge colas: All of the large clusters of cannabis inflorescence will still have to be cut into smaller units, and they're full of stems and more prone to contamination by mold. The majority of Revolution's premium flower is sold in 3.54-gram units. Therefore, the Revolution team focuses on growing beautiful high-quality flowers that receive even light from all sides. The result is a consistently superior quality in every harvest and package of Revolution Cannabis bud. \\*







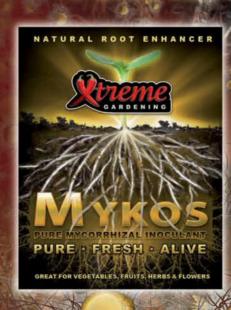




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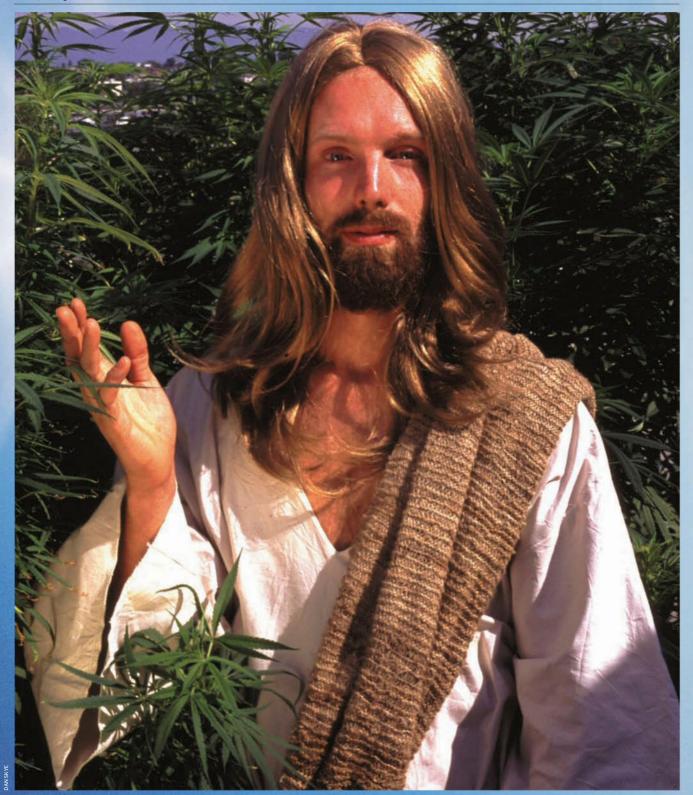




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February 2017 High Times



# Onward Christian Stoners

In the words of the late, great comic Bill Hicks:

"To make marijuana against the law is like saying God made a mistake."

These days, legalization and the internet are bringing Christians and cannabis together.

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On a Wednesday evening in a quiet Denver suburb, a small group of Christians are beginning their weekly Bible study. Prayers are spoken with heads bowed, songs of praise are sung to the heavens, followed by a heavy discussion about the Book of Job.

At first glance, it looks just like any of the other countless Bible studies happening in suburban homes all over the country. The one anomaly is that every God-fearing soul who showed up tonight is getting thoroughly stoned.

Relaxing on the back patio of this upscale home, the participants pass joints and bongs around the circle, along with Bibles for people who forgot to bring theirs. A summer breeze blows through the dozen half-grown cannabis plants that surround us, bolstering the overwhelming funk of ganja emanating from the circle. The red-eyed pastor guides everyone through the Book of Job, which sparks a conversation about how marijuana can serve as a conduit for spiritual experiences.

"In Job's time, he could speak directly with God, but we can't do that today," says Deb Button, whose home is serving as the gathering place for tonight's Stoner Jesus Bible Study. "I believe that consuming cannabis brings me closer to Jesus. It gives me that sense of awe, the spiritual experience I was always looking for in church."

A middle-aged mother of two who curses more than any evangelical Christian alive, Button has transformed her home into a social space for Christian potheads (as well as a Bud & Breakfast), despite having tried marijuana for the first time only 18 months ago.

Since she began advertising the group on Craigslist and MeetUp, Button has been inundated with daily messages from Christians all over the world and from many different backgrounds, excited to find other followers of both Kush and Christ.

"There's a lot of people out there who feel isolated as Christian pot smokers," says Button, who sees no conflict in identifying as both an evangelical conservative and a pot smoker. "There are a lot of conservatives out there who smoke pot."

Button believes that the traditional 420 stoner stereotype doesn't begin to capture the variety of people who consume cannabis, a notion that's reflected in the diverse makeup of the people attending her Bible study. There are so many ages, races, classes, cultures and genders in this group, it looks like an ACLU ad for diversity. Many of these people have been consuming cannabis and reading the Bible their entire adult lives, but had never met others who did likewise.

An elderly white woman passes her vape pen to a college-age black girl as they discuss how much they appreciate God's creation of the trees, mountains and sky. Before legalization—and the internet—it would have been difficult to imagine these two even crossing paths, let alone engaging in passionate conversation about a shared interest.

"Last year, it was hard for me, as a Christian, to come out as a pot smoker," Button says. "But I think it's becoming less taboo."

"There's a lot of people out there who feel isolated as Christian pot smokers."



#### Marijuana: Sin or Spiritual Tool?

From a certain perspective, it might appear that Christians are beginning to warm up to marijuana. In 2012, iconic televangelist (and two-time presidential candidate) Pat Robertson said: "I believe we should treat marijuana the way we treat beverage alcohol." Around the same time, so-called "cannabis churches" began popping up all over the country. And in the last year, the Sisters of the Valley have become media darlings for their nuns-who-smoke-pot activism.

But look a little more closely, and this picture is not what it seems. Robertson would go on to retract his endorsement of pot; most cannabis churches have nothing to do with Christianity; and the Sisters of the Valley are not Catholics but Wiccan priestesses.

In fact, studies show that while a majority of Americans (58 percent) are increasingly in favor of marijuana legalization, the demographic pulling that number down is evangelical Christians, only 29 percent of whom, according to a Public Religion Research Institute study, support legalization. Other Christian

groups hover in the 40s—far below the national average.

This wasn't always the case, says Dr. Carl Raschke, professor of religious studies at the University of Denver. He doesn't believe there's a scriptural precedent for banning marijuana. Unlike booze or certain sexual practices, the Bible doesn't mention pot, in part because it wasn't very common in that time and place, but also because, as Raschke explains: "In ancient Judea and Christianity, the focus wasn't on the substance itself, but how it was used. This legalistic approach of forbidding some substances was a late development. It's not an ethical issue but a legal one. In America, we've decided marijuana should be a Schedule I drug for whatever reason, but we didn't have those reasons before the 1930s."

In the past, inquisitive young Christians who asked their parents why God forbids marijuana use were typically pointed toward its illegality, along with several Bible verses instructing them to obey the laws of man. But once marijuana laws began changing in 2012, additional arguments were needed to condemn pot.

Since then, several tech-savvy young pastors have written blog posts with some variation of the headline "Is Marijuana Use a Sin?" (Presumably because this was a popular Google search among their followers.) The vast majority of these Christian bloggers are anti-pot, and they typically cite Bible verses condemning intoxication and the defilement of our bodies, basically revamping the antiquated arguments that Christians made during the anti-alcohol temperance movement of the early 20th century.

But what if you believe that marijuana isn't an intoxicant, but a spiritual tool?

For nearly a century, Rastafarians have used marijuana as a ritualistic sacrament. And they have their own Bible verses to cite when defending cannabis as holy, such as Revelation 22:2, which refers to the Tree of Life bearing leaves "for the healing of all nations."

Similarly, David Simpson, a Texas state representative and evangelical Republican, made headlines last year when he offered a Christian argument for legalization by citing 1 Timothy 4:4 ("Everything God created is good") in an interview with the *Daily Beast*.

There are also Christians who believe that the holy anointing oil mentioned in the Bible was made from cannabis, and even that Jesus used the herb to perform his healing miracles, though these are far from mainstream beliefs.

For the most part, marijuana has been so taboo among modern Christians that those who use it have, until recently, done so in secret, alone and often with no small amount of shame. And as with gays and lesbians, we're now finding out that tokers have existed in churches around the country this whole time.



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#### Bible Beatniks and Cannabigotry

It's an often-overlooked piece of pop-culture history, but throughout the 1970s, many burned-out hippies in California were converting to Christianity in what became known as the Jesus Movement. Kris Kristofferson, Bob Dylan and Barry McGuire were all devoted converts. Even John Lennon toyed with the idea.

This culture kept the hippie clothes and music, but rejected hard drugs in favor of clean living. Grass fell into an unspoken gray area.

Did people in the Jesus Movement smoke dope?

"Definitely," says Professor Raschke, who was a student at UC Berkeley at the time. "It was illegal, so people didn't talk about it, but most people had a benign attitude about it."

This movement of Bible beatniks soon spread across the nation, ironically laying the groundwork for what would become the Christian right of the 1980s, a political force that wholeheartedly embraced Ronald Reagan's escalation of the War on Drugs. Throughout the 1980s and '90s, any Charlie Churchgoer who required cannabis for medicinal reasons (or simply liked to get high and watch *The Cosby Show*) was forced into the closet with a towel under the door. For anyone who's experienced a moment of paranoia while high under awkward circumstances, life was like that all the time for Christian stoners in the late

20th century (not to mention the difficulties of finding a reliable dealer when your entire social circle comes from the church).

"I was constantly worried about smelling like pot or having red eyes," remembers Greg Giesbrecht, the red-eyed pastor from Stoner Jesus.

Growing up in Fountain Valley, California, Giesbrecht was exposed to marijuana from a young age, smoking a joint with his older brother for the first time in 1975. It didn't become a regular part of his life until he moved to Denver in the 1980s, when he fell down the steps of the Capitol building while delivering a copier. The injury got him hooked on opiates, before friends recommended that he try switching to cannabis.

It has since become an essential component of his life, though before he met Deb Button and the Stoner Jesus group, Giesbrecht rarely let anyone in on his little secret—especially not anyone who knew him from church. "I was honest with my family—my children always knew it as my medicine," he says. "But I had to be careful who I let into that circle. Almost none of my friends knew."

Until earlier this year, Giesbrecht was volunteering and playing guitar for a large church in Colorado (which he doesn't wish to name). By this time, marijuana was legal in the state, and he was beginning to be somewhat more open about his medication. This led him to join the

Stoner Jesus Bible Study, where, for the first time, he discovered that he wasn't the only one who saw no conflict between God and ganja.

Still, a local news outlet filmed a story about Stoner Jesus featuring Giesbrecht and others sharing a large joint while praising God, and he was quickly reminded that mainstream Christians still weren't ready to accept a cannabis congregation. "After the story aired, I got a call from one of the pastors, and he said, "You're not the type of people we want in leadership here," Giesbrecht recalls. "And then everyone turned their backs on us."

Button also knows something about cannabigotry on the part of Christians. The avalanche of support she received from Christian tokers online after forming Stoner Jesus was equaled by the amount of hate she received from mainstream believers, who harassed her via blogs, social media, e-mails and phone calls.

"There were some disturbing comments on my Facebook page—people calling me a heretic, saying that I'm going to hell, very vitriolic," she recalls. "One was a very graphic death threat putting a \$10,000 bounty on my head. After that, I shut down the website and tried to scrub my phone number and address from the internet."

Button has since relaunched the website, but she's careful about whom she provides with her home address. While her online haters are now confined to a computer screen, she still





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has to contend with the disapproving eyes of her fellow suburbanites.

"My neighbors told me how fearful they are now that they can't keep their doors unlocked anymore," she says. "And I'm like, 'It's a freakin' Bible study!' I think they don't like the look of the people who come here—it's a very diverse crowd. They take pictures of everyone who comes and goes."

Button is very protective of the community she's created with Stoner Jesus. Like Giesbrecht, she was forced to abandon the social network she'd formed at church when she decided to go public about her marijuana use—though, unlike him, she'd never even tried marijuana before 2015.

Before that, Button fit the profile of the redblooded, all-American, strongly conservative soccer mom. Despite being a lifelong Christian who raised her two sons in an evangelical church, Button says she'd lived her whole life without ever experiencing the emotional stir of God's presence that her peers seemed to have every Sunday. "I was very lonely in my faith," she confides.

Button longed for a spiritual community she could relate to. Around the same time that she began drifting away from the church, Button and her husband divorced, sending her into a spiral of depression and migraines. To help with her headaches, Button's friend recommended

that she try a cannabis edible.

"It was like a reawakening," Button recalls.
"It focused me in the moment, and my worry started to disappear. All that mattered was the love I was feeling right then. It gave me a sense of awe and wonder for God's creation—the feeling that everyone said I should feel in church."

She soon began centering her life around the experience. If she hadn't been living in the banner state of legalization in the age of the internet, Deb Button might have been damned to the life of isolation that befalls most Christian stoners. But all it really took was a couple of posts on *MeetUp* and *Craigslist*, and suddenly she had the community of spiritual seekers she'd always wanted—right in her own living room!

It's important to Button that Stoner Jesus never takes on the trappings of a church service. Instead, it remains an informal social hour where Christians can discuss the Bible while enjoying the lift of a good toke.

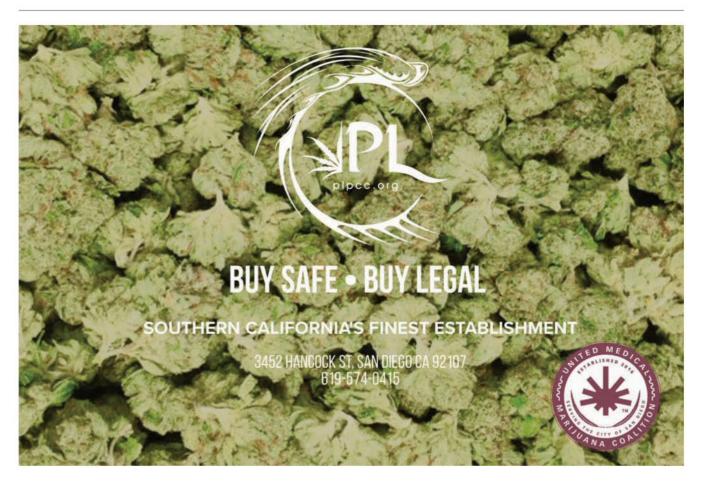
"There's nothing about church in the Bible," Button says. "I think, for a lot of people, it's outlived its purpose. I never felt anything praying in church. But praying with a friend in the backyard—that's personal."

Button adds that if politics enters the conversation, she has an easier time talking things through with a group of stoners than she would have with anyone in church. When she told the group of her plans to vote for Donald Trump,

a few of them rolled their eyes (the racial and gender makeup of the group certainly doesn't match that of a Trump rally), but that's about as vitriolic as things get.

The two intersecting circles that make up the Stoner Jesus Venn diagram—religion and weed—can splinter off into many opposing views. Catholics, Mormons, Baptists and folks from several other denominations are often in attendance, and not all of them consume marijuana with the same intent. Many are recreational users, but Geisbrecht only uses pot medicinally. He says that he doesn't experience the same supernatural high that Button does. But Button explains that her recreational and spiritual highs are very different experiences, like the difference between sacramental wine and a shot of tequila.

Whether or not their cannabis use is integral to their spirituality, the fact that the members of Stoner Jesus can discuss these different approaches and experiences in public, with people who might be strangers, in a place of scripture and prayer, represents an opportunity to unearth what many Christian stoners have been doing in private for decades. And this can only lead others like them, living in more repressive, non-legalized Christian communities, to reject the shame and isolation handed to them by church leaders, and begin to proudly identify as tokers for Christ. \*\*



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# howtohydro



High Times examines three of the easiest and most effective hydroponic systems, as well as the latest development in water culture: hybrid hydro growing.

Story & photos By Nico Escondido

The idea of growing cannabis hydroponically isn't nearly as frightening as it once was. When hydroponic growing was first unveiled to the general public, it was depicted as something used in large-format, commercial-size grows. Dutch botanists used it in their massive tulip greenhouses, and big names like Epcot and NASA were advertising the concept as the "way of the future" and a possible solution for growing food in space colonies with zero gravity. All of this made hydroponics sound like a daunting prospect for any would-be gardener, so it's easy to see why cannabis growers didn't take to it immediately—especially those growing at home.

Today, a lot has changed in terms of the perception and impact that hydroponics has had on cannabis growers. While hydroponic growing, by definition, simply means cultivating plants without soil, there are still many moving parts and technical aspects to consider. However, as hydro growing has moved into the mainstream, new advances in equipment, mediums and nutrients have made hydroponic systems the most widely used method of cannabis cultivation around the world. Here's an overview of three of the easiest and most effective hydro systems on the market, as well as a glimpse of where hydroponics might be headed in the future.



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#### Flood-and-Drain Systems

One of the first hydroponic systems to hit the market, flood-and-drain (also known as ebb-and-flow) tables are simple to set up and easy to use. The system involves using flood tables to house the porous containers so that when the table is flooded, the medium holding the plants' roots becomes saturated with water and nutrients.

Flood-and-drain systems commonly use "netted" containers (Gro Pro, Current Culture, etc.) or Smart Pots to hold the individual plants. These plastic pots have wide openings or slits around the sides and bottom to allow the water and nutrient solution to completely flood the interior of the pots. This allows the medium to soak up and retain large amounts of moisture.

Depending on the medium and nutrient program being used, flood-and-drain systems can be drain-to-waste or can recirculate the water. For home growers, the latter can be achieved simply by housing the system reservoir directly beneath the flood table. In this case, the water is usually only recirculated for a one- or two-day period (perhaps more if only purified water and no nutrients are used) before the reservoir is emptied and refilled with fresh water.

#### Deep-Water Culture

Deep-water culture (DWC) systems represent an all-in-one turnkey solution for hydroponic growers and offer good scalability for both small and medium-size growrooms. DWC systems use large (usually 5-gallon) buckets to hold the individual plants, which rest in a netted pot nestled into a hole in the bucket's lid. The buckets are daisy-chained together by water lines at the base of each. A reservoir-and-pump system fills each plant site with water, which rises from the bottom to the top of each site. The roots hang down into the buckets and suck up water and nutrients.

One great aspect of DWC systems is that the pump timer can be set to fill and drain the buckets on any schedule, meaning that roots can sit in water for several minutes at a time, several times a day. When no water is present in the buckets, the roots are efficiently aerated. This is especially beneficial during the dark cycle, when the above-surface plant is "asleep" and the roots are working, growing and breathing in oxygen (remember, roots breathe in  $\mathrm{O}_2$  while the rest of the plant breathes in  $\mathrm{CO}_2$ ).

DWC systems are known to grow large root systems, resulting in massive plants. As a result, these systems deliver some of the largest yields of any hydro setup. Single-reservoir DWC systems range from two to 12 plants sites; however, they can get much larger if additional reservoir-and-pump systems are added. Because this is relatively easy to do, DWC growers can scale these systems up to commercial-size operations, garnering huge yields with each cycle. Home growers can max out their yields as well by using smart trelliswork around the plant sites in conjunction with good topping techniques. With the dissemination of more and more reliable cultivation information on the subject, DWC systems are on the rise and may soon be the home grower's top choice.

#### Best Hydro Mediums



#### 1. Soilless Mixtures Soilless mixtures are sphagnum-, peat- or coco-based blends that look, act and

feel extremely simi-

lar to regular topsoil. These mediums are better suited for indoor gardens than outdoor topsoil because they carry fewer pests, diseases, bacteria and mold. Standard topsoil is rarely used indoors anymore.

Soilless mediums generally come pre-mixed with beneficial amendments like perlite, wood chips and, at times, mild nutrient additives.

Many advanced growers will mix their own ratios of base medium (most often coco coir) with additives that absorb and retain moisture as well as others that help agrate the medium.

Soilless mixtures are most commonly used in top-feed drip- or spray-emitter systems, which are able to saturate the medium evenly (especially when spray emitters are used). This type of medium doesn't perform as well in flood-and-drain or DWC systems, as soilless mixtures are composed of small particles of matter.



#### 2. Mineral Wool

Mineral wool—or rockwool, as it's most commonly known—is a medium made from spun molten lime-

stone, with a look and feel similar to fiberglass. Rockwool is extremely absorbent, with an ability to stay firm while holding moisture for hours at a time. However, rockwool is a tough medium to understand and is not recommended for beginners.

Rockwool offers only limited buffering for roots, making nutrient dosing a precarious endeavor for those new to the medium. Salt buildup is another common issue, requiring rockwool growers to do pure-water flushes at least once a week. Keep the rockwool at a pH between 5.5 and 5.9 for best results, and be sure to cover it from light to prevent algae growth around the root zone. Rockwool is best suited for use with flood-table systems or flood-and-drain setups.



3. Hardened Expanded Clay HEC, or pop clay, has the look of small brown marbles. It offers a number of benefits.

including being inexpensive, reusable and sterile. It's also very sturdy and great for stabilizing plants in flood-and-drain systems, though it can very easily be used in DWC and nutrient-film technique (NFT) setups as well.

The downside with HEC is that it offers little to no buffering, rendering it useless as a safeguard against overfeeding (i.e., nutrient burn). Growers who choose HEC need to be well versed in the nutrients and doses they're using. Additionally, top-feed setups like drip-emitter systems tend to leave too many dry areas in the medium, making it harder for the HEC to become saturated and deliver adequate moisture to the roots.

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# Plant roots grow down into the troughto soak up additional nutrient solution.

#### Hybrid Hydro: The Future of Hydroponics

With an eye toward the future, many advanced growers are now customizing their hydro systems to accommodate their space, strain and yield requirements. Given that the objective of hydroponics is to provide adequate moisture so that minerals dissolved in the water can be easily absorbed by the roots, the opportunity for new ideas and approaches is clear. In the past, these have led to the advent of new or improved hydro systems, which now number in the dozens. Recently, we found such a system in use at Breakwater Treatment & Wellness in Cranbury, New Jersey.

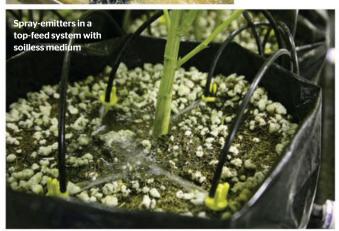
#### Hydro Nutrient Programs

Perhaps the most difficult aspect of hydroponic gardening is the implementation of an effective nutrient program. When dealing with water culture, the old adage of "Less is more" certainly holds true. For beginners, it is definitely important to remember that you can always increase the dosage, but it's extremely difficult to remedy overfeeding.

As an example, studies have shown that gardens using nutrient solutions with high partsper-million (ppm) levels of dissolved solids were consuming less water on a daily basis. When the ppm was lowered, the plants drank much more. The reason is that the high ppm levels created by overfertilizing caused higher osmotic pressure at the molecular level. Essentially, the plants were unable to absorb moisture due to the higher presence of dissolved minerals. The result was a big decline in both yields and potency.

For this reason, many hydro growers chose to use milder, liquid-based nutrients; more often than not, organic (or even veganic) nutrient solutions provide the best results. Also, synthetic nutrients are mostly salt-based. This not only increases ppm levels, but synthetic nutrients also don't dissolve as easily and tend to clog irrigation lines and drip emitters.

There are currently many excellent brands offering organic nutrients created just for hydroponics. General Hydroponics, Advanced Nutrients, Botanicare and Pure Life Veganix all have excellent lines for hydro growing. Remember, when creating nutrient programs for your system, it is essential to have a pH and EC (electrical conductivity) meter on hand to help you evaluate doses and ratios. You should never rely solely on the manufacturer's instructions, as these tend to go above and beyond what the plants actually need. As a rule of thumb, keep your nutrient solution at a pH of 6.0 and the EC between 2.0 and 3.0.





#### Top Feed + NFT

Nutrient-film technique, or NFT, is another type of hydroponic cultivation in wide use today by large-format, commercial-size grow ops. In this setup, plants are suspended in the medium with their roots hanging down, much like a DWC system. However, instead of being contained in a flood bucket, the roots dangle into a trough that sits at a very slight angle so that the water poured into it will collect and drain at one end. This trough provides a thick,

constant flow of water—or nutrient film—that the roots soak up as needed. As an added bonus, due to the exposed nature of the trough, the root zone lives in the open air, giving the roots access to enormous amounts of oxygen.

At Breakwater, the troughs in the flowering rooms are engineered to continuously flow with the nutrient solution (dissolved nutrients in filtered water) via a top-feed irrigation system. The benefits here are twofold. First, the bulk of the plants' roots sit in a firm

medium (HEC in this case) that supports them while also retaining some moisture. Second, rather than drain-to-waste, the nutrient solution collects in the trough that runs beneath all of the plants in a row, allowing the dangling roots that have grown out of the containers to soak up additional nutrient solution as needed. At the end of the trough, the water is collected and redirected to the main reservoirs for a continual (nonstop) flow back through the gardens.



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#### Advanced Hydro

The larger yields associated with hydroponic growing are directly correlated with faster growth.

"The biggest advantage to hydroponics is the growth rate of the plants," confirms Joe Bender, chief horticulturalist at Breakwater Treatment & Wellness. "A constantly recirculating nutrient solution ensures that the roots are always bathed in a steady supply of nutrients, while still constantly providing plenty of oxygen for the roots."

Since roots need oxygen for respiration, Bender explains, a potting mix won't hold the optimal amount of oxygen to sustain the accelerated growth that hydroponics creates. "A freshly watered potting mix, such as peat, perlite and vermiculite in a 3:1:1 ratio, holds less oxygen than is ideal for roots. Therefore, plants grown in potting mix must dry between waterings in order to provide sufficient oxygen to the roots," he observes. "As a potting mix dries, it gradually allows more oxygen to reach the roots, but simultaneously water and dissolved nutrients become harder for the roots to absorb, and the solution in the area surrounding the roots becomes depleted of nutrients—unlike in a hydroponic system, which constantly replenishes this would-be depletion zone. The combination of constantly available, optimal levels of both water and oxygen in a hydroponic system allows plants to grow much faster."

Breakwater avoids oxygenating the reservoirs with air pumps, because the growers don't want to force microbes from the air into the solution—not to mention that keeping the nutrient solution cool (the reservoirs are maintained at  $66.5^{\circ}$ F) allows it to hold the maximum possible amount of dissolved oxygen. Furthermore, the nutrients pouring from the drippers and through the pebbles in the pots, then pouring from the troughs into the collection gutters along the wall, then circulating from the gutters to the return reservoir, and finally getting pumped and dumped back into the main tank—all at a very high rate of flow—allows enormous amounts of oxygen to efficiently dissolve into the water. And this process is constant, 24 hours a day.

However, one drawback with any hydroponic system—especially one that runs nonstop—is algae, which clogs the drippers, is difficult to clean post-harvest, and decreases the oxygen content of the nutrient solution. Algae's effect on the dissolved-oxygen concentration in the Breakwater system hasn't been causing any problems (i.e., no root rot, with healthy-looking roots and plants), but steps have recently been taken to keep light from reaching the nutrient solution. Since algae can be expected to be a nuisance in any hydroponic system, growers should design their setups to minimize the nutrient solution's exposure to light as much as possible.

#### Reaping the Rewards

With 480 plants per flowering room, the hybrid hydro system at Breakwater helps ensure that the plants always have enough water and nutrients on demand. With a vegetative cycle of just two weeks and a flowering cycle that ranges from seven and a half weeks (60 days) to 11 weeks, depending on the strain, the average yield here is around 125 pounds per flowering room, with maximum yields climbing as high as 186 pounds per room. With 88 lights per room, this system produces over 2 pounds per 1,000-watt lamp.

The max yields are achieved when Breakwater grows its best-yielding strains, notably AK-47 and Bubblegum, both propagated from seed from the Dutch breeders at Serious Seeds. Other popular strains among the patients at Breakwater include Dutch Passion's Orange Bud (an inbred Skunk selection), an incredibly rare pheno of the Lemon G, and the highly medicinal Cannatonic, which has a 1:1 ratio of CBD and THC. The combination of high-quality genetics with an ingenious, commercial-size hydroponic facility means that these New Jersey flowers will hold their own against those of any other dispensary nationwide

"So when will there be a Medical Cannabis Cup in New Jersey?" Bender asks.

Who can say? But regardless of when that happens, 2017 is looking like a ripe year for the East Coast.  $\Psi$ 

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The High Times Interview 99



# CARLOS SANTANA

## THE HIGH TIMES INTERVIEW

N THE PANTHEON OF ROCK'N'ROLL
GREATS, TWO GUITARISTS TRANSCEND ALL THE REST: JIMI HENDRIX AND CARLOS SANTANA. BOTH
PLAYED WOODSTOCK IN 1969 AND
DELIVERED LEGENDARY PERFORMANCES.

SADLY, JIMI DIED IN 1970. BUT CARLOS PLAYS ON.

TO CALL CARLOS SANTANA A LIVING ROCK GOD IS HARDLY AN EXAGGERATION: HE HAS SOLD OVER 100 MILLION
RECORDS AND REACHED EVEN MORE FANS
WORLDWIDE. AT 69, HE CONTINUES TO
TOUR INTERNATIONALLY, AND HIS CONCERTS GROW MORE PASSIONATE AND MUSICALLY DIVERSE WITH EACH PASSING YEAR.
HE'S BEEN A MEMBER OF THE ROCK AND
ROLL HALL OF FAME FOR NEARLY TWO
DECADES AND WAS ALSO THE RECIPIENT OF
THE PRESTIGIOUS KENNEDY CENTER HONORS AWARD IN 2013.

IN PERSON, SANTANA IS GENTLE AND SOFT-SPOKEN, SMILING EASILY AND OFTEN. He's A DEEPLY SPIRITUAL MAN WHOSE CONVERSATIONS ARE PUNCTUATED WITH REFERENCES TO THE DIVINE, "THE SPIRIT THAT MOVES THROUGH ALL OF US." HIS LEGACY OF SOCIAL ACTIVISM IS NOTABLE AS WELL: THE MILAGRO FOUNDATION, WHICH HE ESTABLISHED WITH HIS FAMILY IN 1998, HAS PAID OUT MORE THAN \$5 MILLION TO NONPROFIT PROGRAMS THAT SUPPORT UNDERSERVED YOUNG PEOPLE IN AREAS LIKE THE ARTS, EDUCATION AND HEALTH.

THESE DAYS, SANTANA FREQUENTLY
DISCUSSES OUR URGENT NEED FOR SELFDISCOVERY, ESPECIALLY IN RECOGNIZING
THE INSIDIOUS ILLUSION THAT HAS BEEN
IMPOSED ON US: THAT WE ARE POWERLESS
TO CHANGE OURSELVES AND OUR WORLD.
THE TOOL FOR ACHIEVING THIS CRUCIAL
ENLIGHTENMENT IS CANNABIS, WHICH SANTANA CALLS "A GIFT FROM HEAVEN TO
HUMAN CONSCIOUSNESS FOR HEALING AND
FOR AWAKENING."



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## Tell us about your history with marijuana.

When I was a child, I worked in an herb store. I've seen and smelled weed all my life, because I grew up in Tijuana. But people wouldn't do it around me; they purposely would go in the alleys and places. Other doctors called it "mumbojumbo"—even though they make mumbo-jumbo in the laboratories.

I'd forgotten that my mom used to use it. She used to whisper to me, "Get me a lid." So I brought her a lid and she'd dip it into alcohol, leave it there about a day or two, then use it for different ailments. How the hell did she know? It's innate. Your DNA allows you to remember something that was dormant.

I first started smoking around 1967. I came to San Francisco around the time when it was ground zero for conscious evolution, with the hippies in Haight-Ashbury. I remember after I took my first toke, I said to this guy in the band that "when you smoke a joint, you forget all of the shit that you can't play right." They were like, "What?"

I wanted to go a certain way playing. But then I realized it was like rubber-stamping: Certain things don't have to go like that every day. The thing about music is that, unless it's classical music, the music that we love is all about improvisation. You learn the mechanics and then you let it go.

I noticed that the music I was listening to suddenly became a sphere. I was listening to Jeff Beck and the Yardbirds—"Over Under Sideways Down"—and then I was listening to "For Your Love." I was like: "Oh, this sounds so different!" I had heard the song about four or five times already, and I realized that my whole sensory of hearing and feeling was different. Actually, I wasn't clear what



# I am so stimulated to be part of something that carries a frequency of healing.

I was listening to—instead of a black-and-white TV, I had big surround sound and high definition.

## How would you describe your own musical evolution?

When I was a child, Armando Peraza [the late Latin jazz percussionist] said to me: "Hey, youngblood, I wanna talk to you. All that shit that you wanna play? You have to learn how to breathe correctly. Because it takes so much energy and so much breath—if you don't sit right and breathe correctly, you're going to keel over and pass out."

It's kind of like going up in

the mountains, to the Himalayas. You have to learn how to adapt and change, make a conscious change.

### Any thoughts on today's music?

I can tell you, with any album that you play right now, whether people created it consciously or unconsciously. Like Stravinsky or Coltrane or Jimi Hendrix or The Beatles—I can tell you who was experimenting with dimensions. Lately, when you hear the radio, there are no dimensions; most of the Top 10 music you hear is really flat and shallow. It's not profound anymore. It's very disposable,

like Colonel Sanders packaging or something. Even rapping, after a while, sounds so much the same. As musicians, what we miss is the constant... what we call brilliant, new and fresh. That's what's going out the window right now.

#### You've been talking about cannabis for years, often slipping in favorable comments in the middle of your concerts.

I am so stimulated to be part of something that carries a frequency of healing. I am inspired. Cindy [Blackman, Santana's wife and the band's drummer] and I are constantly taking account of who we're meeting and why we're meeting them: Why is this person suddenly here, instead of over here or over there?

It's because like attracts like. All of us are attracted to people who want the same thing that we want. What do we want? Like The Doors used to say, "We want the world, and we want it now." But we want the healing world. We don't want this world anymore—this world that's sick with grief, sick with violence and brutality and greed. We want a world that believes that it can be successful.

There's a reason why a lot of people didn't want us to deal with marijuana. They don't want you to wake up from the nightmare of being dependent on those whose only agenda is to enslave you into thinking that you're limited, you're unworthy, you're full of poop. When you say, "I've got something the world needs... I'm something the world needs," that's the opposite of all that.

# When you say that cannabis has a "frequency of healing," what do you mean?

It's a gift from heaven to human consciousness for healing and for awakening—and to stay awake from the nightmare of separation. I would



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The CIA, the FBI, the Pentagon and Hollywood sell more fear than anything else on this planet. The more you sell fear, the more people invest in protecting themselves from something that doesn't really fucking exist.

say it's the key factor to help humans use divine reason.

#### How does that manifest itself?

It helps you to remember that the most precious thing that God gave you, besides life, is your uniqueness and individuality. It's your own voice, your own symmetry, whether you're a guitar player or a poet-whoever you are. You don't have to go to Christ or to the government, being patriotic... baa-aa!

Christians call Jesus the "pastor," because people are dumb like sheep. They have to follow Him... baa-aa!

But Jesus said, "Follow your own light." That way, you don't have to be a sheep. We can be as wise as snakes and as peaceful as doves.

#### And you believe cannabis promotes that?

It's tried, true and tested healing, you know? Where I am right now

is that I keep believing there's some way to correct the crooked, twisted mindset of humans. It's almost like we're at the end of our rope—there's too much fear out there.

#### The Hopi prophecy says something similar: that we're entering an age of transformation or an age of destruction-and the choice is up to us. Is that what you're talking about?

We are collectively in a dream in this world that we created ourselves: the illusion caused by not listening to the inner voice. I say this constantly. I pray about it.

The CIA, the FBI, the Pentagon and Hollywood sell more fear than anything else on this planet. The more you sell fear, the more people invest in protecting themselves from something that doesn't really fucking exist. When you wake up to self-discovery, the self-deception ends. It's the end of selfdeception. It's not that the world's going to end, with

volcanoes and all that stuff. What's going to end is the frequency of greed, the mentality of Ronald Reagan, George Bush, LBJ, Nixon-the mentality of people who say: "Without me, the world don't roll."

Right now, 200 named tribes are going to Standing Rock [site of the controversial Dakota Access Pipeline project] from all over the world. They're saying to the people of the world to straighten up, because this is the crossroads-whether we go right or we go wrong. No more oil in our water, no more waste going into aguifers that will ruin all of our land. We are waking out of the dream of separation and distance from our own light. And this is the most important thing in our music.

#### How are people "waking"?

People are waking from the illusion of not being worthy, of being separated from the highest power you have... and the highest power you have is to

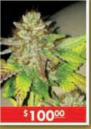


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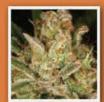
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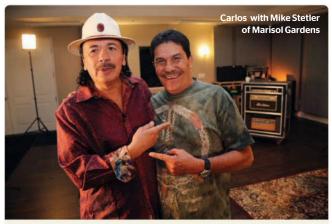
not let go of the hand of the everyday Holy Spirit inside you. Jesus never said we have to jump through hoops or fast to be worthy. You are worthy of God's grace. You're inseparable.

Let me start from the beginning here. The beginning is that a beam of light tells each plant what color, what texture, what flavor, what aroma—all that. And when the plant dries, it tells us when, for example, is the best time to make tea out of it to correct the liver. For humans, the photosynthesis, the beam of light that helps us transmogrify the molecular structure in ourselves, is when we get high.

When you smoke weed, it makes you think with a different mind. This is the gift. It's where we get the most energy in our lives; we're in a good, beautiful place. This is the time and the place where we help break the illusion-night-mare—the nightmare of having limitations, of being not worthy and with sin. Be yourself, because everyone else is taken. People have forgotten how to be themselves. Breathe in and remember always that you have never not been; you always will be. Celebrate you.

For me, this is what it's all about. You can get high while healing yourself—and I don't mean getting stoned or fucked up. No, you get high knowing that you can will yourself to be in good health, with clarity and peace of mind. \

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#### Santana Smooth

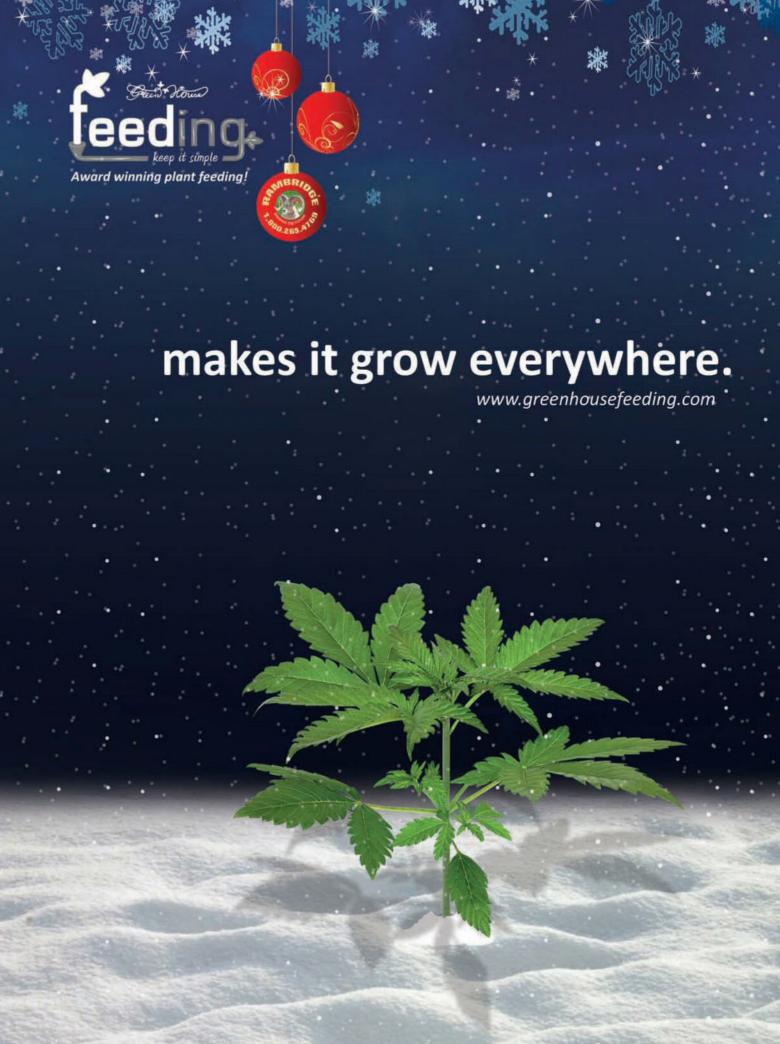
What is "Smooth"? Well, back at the end of the last century, "Smooth" was a red-hot instant classic created by Carlos Santana and Matchbox Twenty's Rob Thomas. It wound up winning Song of the Year, Record of the Year, and Best Pop Collaboration With Vocals at the 2000 Grammy Awards.

However, these days "Smooth" means something else, something just as enticing: Santana Smooth, the new cannabis inhaler available at Marisol Gardens in Pueblo, Colorado. Marisol, owned by Michael Stetler and family, is one of southern Colorado's premier dispensaries; and over the past year, Michael and Carlos have partnered to develop an inhaling device similar to the one

used by asthma sufferers. Santana Smooth is simple, effective, and unobtrusive—and it delivers a silky-smooth dose of high-powered cannabis vapor.

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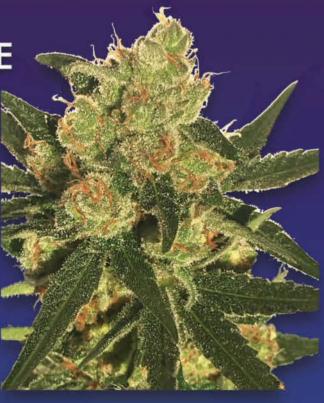
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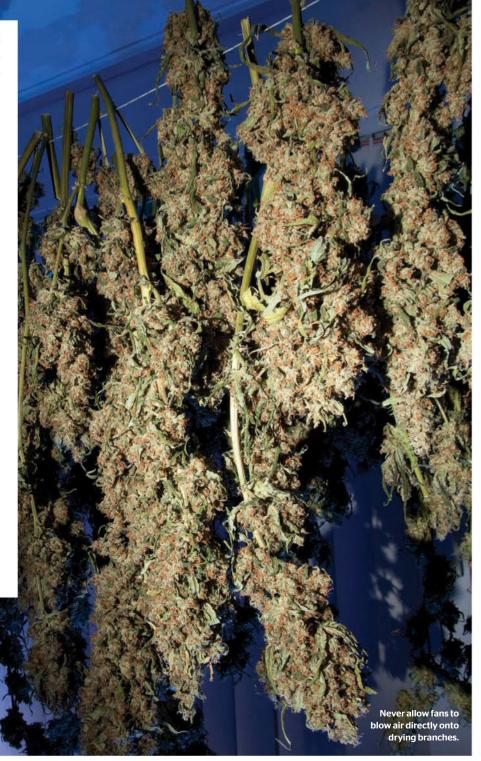
SUBJECT: Drying Temps and Humidity FROM: Michael C.

What's the best temperature and humidity level for drying my plants?

Dear Michael,

The drying room is a place that must be carefully monitored. Keep in mind that your plants will give off large amounts of moisture as they dry. It's important to pull wet air out of the room and keep the air circulating-but without actually having the fans blowing right on the hanging branches, which can dry them out prematurely and result in a harsh taste and burn. Growers in dry places like Colorado struggle to extend their drying time with humidifiers, while farmers in more humid places like Northern California use dehumidifiers to pull water from the air in order to avoid mold forming on their buds.

The ideal temperature for a drying room is between 65°F and 75°F, with the humidity level ranging from 45% to 55% in a darkened room. Within six to 10 days, the branches on your plants should snap instead of bending, and the buds should feel popcorn-dry on the outside. This is the time to cut the individual buds from the branches and put them in glass jars to begin the curing process.



108 Dear Danko

Danko Tip: The larger the container for roots to grow in, the larger the resulting plant will be, so avoid letting your plants get root-bound.



SUBJECT: Storing Seeds

FROM: Carol M.

How long can seeds be stored in a refrigerator? I was unable to plant this summer, which was good because our county had a disastrous drought (bad). So I'm hoping my seeds will still be viable next year. What do you think?

#### Dear Carol.

I don't recommend storing seeds in a refrigerator, which has too many fluctuations in temperature and humidity. Instead, store your seeds in a cool, dark place, preferably sealed in an airtight opaque jar. (You can also add uncooked rice as a desiccant to keep the seeds from getting moist.) You can store the seeds for several years in this way before seeing any loss in germination rates. Then again, your seeds should be fine after just one winter in a fridge.

SUBJECT: Seeded Buds

FROM: Melanie S.

l have plants that have been growing for 16 weeks. They are three-quarters of the way through their cycle with no males present. We've been having a very dry summer, so I've been saving rainwater. Three days after a rainfall, I mixed the three-day-old water with plant food and gave it to my plants. After I was done watering, I went through all of the plants to make sure there was no mold, and everything was good. Four days later, when I went back to check on my plants, all of the buds were now completely peppered with seeds.

Did I end up pollinating them myself with dirty rainwater? Should I let them go or keep growing? Are they hermie plants? Should all of these seeds be thrown out? I've been growing this strain for three years now. The first year, there were a few seeds but nothing to worry about. The

second year, I found more seeds than the previous year, but still with no males present. This year, my plants are completely peppered and went from perfect to infested with seeds in just four days.

Dear Melanie,

Either your plants are hermaphrodites, or there are male plants growing somewhere nearby that are pollinating your females. Rainwater can't cause the effects you're experiencing; the only way your plants could be getting seeded is from pollen, either from your own plants or someone else's. If you live in an area where hemp used to grow, there may be male wild hemp plants (a.k.a. ditchweed) growing nearby that are causing your problem.

You can let the plants continue to grow, but they'll probably end up with immature or fully mature seeds inside them, depending on how close you are to harvest. The flowers have now put all of their energy into creating seeds, so the production of bigger buds and essential oils will be diminished. You can use these plants to make hashish or edibles, or you can even remove all of the seeds for some smokable material if you wish.

The seeds are essentially useless, though, as they're either the result of hermaphroditic plants or some muddy genetic blend of roadside schwag and your females. You may as well throw them out and focus on growing more stable genetics or protecting your plants with some sort of greenhouse or transparent tarp in the future.

SUBJECT: Watering While Away FROM: Supreme Commander

l need to take a long weekend trip. What are some simple auto-watering solutions for small home setups? I have two plants in 5-gallon soil pots.

Dear Supreme,

The ideal way to ensure that your plants are watered is to ask a trusted friend to help out while you're gone. Barring that, you can employ a nutrient-solution-filled reservoir with a drip-emitter system and a pump on a timer that feeds the plants on a regular schedule. However, I definitely don't recommend letting your plants sit in stagnant water too long,







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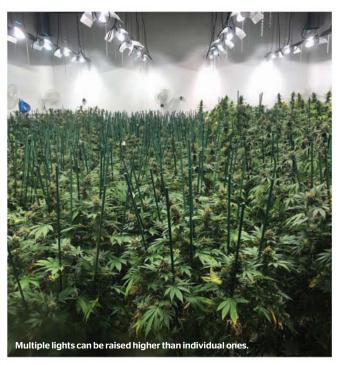


2016 CANNABIS CUP WINNERS

Danko Tip: Grow tents are a great alternative to growing cannabis in a closet or small room, and they're easy to put up and take down.

so make sure you won't be overwatering them. An automated watering system can also result in potentially disastrous flooding, so always be sure your flooring is flood-proofed in case of a pump or timer failure.

However, since you'll be gone only for a long weekend, you may be able to get away with the 2-liter-bottle method. This involves using a nail to poke a small hole into the screw-on cap of a clean plastic 2-liter bottle. Fill the bottle with water or nutrient solution, screw the cap onto the bottle, and then firmly press the bottle upside down into the top of your watered soil. The liquid will slowly escape from the hole in the bottle cap, watering your plants while you're away.



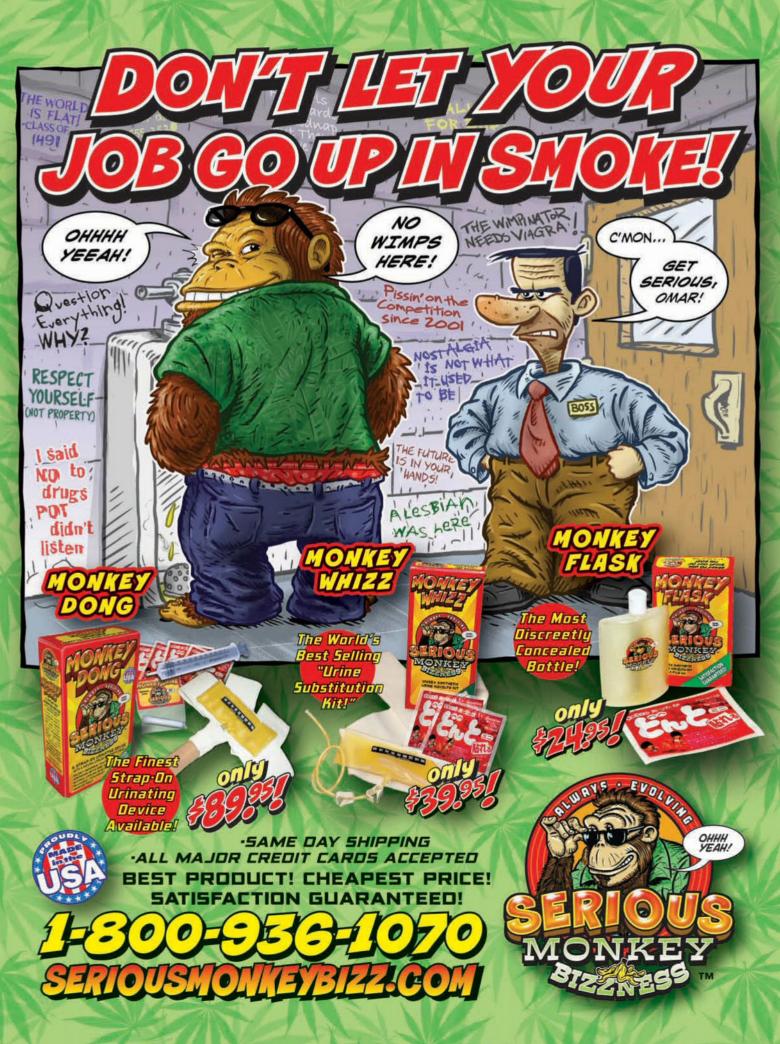
#### SUBJECT: Light Distance to Plant Tops

FROM: Alfie

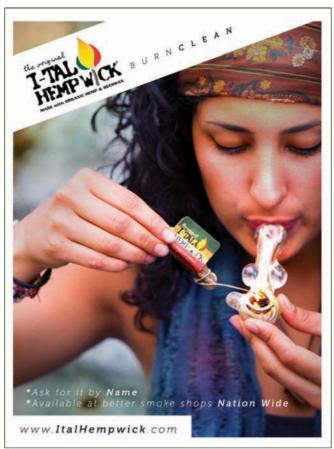
Hello, Danko! I've been trying to grow on a professional level for the last year and half. I grow outside in my greenhouse in extreme conditions. It can be very challenging to grow this way when you don't have complete control of the environment. The only upside for me is that it's cost-effective—but I'm ready to move indoors so I can have more control when it comes to my grow. My question to you: When growing indoors and using lights, how close should they be to the plants in both the vegetative and the flowering stage? Thanks for your help.

#### Dear Alfie,

The distance of the lights to your plant tops will vary depending on the type of lights you decide to use, the amount of heat generated by them, and the number of plants you're growing. In general, with high-intensity discharge (HID) lighting, including metal halide (MH) and high-pressure sodium (HPS), individual 1,000-watt lights should be kept 24 to 30 inches from the canopy; 600-watt lights should be kept 18 to 24 inches away; and







Danko Tip: Place yellow sticky traps around the base of your plants to catch pests before they infest your growroom.

400-watt lights can be placed as close as 12 to 18 inches from the plant tops. Keeping your room cooler and supplementing it with  ${\rm CO_2}$  gas can also allow you to place the lights a bit closer.

You should raise the light if the temperature at the leaf surface is too high. Use a light meter if you have one or, if not, simply place your hand at the level of the plants under the light. If it seems too hot, raise the light or lower the plants. Bleaching buds, burning leaves, or plants stressing out are generally sure signs that the lights are too close.

Another option is to use fluorescent or LED (light-emitting diode) lamps, which generate far less heat; however, the light they produce also penetrates much less farther into the canopy, so they should be placed significantly closer to the plant tops.

In industrial- or commercial-growing setups, the lights can be higher because the growers are using much more lighting and spreading it around more. That's why commercial-lighting hoods are smaller, while the hood you should purchase for growing under just one light needs to be larger and able to direct the light downward into a tighter footprint.

Also, always be sure either to lower the light and then raise it as the plants grow taller or, as an alternative, to raise the plants toward the light early on and then lower them as they grow. The one big mistake I see over and over is that growers install a light too high and then let the plants grow up toward it. This results in long and lanky plants that struggle to hold themselves up and need staking or trellising in order to keep from falling over. It's a waste of both space and time.

SUBJECT: Best Grow Books

FROM: Josh G.

My name is Josh and I'm from Texas. I've been in sales my whole life and am finally about to be in a position where I can move to a state where marijuana is legal. That won't be for another year, so my question to you is this: What books would be good for a beginner to read to start learning the process of growing pot? I'm more of a hands-on person, but here in Texas you can do serious time for growing, and I would hate to ruin my chances of ever entering the industry because of a mistake. This is why I'd like to learn as much as possible before I move somewhere that will let me grow and practice and see which methods work.

Dear Josh,

I always recommend that people start with something simple, such as a basic guide to photosynthesis and plant growth that doesn't focus on growing cannabis. That way, you can get a general understanding of how plants grow and what their basic needs are during the various stages of their life cycle. For this, any basic textbook will do, but a good one is *Botany: An Introduction to Plant Biology* by James D. Mauseth.

Once you've mastered the basic information, you'll need to get your hands on a cannabis-specific book. The two best ones on the market right now are *The Cannabis Encyclopedia* by Jorge Cervantes and *Marijuana Growing Fundamentals* by K of Trichome Technologies. Both offer a comprehensive guide to growing pot and also cover more complicated subjects like breeding your own strains and making your own hashish. \*\*







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#### 2 Odor Eater

\$9.95 with free shipping reekremover.comRemoving the telltale scent of smoke, plants or mold can be a matter of great importance. We love the new Reek Remover from High Plains Packaging, which eliminates odors using a proprietary blend that breaks down stinky smells on the molecular level and replaces them with the scent of fresh linen. Also, the environmentally friendly pump sprayer makes it convenient to use whenever necessary.

#### 3 Puff, Puff, Pass

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If you're looking for an allin-one toking kit with everything you need for a special session, look no further than the Alpha Puff Kit. It includes a grinder, a portable (and collapsible) water pipe, a cleaning tool and an Alpha Turbo-Torch lighter—plus it comes in a comfortable and stylish dishwasher-safe package with plenty of storage space for rolling papers, pre-rolled joints and much more.

#### **Steaming Sensi**

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italsteamchalice.com
Rastafarians have been using chalices as part of their religious cannabis use for decades. The Ital Vapor Steam Chalice is a modern take on those pipes, working like a vaporizer to heat herbs. It won Best Product at the High Times World Cannabis Cup in Jamaica in 2015, and it's made using natural local products like bamboo, coconut, the outer shell of

the calabash fruit and pure Ja-

maican clay.











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## Edibles



So spark a few joints, choose some excellent tunes and fire up the microwave, with the understanding that, while these mug cakes won't replace a professionally baked cake, they will provide a way to quickly satisfy your late-night craving for sweetness. One word of caution: If your cannabutter is very potent, start off using only a teaspoon diluted in regular butter so you can gauge the effect of the high before adding more.

#### Blueberry Haze Mug Cake

#### Ingredients:

1tbsp. cannabutter
½ cup rolled oats
1tbsp. light brown sugar
2 tsp. honey
½ cup blueberries
1 generous pinch ground cinnamon
Greek yogurt, to serve

#### **Directions:**

Place the cannabutter in a 7-fluid-ounce microwave-safe mug and microwave on full power for 30 seconds, or until melted. Stir in the oats, sugar, honey and cinnamon, then microwave on full power for one minute.

Mix well, then stir in the blueberries and microwave on full power for one minute more, or until the blueberry juices start to run. Serve with yogurt.

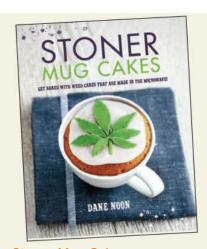
#### Microwaveable Muggles Cakes

When the munchies strike, these mug cakes can be created quickly.

By Elise McDonough

Lots of people don't have the time, patience or kitchen gear to bake cakes from scratch, but this recipe makes it so easy you'll be amazed! With this ingenious method, you can create marijuana-infused edibles with minimal equipment in just a few minutes. If you've got a microwave in your dorm room, there's no reason why you can't bake stoner sweets to order.

Featuring 22 tasty recipes, Stoner Mug Cakes by Dane Noon makes a fabulous gift for any stoner MacGyver who loves warm, gooey cake at odd hours. While the effects of high microwave temperatures on THC activation are still up for debate, these cakes are meant to be a fun novelty snack to eat in a pinch rather than a full-time cannabis-therapy program.



Stoner Mug Cakes

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#### **Black & White Doughnuts**

Outrageous colors and fun flavors define the treats made by Kitty's Munchies, which uses extracts and concentrates from Nature's Lab. Instagram: @kittys\_munchies



Each of these lovingly designed mini-doughnuts from Starfire Edibles delivers 100 mg of THC in a tiny package. Instagram: @starfire.edibles

#### **Chocolate Doughnuts**

Perfect for dunking into coffee, these chocolate-dipped doughnuts from Maxx Power arrive in packages of three in either Milk Chocolate or Dark Chocolate flavors. You can choose from either 140 mg of THC per package or 240 mg for Super Maxx. Instagram: @maxx\_power\_edibles

#### Cookies N' Cream Doughnut

Babinka Treats makes delightful medicated doughnuts, with flavors and decorations that play off pop-culture trends. Available in a variety of THC levels. Instagram: @babinkatreats



S'mores Oreo Doughnuts

Snoog Life doughnuts have a nostalgic charm to them: They're decorated with whimsical candies and come in creative flavors dosed with 50 or 100 mg of THC. Instagram: @snoog.life



#### **High Chai Hemp Milk**

Pairing cannabis and hemp creates one terrific beverage.

Available for a limited time, the seasonal chai flavor of Waska hemp milk is created using a whole-plant infusion of sun-grown, freshfrozen cannabis from Mendocino. With 30 mg of THC and 15 mg of CBD packed into 2 fluid ounces, this hemp milk is the perfect addition to your morning chai tea or for use in a decadent supersmoothie-or just pour it over cereal for pain relief and davdream enhancement. chocowaska.com



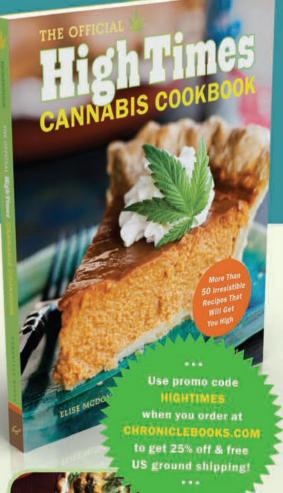


#### Saturday Night Special Sundae

Make the medicated sundae of your dreams with THC-infused sauces from Sweet Stone Candy.

Designed for the big kid in all of us, cannabis-infused Chocolit and Caramel sauces from Sweet Stone Candy allow you to add a custom THC dose to all of your favorite ice creams. With an evenly balanced ratio of 50 mg of THC to 50 mg of CBD per bottle, the resulting high is euphoric yet calm. Look for these medicated sauces in Michigan wherever Sweet Stone Candy is sold. sweetstonecandy.com





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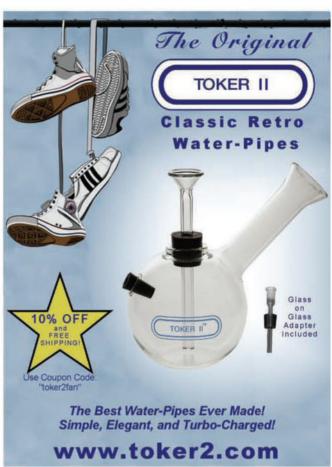


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#### Smoking Out the Facts PMS, bipolar disorder, crime and art.

Got a question for Dr. Mitch? Email him at 420research@gmail.com.

Can cannabis really help PMS?

Grumpy Sometimes

Hello Grumpy, Cannabis looks like it's fine for treating mood swings, depression, anxiety, sleep problems, cramps and muscle pain, all of which can be symptoms of PMS.

I have three studies in front of me showing that cannabis is bad for bipolar patients. Then I get bipolar patients coming in who swear that it keeps their moods steady. Does it help or not?

Dr. Manny LC

Hello Dr. Manny, Folks with bipolar disorder often have a rougher time if they're using the plant. But they may be self-medicating when they first notice symptoms, rather than creating a cannabis-induced manic episode. Those who say it helps them are very attentive to their sleep: They use sedating strains, get to bed early and keep their sleep cycles reasonable. Any other approach seems to make tough times more likely.

Please help me explain that medical cannabis laws don't affect crime.

Sheriff Sharif

Howdy Sheriff, Medical marijuana laws actually *lower* crime. My friend Ted Shepard at Le Moyne College showed that passing medical marijuana laws in the West led to significant decreases (about 6 percent) in violent crimes like homicide



and assault, with no significant increases in any other crimes. Nobody's exactly sure why, but you might want to get the underground market out of town, sheriff!

Are there any famous painters who did their work while using the plant?

Art Connor

Hi Art, In terms of the Old Masters, that's hard to say, but Rembrandt painted on hemp canvases.

Once marijuana is legal everywhere, are you legalizers going to go save the whales or something?

Seven Kabet

Hi Seven,
Much as I love whales, I'm
afraid we'll still have plenty of
work to do in consumer advocacy. We'll want to ensure
that product testing and
labeling, employee rights and
business practices all stay on
the up-and-up. So don't worry,
we'll still be here!

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



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#### **Solvents of the Hash-Makers**

Concentrate creators have a number of options for extracting cannabinoids, but each comes with its own baggage. This month, we're examining the pros and cons of the most popular solvents. By Craig Coffey



ost of us know the basics of how concentrates are made: Cannabis is soaked in a solvent, which dissolves the cannabinoids and terpenes; the solvent is then evaporated, and what's left behind is a very concentrated form of the plant's active ingredients.

Now that we're all on the same page, let's look a little deeper into the solvents most commonly used for making extracts. A solvent's *polarity* refers to the electrical charge it carries. Polar solvents, such as water, have an electrical charge due to the arrangement of atoms in their molecules. Polarity is the reason that oil and water will not mix into a solution. When it comes to dissolving THC, it's all about polarity—or, more specifically, *non*-polarity. Cannabinoids will dissolve into any non-polar solvent, and there are many of these to choose from.

Here are some of the most common non-polar solvents used in the hashmaking industry:

#### **Isopropanol**

This solvent is cheap and easy to obtain. It's commonly used as a secondary solvent or wash in conjunction with some of the other solvents on this list. The yields from isopropanol hash are pretty low, but it's very safe to work with.

#### CO,

Carbon dioxide is in the air we breathe, and it's non-explosive. It will dissolve THC and other cannabinoids when in supercritical form (i.e., under so much pressure that the gas becomes a liquid). The downside is that the equipment needed to make CO<sub>2</sub> supercritical is very expensive and takes some training to operate safely.

#### n-Butane

This is the most commonly used solvent for hash-making because it's excellent at capturing cannabinoids and terpenes, and it's also easily purged from the final product. It is non-toxic, cheap and fairly easy to obtain, but it has an extremely high risk of explosion. Amateur hashmakers should probably not cut their teeth making butane hash oil.

#### Propane

Propane is a very good solvent for making hash, since it does a great job of capturing terpenes. This solvent is almost always odorized, which allows you to smell it if it's leaking from a storage container. However, if you're making hash with propane, you'll have to find a source that is *not* odorized.

#### Hexane

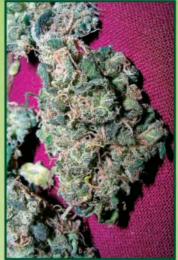
Hexane is commonly used for making pharmaceuticals and food products. It has qualities similar to butane but is harder to get as well as more expensive. When working with hexane, you must take all of the same safety precautions as when working with butane. In gas form, it will easily ignite and explode.

#### Ether

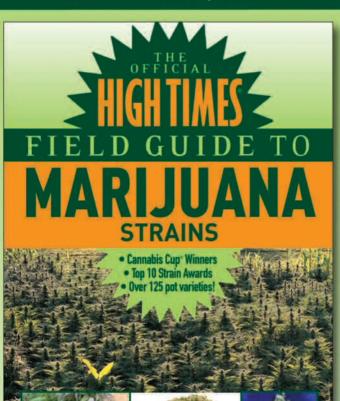
Ether is the solvent of choice for most pharmaceutical production, since it evaporates at room temperature. The downside to this solvent is that it's extremely dangerous to work with. Ether can autoignite at relatively low temperatures (i.e., start a fire without a spark). Even if you can get your hands on this stuff, it's probably a bad idea to work with it unless you're a professionally trained lab technician.  $\checkmark$ 

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By Danny Danko, Senior Cultivation Editor with a foreword by Jorge Cervantes





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## **Congress Gets Graded**

It's report-card time for our national leaders.

Paul Armentano is the deputy director of NORML. Visit norml.org.

**IXTY-ONE PERCENT OF** Americans agree that "the use of marijuana should be made legal." More than four in five favor legalizing cannabis as a therapeutic treatment option, and six in 10 voters believe that the states, not the federal government, should be the ultimate arbiters of marijuana regulatory policy.

Yet these positions are not being sufficiently represented on Capitol Hill. This growing divide between the public and congressional opinion is apparent upon reviewing NORML's updated 2016 Congressional Report Card, a database that assigns a letter grade to members of Congress based on their comments and voting records on matters specific to marijuana policy. The full report is available online (norml.org/congressional-scorecard).

#### How NORML's Report Card Is Calculated

Our Congressional Scorecard grades members of the US Senate and House of Representatives on a scale running from A (the highest grade possible) to F (the lowest). An A grade indicates that a member publicly supports legalizing and regulating the use of marijuana for adults. A grade of B indicates that a member supports policies legalizing the therapeutic use of cannabis. C indicates that a member supports the right of states to move forward with marijuana-law reform free from federal interference. D indicates

that a member has expressed no support for any significant marijuana-law reform. A grade of F indicates that a member has expressed significant and vocal opposition to marijuana-law reform.

NORML's grades are based on the 2015and 2016 voting records and public statements of members of Congress; whether the elected official in question has sponsored or co-sponsored marijuana-centric legislation; and whether he or she has sponsored marijuana-specific budgetary amendments.

#### **Key Findings**

senators).

Of the 535 members of the 114th Congress: • 330 members (62 percent) received a passing grade of C or higher (270 representatives and 60

- Of these, 22 members (4 percent) received an A (20 representatives and two senators).
- 254 members (47 percent) received a B (218 representatives and 36 senators).
- 54 members (10 percent) received a C (32 representatives and 22 senators).
- 172 members (32 percent) received a D (149 representatives and 23 senators).
- 32 members (6 percent) received an F (16 representatives and 16 senators).
- To sum up, 60 senators (60 percent) received a passing grade of C or higher (two A's, 36 B's and 22 C's).
- 270 representatives (62 percent) received a passing grade of C or higher (20 A's, 218 B's and 32 C's).
- Of the 233 Democrats in Congress, 215 (92 percent) received a passing grade of C or higher.
- Of the 302 Republicans in Congress, 113 members (37 percent) received a passing grade of C or higher.

Support for marijuanalaw reform is largely a partisan issue.

#### The Takeaway

While the majority of Americans support legalizing the use and sale of cannabis for adults, only 4 percent of federal lawmakers support this position. Approximately half

(51 percent) of Congress favors liberalizing medical cannabis policies. However, this percentage remains far below the level of support frequently expressed by voters in state and national polls.

Also evident is that congressional support for marijuana-law reform is largely a partisan issue. While more than nine out of 10 Democrats express support for some level of reform, just over one-third of Republicans hold similar positions. This partisanship lies in contrast to voters' sentiments, which tend to view the subject as a nonpartisan issue.

In sum, it's apparent that voters' views regarding marijuana policy have evolved significantly over the past decades. Yet the positions of their elected federal representatives haven't progressed in a similar manner. As constituents, we ought to demand better. It's time for lawmakers to legislate on behalf of policies that more closely reflect marijuana's rapidly changing legal and cultural status. \*

By Kevin Mahmalji, NORML national outreach coordinator

#### FREEDOM FIGHTER

#### Tennessee Volunteer

John Marek wants his state to reconsider its zero-tolerance policy toward cannabis.

Memphis native John Marek earned a bachelor's degree in political science from the University of Memphis, with a minor in legal thought. He went on to get his master's in political science as well as a law degree.

While still in college, John co-founded the University of

Memphis's NORML chapter, the only one in Tennessee at the time. With no statewide citizen ballot-initiative process available in Tennessee, the chapter focused its efforts on lobbying state legislators in support of medical marijuana.

After graduation, John quickly landed a position as an associate attorney with the city of Memphis, where he worked from 2011 to 2013. He also worked for Congressman

Steve Cohen (D-TN) of the Ninth District, a staunch supporter of marijuana-law reform. After managing two of Cohen's successful campaigns, John started his own firm, DeShazo & Marek, a private practice focused on criminal law.

In 2014, after settling into his professional career, John founded NORML of Memphis and currently serves as its president. The chapter has lobbied elected officials in the

city to pass a decriminalization ordinance. The Memphis City Council

took up the issue and placed it on

the ballot this past October. "We don't have the ability to do ballot initiatives on the state level," John observes. "Nashville decriminalized marijuana, and Memphis is expected to do the same on October 4 [it passed!]. Hemp and CBD oil are already legal statewide, and we continue to urge our state legislature to pass a medical marijuana bill."



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## NANUELESS CINETICS FIRMIX ROOTED

Top-notch genetics define this Southern California company. We caught up with Jeff and Clyde from Nameless Genetics to learn about breeding and growing award-winning cannabis, and how they plan to expand the brand.

As the co-owners of Nameless Genetics, Jeff and Clyde want to make something clear right away: They're not in the cannabis industry for the money. "We do this from love," says Jeff. "Our plants really feel the love that goes into them, and that's passed on to the patients. We do it for the patients, and for the bigger vision." That bigger vision is a genuine passion for the plant, and it shows in the work ethic of their employees, Clyde tells us: "People work so hard because they really appreciate what they're doing."

Exciting times lie ahead for Nameless Genetics, which has several new strains in development, including some new Mega crosses that will be released soon. "People are really going to love them," Clyde says with pride. Jeff agrees: "We have eight new strains, and we believe they're all Cup winners." Lately, they've been focused more on breeding than growing, Jeff adds. "We already can grow weed. Now we're developing new strains so that the world can enjoy more variety at the quality level that Nameless provides."

And with more and more states legalizing medical or recreational use, Nameless looks forward to growing with the national market. Jeff and Clyde both see a bright future for a legal, regulated marijuana marketplace. "When we started as growers, the space was far from safe, and we ran into many issues along the way," Jeff



#### "We're developing new strains so that the world can enjoy more variety at the quality level that Nameless provides."

recalls. "And so we look forward to having a safe space where we feel like we can be more open with what we're doing. We look forward to being able to provide quality genetics through other growers across the country."

"For everybody!" Clyde chimes in.

But how do they plan on competing with big corporate marijuana grows? Their six first-place Cannabis Cups speak for themselves, the pair believes. "Every genetic that we've released so far has won a Cup, which is something to be very proud of as a company," Jeff declares. They predict that their products will stand apart from corporate cannabis just as craft beer does from Budweiser. "We're definitely part of the 'craft weed' movement," Jeff says. "At the same time, we have the experience to expand our production and get the same quality at any size space."

Yet even with the wholesale price of weed going down—in Colorado, a pound is as low as \$1,000 right now—that's not the arena that Nameless is competing in, Jeff maintains. "Connoisseurs want to smoke the best weed in the world. That's a given. Just like people don't really want to drink Budweiser with their dinner—they want to drink an Allagash or something higher-quality. The world is asking for more quality in all products... shopping for that grower you can count on. People want to know what they're ingesting and putting in their bodies. We feel like we have a strong hold on that."

Nameless has won Cannabis Cups for concentrates as well as flowers, and the company has just released its first line of Firestixx vape pens. It also has a line of high-CBD flowers.

What's the secret behind their accomplishments? It's simple, Jeff and Clyde both say: "Work hard, stay focused. You'll never be successful if you keep moving around." Looks like Nameless Genetics is firmly rooted to flower into even greater success.



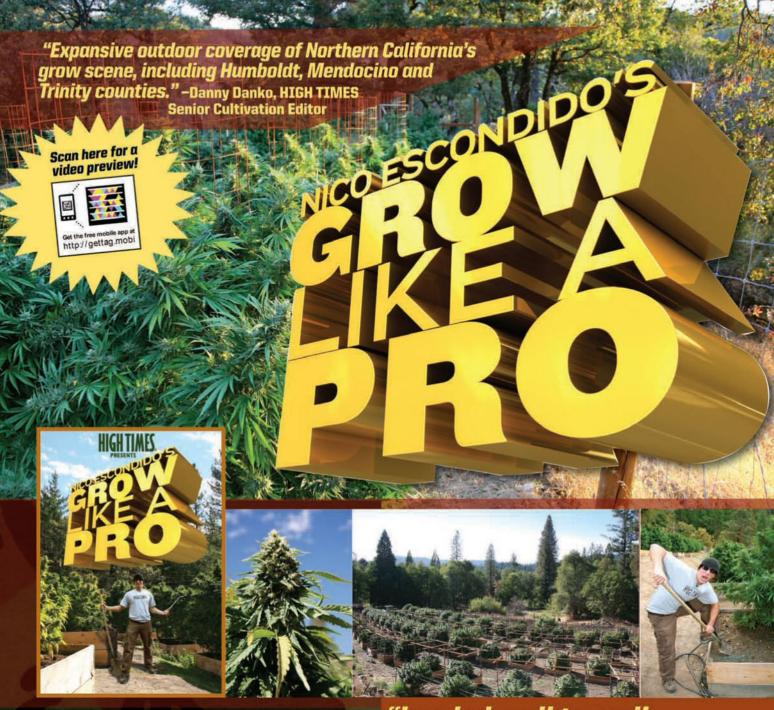


Many years ago, I was fishing, and as I was reeling in the poor fish, I realized, "I am killing him—all for the passing pleasure it brings me."
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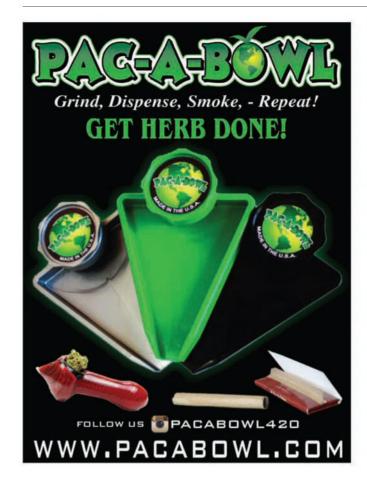


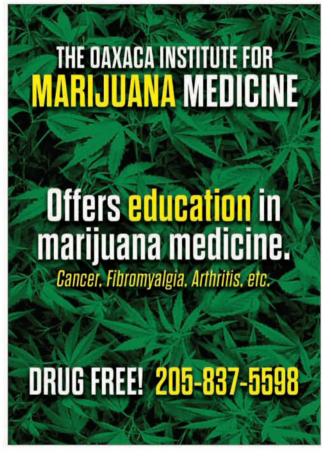
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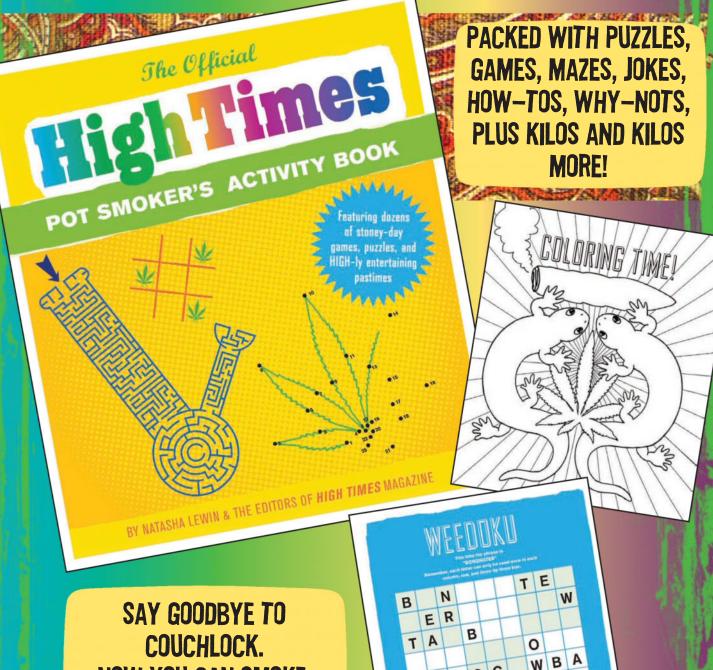
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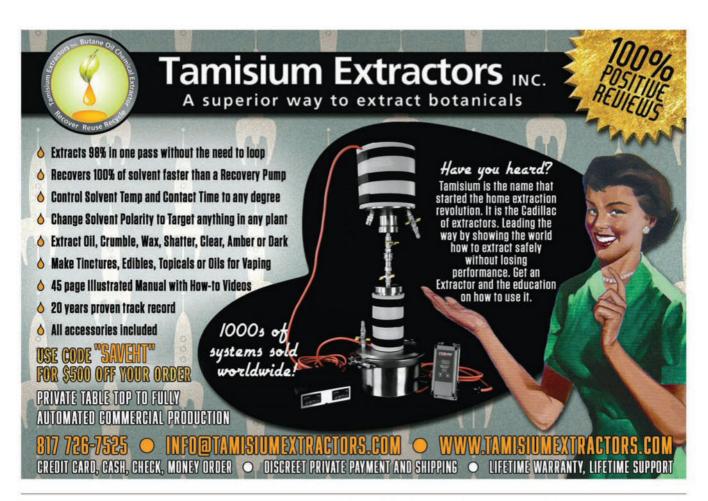
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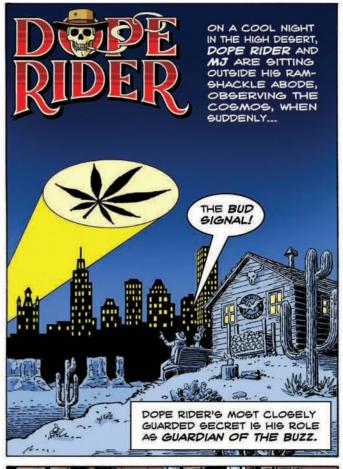


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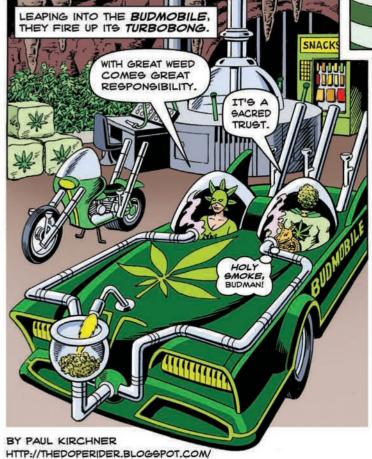
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138 Pix of the Crop High Times February 2017

#### HARVEST OF THE MONTH

#### **AFTER THE FALL**

Here's a pic of some more Big Buddha Seeds King Kong. Hope you and the readers enjoy! Danknaturally







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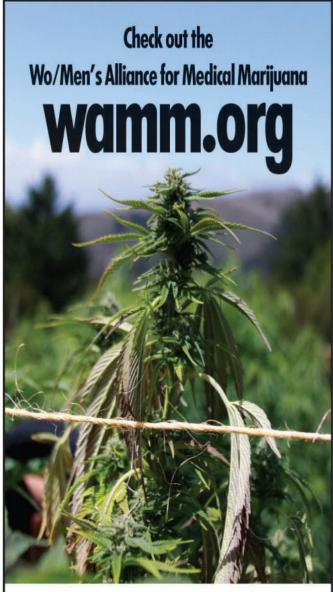








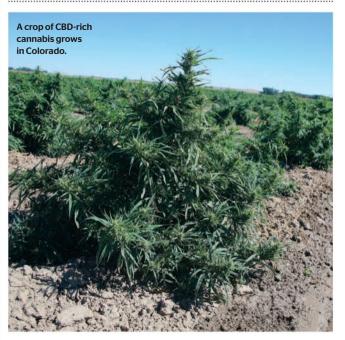




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Cannabidiol, or CBD, has been proven to have significant medical benefits. Martin Lee, the author of  $Smoke\ Signals$  and the director of Project CBD, provides the truth about this remarkable cannabinoid. Plus, HT editor-in-chief Dan Skye checks out a massive crop of CBD-rich cannabis in southern Colorado.

#### Roll to the Polls

A cannabis-legalization initiative—medical or recreational—appeared on the ballot in nine US states this year. Now that the smoke has cleared and the results are in, what does the future hold for legal marijuana, both in America and around the world?

#### New England's Wicked Good Growers

Take a trip to the Great Northeast with senior cultivation editor Danny Danko to find out how local pot farmers have perfected their marijuana-cultivation techniques to produce some of the highest-quality cannabis on either coast.

#### Northern Lights

As Canadian Prime Minister Justin Trudeau moves his country toward national marijuana legalization, get the inside story on how he became such a strong supporter of the herb, direct from one of the local cannabis activists who helped focus him on the issue.

#### B-Real Gets Real

B-Real takes a break from touring with his new rap-rock supergroup to discuss his smoking habits, his unique legacy on the rap-and-weed scene, and why the world needs a band like Prophets of Rage now more than ever.

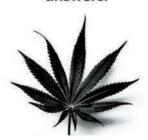
# FREE WEED FROM DANNY DANKO



Growing your own marijuana can be both a liberating and political act. In this pot-cast, *High Times*Senior Cultivation Editor and author Danny Danko provides news, activism reports and cannabis cultivation tips for connoisseurs, aficionados and medical patients alike.

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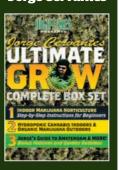




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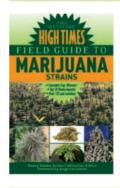
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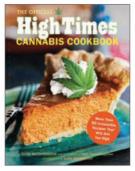
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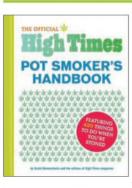
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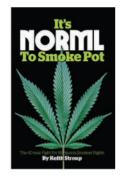
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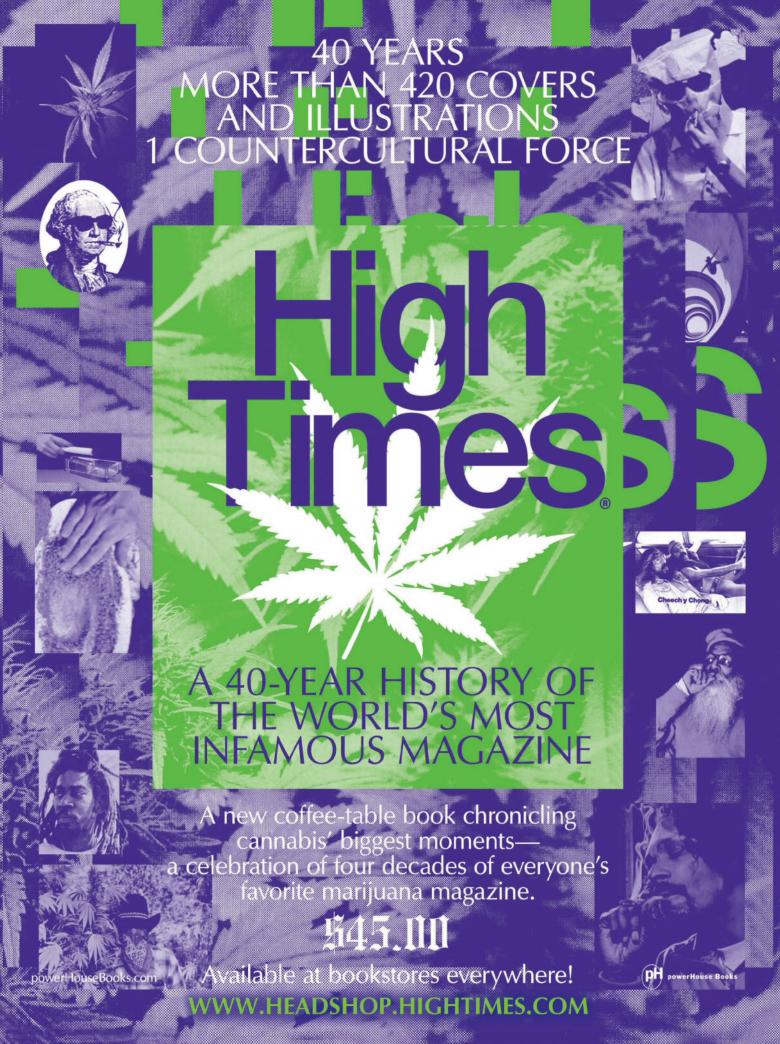
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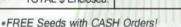
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