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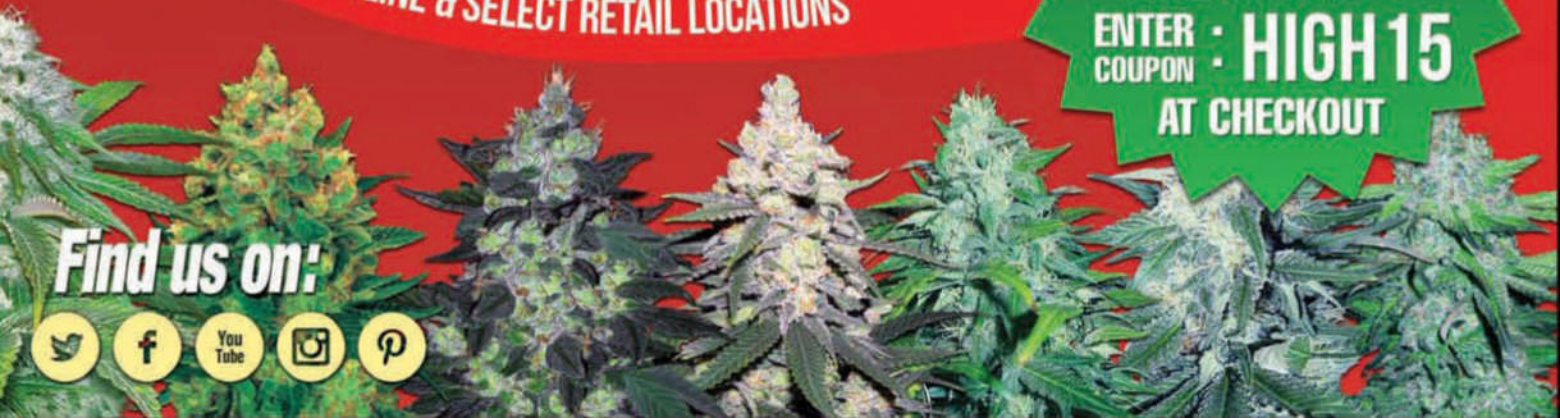
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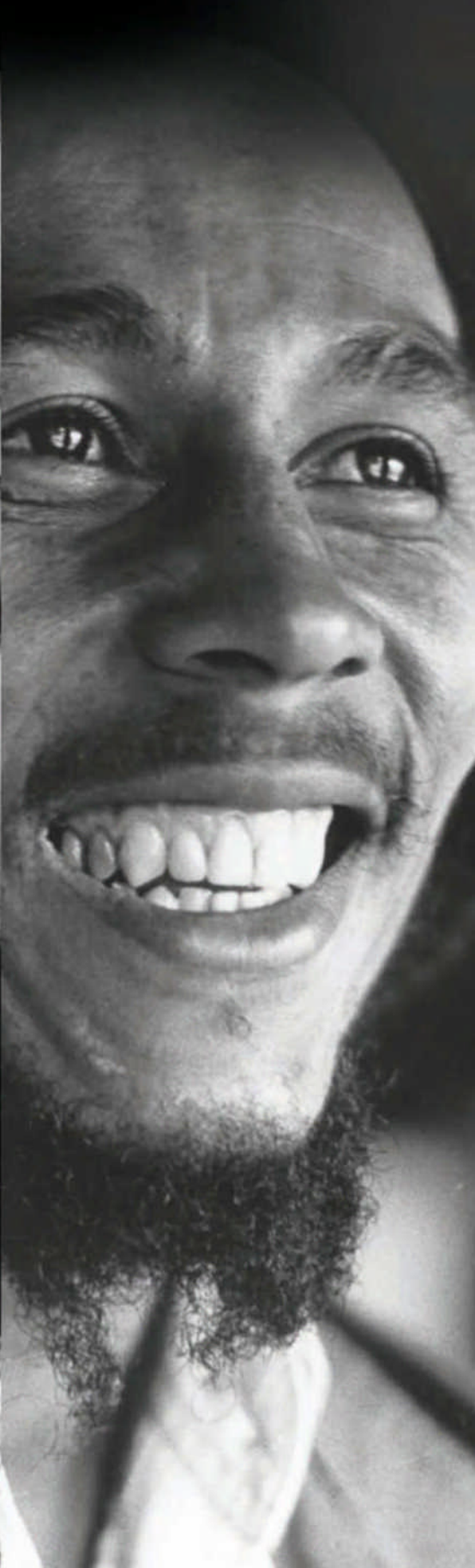
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They're rebels, outcasts, Davids in a world of Goliaths, that come from the least likely of places.

They tread where others fear to go, dislike conforming to the norm, and don't care much for the man or his machine because they truly embrace freedom.

It's hard to fool them because they have a clear perspective on the world and see things for what they really are.

They're fiercely aware of what's right and wrong, speak their minds and take no prisoners.

They look at life differently, society can't pigeon hole them or put them in box, and they see things where others don't.

Their ideas are sometimes out on the fringe, the ragged edge. They have to be, because they're open to the possibilities and realities that change the world.

Some see them as a fish out of water, trouble makers and oddballs. We see them as gifted, profound and uniquely brilliant.

HIGH TIMES AUGUST



"First things first: the weed and hash! Flowers, dabs and rosin were everywhere at the Cup, and attendees wasted no time taking advantage of the abundance."

Sunny Daze and Lit Nights in SoCal—page 45

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- 45 Sunny Daze and Lit Nights in SoCal**
The 2017 High Times SoCal Cannabis Cup featured a host of marijuana-infused goodies. Plus, epic performances from Nas, Wu-Tang Clan, 50 Cent and more! *By Danny Danko*

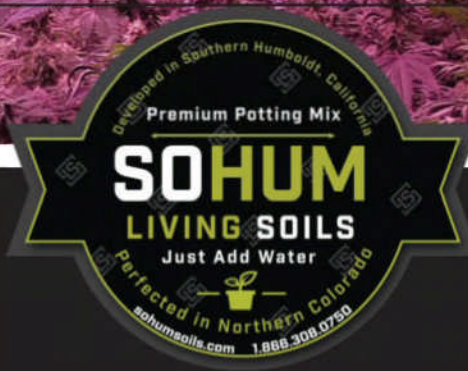
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With the cannabis industry growing exponentially and entering the mainstream, cannabusiness owners are taking a tech-savvy approach to improving cultivation, extraction and ingestion. *By Robyn Griggs Lawrence*

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We pull all of our data on terpene profiles from the past year of Cannabis Cup entries, compiling a list of cannabis strains that have the highest terp content and most jaw-dropping flavors from around the country. *By Nico Escondido*

- 84 Eclipse Tripping**
Like the best psychedelic experiences, a solar eclipse can be an awe-inspiring event with the power to change lives. We explain why it's so special and how best to enjoy the one that's on the way! *By Clint Werner*

- 94 Beat the Heat**
High temps in the growroom can lead to disaster. We break down various ways to cool your space efficiently, circulate air properly and control your growing environment. *By Erik Biksa*

- 102 The High Times Interview: Redman**
Redman is one of the most enduring—and endearing—figures in the rap game. Red gave *HT* the straight dope on changes in the marijuana industry and why he's always promoting pot. *By Danny Danko*



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Take Me Out to the Bong Game

Summer is here and for many Americans, that means heading out to the ballpark to spend a lazy summer day taking in our national pastime. Baseball might just be the perfect sport to pair with cannabis thanks to its leisurely pace. And toking up outside in the summer sun is hard to beat. But getting high in public carries with it some risk—

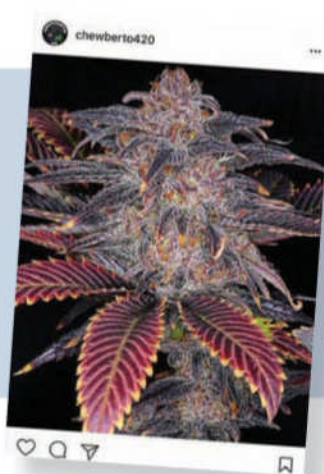
particularly at a ballpark full of fans, security and even cops. Fortunately, there's the High Times Guide to Lighting Up at MLB Parks to offer some helpful hints for getting stoned.

This guide offers advice for the best way to get high at a number of different parks. All six major league divisions are represented and, of course, we include teams located in states with recreational pot laws. So, before you head to a game this summer, be sure to check out our Guide to Lighting Up at MLB Parks!

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The cannabis industry is constantly evolving thanks to stoner ingenuity. The concentrate craze is in full swing and we've highlighted plenty of slabs, rosin, and Twax joints in this space. But there is something positively arresting about a perfectly grown cannabis plant. Its beauty is simply unmatched. Take for example this glorious shot of Hong Kong from @chewberto420 with its deep purples and shimmering crystal trichomes. It's like being reminded of your first love all over again.



Smoking Poll



Which Major City Would You Most Like to Go for a Cannabis Cup?

New York City	10%
Chicago	7%
New Orleans	8%
Austin	8%
Honolulu	8%
Boston	10%
Minneapolis	3%
Other City	47%

It's safe to say that cannabis is having a moment. A majority of states now have laws allowing the use of medical marijuana, eight states and the District of Columbia have legalized recreational cannabis and industry analysts are predicting that the pot biz will soon be worth over \$20 billion. There's a lot to celebrate and there's no place better to celebrate all things marijuana than at the High Times Cannabis Cup.

Since High Times began hosting Cannabis Cups in the US in 2010, most of our events have taken place in just three states—California, Colorado and Michigan. Obviously, our events are subject to local laws but the times are changing and soon cannabis will be legalized nationwide. With that glorious future in mind, we asked our readers where they'd most like to attend a Cannabis Cup.

For this poll, most of you selected "other" presumably because you want to go to a Cup in your home town. As for the best of the rest, New York City and Boston tied with 10 percent of the vote, while Austin, Honolulu and New Orleans all received 8 percent. Chicago was the next most popular destination with 7 percent and Minneapolis came in last with just 3 percent of the vote. **Take our latest poll online!**



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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!

@WrestlSupremacy: @HIGH_TIMES_Mag If Chris Christie took a bong rip he would have much different opinion on Marijuana.

@evanfletch24: @HIGH_TIMES_Mag Nothing beats a really good earthy outdoor indica that gives you that electrifying body high.

@glennjr1975: They have a pill for everything @HIGH_TIMES_Mag and none seems to be as good at giving relief as cannabis does.

@Jazmine68841513: @HIGH_TIMES_Mag every hour I'm at work, weed is in my system

@naicirtcele: @HIGH_TIMES_Mag When I have a party at my house, don't bring a bottle of wine, bring an 1/8th!

@RyanTee82: @HIGH_TIMES_Mag I've noticed the majority of ppl who are very loudly anti cannabis live in places w/ meth epidemics. They should focus on their own shit.

@freecann: @HIGH_TIMES_Mag Good Lord, sugar is exponentially more dangerous to people's health than marijuana. When can we expect a "don't drink" campaign? #tonedeaf

@Weedupon: @DannyDanko @HIGH_TIMES_Mag I miss #FreeWeed

@Evefandango: @HIGH_TIMES_Mag "You rarely find a story that says two stoners beat each other up outside of a bar." I loved that part

@carolanndias: @HIGH_TIMES_Mag Legalize medical marijuana and it will pay for the wall!



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Can You Taste the Terps?

Greetings, amigos!

Once again, it's my honor and pleasure to introduce our latest edition of *High Times* as we climb toward our 500th issue—coming up next month, in case you haven't heard. But that's not to say that issue #499 is any less special. In fact, I personally think this is our best issue of 2017 so far!

Of course, I may be a bit biased, having penned the cover feature: our second annual installment of "The Best-Tasting Buds on Earth." But when I look over the other cannabis 'zines out there, and even our own *HT* archives spanning more than four decades, I don't see any other rankings of marijuana strains based solely on flavor or taste. So call me proud—I don't mind. And, of course, this is an age when the terp craze is at an all-time high. It almost seems that, nowadays, it's less about the potency and more about those flavs. I guess that can happen when every strain out there seems to be over 20 percent THC and concentrates will get you stoned off your ass with even the tiniest of dabs. That's why it's all about those tasty terps.

And those rankings aren't just pulled out of thin air. They're derived from a year's worth of lab testing at our Cannabis Cup competitions, the latest of which just ended in Southern California and is covered by *HT* senior cultivation editor Danny Danko in this very issue. Not to mention that our good friend Redman performed at the SoCal event and even came back out to join Wu-Tang Clan onstage. Danny was the lucky man who got to sit down with "Doc" for an epic one-on-one interview that you can also read in this issue.

Rounding out the lineup are a few tech-heavy articles outlining the role that technology is playing in the burgeoning legal-cannabis industry, as well as some cultivation tech that will help your ladies stay cool in the summer heat. So, as usual, I congratulate you on your wise purchase of this great publication—and I also salute you with hearty thanks, because without you, *High Times'* 43 years in existence might have been only one.

Thanks for reading & stay high,

Nico Escondido
Nico Escondido
Chief Cannabis Officer

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The government's loosening on pot's medical benefits but will never support us having fun. They tolerate what's already legal only 'cause they know they can't stop it and/or do it themselves.

Dave Z.

Opioid Epidemic

The reason so many people are dying from opiate overdoses is because the government is wasting its time and money going after Joe Pot Smoker instead of prosecuting companies like Purdue Pharma for knowingly flooding the black market with Oxycontin.

Richard P.

Say Cheese

Cheese is hands down my all time favourite strain, and I'm from Canada not the UK! I suffer from a variety of mental health disorders such as generalized anxiety and ADHD. I tend to lean toward *indicas* for their calming effect and Cheese makes me feel amazing. A very euphoric and happy feeling. This strain calms me down and relieves my stress. But the best thing about Cheese is that it relaxes me without tiring me out like many *indicas*.

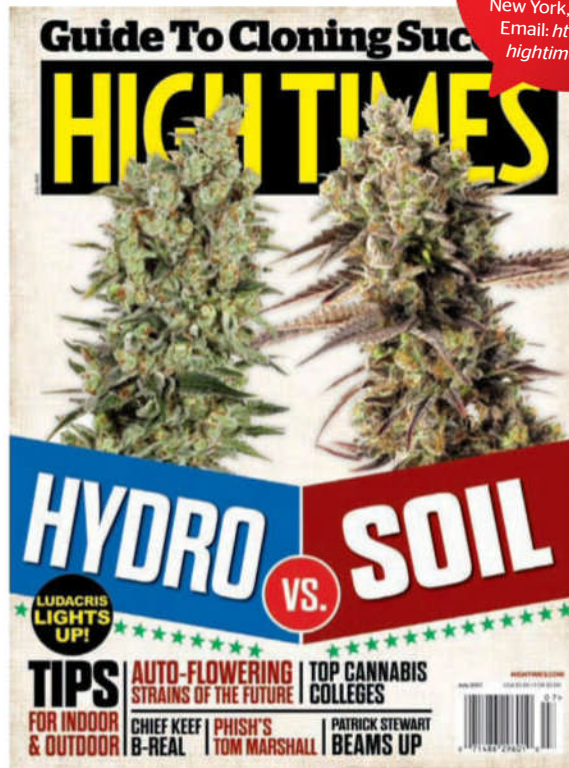
I've been smoking heavily for over a decade now, and have finally found my ideal strain. I couldn't be happier to have discovered the Cheese and think it should make your list of the Top 25 strains of all time.

David S.

Do the Right Thing

I hope with every ounce of energy I have left that our House and Senate members can find a way to agree on a bill that focuses on the patients of Florida. Because, although I feel like I've been waiting forever for this to happen, some have waited a lifetime.

One person in particular is my grandfather who has supported my efforts while he suffers the fate of being terminally ill in the wrong state. His support has been my motivation and fuels my missions all over the state of Florida. I've met senators and house members, health services directors, physicians and health professionals, local government and law enforcement, industry leaders and so many sick patients that manage to find the strength in the hardest of times to speak for a minute or two about their struggles and their



Godfather OG came in at 34.04% THC at your Southern California Cup. Do you think we'll ever see a strain top 40% THC?

need for this medicine.

It's up to Tallahassee now to make Florida proud and implement the will of the 71 percent.

Cynthia Brewer

Midwest Love

I felt the need to write and thank you, High Times. I've been smoking for over 30 years now. I remember hearing about the Cannabis Cup in Amsterdam and it was always a dream of mine to attend but I could never quite make it. But I just learned that you're bringing the Cannabis Cup to Michigan and I can't wait to go. As a Midwesterner on a fixed income, I'm honestly thrilled that you are hosting a Cup in this region. Obviously Colorado and California get most of the headlines but the Midwest loves weed too and I'm personally very excited to witness a Cannabis Cup in the state of Michigan. I'll see you in Clio!

Greg D.
Grand Rapids, MI

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Thanks Greg, we're glad you can attend. The Cup taking place this June 24-25 will actually be our sixth in the state of Michigan and we love returning to the city of Clio every year.

Ever Stronger Strongest Strains?

Every year I look forward to your "Strongest Strains on Earth" feature and this year (the May 2017 issue of *HT*) did not disappoint. You report that Godfather OG came in at 34.04% THC at your Southern California Cup. My question is, do you think we'll ever see a strain top 40% THC? There has to be a limit, right?

Steve W.
Sacramento, CA

This is an excellent question and one we have asked here at *HT* many times. Specifically, I do think we will eventually see THC levels around 40 percent, but I also think that is probably the maximum acceptable levels. After that, we really need to scrutinize lab practices and start to standardize the procedures and protocols used in testing

cannabis. After all, there needs to be a ceiling—a bud obviously can't be 70 or 80 percent THC.

A few years back we asked Dr. Donald Land from Steep Hill Lab in Berkeley, CA the same question and he responded: "To be sure, one must first question the validity of the [high] test results. The cannabis testing industry is littered with labs that are not qualified to provide accurate results, or worse, intentionally manipulate results to appear higher than they truly are. That being said, trichomes are secretory glands, not unlike salivary glands or mammary glands in mammals. When trichomes produce cannabinoids they are secreted into the trichome heads and are not circulating or affecting the rest of the plant's biochemistry. I predict, now that we have better, more accurate testing, that diligent breeders will achieve even higher THC production in the future. From the range of values observed at our lab, values of THC-A in the low-to-mid 30 percent range and THC values in the mid-to-high 20 percent range are possible, but relatively rare at present."

Maybe the question we need to start asking is, just how high of a concentration of cannabinoids can be secreted and stored in a single trichome? Maybe then we can start to really ascertain just how realistic it is to see some of these results hovering in the low-to-mid-30s when it comes to THC potency. —Nico Escondido



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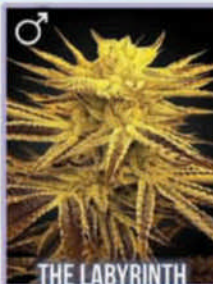
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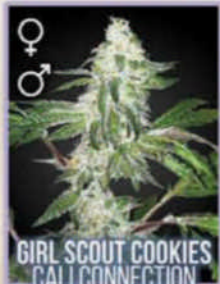
THE LABYRINTH
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GREEN CRACK CBD
HUMBOLDT SEED ORG.



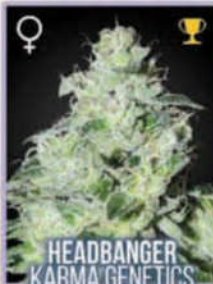
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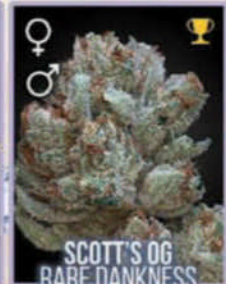
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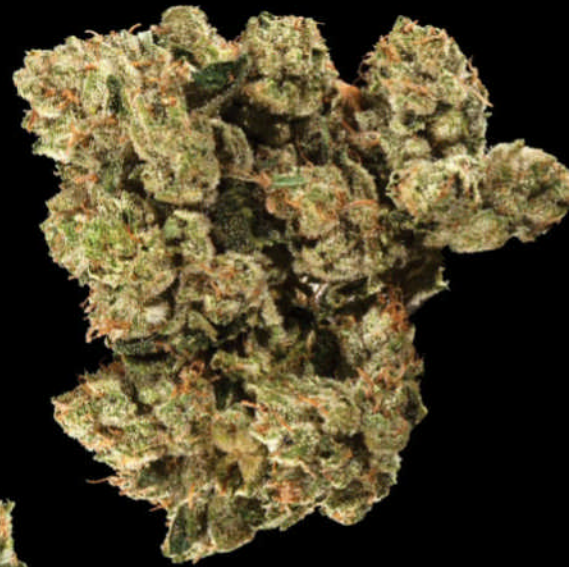
SOCAL WINNERS The 2017 SoCal High Times Cannabis Cup in San Bernardino produced some of the best entries we've seen! Feast your eyes on the top flower entries from this incredible Cup. Find all the winning strains, concentrates, edibles, topicals and more on page 52. *Photos by Justin Cannabis*



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August 2017 *High Times*

SUNNY DAZE AND LIT NIGHTS IN SOCAL High Times returned to one of our favorite Cannabis Cup venues—the NOS Events Center—for three weed-filled days of fun. The flowers were flowing, the dabs were plentiful and smoke was in the air. Then at night, the stars came out. Read Danny Danko's account of the 2017 SoCal Cannabis Cup on page 45. *Photo by Dale Shirley*

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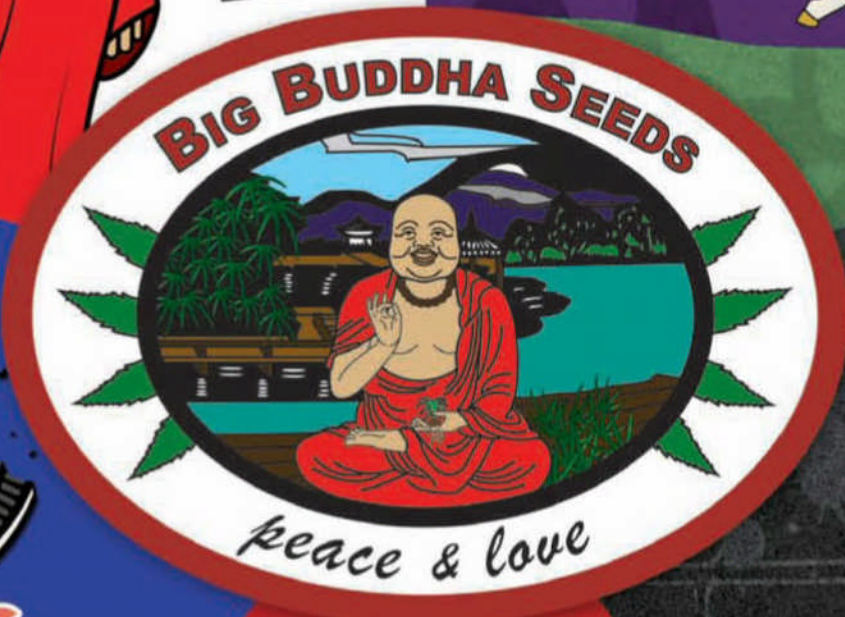
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Highwitness News

**Farewell,
David Peel
1942 - 2017**



Style

High Lights

Bask in the glow of this LED cannabis lamp / irie conversation piece that sits in a clay pot. p.30



Entertainment

Mystic

Arbouretum frontman Dave Heumann opens up about the new album and being a "night toker." p.32



(Left to Right) Earl Blumenauer, Jared Polis, Dana Rohrabacher, and Don Young

Strange Bedfellows Brought Together by Weed

Although there's little cooperation in Washington these days, there is one thing uniting ideological enemies in a common cause—cannabis. *By Mike DiPaola*

Americans are a divided people, with a correspondingly divided government to represent them. Big-ticket legislation is rarely a bipartisan achievement anymore; just look at how many Democrats supported the recent Republican attempt to repeal the Affordable Care Act—zero. In this climate where representatives don't even pretend to play nice with their ideological enemies across the aisle, we have to wonder what will become of the cannabis revolution, the fate of which rests with these polarized pols.

There are ominous clouds on the horizon. President Trump has shown a penchant for appointing people to head

the very agencies they wish to destroy (see the Energy Department, the Education Department and the Environmental Protection Agency, among others). And while his attorney general, Jeff Sessions, has not vowed to abolish the Department of Justice, he is no friend of justice itself, at least insofar as it applies to cannabis. Sessions has voiced some very dumb and retrograde opinions on weed in the past. Example: "Experts are telling me there's more violence around marijuana than one would think, and there's big money involved."

Although the executive branch is hardly weed-friendly, there is now a

small faction in Congress devoting itself to protecting the legal weed industry—and, bucking the contemporary dysfunction in Washington, it's a bipartisan effort. The Congressional Cannabis Caucus was launched in February by Democrats Earl Blumenauer (Oregon) and Jared Polis (Colorado) and Republicans Dana Rohrabacher (California) and Don Young (Alaska). These core four represent states that have already legalized pot; now they're looking to protect the hard-fought gains it took to get there.

"We will be trying to do everything we can to keep the momentum going that we've established over these last four or five years that has seen great progress on this issue," Rohrabacher declared at the caucus launch.

One would think that the great progress itself would be enough to protect the movement. There are now 44 states that

« have enacted laws to permit cannabis consumption to some extent, and around 95 percent of the US population lives in a state or territory that has accepted and codified weed use.

Building on these gains, the caucus's first order of business is the introduction of HR 975, the gist of which is spelled out in its name: the Respect State Marijuana Laws Act of 2017. The caucus members are well aware that if weed-friendly jurisdictions are going to attract votes and support from conservative members, they will have to appeal to the sacrosanct conservative principle of states' rights.

In a weird way, this anti-federalist sensibility is akin to the populist appeal of Donald Trump, whose (bogus) promise to "drain the swamp" is in tune with citizens across the land who want Washington to butt out of their lives. This is especially true for caucus member Don Young's red-state constituency. "Alaska voted to legalize it—pretty large margin—and I believe in states' rights. And the federal government should stay out of it, period," said Young at the launch.

Young is so cool now, he got a mention on *Last Week Tonight With John Oliver*. "If an 83-year-old Republican from Alaska has come around on this issue, then it's probably time for our laws to

This anti-federalist sensibility is akin to the populist appeal of Donald Trump, whose (bogus) promise to "drain the swamp" is in tune with citizens across the land who want Washington to butt out of their lives.

catch up," quipped Oliver, who featured a long segment on marijuana in April.

We are also seeing some positive action outside the caucus. Republican Tom Garrett of Virginia recently introduced a bill to decriminalize cannabis at the federal level, perhaps in response to Attorney General Sessions, who said at his confirmation hearings, "The US Congress made the possession of marijuana in every state—and the distribution—an illegal act. If that's something that's not desired any longer, Congress should pass a law to change the rule." Good thinking, Jeff!

Garrett's bill, HR 1227, or the Ending Federal Marijuana Prohibition Act of 2017, would in effect take Sessions's DOJ out of the picture. Specifically, it would remove herb from the federal Controlled Substances Act, thereby resolving federal and state conflicts and going a long way toward making life easier in states that have already gone green. "Virginia is more than capable of handling its own marijuana policy, as are states such as Colorado or California," Garrett stated at

the bill's introduction.

What puts the strange in these bedfellows is that the bill is identical to one introduced by Bernie Sanders in 2015. The progressive Vermont senator's bill attracted no co-sponsors or co-signers at the time; Garrett's bill is co-signed by Democrat Tulsi Gabbard (Hawaii) and has the support of the new canna-caucus members. "Rather than actually helping people," Gabbard declared at the bill's introduction, "our current laws are turning them into criminals, forever impacting their future and the future of their families."

Gabbard went on to point out the disconnect between state and federal laws and the squeeze it's putting on everyday commerce, particularly because of the banking difficulties faced by honest and legal ganja businesses. And it is there—states' rights and commerce—where conservatives and progressives can hold hands across the aisle, passing the necessary legislation and perhaps the occasional joint. 🌿

HIGH FIVE

Help Is On the Way

As the research continues, the list of conditions that can be treated with cannabis continues to grow.

By Mark Miller



Autism

As profiled by *philly.com* in April, former teen mall stoner turned "canna-mom" Erica Daniels righteously defends administering a cannabinoid spray to her 12-year-old son Leo, who is severely autistic and unable to communicate significantly. Cannabis has dramatically improved Leo's life and well-being, with no negative side effects. Erica has since established a nonprofit called *hope4Leo.org*.



Fibromyalgia

This disorder is characterized by widespread musculoskeletal pain, with symptoms like fatigue, numbness and tingling. Recently, OWC Pharmaceutical Research delivered a promising presentation at a forum held in the European city-state of Monaco on the human endocannabinoid system and cannabis, highlighting the potential benefits to fibromyalgia patients using compounds like CBD in pain management.



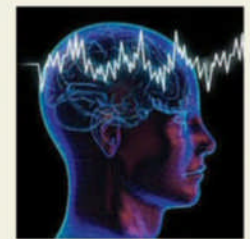
Eczema

A meta-analysis conducted by researchers at the University of Colorado and published in the *Journal of the American Academy of Dermatology* determined that pharmaceuticals containing cannabinoids could prove effective against eczema (also called dermatitis), an inflammation of the skin. In one of the studies cited, cannabinoid-based creams completely eliminated severe itching in over a third of the patients who applied it twice a day for just three weeks.



Lupus

The use of cannabis to treat this autoimmune disease, which spreads inflammation throughout the body, even into the brain, has been recognized by the Hawaii State Legislature. Lawmakers included it as one of the qualifying conditions for medical cannabis use in Senate Bill 174, which passed in April 2017. Cannabinoids reduce the inflammation caused by lupus along with its associated pain.



Parkinson's Disease

The Institute of Cannabis Research at Colorado State University, Pueblo, hosted a conference that included the latest developments in the cannabidiol (CBD) treatment of Parkinson's, the neuro-degenerative disorder. A study published in the October 2016 *Journal of Parkinson's Disease* concluded that medical cannabis was effective in treating both the motor and non-motor symptoms of the disease as well as slowing its progress.



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Pot Czar Declares Weed the “Most Dangerous Drug”

In the midst of a whole bunch of tough talk on cannabis from the Trump administration’s lineup of old-timey prohibitionists, the nation’s “marijuana czar” (yes, we have a marijuana *czar*) weighed in with his own idiotic take.

Ed Shemelya, a former Kentucky state trooper, recently told a crowd of 35 people gathered at a church in Beloit, Wisconsin, that marijuana is “the most misunderstood and dangerous drug on the market” because young people view it as safe. He also called pot “a generational nightmare” before grimly recycling our favorite anti-cannabis trope: “Today, marijuana isn’t what it was 10 years ago.”

While all of this is the usual prohibitionist bullshit, it’s noteworthy because Shemelya is the longtime director of the National Marijuana Initiative (NMI), which operates under the federal Office of National Drug Control Policy.

Of course, medical case studies overwhelmingly confirm that cannabis is one of the most benign and beneficial substances on Earth. But what else would you expect to hear from a man who claims that life-threatening pot overdoses are “an everyday occurrence in Denver”?

Canadian Celebs on Legal Marijuana

Canada is fast becoming a leader in cannabis-law reform, with nationwide legalization set to take effect on July 1, 2018, according to Prime Minister Justin Trudeau. In anticipation, this past April, *Billboard* featured an array of quotes—along with suggested strain names—from over two dozen Canadian musical artists discussing the prospects of legal weed in the Great White North.

Rush, arguably Canada’s greatest band, was represented by bassist Geddy Lee and guitarist Alex Lifeson. Lee came up with the legit-sounding “Lerxst Kush,” derived from Lifeson’s nickname. Alex did his bandmate one better with “Lerxst Couch,” a strain that Lifeson said possesses the medical ability to “cure boredom.”

Singer-songwriter Sarah McLachlan opined, “It’s great that [cannabis] is being legalized. Legalized, standardized, it’s going to be taxed. Think of the music programs we could re-establish in schools.”

STUDY: MARIJUANA COULD SAVE MEDICAID



Not only will legal weed soon make billions of dollars—it can save billions as well. An April 2017 study published by *Health Affairs* predicts that legalizing medical marijuana nationwide would save the federal Medicaid program over \$1 billion annually in prescription-drug expenditures.

Basing their estimates on quarterly data derived from medical cannabis states for the years 2007-14, the researchers found that Medicaid saved \$475.8 million. If all 50 states had legalized medical pot in 2014, the prescription-drug savings would have been a staggering \$1.1 billion.

According to the study, legalizing medical marijuana nationwide would lead to an 11 percent drop in pain meds, a 17 percent drop in nausea medication, and significant drops in both depression and anti-seizure medicines.

In the wake of President Trump’s threatened decimation of federal programs like Medicaid, such savings would be critical to ensuring that more Americans receive proper health care.



David Peel
August 3, 1942 - April 6, 2017

David Peel, RIP

David Peel, the acclaimed New York City street musician and pro-marijuana gadfly who once counted John Lennon among his friends, will puff no more: He passed away in Manhattan on April 6 after suffering a heart attack at the age of 74.

Peel—born David Michael Rosario—and his band, the Lower East Side, developed a proto-punk attitude toward rock music starting in 1968, taking a raw, political element to the streets. His 1968 album *Have a Marijuana* featured songs like “Here Comes a Cop,” “Up Against the Wall,” and the sing-along cannabis song “I Like Marijuana.” After signing with Apple Records, Peel recorded his 1972 album *The Pope Smokes Dope*—produced by Lennon—which mocked religious hypocrisy.

Peel’s colorful career ranged from appearing with Lennon and Yoko Ono at the historic “Free John Sinclair” rally in Ann Arbor, MI in December 1971, to jamming with Occupy Wall Street activists 40 years later, to living long enough to see legal weed become a reality in America. Peel was a friend of *High Times* and often played softball with the *High Times* Bonghitters. He was as unique a human being as you’re likely to meet. Rest in peace, David.



Aaron Hernandez and Synthetic Pot

The lurid April 19 prison-cell suicide of NFL star turned killer Aaron Hernandez took yet another turn when it was reported by *Newsweek* that an autopsy of the former New England Patriots tight end revealed the presence of K2, a synthetic form of marijuana.

However, days after the story broke, officials disclosed that Hernandez’s toxicology report showed he did *not* have K2 or any other illegal drugs in his system when he took his own life.

Inmates at the Souza-Baranowski Correctional Center in Lancaster, Massachusetts suggested that Hernandez, 27, may have smoked K2 the morning he hanged himself and officials were investigating whether Hernandez had used synthetic pot before his death. Police searched Hernandez’s cell, specifically looking for paper soaked with K2, a common method of smuggling the drug into prison.

Before his arrest and conviction for the 2013 murder of Odin Lloyd, Hernandez’s use of actual weed was well documented, even during his pro career.



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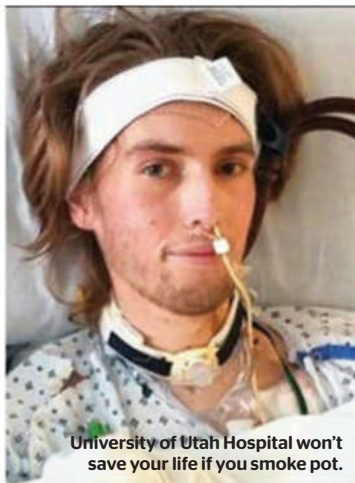


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University of Utah Hospital won't save your life if you smoke pot.

Man Denied Lung Transplant Over Pot Use

Last November, 19-year-old Riley Hancey suffered a severe case of pneumonia that collapsed his lungs. He was told he needed a double-lung transplant to save his life. However, Riley had also smoked some pot with friends that Thanksgiving, prior to falling ill. The trace amounts of THC found in his system were enough for the University of Utah Hospital to deny Riley the transplant. According to Riley's father, Mark Hancey, a University of Utah doctor told the teen, "You will die. You better get your affairs in order."

After the University of Utah gave Riley a death sentence, his family frantically searched for a hospital willing to save their son's life even though he once smoked a small amount of marijuana. An agonizing two months later, the University of Pennsylvania agreed to do the transplant, and Riley was flown out.

Sadly, Riley died from complications following the transplant surgery on April 22. He was 20 years old.

University of Utah officials attempted to justify the absurd decision to deny Riley a transplant because of his marijuana use by claiming that they were merely following international guidelines. "We do not transplant organs in patients with active alcohol, tobacco or illicit drug use or dependencies until these issues are addressed," a hospital spokeswoman said.

Unfortunately, for many patients, the University of Utah seems content to allow these issues to be addressed by death.

POT REHAB OUTPACES OPIOID TREATMENT



According to newly released data, the number of cases of "marijuana treatment" for failed THC tests is so over-prioritized in Philadelphia that the city is having difficulty arranging treatment for opioid addicts.

The findings are based on data assembled via the city's Department of Behavioral Health and Intellectual disability Services, as reported by *philly.com*.

From 2011, the year that heroin deaths spiked sharply in Philly, through 2015, over 20 percent of the admissions to treatment centers were for cannabis use—and in some of those years, the people admitted to pot programs outnumbered those treated for deadly heroin addiction.

In 2014, the city spent \$28 million on 8,363 treatment admissions, with 1,844 being for marijuana, while just 1,764 were for heroin.

According to national data, 60 percent of the people in pot "treatment" programs are forced to attend, usually as a condition of probation or parole.

Macabre smuggler busted with a casket full of cannabis.

Reefer royalty



Coffin Chronic

Border Patrol agents near the town of Tombstone, Arizona, became suspicious of a man stopped while driving a shiny white hearse after he couldn't keep his story straight. Asked about the "nature of the trip," the 28-year-old driver, whose name has not been released, was unable to give a satisfactory answer—like, say, "funeral."

Citing inconsistencies in the driver's story, agents called in the K9 unit, and a drug dog detected a suspicious odor. Agents then took the highly uncomfortable step of opening the casket in the back of the hearse. A powerful smell emerged from the coffin, but it wasn't emitted by a recently deceased person. Instead, it was from the manure that had been spread around the coffin to mask the odor of the 67 pounds of weed secreted there.

The driver, a US citizen, was arrested by Customs and Border Protection agents on suspicion of narcotics smuggling.

Pounds of Pot Sent to Pastor

A pastor in Yeadon, Pennsylvania received an unexpected gift this 4/20 when UPS delivered a package containing 10 pounds of marijuana. The high-quality cannabis was shipped from Sacramento, CA to the pastor's home in Yeadon, a Philadelphia suburb—either by mistake or for a clandestine pickup by persons unknown.

Naturally, the pastor panicked and phoned Yeadon police upon opening the package. The local police chief described the unidentified pastor as "traumatized," fearing a run-in with someone seeking the weed. "She is very upset... and she feels this person or persons who were going to pick this package up might come back," Chief Donald Molineux said.

It's safe to say that the frazzled pastor did not view this delivery as a gift from God.

Yeadon police are currently working with UPS to identify the sender through surveillance videos. They currently have no suspects.



A pastor passed on a package of potent pot.

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TIME-HONORED

Hmbldt vape pens were recently named one of the 25 best inventions of 2016 by, of all places, *Time* magazine. These sleek pens contain cannabis oil sourced from sustainable farms in Humboldt County. Hmbldt touts its pens as "strain-agnostic"—which means that rather than offering specific varieties, the pens are engineered and named for the results they induce: Passion, Arouse, Relief, Calm, Sleep and Bliss.

Hmbldt pens smartly guarantee low, consistent doses for patients monitoring their cannabis intake. When you inhale, the pen delivers 2.25 milligrams of medicine, vibrates softly to let you know your dose is complete, and shuts off automatically. The pens are also ideal for novice cannabis consumers—no rolling necessary. Available in California. hmbldt.com



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Dave Heumann gets crafty.

“I love those experiences where it feels like I’m communicating with myself and the universe at the same time.”

regimen of tai chi and a ready supply of specialty herbal teas, Heumann makes no secret of his fondness for cannabis.

“I’m a night toker,” he says, “which for me is pretty much exclusively vaping at this point. I like to vape, then work on music—playing guitar, editing sounds, coming up with compositions. Sometimes I’ll get deep in the rabbit hole with an edible, and before I know it, hours have gone by and I’ve come up with a richly detailed soundscape where I don’t know where it’s going to go.”

His preference for *sativas* or *indicas* alternates with the particular task at hand. “It’s usually *indica*,” Heumann says, “but it varies, because sometimes *sativas* will give me the creative boost that *indicas* don’t. There are really broad differences between certain *sativas* and certain *indicas*. I don’t react that well to Blue Dream, whereas something like Super Silver Haze is really nice for me, for my kind of biochemistry.

“I just love those kinds of experiences where it feels like I’m communicating with myself and the universe at the same time—which is always a lot more fun and more productive with the aid of some good cannabis.” ✨

Into the Mystic

Arbouretum rides again. *By John Payne*

If you half cock your head, you’ll hear it: the beckoning tone of the spirit world. That’s a sound the truth-seekers of Arbouretum have been trucking toward over five albums since 2002—and judging by their latest, the revelatory *Song of the Rose* (Thrill Jockey), they’re getting real damn close.

The Baltimore band’s founder, guitarist-vocalist Dave Heumann, and his stalwart crew (bassist Corey Allender, drummer Brian Carey and keyboardist Matthew Pierce) grace the new tunes with an intensity of focus that reins in and deepens the hypnotic psych jams that characterized many of their previous albums. *Song of the Rose* achieves a genuinely anthemic music rooted in American and English folk and country strains, source

materials whose traditional lilting melodiousness is given a churning electric burn. In supremely deliberate, hard-hitting songs like the opening “Call Upon the Fire,” “Absolution Song,” “Fall From an Eyrie” and the monumental title track, Heumann’s mystic vision suggests purple hills on the horizon, a full moon high above, a flickering flame surging in the blood. Images like these are given palpable effect via densely interstitched guitar, keyboard and vocal lines.

The album’s limited-palette, deceptively unflashy songs easily seep into the body and mind. Heumann rightly figures that listeners accompanying Arbouretum on this spiritually motivated trek can appreciate how his band’s beefy, iron-butt sound—drizzled with fuzz, then cranked to 11—builds on and mutates

any and all of the familiar classic-rock tropes. Ideally, their carefully chosen tones will resonate with the songs’ somewhat oblique lyrics, which, when examined, reveal common themes of nature, redemption, balance and enlightenment.

“I want the listener to be able to hang their own thoughts on the lyrics,” Heumann says. “I don’t ever want to be telling anybody what to think or hit anybody over the head with ideas. Let’s give the listeners a bit of credit for their own smarts.”

Along with a sturdy



Heumann Behavior

“If we’re on tour and doing this stuff every night, then I’m like, ‘Well, maybe I’ll take a couple puffs.’ But I’m easily distractible, and it’s always kind of a struggle remembering the lyrics. If I were just playing guitar, I’d get baked before every gig.”

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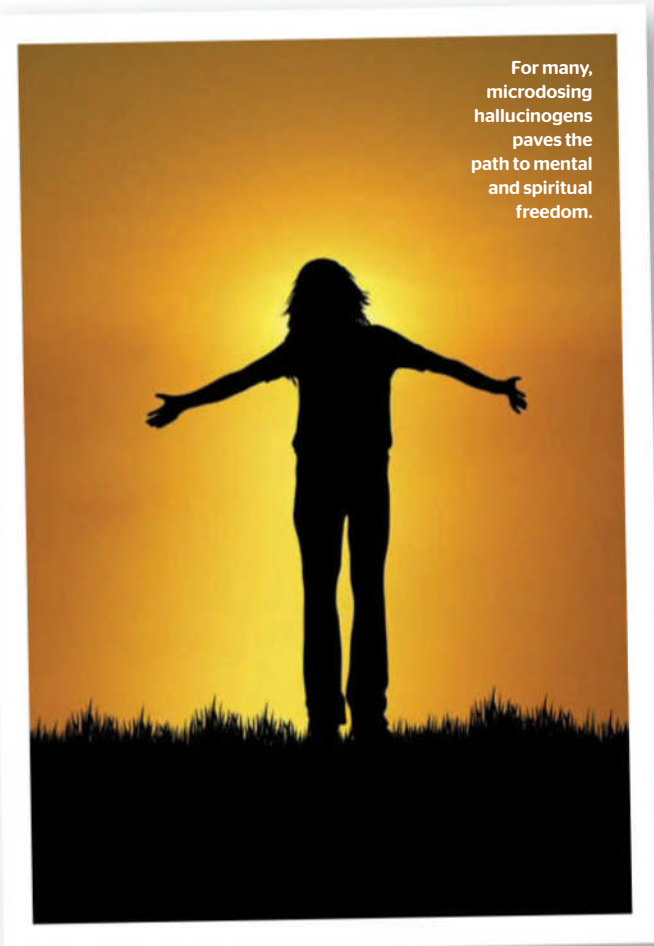
In *A Really Good Day*, author Ayelet Waldman finds calm at the center of the storm with an unlikely but increasingly popular drug therapy. The downside? It's illegal. *By Tommy Smith*

Ayelet Waldman has a lot going on. On the phone with *High Times*, the mystery-author-turned-memoirist speaks at the rapid-fire pace of a mind that has plenty to say, all of it at once, on a subject suddenly near and dear to her heart: the benefits of taking LSD. The matriarch of her household—which includes her husband, the novelist Michael Chabon, and their four children—Waldman simultaneously wrangles her brood and prevents the family dog from walking through the broken pieces of an heirloom butter dish. But through it all, she keeps snapping back to the topic at hand.

“It was very different from when I was prescribed Adderall,” Waldman says. “On Adderall, I could focus, but it wasn’t like I had any massive creative insights. I just got my work done with a kind of laser focus. With the LSD, I noticed a real difference. It was incredible: LSD causes different parts of your brain to communicate in different ways, which explains why it enhances creativity.”

A Really Good Day, Waldman’s most recent memoir, is a blow-by-blow account of the month she spent microdosing with LSD. Though it occasionally falls into the trap of Wikipedia-ing this revolutionary subject, Waldman’s book is an engrossing read, especially as it details the author’s emotional and psychological changes.

The prose thrums with simple urgency when she describes the shifts in her relationship with Chabon. During a particularly difficult period in her life, a combination of bipolar disorder and inborn personality traits led Waldman



For many, microdosing hallucinogens paves the path to mental and spiritual freedom.

“I, frankly, as a parent, would be much happier giving my child a microdose of LSD than I would those stimulant drugs they have to take to combat their ADHD.”

to regularly pick fights with her husband. But by Day 17 of her LSD experiment, the regimen allowed her to externalize her personal issues so that she could return to physical intimacy with him.

“Today, when my husband was eating his breakfast,” Waldman writes, “I walked up behind him, slipped my arms around his shoulders, kissed him, and said, ‘I know you love me.’ I left it at that. Even inside my mind.”

Reflecting on the experience from the bustle of her Berkeley home, Waldman attributes her revelations to the concentrated mind-state that LSD helped her achieve. “It wasn’t so much the drug; it

was the process of writing about the experience, thinking about it, and thinking about my kind of therapy in a new way,” she says. “What the microdosing did was give me the capacity to use the therapeutic tools that then ended up making me feel better.”

The long-lasting positive effects, even after she stopped taking LSD, have led Waldman to speculate about other possible applications.

“I, frankly, as a parent, would be much happier giving my child a microdose of LSD than I would those doses of stimulant drugs they have to take to combat their ADHD. That’s a really radical thought, and not one that’s gonna happen anytime soon,” Waldman adds. “And I’m not saying to parents, ‘Go out and give your kids LSD’—absolutely not saying that. Because there are a lot of good reasons why they shouldn’t take it, the most important being that it’s illegal.”

So what’s the best first step toward making microdosing legal?

“Getting rid of Donald Trump,” Waldman says. “You want to end the Drug War? Don’t elect monsters. You want to end overincarceration? Don’t elect retrograde, racist, xenophobic, misogynist monsters. Super simple.” ✨

Ayelet Waldman’s A Really Good Day, published by Knopf, is now available in hardcover and digital.



Waldman vs. the War on Drugs

Given the appointment of hardline drug warrior Jeff Sessions to head the Department of Justice, Waldman doesn’t see much hope for ending the Drug War. “If I were in the legal cannabis business right now,” she says, “I would be scared out of my mind.”

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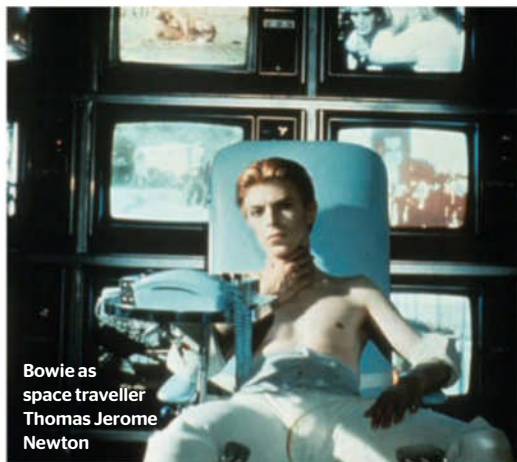
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Paradise Seeds Genetics give great results, as seen on the picture above of Daya Foundation's huge plantation, a licensed medical cannabis producer in Chile.



Bowie as
space traveller
Thomas Jerome
Newton

The Illuminating Alien

David Bowie's sci-fi trip.

When director **Nicolas Roeg's** *The Man Who Fell to Earth* first hit theaters in 1976, critic Roger Ebert gave the trippy, sexy sci-fi flick—starring David Bowie as the extraterrestrial of the movie's title—a mixed review. Years later, Ebert upgraded his assessment in order to note sadly that “projects this ambitious are no longer possible in the mainstream movie industry.”

Roeg makes films (*Performance*, *Don't Look Now*) for the smart stoner. This 40th-anniversary Blu-Ray/DVD/digital-HD combo gives 21st-century fans a choice of formats, a smorgasbord of



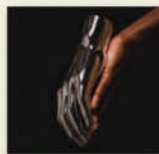
The Man Who Fell to Earth
Nicolas Roeg
(Lionsgate)

Various Artists
The Man Who Fell to Earth
(UMe)

bonus material (including an interview with Bowie), a booklet and a poster. At the heart of these gifts is the movie itself: Repeat viewings continue to unveil different levels, making for the challenging entertainment that Ebert praised. Not everything is obvious—viewers are often forced to interpret the events in the film, thus expanding their consciousness in the process.

The big news for the movie's fans is the long-awaited release of its score. (A sumptuous two-CD, two-LP box set with hardcover book is also available.) Bowie didn't write it, as had been planned, so John Phillips of the Mamas and the Papas supplied most of the music: a proto-Americana potpourri that perfectly suits the New Mexico landscape where the film was shot. (Roeg wanted “twangy”—and he got it.) There are experimental pieces from Japanese composer Stomu Yamashta and source music from the Kingston Trio and Louis Armstrong. In the film's context, we hear the latter through Bowie's oddball from another planet, making the familiar strangely alien—a powerful part of the trip. *Michael Simmons*

MUSIC RECOMMENDATIONS

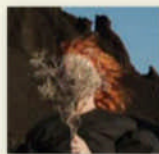


Actress
AZD
(Ninja Tune)

➤ The fifth release from London-born electronic artist Actress shares the hypnotic simplicity of Detroit's deep-house pioneer Mr. Fingers but adds a messier mix, full of crunchy glitches and subliminal melodies. In the frenetic “Cyn” and the show-stopping “X22RME,” the album often sounds like a confused robot

searching for its consciousness, with bits of human voices thrown in. But *AZD* also shines when stripped of its thumping house in the gorgeous “Nimbus” and the meditative drone of “Faure in Chrome,” solidifying Actress in the pantheon of great modern electronic musicians.

Tommy Smith



Goldfrapp
Silver Eye
(Mute Records)

➤ Do you like songs in which churning rhythms weave beneath computerized voices singing soaring melodies over fist-pumping dance beats? If so, Goldfrapp's latest has plenty. “Become the One” and trip-hop throwback “Moon in Your Mouth” pave new pathways for London's hardcore electronica

answer to Björk. Goldfrapp's premiere album featured unadorned vocals distorted through lush synthsapes. With each new release, the duo's sound has become more complete. *Silver Eye* finds human and machine fused—but like cyborgs fucking, there's an undeniable beauty here. *Tommy Smith*



Mark Lanegan Band
Gargoyle
(Heavenly Recordings)

➤ “Honey just gets me stoned, just gets me stoned.” So sings Mark Lanegan on “Beehive,” one of the many excellent tracks on the former Screaming Trees vocalist's latest album. With guest appearances by Josh Homme (Queens of the Stone Age), Greg Dulli (Afghan Whigs) and

multi-instrumentalist Duke Garwood, *Gargoyle* runs the gamut from '60s pop melodies and moody morphine ballads to electronic grooves and modern spirituals. By the time you get to the desperate sundown of “Goodbye to Beauty” and the pulsing closer “Old Swan,” you'll be feeling pleasantly stoned yourself. *J. Bennett*



Ryuichi Sakamoto
Async
(Milan)

➤ Ryuichi Sakamoto, the Yellow Magic Orchestra techno-popper turned acclaimed film-score composer (*The Revenant*), has proved a master at building bridges across disparate musical styles. In his probing endeavors, the gifted melodicist pursues an elusive symmetry balancing music

and noise—an arcanelly beautiful world that his first solo album in eight years explores with tear-inducing solemnity. The entrancing sparseness of *Async* weaves together acoustic piano, orchestra and electric sounds from digitally manipulated sources like household objects, sculpture and nature. *John Payne*

BOOK RECOMMENDATIONS



First Thought: Conversations With Allen Ginsberg
Michael Schumacher
(University of Minnesota Press)

➤ The title of this collection of interviews with Beat poet Allen Ginsberg is taken from his line “First thought, best thought”—confirmed by his many hours of cannabis-induced free association. Ginsberg was “mad to talk” (to paraphrase pal Jack Kerouac). The subjects covered here are

eclectic, but the pursuit of consciousness expansion is a constant. (Ginsberg's 1966 testimony to a Senate committee on the value of LSD was way ahead of its time.) With cannabis legalization on the rise, Ginsberg's once-subversive utterances are now becoming increasingly mainstream. *Michael Simmons*

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The Bloom Is Off the Rose for Flower's Popularity

New data indicate that medical and adult-use cannabis consumers are increasingly opting for non-flower products.

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

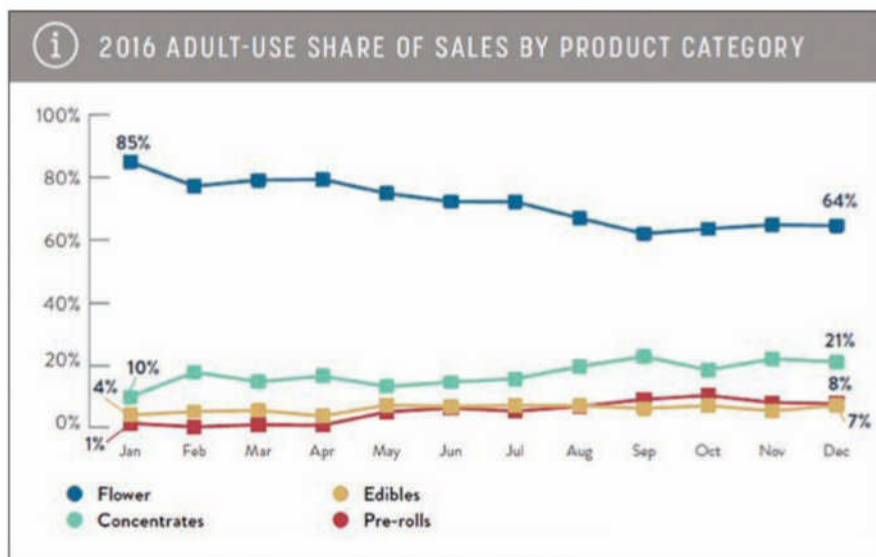


DESPITE THE BURGEONING demand for legal cannabis, whether for medical or adult use, trying to make money from it remains a tricky proposition. Its unique semi-legal status (tax code 280E), plus the challenges of branding and differentiating when advertising opportunities are limited, all conspire against entrepreneurs, and dispensary owners in particular. Enter Baker, a Denver-based software company that helps more than 300 dispensaries in 10 states through its smart applications for online ordering, customer retention and personalized messaging.

Through a research partnership, New Frontier Data has been able to gauge online ordering habits and loyalty data collected by Baker in key US markets, including California, Oregon, Colorado, New Mexico and Washington, as well as the Canadian provinces of Ontario and British Columbia. Notably, these data include the demographics of those consumers who account for 80 percent of the dispensaries' overall revenue and represent the "power users"—i.e., the most influential group in driving demand and shaping consumer trends.

Among the trends noted in New Frontier Data's recent "Cannabis Industry Annual Report: 2017 Legal Marijuana Outlook" is the declining relative popularity of flower against other product types. Certainly, cannabis flower remains the single largest source of revenue for dispensaries. In medical markets, for example, flower makes up 47 percent of total sales volume, but it accounts for 71 percent of total revenue generated. In contrast, pre-rolled joints account for 13 percent of total sales volume but only 2 percent of total revenue.

Even so, the fact is that non-flower products are eroding flower's share of the market. In both the medical and adult-use markets, the share of flower sales fell from nearly 90 percent in early 2016 to just under 65 percent by year's end. The decline was different in both markets: For medical use, the demand



Non-flower products are eroding flower's share of the market. In both the medical and adult-use markets, the share of flower sales fell from nearly 90 percent in early 2016 to just under 65 percent by year's end.

for concentrates grew from 10 percent to 27 percent of sales by year's end, whereas for adult use, concentrates only grew to 21 percent. Yet the demand for pre-rolls among adult-use consumers grew significantly, from 1 percent to 8 percent of sales. In the medical market, pre-rolls accounted for only 2 percent of sales by year's end.

Concentrates are expected to continue to erode flower's market share throughout 2017, with the trend more pronounced in the medical market. In the adult-use market, pre-rolls are expected to continue to perform well as the quality of flower in them improves, and as more producers create distinct pre-roll brands with high-quality packaging and wide choices in flower types.

Also, adult-use consumers were far more likely than medical patients to purchase flower in 1/8-oz packages (61 percent versus 39 percent), while medical patients were more likely to purchase

1-oz packages than adult-use consumers (19 percent versus 2 percent). Those patterns signal differences in how medical and adult-use consumers prefer to purchase their cannabis: Patients using specific phenotypes to address a medical condition are more likely to purchase large quantities and to order more regularly than adult-use consumers. Conversely, adult-use consumers preferred to buy in smaller quantities, giving them the flexibility to try out a range of different strains and to tailor their purchases to reflect various desired outcomes or experiences.

With flower's share of the market continuing to decline, concentrates are now the second-largest category among both types of consumer, while pre-rolls are experiencing far stronger growth in the adult-use market.

As the legal cannabis industry grows, variety remains the spice of life—as well as the key to success. 🌿

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(Blueberry Kush)
"Strong, earthy smell. Good smoke but makes me lazy."
-Nashville, TN

(Three Kings)
"The best of Headband, Sour D and Kush. This smoke never disappoints."
-New York, NY

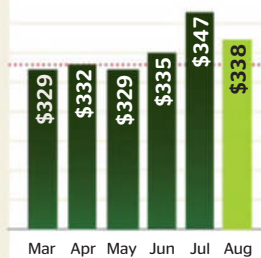
MARKET ANALYSIS

Prices by the ounce

All indices, with the exception of the Eastern Index, finished August below their previous month's average. The Eastern Index tied its year-high price at \$360 per ounce and finished above the Southern Index for just the third time in 2017. The US Price Index experienced the biggest drop this month, falling \$9 from its July average.

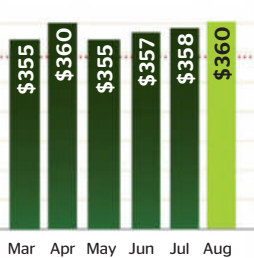
US Price Index

YTD Average: \$332



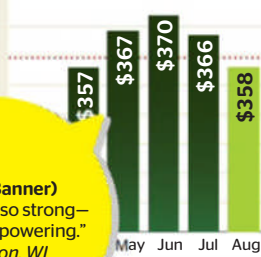
Eastern Index

YTD Average: \$353



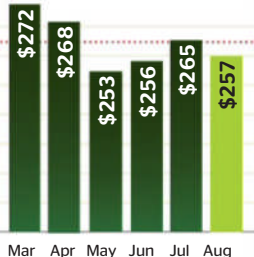
Southern Index

YTD Average: \$362



Western Index

YTD Average: \$265



(Bruce Banner)
"This stuff is so strong—almost overpowering."
-Madison, WI

TRANS HIGH MARKET QUOTATIONS

STATE	CITY	STRAIN	PRICE
ALABAMA	Birmingham	Grape Ape	\$360
ARIZONA	Phoenix	Platinum Kush	330
CALIFORNIA	San Francisco Santa Clara	Girl Scout Cookies Grand Daddy Purp	260 300
COLORADO	Denver Pueblo	Golden Goat Deadhead OG	320 200
CONNECTICUT	Hartford	East Coast Sour Diesel	380
FLORIDA	Miami Orlando	Northern Lights Skywalker OG	375 400
GEORGIA	Atlanta	Ghost Train Haze	380
HAWAII	Maui	Master Kush	360
ILLINOIS	Chicago	Headband	375
INDIANA	Indianapolis	Bubblegum	380
IOWA	Des Moines	Blue Dream	300
LOUISIANA	New Orleans	Gelato	400
MAINE	Auburn	Headband	200
MARYLAND	Baltimore	Sensi Star	380
MASSACHUSETTS	Boston Provincetown	Blue Dream Jillybean	360 380
MICHIGAN	Ann Arbor Detroit	Girl Scout Cookies OG Kush	350 360
MINNESOTA	Minneapolis St. Paul	Trainwreck Purple Haze	360 350
MISSISSIPPI	Oxford	Girl Scout Cookies	380
MONTANA	Helena	Guava Chem	320
NEVADA	Las Vegas	Godfather OG	380
NEW JERSEY	Hoboken	Durban Poison	380
NEW YORK	New York Queens	Three Kings Sunset Sherbet	380 400
NORTH CAROLINA	Raleigh	Master Kush	380
OHIO	Columbus	Purple Haze	360
OREGON	Portland	Chemdog	200
PENNSYLVANIA	Philadelphia	MK-Ultra	400
RHODE ISLAND	Providence	Tahoe OG	380
TENNESSEE	Nashville	Blueberry Kush	250
TEXAS	Austin Dallas	Sour Diesel Girl Scout Cookies	380 400
UTAH	Salt Lake City	G-13	360
VERMONT	Bennington	Platinum Kush	320
VIRGINIA	Richmond	Critical+	380
WASHINGTON	Seattle	Goji OG Death Star	260 250
WISCONSIN	Madison	Bruce Banner	380
INTERNATIONAL			
CANADA	Toronto Vancouver	Kosher Kush Grand Daddy Purp	\$C160 150
UNITED KINGDOM	Birmingham	Cheese	£160

High Times wants to know what you're smoking. Submit your strain information including location and price by the ounce to thmq@hightimes.com, or tweet us (#THMQ).

(Kosher Kush)
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-Toronto, Canada


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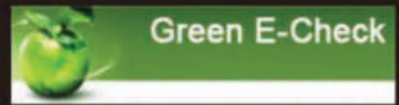
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Sunny Daze and Lit Nights in SoCal

High Times fired up San Bernardino with our 2017 Cannabis Cup, a celebration of all things pot that featured an amazing lineup of marijuana-infused events and smoked-out musical performances.

By Danny Danko. Photos by Dale Shirley



Day 1: California Dreaming

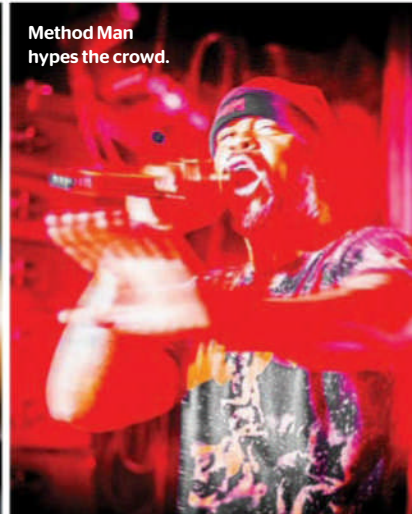
The festival kicked off on Friday, April 21, and the 420 vibe was still in full effect. Revelers lined up outside the National Orange Show event center waiting for their chance to get a head start on the weekend's entertainment. Upon entry, they were greeted with an assortment of activities, all designed to enhance the effects of the many forms of cannabis available within.

First things first: the weed and hash! Flowers, dabs and rosin were everywhere at the Cup, and attendees wasted no time taking advantage of the abundance. In the VIP area, the National Joint League kept busy, producing plenty of

An attendee admires the scent of some flowers.



Method Man hypes the crowd.



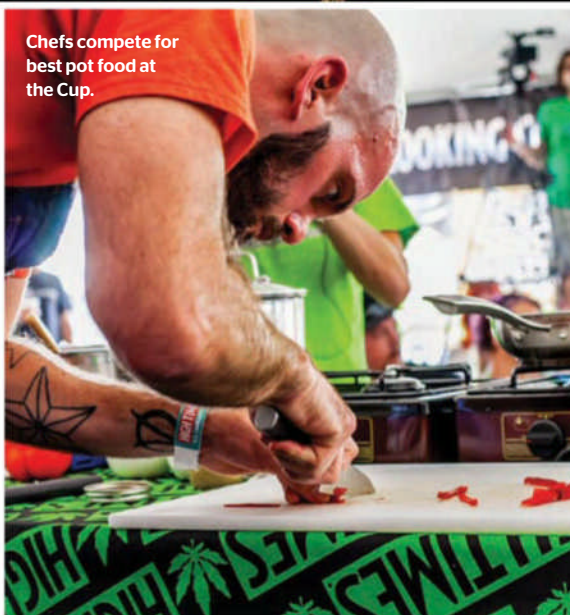
Free dabs were everywhere.



regular joints but also a variety of masterpieces. Joints and blunts of every kind were on display and smoked with the crowd.

As for hash oil, many booths provided free hits of their featured shatter, wax and crumble. "Sauce" seems to be the newest thing on the extraction circuit, and there were plenty of places to sample the sticky, tasty treat. The Solventless Experience tent featured live rosin-press demonstrations from Rosin Tech Products, and samples of flower and dry sift were squished for their essential oils and tasted by the masses. Among my favorite things to see at a Cannabis Cup are live pot plants, and it was exciting to behold the shipping-container grow unit filled with flowering buds from Trade Craft Farms. I remember the impact that my first glimpse of real, live marijuana plants had on me, especially the revelation that I could grow them myself. Hopefully, many of the attendees left cherishing their

Chefs compete for best pot food at the Cup.



own vision of personal cannabis cultivation.

Friday's seminars started with a discussion about responsible investing in the cannabis space. This was followed by a conversation among expert tincture-makers on how tinctures are created and what their many uses are. The talks concluded with a panel of military veterans discussing their service and the many ways in which medical cannabis can help them. Tears were shed by panelists and audience members alike as the vets talked about treating their PTSD, brain injuries and chronic pain with the healing herb.

The first evening of the Cup began with a great show from hip-hop artist A\$AP Ferg. This was followed by a raucous celebratory performance by Method Man and Redman. Damian "Jr. Gong" Marley closed out Friday with his unique blend of dancehall and roots reggae, which had people dancing the night away.

Day 2: Marijuana Fantasy Camp

Saturday began with some serious heat in the forecast and some serious weed and hash being consumed. The "Taste of Cannabis" competition, put on in the Edible Activation Area, pitted serious chefs against one another in the creation of delicious marijuana-infused foods. We've come a long way since the pot brownie, and the culinary expertise of the

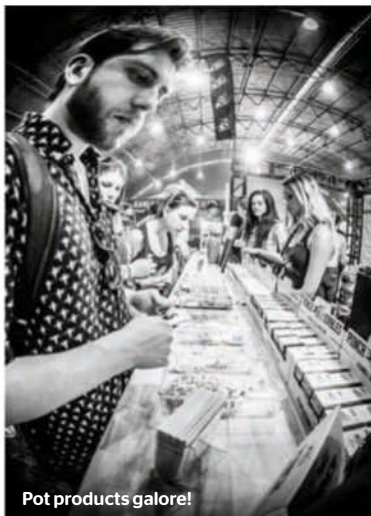
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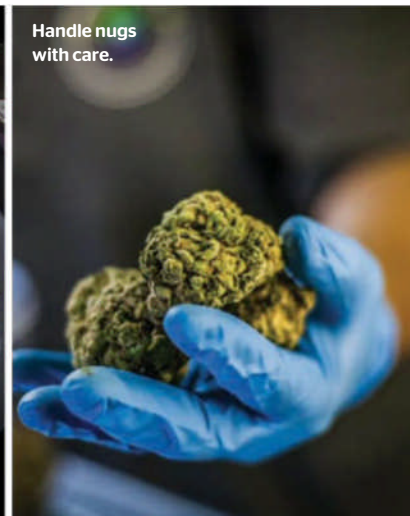
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Pot products galore!



A slab of concentrate



Handle nugs with care.

competitors was shown to brilliant effect.

Sol Distro presented a collaboration between Emerald Family Farms and New Frontier Brewing that handed out samples of delicious non-alcoholic beer imbued with cannabis. It was great to sample a beverage with the flavor of beer but the psychoactive properties of weed—a wonderful and healthier alternative to getting sloshed on booze.

Saturday's panels included a spirited discussion on the future of concentrates by Cannabis Cup competition coordinator Sean Black. Sean was also featured on my grow panel for beginners, along with Subcool, JJNYC and Dru West. The final seminar of the day, helmed by Dr. Dina and Rezwan Khan, highlighted how to get a job in the ever-changing marijuana industry.

In a bizarre yet strangely endearing performance by Corey's Angels, former child movie star Corey Feldman provided an avant-garde glimpse into his unique worldview. Chief Keef and Vic Mensa followed with some amazing hip-hop, then surprise guest 50 Cent came out and rocked the crowd with his many hits. Saturday night culminated with an incredible concert by the legendary rapper Nas, during which he spotlighted his poetic narrations of street life and professed his lifelong love for marijuana.

Day 3: The Awards and the Wu

As the third day of the Cup began, I figured I'd indulge myself with a free massage at the Topical Spa Activation Area. The kind people of Honey Pot provided the back rubs using their Cannabis Cup-winning Bear Balm and Bear Butter, and it all felt wonderful as it permeated my skin.

Feeling refreshed, I wandered over to the vape-pen clinic to check out the latest innovations in stealthy consumption as companies like Eureka Vapor, Pax, hmbldt and the Kind Pen exhibited their wares. We at High Times are excited by the many innovations that allow us to consume cannabis flowers and oils discreetly without sacrificing their potency, scent or flavor.

The seminars on Sunday commenced with my discussion on growing big with cultivation experts JB and R from Cannabiotix, Swerve from the Cali Connection, Mike from Moxie, and Skye from Smart Bee Controllers. Professional athletes Chris Kluwe and Mark Restelli



Jars of flowers on display



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Subcool (seated right) was honored with a lifetime achievement award.



Skaters ripping on the halfpipe



Advanced Nutrients representing

followed with an illuminating look into the world of sports and marijuana. A panel on how to best use social media in the cannabis world rounded out the forums.

Soon it was time for the all-important Cannabis Cup Awards Show. Before presenting the winners, High Times wanted to honor some of the leading innovators and brave pioneers of the pot community. Zach "Jesus Hands" Fernandez received our first Renegade Award for changing the famous Hollywood sign to "Hollyweed" on New Year's Day 2017 to celebrate the legalization of pot in California.

I had the distinct honor of giving the High Times Dr. Lester Grinspoon Lifetime Achievement Award to Subcool, breeder of TGA Seeds (Team Green Avenger) and a longtime contributor to the cannabis gene pool. Sub has bred multiple Cannabis Cup winners and Top 10 Strains of the Year, and in 2009, TGA was inducted into the High Times Seed Bank Hall of Fame.

After all of the awards were announced (see the winners' list on pg. 52), the rock band Lit graced the stage and threw it back to the '90s with their singular sound. The show closed with a raucous performance by the legendary Wu-Tang Clan. They took hit after hit of weed and played hit after hit of their iconic songs, and the crowd's energy was simply ecstatic. What a way to close out an incredible weedy weekend in Southern California!

Special thanks to Eureka Vapor, our presenting sponsor, as well as our premier sponsors: Advanced Nutrients, Atomik, Boundless Vapes, Cali Crop Doc, Cannabiotix, Cannasutra, FlavrRx, Gold Drop, Kushman Brands, Moxie, New Amsterdam Naturals, Point Loma Patient Consumer Co-op, Stoney LLC, the Cali Connection, the Green Doctors, Cali Plug, Nameless Genetics, Greenwolf LA, Trade Craft Farms and Stick E Vape. ✨

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HIGH TIMES

September 2016 Mark Stone

55

2016 S.T.A.S.H. AWARDS

OUR PICKS FOR GEAR OF THE YEAR

The High Times Cultivation Department is constantly on the lookout for new innovations in marijuana-farming technology. Each year, we reveal the latest and greatest grow gear as part of our Significant Technological Achievements in Secretive Horticulture (or STASH) Awards.



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Ultra Trimmer

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CANNABIS CUP WINNERS

BEST EDIBLE

1st Place: Honey Cocoa Almonds by Zendo
2nd Place: 1:1 Gel Caps by Care by Design
3rd Place: Organic Vanilla Almond Milk by Mary Jane Juice Co.

BEST TOPICAL

1st Place: Bear Butter Balanced by Honey Pot
2nd Place: Releaf Balm 50ml 3:1 THC:CBD by Papa & Barkley
3rd Place: Miracle Mending Skin Salve by Sunnabis

BEST CBD EDIBLE

1st Place: Black Cherry 50/50 by Incredibles
2nd Place: Peaches and Dream by Eden's Cure
3rd Place: Evie's Drops by CBD Alive

BEST CBD FLOWER

1st Place: AC/DC Cookies by Brown Dog Cannabis and Med Tree Seeds
2nd Place: Cannatonic #4 by Herbal Solutions
3rd Place: AC/DC by 3C Farms

BEST CBD CONCENTRATE

1st Place: AC Diesel by Gold Drop Co
2nd Place: Goji D.C. by Moxie 710
3rd Place: 1:1 CBD Dab Dart by Nameless Genetics & Greenwolf

BEST MEDICALLY INFUSED PRODUCT

1st Place: Galaxy Tangie Pre-Rolls by Kings Coast
2nd Place: StarWalker OG Terp Slerp by GoldDrop Co & Blue River
3rd Place: Bambino Signature Blunts by Bambino Blunts

BEST VAPE PEN CARTRIDGES

1st Place: Gelato by 710 Kingpen and Greenwolf
2nd Place: Honeystick Full Spectrum Vape Pen by Gold Nugget Extracts with New Amsterdam Naturals
3rd Place: Presidential OG Vape Pen by CO2 Clear and Zeki Farms

BEST NON-SOLVENT HASH

1st Place: Megawellness OG Rosin by Nameless Genetics, Rosin Brothers and Golden State Greens Point Loma
2nd Place: Strawberry Banana Rosin by Crockett Family Farms
3rd Place: Cookies and Cream Cubantech Drysift by Exotic Genetix with the Cuban Grower

BEST INDICA CONCENTRATE

1st Place: Whitewalker OG Live Resin Sugar by Paperplanes and Doctors

Orders Collective

2nd Place: F-Cut Live Resin by Higher Society Extracts
3rd Place: Larry OG Live Resin THCA Sugar by Gold Nugget Extracts with New Amsterdam Naturals

BEST SATIVA CONCENTRATE

1st Place: Nectarine by MNG in collaboration with Greenwolf
2nd Place: Forbidden Fruit Live Resin by Paperplanes and Northstar Holistic Collective
3rd Place: Strawberry Banangie by Gold Coast Extracts

BEST HYBRID CONCENTRATE

1st Place: Strawberry Banana Cake Batter Live Resin by New Amsterdam Naturals with Golden Nugget
2nd Place: GMO aka Garlic Cookies by Herbal Solutions and Notorious THC with Loyalty Extracts
3rd Place: Lemon Lime by 3C Farms & Moxie 710

BEST INDICA FLOWER

1st Place: Motorbreath by Herbal Solutions
2nd Place: Urbols Skywalker by Urbols
3rd Place: CFK OG Story Kush by Cali Kush Farms and The Kind Center Hollywood

BEST SATIVA FLOWER

1st Place: Orange Tree by Greenline Organics with Greenwolf

2nd Place: Pineapple Sage by Emerald Family Farms
3rd Place: LA Snow by Lumpy's Flowers

BEST HYBRID FLOWER

1st Place: El Perro by Los Angeles Kush with Bert Baccarat
2nd Place: Mega Sherbert by NG and 420 Central
3rd Place: Holy Fire Knockout OG by the 90210g at Lorax Labs and CannaSutra

BEST BOOTH

1st Place: California Finest
2nd Place: Papa and Barkley
3rd Place: Los Angeles Kush x CHR Los Angeles x Flight Farms

BEST GLASS

1st Place: Moxie
2nd Place: CANNABIOTIX
3rd Place: ATOMIK

BEST PRODUCT

1st Place: Golden State Banana Marijuana Cigarettes by California Finest
2nd Place: FLIGHT FARM L9 by Los Angeles x CHR Los Angeles x Flight Farm
3rd Place: Moxie

BEST VAPORIZER

1st Place: Dr. Dabber
2nd Place: Puffco
3rd Place: Cloud V

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Advanced Nutrients has recently launched **Grow Med University (GMU)**, a free, self-directed online hydroponics course that reveals the latest techniques, tips, tricks, and technology used by the most competitive marijuana growers in the world.

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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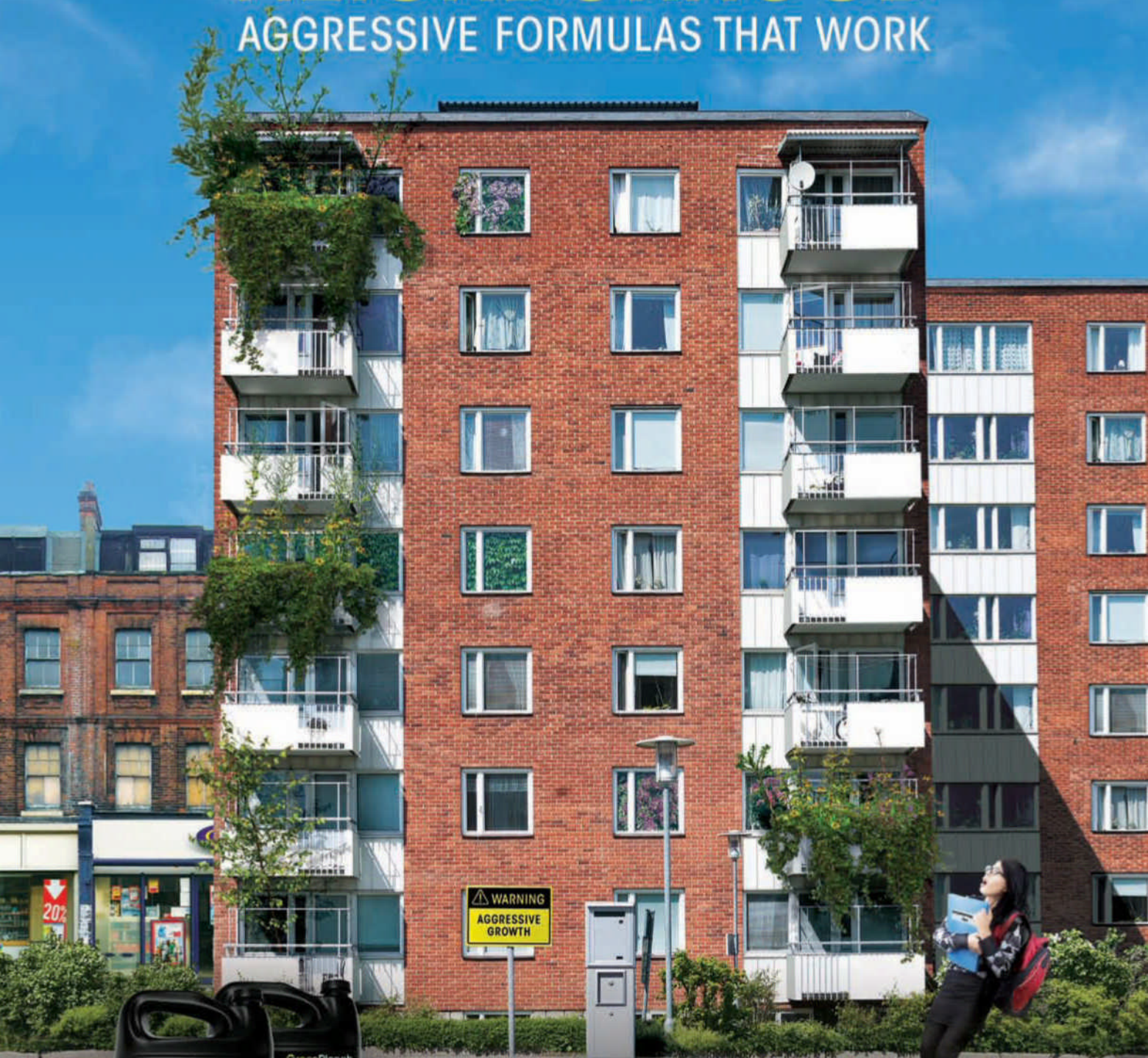


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Higher Tech

The geeks have arrived, and they're about to take over the cannabis industry.

By Robyn Griggs Lawrence



Ebbu labs use technology borrowed from the pharmacology industry to isolate, purify and recombine cannabinoids.

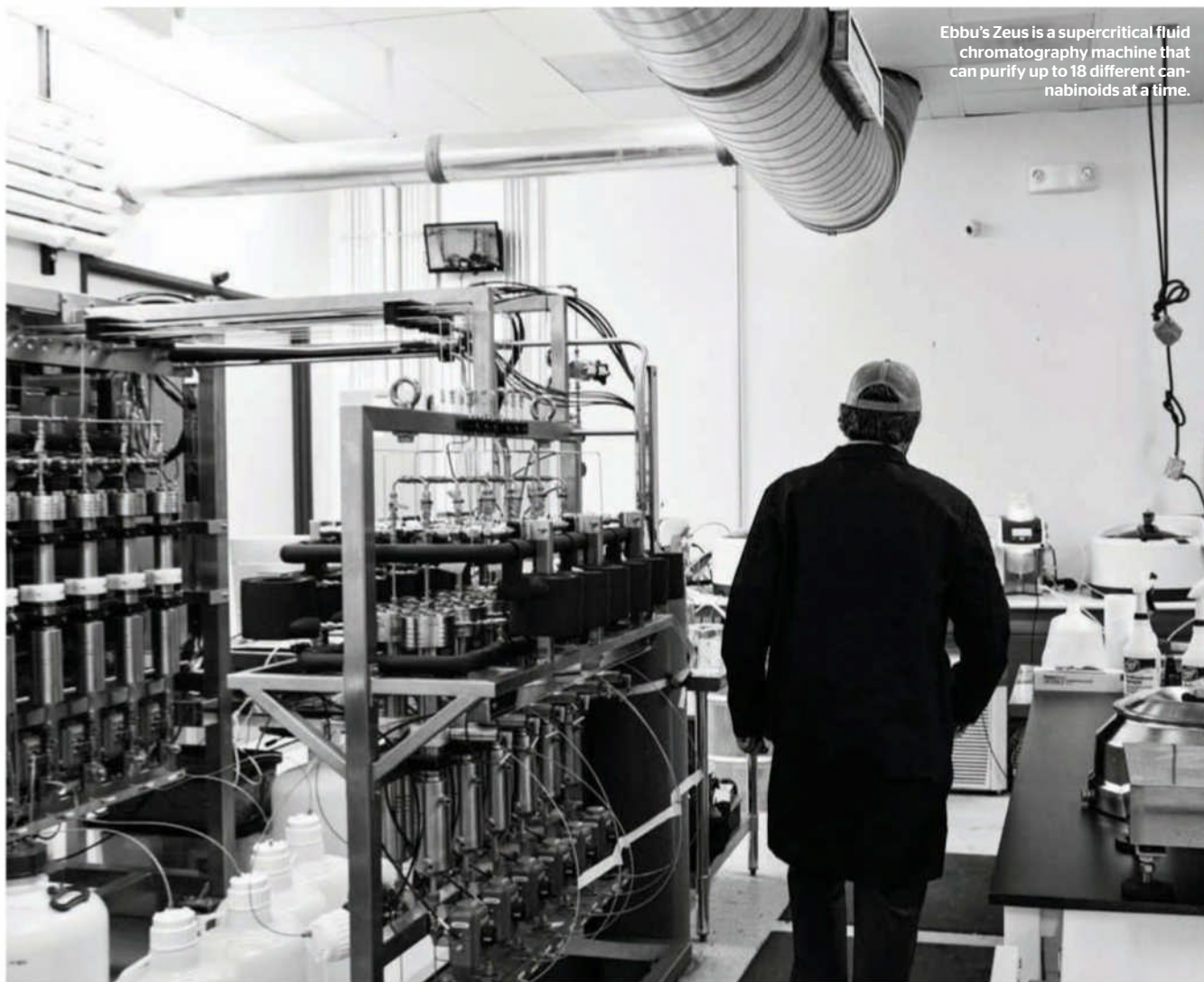
Cannabis is one of the world's fastest-growing industries, currently worth \$7.2 billion and projected to be valued at \$20.5 billion by 2020, while creating nearly 300,000 new jobs. Those numbers, from the marijuana-business data firm New Frontier, have made the tech world sit up and take notice: They've been cited everywhere from *Wired* to *Fortune* to *PC Magazine*, in articles encouraging geeks and suits to launch or invest in startups serving the upstart industry.

Last October, when Richard Branson keynoted the New West Summit 2.0—billed as “the first conference to focus exclusively on the game-changing, disruptive developments in technology, investment and media within the cannabis space”—he told the crowd of more than 1,000 gathered in San Francisco that

cannabis “has enormous potential, with the ability to do a lot of good.”

The New West Summit 2.0 was an important event in the evolution of cannabis, because, as Harborside Health Center founder and CEO Steve DeAngelo explained to *CNET*, “this plant has been illegal and underground since the invention of technology.”

As the cannabis industry moves from prohibition's black-market obscurity to a new age of grueling transparency and highly competitive legal markets, the “geeks” are catching up with the growers. Tech companies are eagerly offering solutions to cannabis businesses for everything from monitoring grow-op conditions to analyzing point-of-sale data, as well as developing apps and technologies to improve cultivation, extraction and ingestion.



Ebbu's Zeus is a supercritical fluid chromatography machine that can purify up to 18 different cannabinoids at a time.

Tech companies are eagerly offering solutions to cannabis businesses... as well as developing apps and technologies to improve cultivation, extraction and ingestion.

Sweet Leaf Marijuana, the nation's fifth-largest cannabis producer, processor and retailer, with 13 outlets in Colorado, Oregon, Illinois and Massachusetts, is a prime target for every new technology developed for the cannabis industry. These days, the Denver-based company gets so many calls from tech companies that the front desk has been trained to weed them out.

"They see us as cash cows," said Sweet Leaf vice president Nichole West.

"For us, everything costs three times as much," added Sweet Leaf co-founder Matthew Aiken. "The marijuana light bulb? It's really expensive."

Sweet Leaf was started in 2010 by three partners with \$9,000 and co-founder Christian Johnson's American Express card; last year, it earned \$70

million and now employs 350 people. To build this mini-empire, Sweet Leaf has reinvested more than 80 percent of its profits, much of that to keep up with technology. And, for the most part, the investment pays off: A Futurola machine that cranks out 100 joints in 10 minutes paid for itself in 10 days.

In Colorado, cannabis plants are tracked digitally from seed to sale, and grow ops and retail outlets must be monitored by systems that require a whole lot of bandwidth. Sweet Leaf uses Complia software for its compliance documentation as well as Flow Hub, point-of-sale software that automatically reports to the state's cannabis-tracking system. At the company's retail stores, employees can scan the barcode from customers' IDs and immediately update

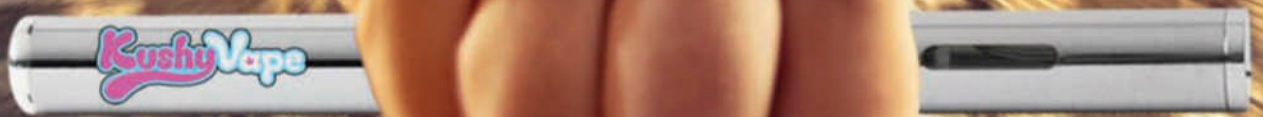
their information, speeding up the check-in process by about 70 percent. And because the software tracks plants from seed to sale, it also provides helpful data on strain yields.

Keeping up with technology is expensive, said Johnson, who measures Sweet Leaf's growth not by profits or even plants but by the number of grow lights (the company started with around 40 and currently boasts 3,500). He's happy with the Nanolux DE Commercial Series lights used in Sweet Leaf's 250,000 square feet of warehouse space in Colorado, because the exposed bulbs don't have to be cooled and are easier to clean and change.

During a tour of the company's cavernous West Denver warehouse, which produces about 65 pounds of cannabis per day, Johnson—who built houses, restaurants and fiber-optic networks before starting Sweet Leaf—looked around at the concrete walls. "With indoor cultivation, there's no way to save

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Sweet Leaf produces about 65 pounds of cannabis per day within 250,000 square feet of warehouse space.

money,” he lamented. “How much longer are we going to be growing marijuana in warehouses? This was all state-of-the-art three years ago.”

In Sweet Leaf’s growrooms, an automated sun rises and sets, sensors monitor humidity and CO₂ levels, and Doseatron machines inject nutrients and chemicals into water lines. Yet, West insisted, “our farming systems are still very farm.” There are certain things the Sweet Leaf team doesn’t believe should be automated, she explained: “We don’t want to lose the human connection.”

As a consumer, West is equally selective. She wants to choose her buds and watch a budtender package them; she hates buying cannabis that was separated, weighed and packaged by a machine. It’s like the difference between ordering hand-cut steaks from a neighborhood butcher and grabbing a plastic-encased tube of ground beef from the grocery store.

When it comes to her job as chief buyer for Sweet Leaf’s stores, however, West is decidedly new-school. She sees just about every new tech innovation for ingesting cannabis before it hits the market. Before any vaporizer, rosin or transdermal patch makes it onto Sweet Leaf’s shelves, West distributes samples to the managers and budtenders and records their evaluations about taste, effects and marketability on a spreadsheet she’s been

building since 2015.

“Look at this data I’ve compiled!” West said as she pulled the spreadsheet up on a large monitor in her Denver office. In an industry starved for data, West knows that this spreadsheet may be one of the company’s most valuable assets.

West’s data—and her instincts—tell her that transdermal technology will be the next big thing among cannabis consumers. Sales of flowers still crush everything else in Sweet Leaf’s stores, but transdermal patches are on the rise, accounting for 7 percent of sales and, more importantly, appealing to the 50-to-60-year-old demographic that is Sweet Leaf’s largest customer base.

“Everyone—people you never would have thought would be interested in cannabis—is utilizing that technology,” West said. “Transdermal technology is really bringing people out of the woodwork... more than the vape pen.”

Transdermal technology isn’t new, but it’s relatively new to the cannabis industry. It emerged in the late 20th century with nicotine and fentanyl patches, and it crossed over to the cannabis industry in 2013. Mary’s Medicinals demonstrated the very first transdermal THC patch, which had been 10 years in the making, at the first High Times US Cannabis Cup in San Francisco. When it’s placed on a venous part of the body (an ankle or inside the wrist), the patch is activated



Mary’s Medicinals tests for cannabinoid and terpene levels, pesticides and adulterants three times before products go out the door.

by body heat to begin releasing controlled doses of medication directly into the bloodstream, bypassing the liver and gastrointestinal tract.

Dr. Noel Palmer, Mary’s chief scientist, likens the delivery of THC, CBD and other cannabinoids through timed-release transdermal patches to “smoking, but much slower.” And because the cannabinoids don’t get broken down in the liver or digestive system, he added, they deliver more potent medicine.

Mary’s Medicinals, a \$6 million Denver-based company with 26 employees, develops cutting-edge approaches for isolating, manufacturing and delivering medicinal cannabis. It’s the leading producer of pharmaceutical-grade cannabis products, now available at about 1,000 retail outlets in Colorado, Arizona, Oregon, Nevada, Vermont and Washington. Even more significantly, Mary’s was

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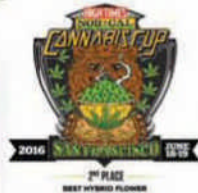
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awarded a US patent for its transdermal cannabinoid-gel technology—a cannabis-industry first.

“We found a niche for people who were curious about cannabis therapeutics or wanted alternative delivery mechanisms,” Palmer said. “That’s where we formed our reputation and our name, and that’s where we’re really doing good.”

Palmer is most enthusiastic about Mary’s gel pen. According to the patent, the gel is composed of a surfactant (lecithin organogel), a cannabinoid such as THC or CBD, and sometimes an exogenous terpene that are “diffused into the bloodstream of the user” to treat pain, nausea and emesis, convulsions, muscle spasm, inflammation, depression or cachexia. Every time a user squeezes the pen, it delivers gel with two milligrams of THC or CBD, which are quickly absorbed into the bloodstream when the gel is rubbed onto the skin. It’s an especially welcome breakthrough for chemo patients experiencing nausea.

Mary’s was also one of the first manufacturers of cannabis-infused products in Colorado to employ in-house HPLC (high-pressure liquid chromatography) testing equipment to separate, identify and quantify cannabis compounds. The company tests for cannabinoid and

At the Ebbu labs scientists have spent two years and \$9 million developing technology that extracts, isolates, and recombines cannabinoids and terpenes to deliver predictable, consistent results.

terpene levels, as well as for pesticides and other adulterants, several times: first when the cannabis comes into the lab; a second time when it’s distilled into oil using old-fashioned alcohol (because, as Palmer said, “you don’t need a Ferrari to drive around the block”); and a third time when it’s formulated into products. No product goes out the door until internal testing has assured that it will pass state-mandated third-party tests for cannabinoid levels and pesticides.

“You have to test,” said Mary’s chief executive officer, Liz Honderd. “You have no way of knowing if you’re accurately dosing without testing. That’s why our internal testing is above and beyond.”

In the cannabis industry, companies are spending a lot of money and brainpower to make guaranteed dosage the new norm. At the Ebbu labs overlooking Floyd Hill west of Evergreen, Colorado, scientists have spent two years and \$9 million developing proprietary pharmacological technology that extracts, isolates, and recombines cannabinoids and

terpenes to deliver predictable, consistent results. Unlike Big Pharma’s monopharmacological approach of relying on single, isolated compounds, Ebbu—the name purposely means nothing and was chosen from a list of open domain names—is playing with poly-pharmacology. Its scientists use custom SuperSep 1000 chromatography equipment from the global pharmaceutical-technology provider Novasep to isolate and purify up to 18 different cannabinoids at the same time so they can be combined in new formations.

Led by the company’s chief scientist, Dr. Brian Reid, the Ebbu team grows live cells with a variety of special human receptors that respond to THC, CBD and other cannabinoids, then uses delicate equipment to measure the biological reaction when different combinations of cannabinoids and terpenes are introduced to these cells. It’s Dr. Frankenstein meets the “entourage effect” (the theory that cannabis is most effective when all of its cannabinoids, terpenes and



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Ebbu's Genesis, formulated to maximize cannabinoids' impact at CB1 receptors, is ready for delivery.

“We take all the things Mother Nature has given us and mix and match them to a different effect. We’re taking apart the entourage effect and recombining it to make consistent products with distinctive experiences.”

other compounds remain intact). “This is the real fun, and where we diverge from what pharmaceutical companies do,” said Reid, who left the University of Colorado to build and run Ebbu’s labs. “We take all the things Mother Nature has given us and mix and match them to a different effect. We’re taking apart the entourage effect and recombining it to make consistent products with distinctive experiences.”

“The ‘entourage effect,’ to this point, has been this magic voodoo term,” added Ebbu CEO Jon Cooper. But they mean to demystify it.

To that end, in November of 2016, Ebbu introduced Bold Genesis, a vaporizer and patented high-potency cannabis oil that promises to deliver “predictable and reliable consistency,” according to the company’s press release. By isolating various cannabinoids and recombining them to create a pharmacologically consistent product, “we believe we have created something that is entirely new,” said Ebbu scientist Jon Martin. The Ebbu team has

identified three cannabinoids and three terpenes that enhance THC’s effect at cannabinoid receptors in the human brain to induce “a long-lasting, potent but clearheaded experience ideal for any type of social setting,” Martin continued.

According to Cooper, Bold Genesis delivers a lucid and functional high: “Whatever you’re doing, you just want to do more of it.”

Ebbu’s scientific team, led by four PhDs with deep roots in the commercial-drug industry, has also been collecting data from a pool of about 500 volunteers for a premium oil line called Feelings, which will offer formulas like “Chill,” “Energy,” “Create” and “Bliss.” They’ve built “a huge data set of how each formulation works, from early dose to late dosage,” Cooper said. Ebbu has developed three prototypes and plans to launch Feelings later this year.

In the company’s R&D lab, lined with vials of concentrated cannabinoids designed to deliver specific moods or soothe certain aches, scientists are

developing water-soluble solutions and other innovative delivery mechanisms that can offer cannabis products in single-serve, premeasured doses to be mixed with liquid or dissolved under the tongue.

Ebbu is also innovating out of necessity. In order to make many of its formulations, the company needs hard-to-find cannabinoids like CBG and CBD-V (the ones most people have never heard of). To meet those needs, Ebbu’s genetics division is breeding plants high in such rarefied cannabinoids and terpenes.

Cooper won’t say much about the company’s work with genetics, except that Ebbu’s scientists are also working on plants that will increase the yields of these harder-to-get cannabinoids. “THC and CBD are commodities now, but there’s a lot of important potential value in other compounds,” Cooper said. “The problem is, you can’t get them. We’re working on a number of things that would allow us to access these other compounds.”

For Ebbu’s purposes, the individual traits that have traditionally made cannabis strains attractive no longer apply. “We don’t really care about strains, but more about how much CBG and CBN we can get out of plants,” Cooper said. “It becomes more of a math formula at that point.” ✨



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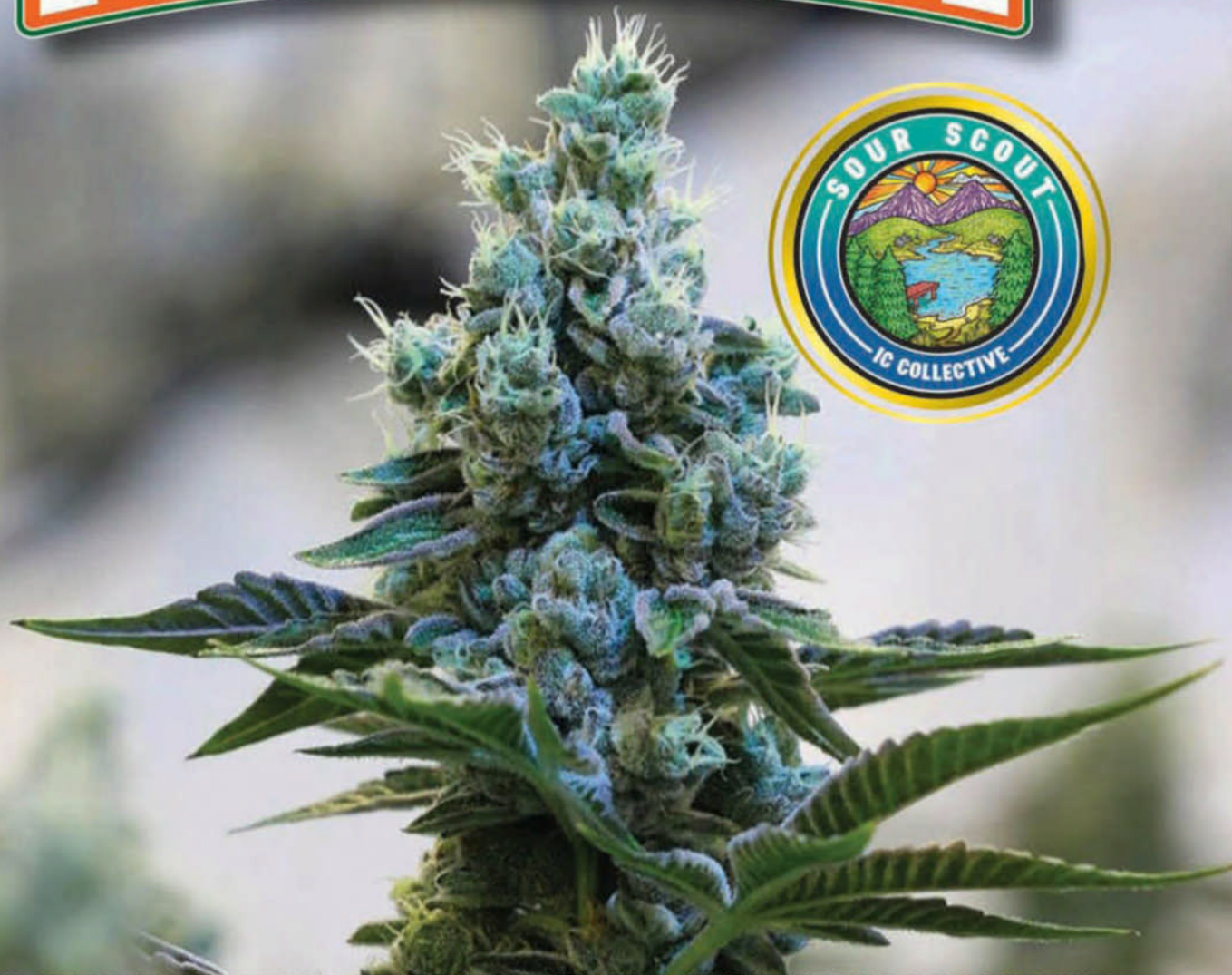
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The Best-Tasting Buds on Earth

Your favorite terps uncovered. *By Nico Escondido*

Welcome to our second annual installment of “The Best-Tasting Buds on Earth.” These rankings are derived from our Cannabis Cup competition data, culled from lab reports from each of our Cups held in the previous year (2016).

This year, we have a different look to how we rank the terpene content of the featured strains, organizing them by Cannabis Cup competition rather than a rolling list as we did last year. The reason for this is twofold: First, each lab in the various Cannabis Cup competition tests for a different number of terps—some for more, some for less. How many and which terpenes are tested for obviously affects the percentage of mass for the terp content observed in the flowers, so each section will note the lab and the number of terpenes tested. Second, this new system of ranking helps to demonstrate which strains are performing well in terms of flavor and aroma in each distinct region of the United States, showing us what growers, patients and recreational users prefer in various areas of the country.

Additionally, we rank the strains first in order of their overall terpene content within that competition and then again using a national ranking (the number in parenthesis) to show how the strain compares across the country. With more and more interest and research being done on the overall effects of particular strains (versus the isolated effects of specific cannabinoids or terpenes via extraction), the importance of broader terpene profiles is starting to come into focus. So when you hear people say they still prefer smoking a joint of flower to taking a (much stronger) dab of a concentrate, this is the reason why.

The List

Cannabis Cup competition: **Southern California Cannabis Cup, February 2016**

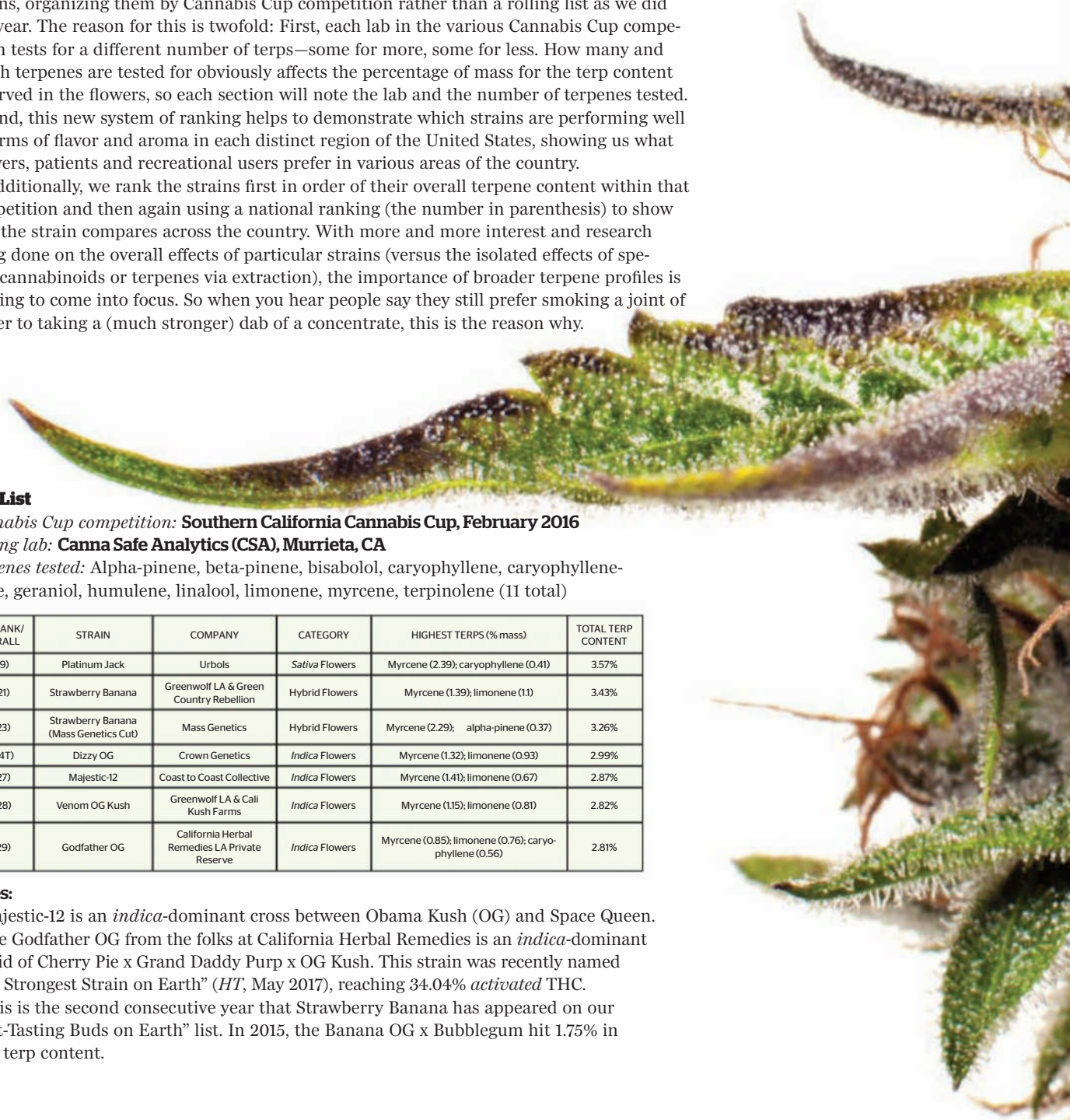
Testing lab: **Canna Safe Analytics (CSA), Murrieta, CA**

Terpenes tested: Alpha-pinene, beta-pinene, bisabolol, caryophyllene, caryophyllene-oxide, geraniol, humulene, linalool, limonene, myrcene, terpinolene (11 total)

CUP RANK/ OVERALL	STRAIN	COMPANY	CATEGORY	HIGHEST TERPS (% mass)	TOTAL TERP CONTENT
1 (19)	Platinum Jack	Urbols	<i>Sativa</i> Flowers	Myrcene (2.39); caryophyllene (0.41)	3.57%
2 (21)	Strawberry Banana	Greenwolf LA & Green Country Rebellion	Hybrid Flowers	Myrcene (1.39); limonene (1.1)	3.43%
3 (23)	Strawberry Banana (Mass Genetics Cut)	Mass Genetics	Hybrid Flowers	Myrcene (2.29); alpha-pinene (0.37)	3.26%
4 (24T)	Dizzy OG	Crown Genetics	<i>Indica</i> Flowers	Myrcene (1.32); limonene (0.93)	2.99%
5 (27)	Majestic-12	Coast to Coast Collective	<i>Indica</i> Flowers	Myrcene (1.41); limonene (0.67)	2.87%
6 (28)	Venom OG Kush	Greenwolf LA & Cali Kush Farms	<i>Indica</i> Flowers	Myrcene (1.15); limonene (0.81)	2.82%
7 (29)	Godfather OG	California Herbal Remedies LA Private Reserve	<i>Indica</i> Flowers	Myrcene (0.85); limonene (0.76); caryophyllene (0.56)	2.81%

Notes:

- Majestic-12 is an *indica*-dominant cross between Obama Kush (OG) and Space Queen.
- The Godfather OG from the folks at California Herbal Remedies is an *indica*-dominant hybrid of Cherry Pie x Grand Daddy Purp x OG Kush. This strain was recently named “The Strongest Strain on Earth” (*HT*, May 2017), reaching 34.04% *activated* THC.
- This is the second consecutive year that Strawberry Banana has appeared on our “Best-Tasting Buds on Earth” list. In 2015, the Banana OG x Bubblegum hit 1.75% in total terp content.





Durban Poison



Holy Grail

**Cannabis Cup competition: Southern California Cannabis Cup, April 2016**

Testing lab: **Canna Safe Analytics (CSA), Murrieta, CA**

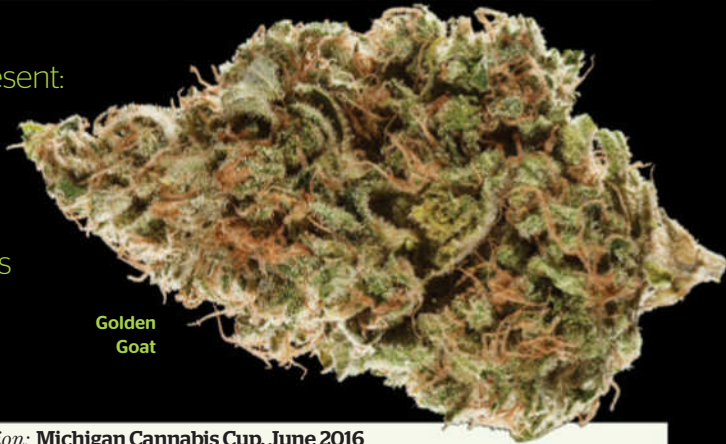
Terpenes tested: Alpha-pinene, beta-pinene, bisabolol, camphene, carene, caryophyllene, caryophyllene-oxide, eucalyptol, geraniol, humulene, linalool, limonene, myrcene, nerolidol, p-cymene, terpinolene (16 total)

CUP RANK/ OVERALL	STRAIN	COMPANY	CATEGORY	HIGHEST TERPS (% mass)	TOTAL TERP CONTENT
1 (1)	Ghost Train Haze #13	Phresh Cannabis Oregon	<i>Sativa</i> Flowers	Terpinolene (3.13); myrcene (1.66)	6.46%
2 (2)	Durban Poison	TJ's Organic Gardens	<i>Sativa</i> Flowers	Terpinolene (4.12); myrcene (0.79)	6.35%
3 (5)	Jilly #2	Mass Genetics	<i>Sativa</i> Flowers	Myrcene (2.13); terpinolene (1.82)	4.84%
4 (6)	Schlemons	The Source Genetics	<i>Sativa</i> Flowers	Terpinolene (1.96); alpha-pinene (0.97)	4.75%
5 (8)	Louise	Phresh Cannabis Oregon	<i>Indica</i> Flowers	Myrcene (2.56); limonene (0.55)	4.35%
6 (9)	Kosher Jack	Karma Squad & Kind Center Van Nuys	<i>Sativa</i> Flowers	Terpinolene (2.80); myrcene (0.41)	4.34%
7 (10)	Dr. J's Alpha Omega OG	Dr. J's OG Extracts	<i>Indica</i> Flowers	Myrcene (1.76); limonene (0.78)	4.33%

Notes:

- The Durban Poison from TJ's Organic Gardens was the top terp strain in our inaugural "Best-Tasting Buds on Earth" feature last year at 4.1%, and it climbed over two percentage points this year to 6.35%—good for second place overall in 2016.
- Schlemons = Gorilla Glue #4 x Schrom, where Schrom = Romulan x Colombian and GG4 = Sour Dubb x Chem's Sister.
- The Ghost Train Haze #13 is really a GTH #1. Turns out a typo on the cover of a certain pot magazine (ahem) a few years back led to some packs of seeds being marketed as GTH #13 to correspond with the error. In fact, there is no GTH #13.
- Speaking of the Ghost Train Haze, she has topped our "Strongest Strains on Earth" list twice—in 2011 at 25.49% THC, and again in 2014 at 27.46% THC.

Landraces Represent:
The Durban and Golden Goat (a Hawaiian *sativa* cross) both have landrace genetics from their direct parent lineage.



Golden Goat

Cannabis Cup competition: Michigan Cannabis Cup, June 2016

Testing lab: **PSI Labs, Ann Arbor, MI**

Terpenes tested: Alpha-pinene, alpha-terpinene, beta-ocimene, beta-pinene, bisabolol, camphene, 3-carene, caryophyllene, caryophyllene-oxide, eucalyptol, gamma-terpinene, geraniol, guaiol, humulene, isopulegol, linalool, limonene, myrcene, nerolidol 1, nerolidol 2, ocimene, p-cymene, terpinolene (23 total)

CUP RANK/ OVERALL	STRAIN	COMPANY	CATEGORY	HIGHEST TERPS (% mass)	TOTAL TERP CONTENT
1 (25)	Golden Goat	Arborside	<i>Sativa</i> Flowers	Myrcene (1.24); limonene (0.51)	2.96%
2 (26)	Holy Grail	Gidget's Amazing Gardens	<i>Indica</i> Flowers	Myrcene (0.86); limonene (0.72)	2.88%
3 (30)	Orange Bangi	Rogue's Island Genetics	<i>Sativa</i> Flowers	Myrcene (1.21); caryophyllene (0.52)	2.70%
4 (31)	LSF Lemon Cookies	LightSky Farms	<i>Sativa</i> Flowers	Myrcene (1.41); alpha-pinene (0.31)	2.69%
5 (32)	Sunshine #4	Herbal Solutions & Midnight Roots	Hybrid Flowers	Myrcene (0.95); limonene (0.66)	2.62%
6 (33)	Who Cut the Cheese	Vaporz	Hybrid Flowers	Limonene (0.82); myrcene (0.63)	2.53%
7 (35T)	Girl Scout Cookies	Elevate Extracts with Elevate Farms	Hybrid Flowers	Limonene (0.49); humulene (0.39)	2.35%

Notes:

- The little-known Golden Goat, a *sativa*-dominant cross (Hawaiian *Sativa* x Romulan x Island Sweet Skunk), has been around for the better part of this decade and was hitting 22% THC at Cups as far back as 2011.
- Orange Bangi is reportedly a landrace strain from Tanzania.
- The Sunshine #4 hit 27.04% THC in the June competition, third-highest in that Cup, taking second place in Hybrid Flowers.

Ghost Train Haze



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Lemon Skunk



Terps:

Flavors, Aromas & Effects

What follows is a list of the major and minor terpenes that play a prevalent role in the taste and smell of our favorite marijuana strains. Listed are the primary flavors and aromas they elicit as well as their medicinal contributions, many of which are also utilized outside of the cannabis industry for treatments and household uses (such as perfumes, soaps, food flavoring, etc.).

On top of their isolated effects as individual compounds, these terpenes combine with cannabinoids such as THC and CBD to create a much broader experience within the user. This total experience is known as the “entourage effect,” which takes into account the overall effects of a particular strain outside of specific metrics like THC potency or primary flavors. The entourage effect will still vary from person to person, but it indicates that a strain has certain qualities when taken as a whole, versus having specific cannabinoids and terpenes isolated and consumed via extraction (such as in hash or concentrates).

MAJOR TERPENES

NAME	AROMAS & FLAVORS	MEDICINAL PROPERTIES	COMMON STRAINS
Myrcene	Earthy, spicy aroma; hoppy clove flavor	Sedative, analgesic, antimicrobial, anticancer agent	Most common terpene, present in 90% of cannabis strains
D-limonene	Citrus aroma; tropical fruit and lemon/lime flavor	Powerful antibacterial, antifungal, anticancer agent	Chems, OGs, Sour Diesel, Lemon strains
Beta-caryophyllene	Woody, clove aroma; spicy pepper flavor	Topical analgesic, anti-inflammatory, autoimmune booster	Present in over 90% of cannabis strains
Alpha-pinene	Pine, sage, and eucalyptus aroma and flavor	Bronchodilator, memory enhancement, mental acuity	Golden Goat, Super Silver Haze, many Kush varieties
Linalool	Floral, lily/lilac aroma with spicy overtones; lavender flavor	Anti-anxiety and sedative properties	Zkittlez, Cookies & Cream, Red Eye OG
Terpinolene	Fresh, sweet, piney aroma; citrus and lime flavor	Antioxidant, anti-proliferative	Candy Chem, Lemon Haze, Blue Dream

MINOR TERPENES

NAME	AROMAS & FLAVORS	MEDICINAL PROPERTIES	COMMON STRAINS
Humulene	Bitter, woody, hoppy	Anti-inflammatory	OG Kush, Sunset Sherbet, Purple Haze
Beta-pinene	Woody, green-pine aroma	Memory retention, alertness, energy	Super Lemon Haze, Strawberry Cough
Bisabolol	Citrus, floral, sweet	Anti-irritant, anti-inflammatory, antibiotic	Most Kush varieties, GG4, Lemon Skunk
Camphene	Pungent, herbal, fir needles, green mint	Sedative, mind-relaxing, anti-anxiety	Fiyah OG, Kosher Kush; rare in <i>sativas</i>
Carene	Sweet, strong citrus aroma; pine, cedar, rosemary flavor.	Antihistamine; can cause dry mouth and red eyes	Dragon Haze, Mega Hash
Eucalyptol	Camphor, minty aroma of eucalyptus	Promotes mental alertness and physical energy, increases blood flow, relieves pain	Bubblegum, Chem Dog, Lemon Haze

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THC

Terpenes (mg/g)

Myrcene, 5.72

β Caryophyllene, 3.50

Limonene, 2.06

α Humulene, 1.32

All of our strains are independently tested for their unique cannabinoid and terpene profiles.



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Dragon Cookie

Dragonfly

Veganic
Blueberry
Cookies



Cannabis Cup competition: Northern California Cannabis Cup, June 2016

Testing lab: Steep Hill Labs, Berkeley, CA

Terpenes tested: Alpha-pinene, beta-caryophyllene, caryophyllene-oxide, citronellol, humulene, linalool, limonene, myrcene, phytol, terpinolene (10 total)

CUP RANK/ OVERALL	STRAIN	COMPANY	CATEGORY	HIGHEST TERPS (% mass)	TOTAL TERP CONTENT
1 (3)	Boss Frost	Vimutti	Indica Flowers	Alpha-pinene (2.12); myrcene (1.07); humulene (1.02)	6.1799%
2 (7)	Veganic Blueberry Cookies	Kushman Veganics & Mike Gustafson for Green Valley Collective	Hybrid Flowers	Caryophyllene (1.56); humulene (1.43); linalool (1.06)	4.4356%
3 (11)	Sour Tangie	CannaCruz Collective	Sativa Flowers	Linalool (1.72); humulene (0.744)	4.0672%
4 (12)	Alphamint	Alpha Medic Inc.	Hybrid Flowers	Humulene (1.07); linalool (0.913)	4.0263%
5 (13)	Durban	C.R.A.F.T.	Sativa Flowers	Limonene (1.57); myrcene (1.03)	3.9983%
6 (14)	5th Element	Elemental Wellness	Indica Flowers	Linalool (2.2); humulene (0.935)	3.9726%
7 (15)	Cookies & Chem	IC Collective	Indica Flowers	Caryophyllene (1.08); linalool (1.06); myrcene (1.02)	3.9220%

Notes:

- Sour Tangie took home a first-place Cup in the *Sativa* Flowers category at this event, reaching 27.5% THC. Combined with over 4% terp content, this flower possesses intense all-around effects.
- This is the second time on this year's List that Durban has appeared. She represents the closest to a landrace/pure strain out of any to make the cut, which says a lot about her genetics.
- Boss Frost, a.k.a. Grease Monkey 2.0, is an unknown cutting originally thought to be Gorilla Glue #4—but terpene profiles indicated that she was not GG4 at all. The cutting was flowered and produced a few SI seeds that were also grown and produced new phenotypes, one of which was called the Boss Frost due to her very high trichome content. She took 26th place (first in NorCal) in our latest edition of "The Strongest Strains on Earth" (*HT*, May '17) at 27.5% THC.

Data analyzed from our "Cannabis Cup Entries" database show that organically—and *veganically*—grown cannabis is more often correlated with higher cannabinoid and terpene content than when the same strains are grown with synthetic nutrients.



Sunshine #4

Cannabis Cup competition: Michigan Cannabis Cup, August 2016

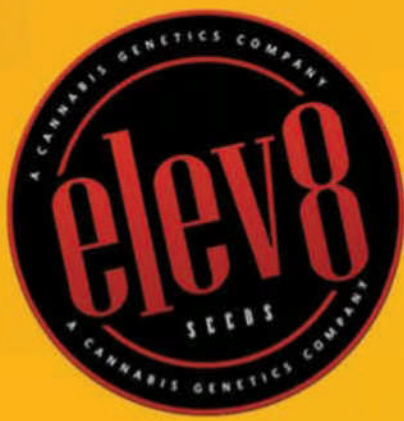
Testing lab: PSI Labs, Ann Arbor, MI

Terpenes tested: Alpha-pinene, alpha-terpinene, beta-ocimene, beta-pinene, bisabolol, camphene, 3-carene, caryophyllene, caryophyllene-oxide, eucalyptol, gamma-terpinene, geraniol, guaial, humulene, isopulegol, linalool, limonene, myrcene, nerolidol 1, nerolidol 2, ocimene, p-cymene, terpinolene (23 total)

CUP RANK/ OVERALL	STRAIN	COMPANY	CATEGORY	HIGHEST TERPS (% mass)	TOTAL TERP CONTENT
1 (34)	Sunshine #4	Herbal Solutions Ypsilanti & Midnight Roots	Hybrid Flowers	Myrcene (0.88); limonene (0.51)	2.36%
2 (35T)	Blue Cheese	Mrs. Berry Kush	Hybrid Flowers	Myrcene (0.96); limonene (0.53)	2.35%
3 (36)	Zprite	Totally Herbal Care with Mi- TerpFarmz & Dying Breed Seeds	Indica Flowers	Alpha-pinene (0.89); terpinolene (0.39)	2.34%
4 (37)	Gorilla Glue #5	Tree of Life Caregivers	Hybrid Flowers	Alpha-pinene (0.73); caryophyl- lene (0.60)	2.28%
5 (38)	Catfish	Arborside & Midnight Roots	Sativa Flowers	Myrcene (0.72); limonene (0.51)	2.18%
6 (39)	Extreme OG	The Most High Farmer & Exotic Genetix	Indica Flowers	Caryophyllene (0.50); limonene (0.46)	1.94%
7 (40)	Holy Grail Kush (OG Fumbles Cut)	Arborside & Midnight Roots	Indica Flowers	Limonene (0.55); linalool (0.27)	1.83%

Notes:

- Sunshine #4 (OG x Cherry Pie x Pink Panties) appeared on last year's "Best-Tasting Buds on Earth" list at #7 with a 2.2% total terp content. Pink Panties is an OG x Burma hybrid.
- Zprite is an *indica*-dominant cross of Zkittlez (bred by 3rd Gen Family and Terp Hogz) and an undisclosed NorCal strain from Eddy Lepp.
- Arborside's Catfish (an OG-18 backcross) took home a first-place Cup in the 2014 Michigan Cannabis Cup with 20.1% THC. In 2016, she hit 22.57% THC in a Cup competition.



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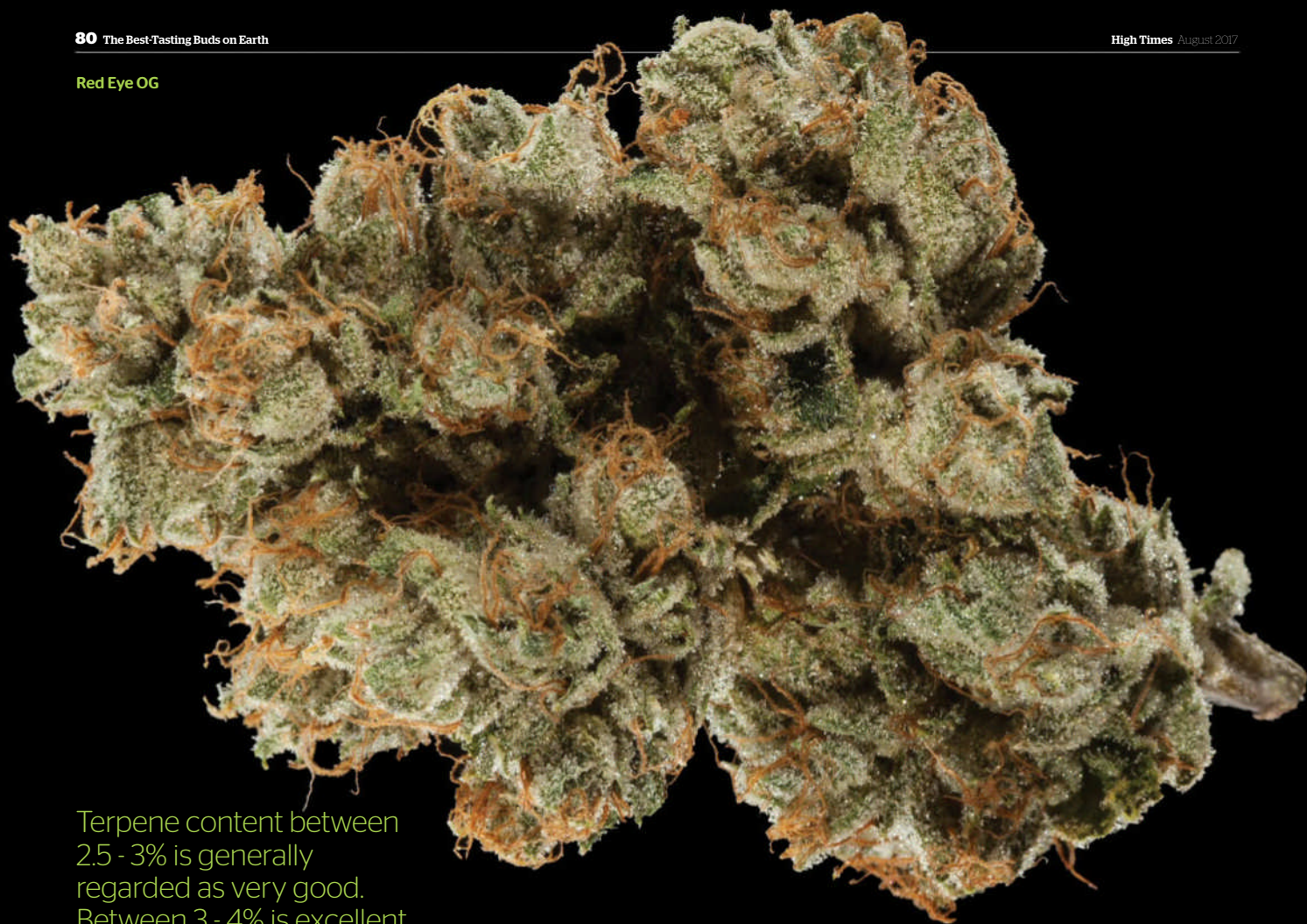
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Red Eye OG



Terpene content between 2.5 - 3% is generally regarded as very good. Between 3 - 4% is excellent. Above 4% is off the charts... Less than 1% of all Cannabis Cup entries climb above the 4% threshold.



SFV OG

Cannabis Cup competition: Southern California Cannabis Cup, October 2016

Testing lab: Canna Safe Analytics (CSA), Murrieta, CA

Terpenes tested: Alpha-pinene, beta-pinene, bisabolol, camphene, carene, caryophyllene, caryophyllene-oxide, eucalyptol, geraniol, humulene, linalool, limonene, myrcene, nerolidol, p-cymene, terpinolene (16 total)

CUP RANK/ OVERALL	STRAIN	COMPANY	CATEGORY	HIGHEST TERPS (% mass)	TOTAL TERP CONTENT
1 (4)	Red Eye OG	Cannabiotix	Hybrid Flowers	Alpha-pinene (1.9); myrcene (1.02)	4.99%
2 (16)	SFV OG	Eel River Garden	Indica Flowers	Myrcene (2.05); humulene (0.45)	3.91%
3 (17)	Mega Hash	Nameless Genetics/Sylmar Caregivers	Indica Flowers	Myrcene (0.87); linalool (0.67)	3.82%
4 (18)	Dragon Haze	Zeki Farms	Sativa Flowers	Alpha-pinene (1.46); myrcene (1.02)	3.72%
5 (20)	Crusader OG Kush	The Baked Crusader	Indica Flowers	Myrcene (1.86); limonene (0.49)	3.55%
6 (22)	Master Lemon	LAK/California Herbal Remedies/Trap of Diamonds	Hybrid Flowers	Alpha-pinene (2.1); caryophyllene (0.42)	3.27%
7 (24T)	KushCo OG Kush	Kind Center Van Nuys & Kush Company	Indica Flowers	Caryophyllene (0.91); myrcene (0.83)	2.99%

Notes:

- Mega Hash took fifth place in the *Indica* Flowers category, with an average judges' score of 3.5 (out of 5) on "Taste."
- Five terps went over a half-percent each: myrcene, linalool, caryophyllene, carene and limonene.
- Newcomer Zeki Farms took home a second-place finish in *Sativa* Flowers last October with the Dragon Haze, which hit 23.14% THC. The Dragon Haze is a *sativa* consisting of Super Silver Haze x Blue Dream x The White.
- It is rare that an OG phenotype is higher in pinene than limonene, but the Red Eye OG has nearly triple the pinene, at 1.9%, than limonene, at 0.62%. She also hit 29.69% THC in the February Cup in SoCal.

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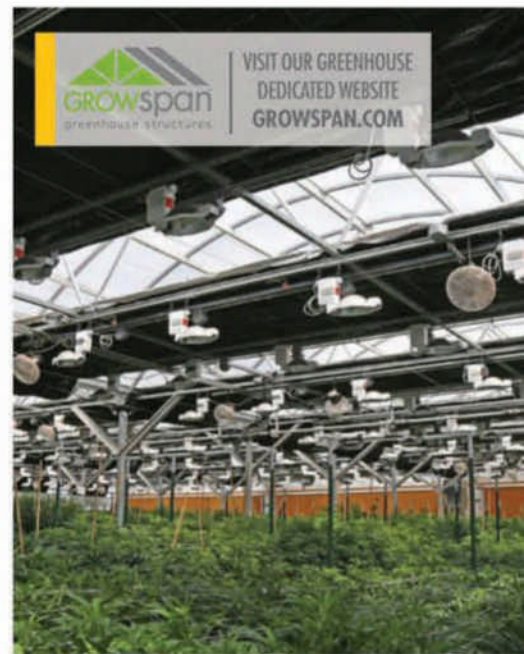


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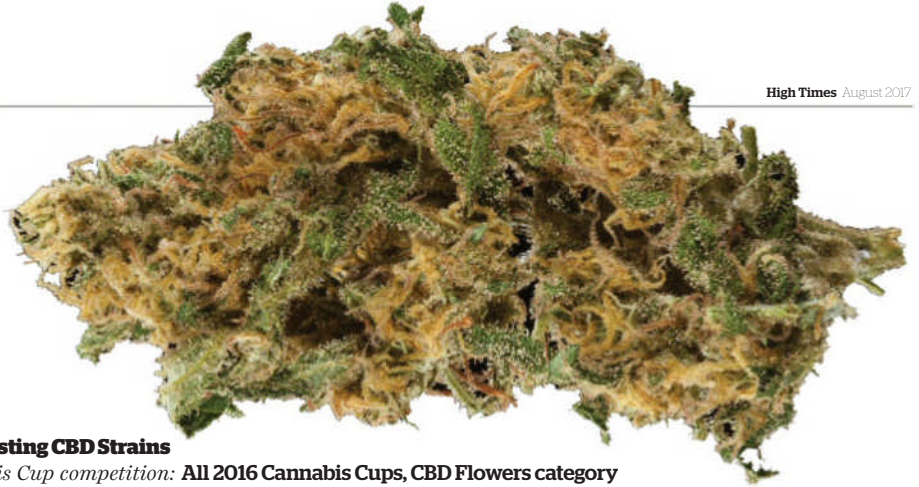


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Cannatonic 4

Cali Cure



Best-Tasting CBD Strains

Cannabis Cup competition: All 2016 Cannabis Cups, CBD Flowers category

Testing labs: Steep Hill Labs, Berkeley, CA; PSI Labs, Ann Arbor, MI; Canna Safe Analytics (CSA), Murrieta, CA

STRAIN	COMPANY	CANNABIS CUP	HIGHEST TERPS (% mass)	TOTAL TERP CONTENT
1. Cannatonic 4	Herbal Solutions/Plant 4 2morrow	SoCal, October 2016	Myrcene (2.98); alpha-pinene (0.50)	4.26%
2. Cali Cure	Hermosa Seeds	SoCal, October 2016	Myrcene (2.57); alpha-pinene (0.47)	4.22%
3. Toci	Med Tree Seeds & Brown Dog Cannabis	SoCal, February 2016	Myrcene (1.82); caryophyllene (0.22); alpha-pinene (0.18)	2.63%
4. Vitamin CBD	Guild Cannabis	SoCal, February 2016	Myrcene (1.42); limonene (0.15)	2.22%
5. Scandinavian Mooselodge	LightSky Farms	Michigan, August 2016	Myrcene (0.80); caryophyllene (0.32)	1.49%

Notes:

- Hermosa Seeds' Cali Cure hit 19.92% CBD in the October 2016 SoCal Cannabis Cup.
- Vitamin CBD had nearly a 1:1 THC-to-CBD ratio with 9% THC and 11% CBD.
- Toci had nearly a 2:1 THC-to-CBD ratio (16:9), which new studies are showing may be the most effective ratio for CBD patients. ✨

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eclipse

This August, you'll get a chance to have a truly strange and otherworldly experience, when normal daylight suddenly turns to eerie twilight and a black sun hangs high in the sky, like the eye of some seldom-seen God radiating waves of luminous, life-giving energy to humanity. *By Clint Werner*

tripping

On August 21, 2017, the mainland United States will have its first total eclipse of the sun since February of 1979. Because of this nearly four-decade-long period without a total solar eclipse in the contiguous United States, most people have no idea exactly what's coming, but many sense it's going to be an amazing peak experience—and they're right. A total solar eclipse is nature's greatest spectacle, and it can be so moving as to change lives and even the course of history.

A total eclipse of the sun is so uniquely novel and profound that this phenomenon has compelled me to travel the world to experience it. I have seen every total solar eclipse since 1994, and I hope to see every one in my remaining lifetime.

The short period of time during which one can safely look directly at the eclipsed sun and see the light of life—the corona—is called *totality*. For me, seeking totality is a kind of shamanic pilgrimage. Over the course of 27 years seeking the transcendent experience of totality, I have traveled to some wonderfully enchanting and distant locations, including Hawaii, Chile, Thailand, Mongolia, Aruba, Hungary, Zambia, Australia, Antarctica, Tahiti, Turkey, the South Japan Sea, the Arctic Circle, Fiji and, most recently, Borneo.

I'm not alone in my pursuit of totality. Although different people travel to eclipses for different reasons, the common denominator of the obsession is experiencing the absolute awe and amazement that an eclipse inspires. Those of us who are

eclipse nuts are more politely referred to as “eclipse chasers” or “umbraphiles.” There are many of us, but the hardcore group that travels to every totality probably numbers fewer than 100.

A total solar eclipse is not just something that is thrilling to watch; it’s an all-encompassing experience that involves sight, body and mind. The eclipse experience starts with *first contact*, the moment when the moon initially encroaches on the sun’s disc. Suddenly, part of the sun’s curvature looks off, and then a tiny nibble appears that grows into a dark bite in our star. During this and all subsequent partial phases, you must use protection like eclipse shades to prevent damage to your eyes or even blindness.

Nothing much happens for the next 40 minutes or so except that the dark bite grows larger, but when over half of the sun’s disc is covered, things begin to get strange—very strange. The sunlight starts to change, and it is unlike any type of light you’ve ever seen. The entire environment is profoundly transformed: Colors drain away from plants, the light takes on a metallic quality, the sky deepens in its blueness, and shadows are sharply defined.

Bizarre crescent patterns of light appear beneath any nearby trees. These are pinhole projections of the partial eclipse created by spaces between their leaves. Usually these are just dappled and irregular blotches of sunlight, but during a solar eclipse they become uniform, fish-scale patterns.

As the eclipse deepens toward totality, the temperature begins to drop, and this sensation, along with the perception that the predictable nature of reality is disintegrating, frequently causes people to have goose bumps and experience their hair standing on end. Your rational mind understands what’s happening, but your instinct and body have involuntary responses that override it. Although you’re watching it happen, your mind is thinking, “This cannot be happening.” Then the weirdness begins to accelerate. At this point, the eclipse experience reminds me a little of the aspects of an LSD or mushroom trip. The changes in the perception of light, the strange patterns on walls or the ground, the rising sense of awe and wonder, and a cascade of metaphysical thoughts about humanity, the universe and life mimic some of the best aspects of early psychedelic states.

The strange bleeding away of light increases, as if some god’s hand were

turning down a celestial rheostat. The sun shrinks from a wedge to a curved filament of light. At this point, if you have a clear view of the western horizon, you can lift your shades to see a line of deep indigo blue appear between the land and sky, rising up like a swift-moving thunderstorm, although silent and much faster. It quickly becomes a wall of darkness rushing toward you. This is the shadow of the moon moving faster than the speed of sound. Inside this wall of darkness, totality has already arrived.

With your shades back on, you can look up to see the tiny, remaining arched filament of light begin to break up into beads because of the moon’s mountains and valleys. At this point, you can

“Changes in the perception of light... the rising sense of awe and wonder, and a cascade of metaphysical thoughts about humanity, the universe and life mimic some of the best aspects of early psychedelic states.”

remove your shades and watch as the last ray of light flares out from the deepest lunar valley, creating what is possibly the most beautiful sight in all of nature: the *diamond-ring effect*. The black moon is encircled by a thin ring of coronal light, looking much like a wedding band, while the flash of that final ray looks like a diamond throwing off a sparkle. At this moment, the shadow arrives and you are in totality.

Above you is what the ancient alchemists called “the marriage of sun and moon,” with the black sun emanating waves of light—the light that creates and maintains our world. With the direct, eye-burning rays blocked, you can stare in wonder and awe at this light of life. Also visible are the *prominences*—bright-red filaments and loops projecting out into the glow of the corona. These are jets of hydrogen gas erupting thousands of miles above the surface of the sun, and they’re best viewed with binoculars or a telescope. With magnification, you can literally see the structure of the energy waves emanating from our sun.

In the rare daylight darkness, planets come into view: Venus, Mars and

Mercury should all be visible during the August eclipse. Stars can also be seen, but you don’t want to spend much time scanning for them when you can gaze at the glory of the corona. Another surreal aspect is the 360-degree sunset effect surrounding you. During totality, you’re under a shadow cone projected by the moon, and light creeps in at the horizons, producing the circular-sunset effect.

All of this immense and sudden strangeness combines to create what the theologian Rudolf Otto called the *numinous*, meaning something that is mysterious and awe-inspiring and evokes a sense of the mystical. One of the big appeals of psychedelic plants and substances is their ability to trigger an overwhelming numinous experience—the “Oh, wow!” moments. We hunger for such awe-inspiring experiences, and they can actually be vital to our mental and physical health. Professor Dacher Keltner found that having an awe-inspiring experience correlated with a greater sense of well-being for weeks following the transcendent event. Similarly, studies with psilocybin—the active component of magic mushrooms—have found that psychedelic experiences create a heightened and lasting sense of well-being and contentment even in patients in the late stages of terminal illness.

Unfortunately, the totality phase doesn’t last nearly as long as an awesome mushroom or LSD trip; it’s more like the length of a DMT flash. The longest period of totality possible for a solar eclipse is seven minutes and 21 seconds, but there won’t be one that long until July 16, 2186. In 2009, I was at sea near Iwo Jima for the longest totality of this century: six minutes and 49 seconds under perfectly clear skies.

The longest totality phase for the August eclipse will last two minutes and 40 seconds at maximum, and that occurs in the area around Carbondale, Illinois, and Hopkinsville, Kentucky. In Oregon, totality will be about two minutes, depending on your location. Because the moon’s shadow is elliptical, like an egg, the closer you are to the center, the longer totality will last. At the edge of the shadow, totality drops to mere seconds. An interactive map at eclipse.gsfc.nasa.gov allows you to drag an icon around the path of totality to find out how long it lasts at any given location.

One of the biggest complaints of eclipse chasers is that totality doesn’t last long enough—but marijuana can

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definitely help here. The wonderful quality that cannabis has of seeming to slow the passage of time, sometimes called “space-time distortion,” can really optimize eclipse viewing.

Another wonderful eclipse-enhancing quality of marijuana is its nurturing effects on eyesight. Regular cannabis users can testify to how certain strains improve their clarity of vision as well as color perception. Before the discovery of cannabinoid receptors in the brain and certain parts of the eye, these effects were dismissed as the delusions of intoxication, but we now know that using marijuana or hash actually encourages eye health and improves vision. Allen Ginsberg called these effects “eye kicks.” And sharpened vision is great for enjoying the changes in color, lighting and patterns during a total solar eclipse.

My favorite strain, largely because of its effects on one’s vision and mental state, is SAGE from T.H.Seeds. When I took a group tour to Prague and then Hungary for the European total eclipse in 1999, I knew that the Czech Republic was tolerant of personal-use amounts of cannabis, so I took an ounce of SAGE with me.

We experienced that eclipse on a

hillside in the ruins of a 13th-century castle overlooking Lake Balaton, the largest freshwater body of water in Europe, while smoking SAGE. One quality I really love about SAGE is that it enhances my peripheral vision so that my eyes seem like they’ve stretched around to my ears. It was the perfect strain for taking in the Old World panorama surrounding our hilltop castle: bucolic hay fields, vineyards and thatched-roof villages. The sky was crystal clear, and we had a soul-rocking view of the moon’s shadow spilling into the valley below and rushing toward us. The corona was ethereal, and there were intensely bright prominences encircling the black disc. As the eclipse ended and light returned, *shadow bands*—alternating strips of light and dark—fluttered across the ground. It was the perfect day.

As you’re enjoying the totality phase, you will know the end is approaching when the side of the eclipsed sun where first contact occurred begins to lighten. This is the latest point at which you can safely use any form of magnification, such as binoculars or telescopes. For safety’s sake, it’s best to know the length of totality at your location and set a timer for two-thirds of that time,

starting it when totality begins. When the timer goes off, everyone puts away their binoculars or telescopes to enjoy a beautiful and unaided view of the eclipse panorama.

As totality ends, look for one of its most breath-taking aspects: a glimpse of the *chromosphere*. This edge of neon-bright scarlet/crimson/pink is the layer between the sun’s photosphere and the radiant energy of the corona. It is visible only for seconds, but it’s a shockingly gorgeous sight: The color is one not seen anywhere else in nature. After my very first view of totality, my immediate question was: “What was that neon crimson wall of glowing fire just before the end?”

The emergence of the chromosphere is quickly followed by the blossoming of another diamond-ring effect, as the first ray of returning sunlight slips through the deepest valley of the moon. It’s safe to watch this final diamond ring without eye protection, but as soon as that flash of light shrinks into a tiny arc of sunlight, you need to put on eclipse shades or welder’s glasses. But don’t bother with that: As soon as the diamond-ring effect ends, look to the ground or at a light-colored surface or wall for the shadow bands, those rippling bands of light and darkness

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speeding across the earth. They're very difficult to see; I've only witnessed them twice out of my 16 total eclipses. Hopefully, you will have a good sighting in August, as they are very strange.

As a long-time devotee ofentheogens and shamanic practice, I caution my friends and acquaintances about using heavy doses of psychedelics during a total solar eclipse. The experience itself is so strange and bizarre and awe-inspiring—much like the best psychedelic experiences—that the effects can compete with and detract from each other. I've found that it's best to enjoy totality with just a little marijuana or hash, since this can enhance viewing and slow down time perception a bit. I've used mushroom tea once during an eclipse, but I found that it mainly heightened my anxiety about the possibility of getting clouded out.

Microdosing with mushrooms or LSD can be a fun way to enhance the experience, though. The dilation of your eyes can increase your view of the details of the corona, and the slight shift of thought in a metaphysical direction can amplify the sense of awe you'll already be feeling. Microdosing usually involves taking about 10 micrograms of LSD or a very small piece of mushroom to

enhance thought and sensory perception without bringing on a full trip.

If you're planning to experience this summer's solar eclipse, I advise getting into the path of totality early. I predict that there will be massive traffic jams on major highways, and many people will be stuck in bumper-to-bumper traffic and miss the event. If you can leave early in the morning and make an adventure of it, say with a picnic basket and plenty of patience, then you'll have one of the most meaningful and memorable days in your life—a bucket-list peak event.

One more piece of advice: Don't bother trying to photograph the eclipse unless photography is your profession or a seriously pursued hobby. You don't want to waste precious time fiddling with a camera or smartphone; you want to let your eyes drink in every second of this rare and majestic spectacle.

But if you do plan to take photos, cover your flash with tape: If your flash goes off, it could damage someone's vision during the period of totality. I've never touched a camera during this time: Great images by skilled photographers will be all over the internet immediately after the event, but none will show the glory that we can observe personally. The human eye is a much more sensitive lens.

One very serious consideration for eclipse watching is eye safety. If you're careless or negligent about taking the proper precautions, you can seriously and permanently damage your vision. Even when the sun is a tiny sliver, it can burn and scar the retina, leaving a blind spot in your field of vision. It's only safe to look at the eclipse with the naked eye when the sunlight has shrunk down to a bead. Then you can remove your shades or welder's glasses and watch the diamond-ring effect.

Eclipse shades will be on sale at many places, but you can order them from rainbowsymphony.com or eclipseglasses.com. You can also use #14 welder's glasses, which can be purchased at hardware or building-supply stores. Remember that once totality occurs, you can and should look at the marvel of the eclipse with your naked eyes.

I hope this summer's total eclipse of the sun infuses your life with as much awe, joy and wonder as eclipses have given me. I also hope that this wonderful gift of the universe that will bisect this country in August will be a way to pull people together in the knowledge that life is marvelous and that we are all one, unified by love and awe. We all shine on. Clear skies! 🌱

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Beating the Summer Heat

What should you do when the thermometer climbs to 85°F in your growroom or greenhouse and continues to rise? Put down that cool drink and start thinking about how you can beat the heat so you can still harvest dense and tasty buds. *Story & photos by Erik Biksa*



A Hot Mess

Even plants grown outdoors under the open sky can suffer in the intense heat of summer. Apart from the need for copious amounts of water, here's some of what you could be facing if you grow your crop in the temperature red zone:

Insect damage: Spider mites can devastate your cannabis plants fast under hot, dry conditions. In fact, they love it so much that they reproduce up to twice as quickly during such periods.

Hermaphrodites: Less-stable genetics can be triggered to produce a few male flowers (or even lots) in otherwise female plants under hot and dry conditions, thus seeding your crop (highly undesirable in any circumstances, especially since the seeds will be very likely to go "hermie," too).

Foliar blights and diseases: Excessively hot conditions, whether humid or dry, invite blights, molds, fungi and bacteria that cause diseases in your crop, because the plants are stressed and the conditions favor the incubation and reproduction of spores.

Root and stem rot: Anaerobic bacteria and fungi that cause rot in the lower portions of cannabis plants often prefer warm, wet conditions around the roots because, at warmer temperatures, water holds less oxygen and the roots are weakened as a result.

Poor quality and low yields: Even if your crop makes it to harvest, it's very likely the quality will suffer. Loose and airy buds lacking flavor and aroma are a telltale sign that a crop has experienced stress under excessively hot growing conditions.



Big colas, basking under intense lighting, thrive when proper temperatures and healthy air are maintained.

What to Do When It Gets Hot

If you have an industrial air conditioner already keeping things cool, chances are you're resting easy (although you're still not immune from every issue to be aware of). However, for most growers, there are some things you're going to want—or need—to do in order to ensure healthy plants and high-quality harvests. Naturally, the first step is to try and lower temperatures through the following methods.

Air Conditioners

For every 1,000 watts of high-intensity discharge (HID) lighting in your growroom, you'll want around 3,500 to 5,000 BTUs of cooling power. The range is wide because not all air conditioners perform up to their claims, coupled with the fact that different types of lamps and ballasts produce different levels of heat.

Be aware that a good-quality AC unit—i.e., a “split” style—doesn't come cheap. In fact, it can be the most expensive piece of growing equipment you'll own, making it a serious investment for those who can afford to purchase one.

Split ACs have a unit that runs outdoors to scrub off the heat and a separate air handler that is installed indoors, in the growroom. These are perfect for growers because there is no exchange of air from the growroom to the outside or vice versa—it's essentially “central air” for growrooms.

Pro-tip: Common window ACs and portable room ACs from your local building center typically exchange inside air with outside air to provide cooling. This means you'll potentially be blasting some pretty pungent odors outdoors during the time of year when there are more people outside doing stuff (and therefore more likely to notice). Inline carbon



Water-cooled air conditioning, while effective, is very powerful and water intensive.



Carbon dioxide can help buds grow but the heat created by CO2 generators must be scrubbed away.



Each of these air exchangers for the AC system is paired with an air handler inside the growroom, which is stealthily located beneath the ground.

filters or odor neutralizers can be added to the discharge, although these will usually not eliminate the problem of strong, dank odors entirely.

Water-Cooled Heat Exchangers

These are essentially growroom radiators, although they're quite a bit different in construction from an actual car radiator. The hydronic fins in a good-quality heat exchanger are very fine, giving them a large surface area in a small-dimensioned cube to scrub away heat from the fluid that's circulated through them, originating from the growroom.

If you have access to a free stream of water that stays cool and plentiful, a water-cooled heat exchanger can be a great solution for keeping a growroom or even a greenhouse cool during the hot summer months—or even year-round in a sealed growing environment.

The water that circulates through a heat exchanger remains clean and very usable afterwards. It's just much warmer than when it started out—and plenty of water gets circulated during the course of a hot day. Liquid cooling can be very efficient, and the heat can be directed as far away from the growroom as your circulation lines allow. Water chillers, tanks and geothermal principles can also be used to cool the water in a heat-exchanger system.

Pro-tip: Just because your water supply is cold and plentiful during winter and spring doesn't mean it will be the same in the summer months. A water-cooled heat exchanger is very dependent on the temperature of the water coming in to work properly. Cool water ensures that the air blowing out is sufficiently cooled to manage the temperatures involved in growing your valued cannabis crop.

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Fan Cooling

Exhaust fans for indoor growrooms, tents and greenhouses can be effective for cooling even in summer months—but this largely depends on where you live and whether you're having luck with the weather. Even the best fan-cooled set-ups (i.e., in/out exhaust) usually need about a 15°F difference between the outdoor air temps and the desired indoor temperature to work near the optimal range for growing cannabis.

Pro-tip: For every 700 cfm (cubic feet per minute) of exhaust output that your shutter-style fans push, you need 1 square foot of opening to ensure that static pressure doesn't create excessive resistance to air movement. Typically, this is accomplished with a motorized or thermal shutter opening, available in various sizes.

Hydroponic Crop Cooling

Water-culture hydroponic methods like nutrient-film technique (NFT), deep-water culture (DWC), recirculating deep-water culture (RDWC), and aeroponics require little to no growing medium. Bare cannabis roots drink freely from a recirculated mineral-rich solution that is kept well aerated. Temperatures in the hydroponic reservoir over 75°F can create problems like poor nutrient uptake or even root disease in some instances.

The cool thing about hydroponics in warm weather is that savvy growers chill the nutrient solution instead of the air. This is much more efficient from an equipment-cost and power-usage perspective. Remember, it's the plants that need to be kept cool, not so much the air. Think of sitting with your feet in a cool stream on a very hot day... thermodynamics is fun!

Less-Expensive Solutions

If you're on a budget and can't spend a lot on growroom tech, here are some other suggestions:

Indoor or Greenhouse Lighting

While they're not exactly cheap, air-cooled HID light reflectors are a great way to remove heat from grow lamps before it ever enters the growing environment—and since most growers end up buying a lamp reflector anyway, it's often not much more of an investment as a startup cost. Good-quality air-cooled lamp reflectors spread light evenly and can be sealed off from the environment, which means you won't suck out carbon dioxide or telltale odors along with the heat you discharge from the growroom to send outside.

Alternative crop-lighting sources like LED (light-emitting diodes) or LEC (light-emitting ceramic, such as a ceramic metal halide)



The inline fans above the canopy remove heat directly from the bulbs.



Fans cool the lights, maintain room temperature and keep fresh air moving through the plant canopy.

can cost more to buy for the same-size area versus HID lights, but they often produce considerably less heat for the level of bud production they offer. Of further bonus to offset the initial cost is the fact that you use less electricity to power them or any other equipment you may use to cool your growroom—meaning that your cooling needs and power draw decrease proportionately.

Pro-tip: An easy and inexpensive way to reduce heat in the growroom by as much as 30% is to operate your HID lighting fixtures via remote ballasts. These are lighting systems that allow the "driver" (what makes the lamp light up) to be put in an area outside the growroom, at the other end of the cord, thus keeping the heat generated by the electronics away from your plants.

Plant Genetics

Some cannabis strains deal with the heat better than others—there are even strains that crave it. Exotic *sativas* (for example, Cambodian varieties) may actually prefer higher heat coupled with high humidity levels versus the more common domestic hybrids. Desert strains like Afghanis may also take the heat, but they won't do well with high humidity.

Strains with sensitive roots or that are prone to insect infestations are also not advisable when growing in less-controlled conditions during the hotter months. Because frequent watering is necessary in hot climates, there's a much better chance of getting root rot in hot, wet soil conditions.

I CHALLENGE YOU TO A DUEL

Article by Jeremy Deichen



Growing Exposed is a new video series produced by Jeremy Deichen. Coined "the MTV Cribs of the marijuana industry" the show is led by host Amanda Mackay. Take a view behind the scenes, into the world of cannabis growing. In addition to garden tours, David Robinson, author of The Grower's Handbook lends his expertise in a segment entitled Teachings Of The Garden Sage. David's has dedicated his life to dispelling the myths behind cannabis, while educating people on how plants grow.

When you hear to the words "I challenge you to a duel" you generally think of two people preparing for battle.

But in this case, it's referring to a challenge for growers to try a revolutionary new base plant food manufactured by Green Planet Nutrients called Dual Fuel. The name is both fitting and clever considering it's providing all the energy the plants need packaged in a 2-part formula. If you are wondering exactly what the challenge is... well, it's a classic one. Try Dual fuel against any other brand for one crop, and then tell us which one you feel should be the winner. Here is one grower's experience from his Dual Fuel challenge.

Chris is a master grower based out of the snow-capped mountains of the Kooteney Region. Famous for growing high quality buds, this area is considered the mecca of growing in British Columbia, Canada. With multiple facilities under Chris's brand, Hillside Pharms, he was skeptical about switching out fertilizers from his current feeding regimen. Already pretty happy with his final product he didn't think it would make that big of a difference.

Starting with his genetics he had already gone through the time consuming process of correctly selecting a phenotype from seed. He felt he had a winner with this indica-dominant strain called Wappa. Wappa is known for being heavy and sedative. Good

for relaxation, medical patients have found this effective for insomnia and pain relief.

Chris was also happy with his reliable drain to waste system. Starting in rockwool, Chris gives the plants 2 weeks in the vegetative growing phase. Then he transplants them into 8-inch rockwool cubes as he flips them into flower. But...when he did it this time while using Dual Fuel...Chris could not help but notice the initiation of flowering sites were appearing faster. He went on to explain that his crop actually finished a week early!

He was also surprised at how simple it was to use. Chris has multiple cultivation sites and workers need a dummy-proof feeding schedule. Chris was clear when he said "Hillside Pharms has never used something so simple from start to finish." The formula is so complete, it eliminates the use of calcium or magnesium additives. This is so BIG!



Chris also couldn't believe how economical this was to use in the garden. Turns out this was intended and designed by Green Planet to be viable for large commercial applications. So when we asked Justin Cooper from Green Planet Nutrients about who is currently using this product he said, "Some of the largest federally licensed producers in Canada are running dual fuel and it is single handedly changing their gardens. We are talking about large projects with investors operating in the stock market with share holders that can not afford to run a sub par product.

I was blown away by the vibrant yellows and purples that were predominate on the final product. You can see the trichomes on the close up are covering every piece of the flower, which make high yielding concentrates. Chris explained that he drops the temperatures in the rooms to 60 degrees in the last week. He also pointed out that you should flush your plants a few more days than normal when using this super-charged formula.

Here is a list that makes Dual Fuel the winner of this Duel:

- BEST VALUE ON THE MARKET**
- Commercially viable
- EASY APPLICATION**
- Less room for error.
- HIGHLY CONCENTRATED**
- Plants finish faster
- PH STABLE**
- Well buffered
- HIGHER YIELDING**
- Heavy resin production.
- COMPLETE FORMULA**
- No need for calcium or magnesium additives.

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Dual Fuel,
Green Planet
Nutrients

Cultural Practices

1. Watering

It's easy to see why warmer temperatures lead to a higher demand for water when growing plants. With this in mind, cut back on your fertilizer levels. Remember, your plants will use proportionately more water than nutrients in hot climates versus cooler ones (kind of like a summer beverage-to-food intake). Otherwise, nutrients can build up, eventually reaching levels toxic to your plants.

Pro-tip: Increase the drainage in your growing medium or system. While seemingly counterintuitive, the principle is that you'll need to water a lot anyway—so your plants should be left with some air to breathe at the roots, since they'll need to be watered more frequently and the medium will be kept saturated more often.

Don't think you can keep up with increased watering demands? There's an easy fix for that: Install an inexpensive drip-irrigation system (no electricity is required with gravity). For the backyard or growroom, it's easy and cost-efficient to piece together a small-scale drip-irrigation system using a pump and timer. Be sure to use a good-quality drip-irrigation filter, though, because if your lines plug up, your crop of buds could be denied water when it's needed most.

2. Feeding

The guard cells that control the openings on cannabis leaves to let moisture out and breathe gases in are largely regulated by the plant-essential potassium (K). Naturally, if these cells get worked harder, the plant is going to need more potassium than usual.

Silicate (the element in sand) is considered a plant-essential element. It has benefits to crops, including cannabis, because it helps to create a "harder" plant cell that is less susceptible to damage or moisture loss.

Pro-tip: Potassium silicate is a common nutrient additive that gives plants the building blocks for protecting against stress and excessive moisture loss in hot climates. It's relatively inexpensive to purchase and apply—but note that many potassium-silicate products will increase the pH of your nutrient solution, making it less acidic and more alkaline. Be careful not to over-apply, or simply monitor and adjust the pH during mixing.

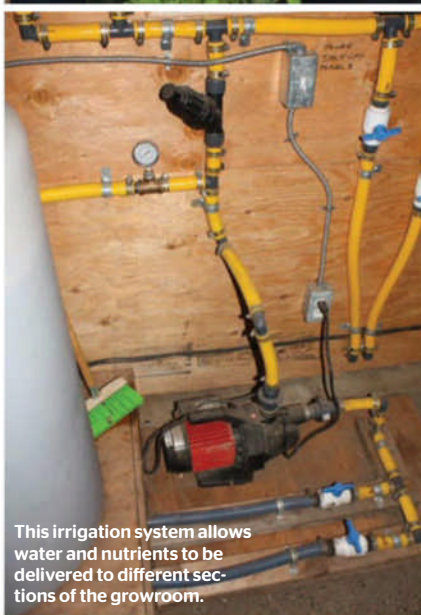
3. Building Biology

You don't have to be a biochemist to benefit from natural processes that you can enlist to help protect your plants in hot growing situations.

Trichoderma are a form of beneficial fungi that eat root-disease-causing organisms that occur as soils heat up while remaining moist.



Stay hydrated, stay beautiful—that goes for plants and people!



This irrigation system allows water and nutrients to be delivered to different sections of the growroom.



Plants that experience big swings in temperature are prone to problems with insects and diseases.

They're just one type of many specialized organisms that are usually part of beneficial-microbial blends.

Digestive enzymes are available in a variety of formulations for applications to benefit crops. Basically, these living enzymes dissolve dead root tissue (much like you shed skin, plants shed root membrane), removing a preferred food source for root-disease-causing organisms while converting nutrients from fertilizers into forms that are easier for plants to digest.

Aerobic microbial teas—the type that growers brew with lots of aeration—can also be of benefit. If the plant foliage and root zone are alive with beneficial microorganisms, there is little to no room left for the "bad guys" to come and stay, causing problems. Living brewed teas may be sprayed onto foliage and applied to roots with periodic waterings to "recharge" their population levels.

4. Kill 'Em All

On the flip side of building healthy microbiology, keeping the foliage and root zone hygienic and sterile is another approach to preventing plant-disease outbreaks in hot growing climates.

Hydrogen peroxide and ozone are management tools available to skilled growers that allow microorganisms to be "zapped" while not damaging plant tissue. These need to be applied with some level of skill and care, however, as too much can hurt your plants, and too little will be ineffective.

Hypochlorous acid is a nutrient additive that acts like a "friendly bleach" to roots, keeping them sterile and hygienic with regular applications as recommended by the manufacturer.

Stay cool out there! 🌱



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By **DANNY DANKO**
PHOTOS BY DALE SHIRLEY

REDMAN

THE HIGH TIMES INTERVIEW

I**N 1993, REDMAN**—A.K.A. REGGIE NOBLE—WAS A NEW-SCHOOL RAPPER FRESH OFF A SOLO DEBUT (1992'S *WHUT? THEE ALBUM*) TEACHING HIP-HOP FANS "HOW TO ROLL A BLUNT" WHEN HE MADE HIS *HIGH TIMES* DEBUT ON OUR MARCH '93 COVER. SINCE THEN, REDMAN HAS HOSTED OUR AWARDS SHOWS, HEADLINED (AND JUDGED AT) VARIOUS CANNABIS CUPS AND, OF COURSE, GRACED THESE PAGES NUMEROUS TIMES. IT'S SAFE TO SAY THAT REDMAN—KNOWN AS YOUR FAVORITE RAPPER'S FAVORITE RAPPER—IS ALSO *HT*'S FAVORITE RAPPER. SURE, HE'S AN ELITE RHYME-MAKER AND BRILLIANT PERFORMER WHO'S ACHIEVED SUCCESS THROUGH HIS SOLO WORK, MIXTAPE MASTERY AND LONG-TIME COLLABORATION WITH METHOD MAN, INCLUDING THE LEGENDARY STONER FLICK *HOW HIGH*. BUT IF YOU SPEND FIVE MINUTES WITH REDMAN, YOU'LL BE SWEEPED AWAY BY HIS GENUINE POSITIVITY FOR ALL THINGS CANNABIS. HE MAY BE THE ONLY GUY IN THE GAME NOT TRYING TO GET RICH OFF THE MARIJUANA INDUSTRY—AN INDUSTRY HE HELPED PAVE THE WAY FOR THROUGH HIS TIRELESS PROMOTION OF THE PLANT. WE CAUGHT UP WITH MR. NOBLE SHORTLY AFTER HIS PERFORMANCE IN FRONT OF A CAPACITY CROWD AT THE 2017 SoCAL CANNABIS CUP.

Redman on stage at the 2017 SoCal Cannabis Cup



You've had a relationship with High Times for a long time...

Very long time.

And played shows at the Cannabis Cup in Amsterdam.

Absolutely—the best time in Amsterdam.

Do you have a favorite Cannabis Cup memory there?

Taking a picture with Jack [Herer] before he passed. That was legendary for me. And the performance was fabulous, and the place we stayed in—that rented house—it was just full of marijuana. And we rolled a big hash blunt—a big, fat slab of hash, spread that shit out and put marijuana in it, rolled the whole fucking hash slab with weed in it, and that shit was amazing.

How has the weed scene changed since the '80s and '90s?

Well, it got stronger, definitely. Got greener. On the East Coast, you know, we don't get it like y'all get it on the West Coast, so it definitely upgraded in our sector, I would say, by the greenery, by the taste, by the high. But the politics of it has grown—it being legalized, you know—and the medical side of it, how it's helping people and helping disorders. It's just fascinating how many cannabinoids pot has—and THC is just one of them. So the science of it, the political side of it... I love how Denver, Colorado, is using it: They're helping the state grow with it, helping education and things like that. So there's a lot of things that this plant has done over the years since I came in the game of just wanting to get high.

Now, it's more business. But I love the way it's helping people, too. I love the way that medical patients are turning away from over-the-counter drugs and turning to CBD strains and seeing how it's better. That fascinates me. It seems like I was a part of



Redman is a consummate performer.

I love the way that medical patients are turning away from over-the-counter drugs and turning to CBD strains and seeing how it's better. That fascinates me.

something and I didn't know it was going to grow this big, and I was there helping promote it.

Speaking of the industry, you're involved with a brand called CannaMark that focuses on safety in edibles, right?

Yeah, CannaMarkUSA. Well, Redman and Method Man... we don't have our name on vape pens, or a Redman and Method Man grow. I'm looking at the bigger picture. I want to be behind the safety of digesting and smoking marijuana when it's legalized, because I know it's going to be legalized throughout the whole world. I believe in that. It will be.

But I want to be behind the safety of it, and CannaMarkUSA right now is a company that doesn't deal with the marijuana plant itself, but it's the first FDA-approved edible with a 100-percent-all-natural warning label that goes right on the infused candy. We're just trying to stop kids from ingesting candy that they don't know [has weed in it], and people trying to blame pot on their actions and shit like that. So we have this label that goes directly on the candy, and it comes with an app: You can actually take your phone and go over that candy to see what it's infused with. You can take your phone and

it'll read that candy right on the spot, tell you how many grams it's infused with, even how many bites you should take before you get fucked up, who manufactured it, is it a *sativa*, *indica* or hybrid—all the goodies. And it tells you even more. You can look us up: CannaMarkUSA. That's what I'm a part of.

And a Blazenow app that we dropped—the Redman and Method Man Blazenow app. It's an app that tells you all the hottest dispensaries and more. I'm behind the company, like I have stock in that company—I feel good in it. So we want y'all to go tune in to that app.

You've been part of the High Times family for years. You were on the cover a few times.

Well, first of all, I was knocking on y'all door to be on the fucking cover—first of fucking all, all right? Because, like I said earlier, we was smoking a lot of brown weed. Now, don't get me wrong: You get some good brown, some good tar weed, some sticky tar—oh yeah, we puts it down in the East Coast for that. But at that time, I seen Cypress Hill on the fucking cover. It was like the first rap group on the cover, and they had that goddamned green bud I never seen that was from Cali. I was like, "There's something out there, another world that I'm not a part of," and y'all guys were the first ones to show that, to tie in the rap world with the marijuana world. I was like, "Something's 'bout to boil," and I had to be on the cover. That's when I knocked on y'all door. I said, "I gotta be on it," and then I took my picture. I had my little blunt—I explained how to roll a blunt and everything. It was good.

How long have you been performing with Method Man?

Since about 1939... no, I've been performing with my dude since 1994. We was on the road. We did the first



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Red and Meth
got the crowd
fired up.

promotional tour, which was known as the "Month of the Man" tour. Def Jam sponsored that. We was under Def Jam; they put us two together in a van, and we toured the cities doing in-store, shaking hands, communicating... Which you people don't know about now because you got all this fancy Internet bullshit, but we actually had to go out and sell records and go to stores and shake fans' hands and sign autographs right there. We didn't have too many outlets, so that's what took us there: that struggle, that motivation of being in a van traveling, knowing that we wanted more. That's where we created the song "How High"—on the road.

And that became the inspiration for the film *How High*?

Oh yeah, later on they just tagged on us smoking. We was like Cheech & Chong—they called us the Cheech & Chong of the rap world.

We heard something about a *How High 2*. Is it really in

the works?

How High 2 is in the works. I know y'all bastards out there been hearing us say this for like 10 years. And my mom is up and telling me, "Pray for what you want." So I've been praying about this, and I think Universal—maybe Focus—picked up the movie. It's being written, but we're a little shaky on the written part. So you know how that go, the political part of it—I won't do the shit unless it's fucking funny. I won't taint the first fucking one; I'll leave it as a legend and do something new. But I will not do no corny fucking shit like they did on that other goddamned movie—I ain't gonna call it out...

Right now, you guys are on the Mount Kushmore tour. Was that name inspired by the *High Times* cover [featuring Snoop Dogg, B-Real, Redman and Method Man on the June 2014 issue]?

Abso-fucking-lutely! Wooooooo! I'm glad I was a part of that, too. I helped put that together. And, you know, just

getting all us together—it was time. And who better to do it with than the pioneers of *High Times*?

You're also an honorary member of the Wu-Tang Clan.

Shit, the craziest meeting I had out of all the members is RZA. Sitting down with RZA is like sitting down talking to someone from outer space, out of this world.

And you were obviously an important member of Def Squad.

I'm still an important member of Def Squad. That's my first team.

What are you working on now?

I'm dropping *Muddy Waters 2*. That's what I'm doing first. I'm bringing it back... no, it's already back—fuck that. I'm just giving y'all that '90s feel of beats. I like to give eargasms and shit, you know? Ain't nobody giving eargasms no more. Nobody ain't fucking you in the ear no more. I want to fuck you in the ear with some music.

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What are your thoughts on dabbing and the concentrates craze?

That dabbing is serious. You gotta be a champ to be dabbing all fucking day and do business. That's just a little bit too much for me. I tried it a couple of times, but I fucked around and tried it before I went onstage. I was onstage, I was fucking up, forgetting shit. But afterwards I hit it, a good, clean *sativa* dab. But I wouldn't do it on the regular, because the setup is just too fucking much—you know, you gotta put this here and rig that there and burn this here and burn the right part going in there and then... it's a little bit too much. I'd rather just roll that blunt, keep it moving. Keep it swift.

What's the best weed you've ever smoked?

Sour Diesel is one of my favorites to smoke because it gives me good motivation, gives me energy. I like to work a lot: I'm in a studio maybe 16 hours a day. I'm a studio bunny, so I can't fuck with *indica* too much—not at all during the day. I don't like to be sluggish; I like to be energized, I like to be creative. But a good hybrid, like the XJ-1, I just can't get my hands on enough of that goddamned junk. Besides the Blue Dream and some simple, good *sativas*, a fresh batch of XJ-1—oh my God, you'll be cleaning and writing rhymes at the same time, vacuuming and shit, sweeping and shit, writing rhymes. And it's good. It's like caffeine—I don't drink coffee and shit, so XJ-1 take me there. And then, maybe at night, I might get a good Cookie or something like that. I like that Gelato too, that new Gelato. Oooh, Lord.

What have you learned about the cannabis industry after all these years?

That I'm not in it for the money. You know

that—goddamn, I forgot what I was on, *TMZ*? I forget who was interviewing me. They was boxing me in, like telling me about, you know, people who's succeeding in having marijuana farms and investing in marijuana farms and why haven't I done that yet, why haven't I capitalized on making money off this plant that I've been promoting for years? For one, I'm in it for the help and for the knowledge and to really help people. That's what I'm about, and that's what I told them, too.

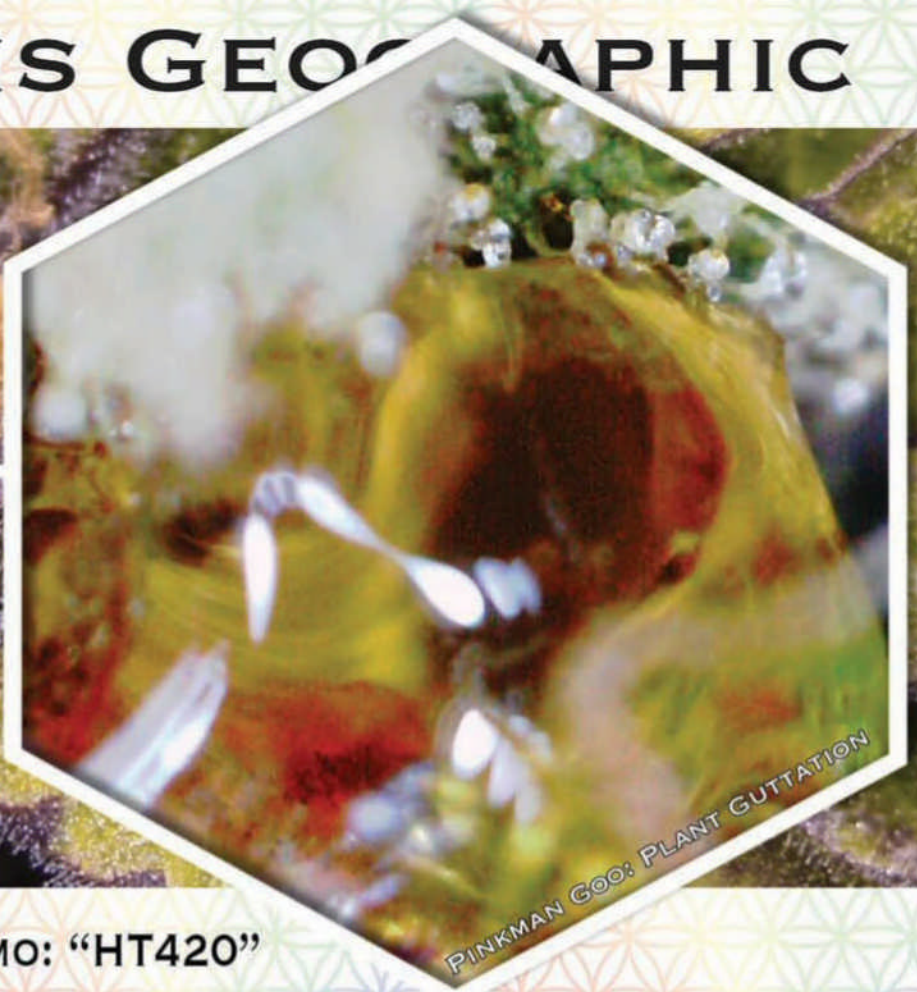
They tried to box me in, but I stood my ground. My mama called me—and she don't call me for shit—and she was like, “You know what? I like how you stood your ground. I know your black ass been smoking all these years, and I've been trying to get your black ass to stop smoking, but I see what it's about from that interview, that you're really serious about helping these people. And they tried to get you out your goddamn zone, but you stayed in your goddamn zone.”

And that's where I'm at—I want to help people. I'm glad that it's helping people. I'm glad people can enjoy this plant that we've been talking about for years. I'm glad that y'all at High Times are getting out the knowledge and the proper understanding of what this plant is about—and it's not just about recreational. That's what I'm glad I'm a part of, and I hope that y'all help legalize this plant through all 50 states. Let's help your community and let's help your state grow and educate and put money back in your state.

You're such a great ambassador for cannabis, and for hip-hop—every time you perform, you always give it your all.

When I'm out there walking with a walker, I'm still going to be performing for High Times. Fuck that... yes, sir! ✨

CANNABIS GEOGRAPHIC



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Send your cannabis cultivation questions to @deardanko or deardanko@hightimes.com.

SUBJECT: **Strains for Insomnia**

FROM: **Fooshang**

🌿 I need a short *indica* strain that has a nice bedtime buzz. I suffer from insomnia and want to grow my own medicine. I have two 400-watt high-pressure sodium (HPS) lights and am going to grow in soil. A nice yield would be a bonus; I'm also thinking of growing organic. Anyhow, I want my first grow to be from feminized seed; after that, I plan to grow from standard seed.

Dear Fooshang,
My suggestion to you is an *indica*-dominant strain such as Grand Daddy Purp from Ken Estes (*granddaddyburp.com*), Big Buddha Cheese from Big Buddha Seeds (*bigbud-dhaseeds.com*), the Black from BC Bud Depot (*bcbuddepot.com*) or Critical+ 2.0 from Dinafem (*dinafem.org*). All of these will provide the nighttime relief you're looking for, with great yields to boot. My recommendation is to start from regular seed and keep one chosen female as a mother plant from which you can take clones over and over. Just be sure to flower a clone from the plant instead of flowering the whole plant itself. This way, you won't have to reverse it from flowering to the vegetative stage, which means you'll avoid the extra time, effort and frustrations that can arise.

Danko Tip: Buds placed too close to grow lights can burn or exhibit “bleaching” or whitening of the affected flowers.



Trim buds as close to the flower as possible.

slower drying can make for a smoother, cleaner smoking experience, because the longer it takes to dry your crop, the more it will lose its “green” chlorophyll smell and taste.

My advice is to use the best of both worlds: Trim off any large fan leaves and big sugar leaves that protrude from the buds, but leave some of the sugar leaves to keep the drying slow and protect your flowers and their essential-oil-filled trichomes. Then, once the branches have dried and snap instead of bending, do a second, more thorough trim just before starting the curing process in glass jars.

SUBJECT: **When to Harvest**

FROM: **Zach's Dad**

🌿 I have an outdoor plant about 2 feet tall. It started flowering early for some reason, but it's budding beautifully at this point. This is my first time trying to grow anything, so my question is: When will I know it's the right time to harvest? Right now, there are about 25% to 30% red hairs. Is that too soon?

Dear ZD,

The amount or percentage of red hairs isn't an accurate way to judge the proper time to harvest your plant. The best thing you can do is to get a magnification device, such as a loupe or microscope, that will give you a closer look at the trichomes on your buds.

Typically referred to as “crystals,” trichomes are actually the glands filled with essential oils made up of cannabinoids like THC, CBD and CBN as well as flavinoids and terpenes. They look a bit like clear little mushrooms with a stalk and a bulbous head. It is these gland heads that are separated and pressed together to make hashish.

As harvest time approaches, the trichomes will turn from clear to cloudy white and then eventually to amber as they begin to go beyond ripeness. If you harvest when most of the gland heads are clear and cloudy, you'll get a more uplifting high. If you wait until most are amber, the effects will be more lethargic. It really comes down to personal preference, but most growers prefer to harvest when the gland heads are cloudy, as this is when THC levels are at their highest, with no degradation.

SUBJECT: **Trimming Wet or Dry**

FROM: **Kyle B.**

🌿 First off, thanks for your years of continuous grow advice. I wanted to know your opinion on dry trimming instead of wet. I myself have switched from wet to dry and honestly wouldn't go back to my old method. As always, your guidance on the subject is much appreciated. Thanks again, Danny!

Dear Kyle,

I appreciate your kind words! Trimming wet means taking off all the fan leaves and sugar leaves before drying,

and trimming dry means hanging your plants up with the leaves intact and then removing them after the branches have dried out. It's mainly a matter of personal preference, since both methods have their advantages and drawbacks.

Trimming wet is easier because the leaves are still turgid, which makes them stick out from the flowers more. After drying, the leaves will droop and curl closer to the buds, and that makes it a bit harder to clip them off. So a wet trim can be more convenient.

On the other hand, if you want to trim dry, the plants take a bit longer to dry out due to the water in the leaves. But

HIGH TIMES

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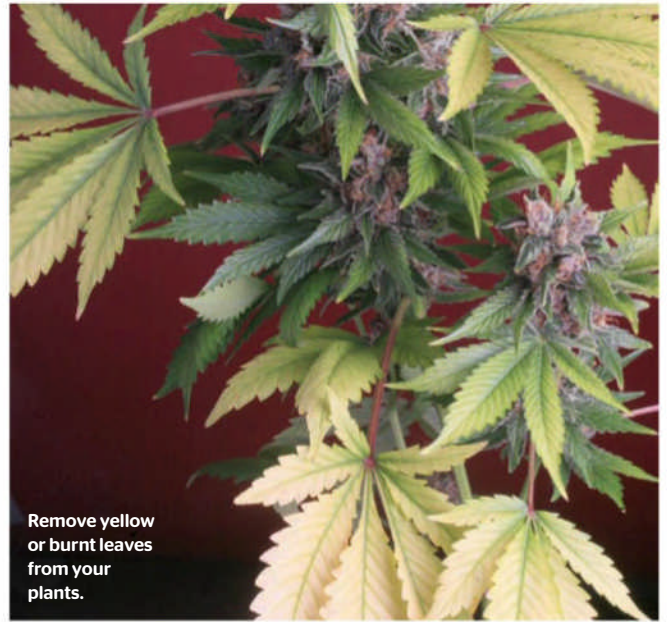
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Danko Tip: Freeze your trimmings after harvest if you plan to make ice-water-extracted hash from them.



Remove yellow or burnt leaves from your plants.

SUBJECT: **Removing Dead and Dying Leaves**

FROM: **Penguin Pete**

🌿 What are the consequences of leaving yellow or dead leaves on the plant? How much of them should you trim off? My friend says that even if leaves are damaged, they're still helping the plant, and that removing them is worse than leaving them on. Is he right?

Dear Penguin,

Always remove all yellow, dead or dying leaves from your cannabis plants. The reason that sticky insect traps are yellow is that insects view the color as a perfect signal for their infestations. Pests are drawn to yellow leaves knowing that they represent a weakness in the plant, thus making a great place to start their assault. Dying or dead leaves contribute nothing to your garden and can actually hurt it in a number of ways. Molds, powdery mildew and other pathogens find a home in diseased areas first and spread from there.

I can't tell you how many growrooms I've seen that have dead leaves on the floor. This is a breeding ground for trouble, so always remove yellow, dead or dying leaves and get them out of your growroom completely. However, don't put them out with your regular garbage. You can compost them, burn them in a fireplace or use some other method, but throwing them out in your trash can alert your neighbors or, even worse, law enforcement as to what's going on inside your home.

SUBJECT: **Naming Strains**

FROM: **BonGTokin**

🌿 I'm a long-time subscriber and reader of *High Times*. The wifey and I are having a debate about naming our strains. We're longtime medical growers and have recently started getting into breeding our own varieties. I have a Love Cheese female and crossed it with an AK-47 male. Is there a name for that cross, or do I give it my own name? I also have a Sour Kush/Headband female and crossed it with a Da

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4. Replace tip and cap



5. Let sit 2 hours



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1. Remove cap

2. Remove tip

3. Place inside bottle

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Danko Tip: Label all plants and take copious notes if you hope to learn from experience each time you grow cannabis.

Purps male. I can go on and on with my crosses, but what names should I give them? Do I stay with a name like Love 47 or something else related to their heritage? I'd appreciate some help... thanks!

Dear BonG,

Breeding your own strains can be a fun and rewarding experience, and the most successful cannabis breeders take plenty of notes and adhere to certain criteria when it comes to nomenclature. In the first case, your hybrid seeds would technically be a Love Cheese x AK-47 F1 (the female precedes the male). You can nickname it any way you want, but that's what you write in your notes.

Keep in mind that true breeding isn't just crossing males and females for seeds; it actually involves growing out large populations of the resulting seeds and then choosing the most desirable traits to continue in the next generational cross. In this way, the cannabis gene pool is improved rather than muddled. Good luck!

SUBJECT: **Exposed Roots**

FROM: **Brad M.**

I've been using an air-bubbler (aero-style) system for a year now with great results, so I haven't tried anything new. I grow a single plant in a large Rubbermaid box with two aquarium bubbler lines in the water (each has its own pump, just in case). I do a complete water change every two weeks, and my system is in a tent. I veg with T5 lights and LEDs, and flower with a 400-watt HPS. I'm about two months into veg with a new strain (East Coast Sour Diesel), and I'm now starting to see roots growing above the lid of the tub. I wanted to cut them off, but my wife convinced me to leave them (she said I would kill the plant if I cut them, so I covered them with tinfoil). Should I be concerned?

Dear Brad,

You shouldn't have a problem with your exposed roots, but you were wise to cover them. Algae forms when light and water meet, so you run the risk of your roots getting moldy if they remain uncovered. Cutting the roots wouldn't necessarily kill your plant, but it would certainly shock it, and the plant and root system would need some time to recover.

SUBJECT: **Mirrors as Reflectors**

FROM: **Alex R.**

I have a question that is short and simple: Has anyone tried lining a growroom with mirrors to see the results, and if so, how well did it go?

Dear Alex,

It's not recommended to use mirrors as reflectors in your growroom. Mirrors reflect infrared light, which is also heat, and so they can create hot spots that will burn your plants. Some people use mylar or tin foil, but I don't advise this because it can provide a safe place for insects to hide and attack your plants. Mylar and tin foil can also crinkle or crease, decreasing their effectiveness. It's much easier and better to just paint the walls of your space with flat white latex paint. 🌿

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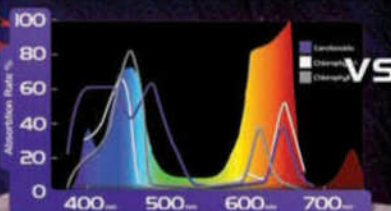
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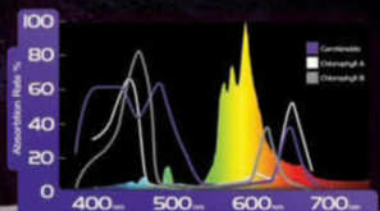
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Battery-operated smoking devices for the consumption of oil or wax are essential for dabbing on the go. The new TC PORT E-Nail from Greenlightvapes provides real-time temperature control with a digital display and allows you the choice of a titanium, ceramic, quartz or silicon-carbide nail. Simply fill the glass bubbler with water and enjoy hit after flavorful hit at a temperature that's perfect for you.

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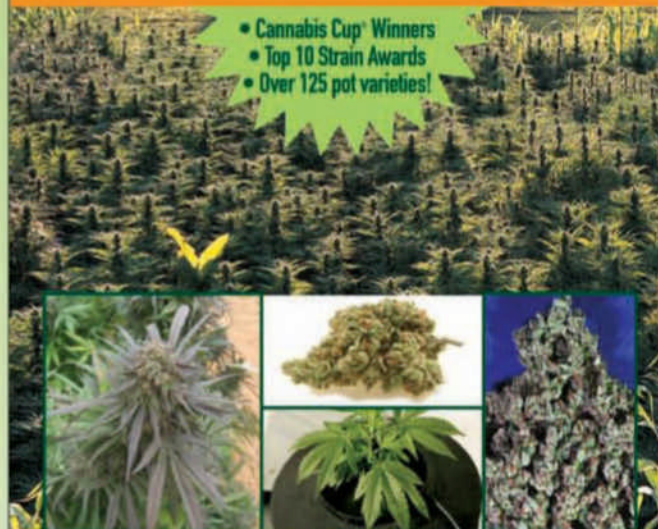
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Edibles



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Sativa Spring Rolls

Roll up some fresh veggies to enjoy with a hash-infused peanut dipping sauce. *Recipe & photos by Joanna O'Boyle*

Spring rolls are a classic go-to for a quick and easy bite in warmer weather, and they're also perfect for using whatever veggies you happen to have on hand with minimal fuss. Add a quick, no-mess cannabis concentrate-infused spicy ginger-peanut dipping sauce, and you've got a simple, healthy and potent meal that can be prepared in less than 45 minutes.

For the infused peanut sauce:

1 cup natural peanut butter
3 tbsp. freshly grated ginger
2 tbsp. Sriracha sauce
1 tbsp. lime juice (or the juice of 1 lime)
2 tbsp. soy sauce (can substitute Bragg's amino acid for a gluten-free sauce)
1 tbsp. honey
1 tbsp. apple-cider vinegar
1 gram high-quality cannabis concentrate (any form of cannabis extract that will melt when heated to 252°F for decarboxylation)
9 tbsp. hot water to thin (approximate)

For the spring rolls:

7 to 8 rice spring roll papers

Hot water to soak the spring roll papers

1 beet, skin removed and finely grated
1 yellow, 1 red and 1 orange bell pepper, seeded, thinly sliced
½ pineapple, cut into strips
1 large bunch mint leaves, washed
1 large bunch cilantro, washed and cut from stems
1 bunch green onions, chopped
For extra flair: 1 cup freshly washed and cut young cannabis fan leaves
Also optional: 8 oz. cooked rice, firm tofu or nuts for added protein

Chop the veggies into thin, even slices (the thinner the better for constructing the roll), then set aside. Place a heat-proof mixing bowl with some kind of see-through lid into an oil bath—i.e., enough cooking or vegetable oil within a larger pot to surround the bottom of the mixing bowl as a heat-conducting layer. The mixing bowl surface needs to be heated to an even 252°F, so you'll be using the oil to reach and maintain the proper temperature. (Since water has a lower boiling point than 252°F, it won't work as a medium to maintain

the right temperature for decarboxylating the concentrate.)

Put the gram of concentrate into the mixing bowl preheated to 252°F and put the see-through lid on it. Keep an eye on the decarboxylation of the concentrate for 27 minutes—you're looking for the bubbles to slow and stop forming. Remove the bowl from the heat when you see that the bubbles have stopped or when the 27 minutes are up, whichever comes first. Also, be careful of the hot oil on the bottom of the mixing bowl as you remove it from the heat! I recommend keeping an old towel handy for removing the bowl from the oil-bath step.

Prepare the peanut sauce directly in the mixing bowl with the decarboxylated concentrate, adding all of the ingredients for the sauce except water to the bowl. Whisk slowly to incorporate the ingredients evenly. Add hot water one tablespoon at a time and whisk until the consistency is pourable but thick, then set aside. (The sauce will thicken over time, but it can be thinned with warm water as needed.)

Add warm water to a large, shallow dish and submerge the rice paper for about 10 to 20 seconds to soften. Once it's soft, transfer the rice paper to a clean, slightly damp surface and gently smooth into a circle.

Add the bell peppers, pineapple, beets, cilantro, mint and any other desired fillings into as neat a pile as possible in the center of the rice paper. Fold the bottom flap over the fillings, gently tuck in both ends, then fold and stretch the remaining side over the roll until completely sealed. This step can be a little tricky! No one will judge you if you end up with a salad with infused ginger-peanut dressing, I promise. If you do possess rolling skills, you can top the rolls with a damp towel to keep 'em fresh while you work your rolling magic.

Repeat the rice-paper rolling process until all of the toppings are used. Serve with infused peanut dipping sauce, uninfused dipping sauce, green onions and Sriracha sauce. Be safe, share responsibly, and enjoy!

(A note about calculating the THC dosage: If your concentrate potency is about 70% THC, then 1 gram contains about 700 milligrams of THC. If there's about 1½ cups of sauce total, that comes to 24 tablespoons, so 700 mg divided by 24 equals about 29 mg THC per tablespoon of dipping sauce. Two tablespoons of infused peanut sauce equals 58 mg THC per recommended serving.)

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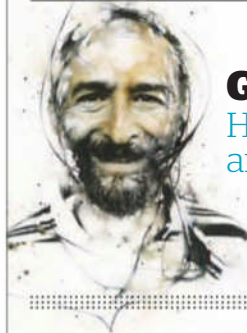
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Got a question for Dr. Mitch? Email him at 420research@gmail.com.

Would prohibitionists be happier if we promised that all plants would be high in CBD?

Hashtag Jameson

Hi Hashtag, Interesting idea! High-CBD strains do lead to smaller changes in memory, less magical thinking and fewer mind-expanding effects, but I think many consumers would miss their THC-dominant experiences. Responsible users are already reporting no negative consequences, so I'd hate to make such a big concession for so little potential gain.

I know the plant can do anything, but my hippie gramps says it's a hearing aid.

Skepiquah Occam Morgan

Hi Skepiquah, One experiment revealed brain-wave changes in people listening to music after communing with the plant. Charlie Tart's groundbreaking data in the early 1970s also suggested that people feel "they understand lyrics better." I wouldn't call either of those a hearing aid, but they sound like a lot of fun.

Can THC lotions make you fail a urine test?

Barry Worried

Hi Barry, Now that topicals have their own award at the High Times Cannabis Cup, everybody's wondering about them. Most contain 5 milligrams of THC per dose, which would ding you if vaped or eaten, but transdermal absorption can



Cannabis lotions absorb through the skin but don't raise THC blood levels.

stimulate receptors locally, right on the skin and the muscles below, without raising THC blood levels much. There are no publications about this, so I used a triple dose of a favorite balm of mine for nine days and passed a urine screen at 50 ng/ml (the cutoff for the first round of testing for government workers). Urine screens are cheap now, so you might try it out yourself.

Are marijuana suppositories a joke?

Seymour Sububi

Yo Seymour, Nope—lots of anti-nausea medications are administered this way. If you don't want to smoke and can't swallow an edible, what other choice do you have? The absorption is slow but steady. I can understand if you'd prefer a tincture or lozenge, but keep an open, um, mind. 🌿

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

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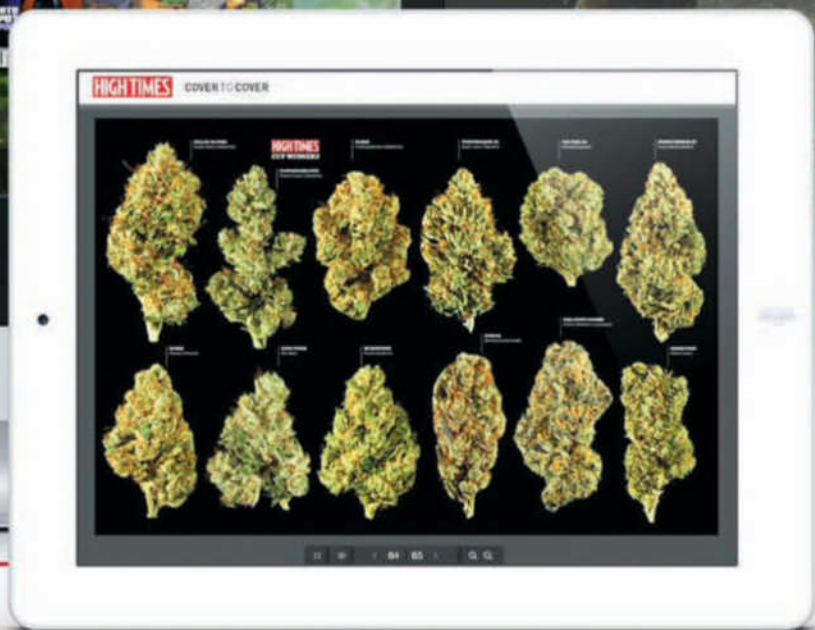
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Just Say No to Czars

The remnants of pot prohibition, including the position of “Drug Czar,” should be torn down.

Erik Altieri is the executive director of NORML. Visit norml.org.

AT PRESS TIME, the Trump administration is widely expected to name Representative Tom Marino (R-PA) as director of the Office of National Drug Control Policy, a.k.a. the “Drug Czar,” and there’s been renewed discussion of making the ONDCP head a cabinet-level position in the executive branch, as it was from 1993 to 2009.

Clearly, Representative Marino would be a terrible pick for the job. He’s a longtime, rabid drug warrior with a consistent record of voting against marijuana-law reform—a record that runs counter to the views of the majority of Americans and even of his own constituents. Marino voted against amendments that would have prevented the federal government from going after state-level recreational and medical marijuana programs, and he even voted against granting veterans access to medical cannabis. His potential appointment highlights the fact that the Trump administration remains committed to the failed 1980s War on Drugs playbook. Marino would be right at home with the other old-school drug warriors already tapped by the administration to lead drug task forces, such as Florida Attorney General Pam Bondi and New Jersey Governor Chris Christie—and, of course, former

Alabama Senator Jeff Sessions, now head of the Justice Department.

Here at NORML, we oppose Marino’s appointment to the position of Drug Czar. More importantly, we call for the Office of National Drug Control Policy to be scrapped entirely. The office is a charade that has long wasted taxpayer dollars on propaganda with no basis in science or fact. On the campaign trail and throughout his first 100 days in office, Donald Trump promised to eliminate bureaucratic waste. He should start with the office of the Drug Czar.

The director of the ONDCP is required, by law, “to oppose any attempt to legalize the use of a substance that is listed in Schedule I” of the Controlled Substances Act, and to “ensure that no Federal funds... shall be expended for any study or contract relating to the legalization (for a medical use or any other use) of a substance listed in Schedule I.” This close-minded “flat Earth” mentality refuses to acknowledge the reality that most states in this country now authorize the use of medical cannabis in some form, and it mandates that US drug policy be dictated by rhetoric and political ideology rather than by reason and scientific evidence.

The Drug Czar’s office is a remnant of

a bygone era when US drug policy was framed as a “war” against Americans who used drugs. This type of myopic thinking does nothing to advance sensible drug-law reform and ensures that modern medical and social-science data are precluded from even being involved in the conversation. In 2017, we can do better—and we must. The majority of Americans view drug abuse as a public-health issue; they favor regulating cannabis as opposed to criminalizing it; and they are demanding policy changes based on scientific and medical fact.

The funding currently used for the ONDCP could be better spent assessing ways to end federal marijuana prohibition and pursuing harm-reduction strategies. The War on Marijuana has eroded faith in law enforcement, fueled mass incarceration along racial lines and wasted millions upon millions of taxpayer dollars. Ending pot prohibition also requires dismantling the prohibition infrastructure that has developed over the decades of this misguided strategy, and the ONDCP seems like an ideal place to start.

President Trump, end this frivolous waste of taxpayer dollars and government resources and abolish the position of Drug Czar. 🌿

FREEDOM FIGHTER

By Kevin Mahmalji, NORML national outreach coordinator

Active Activist

Jennessa Lea is helping people get healthy with cannabis.

Jennessa Lea became active in the world of marijuana-law reform in June of 2013, after providing testimony in support of a medical marijuana bill that was being debated by the Minnesota State Legislature. The experience of engaging lawmakers and being involved in the legislative process inspired Jennessa to work toward reforming marijuana laws by educating her community and promoting

cannabis awareness.

Jennessa has volunteered with several reform organizations, including Minnesota NORML, Legal Marijuana Now Minnesota and the Minnesota NORML Women’s Cannabis Coalition. She has also worked tirelessly as a citizen lobbyist, following marijuana-related initiatives through the state legislature.

Jennessa moved to Colorado in November 2016 in order to have better access to safe, legal and affordable medical marijuana.



Looking to continue her mission of education and awareness, she attended a Denver NORML meeting, where she was introduced to members of the Denver NORML board of directors.

Thankfully, it didn’t take long before she was doing what she loved—volunteering to reform marijuana laws! Shortly after joining Denver NORML, Jennessa became the group’s treasurer. “Denver NORML’s doing great work on the local and state level, so I’m excited to see what we can accomplish in the years to come,”

Jennessa told *High Times*.

After being exposed to Colorado’s thriving marijuana scene, Jennessa decided to combine her love for the marijuana plant with her passion for fitness and helping others. “I have gone from a wheelchair to living a very active life, and want to share that great success with as many people as I can,” she says. “That’s why I started Fit Cannabis Girl LLC. Through Fit Cannabis Girl, I hope to encourage others to live a healthier life by offering cannabis-friendly personal training and group fitness classes.”

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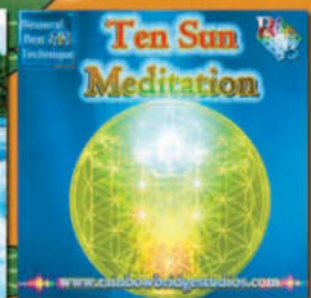
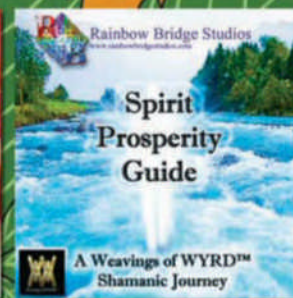


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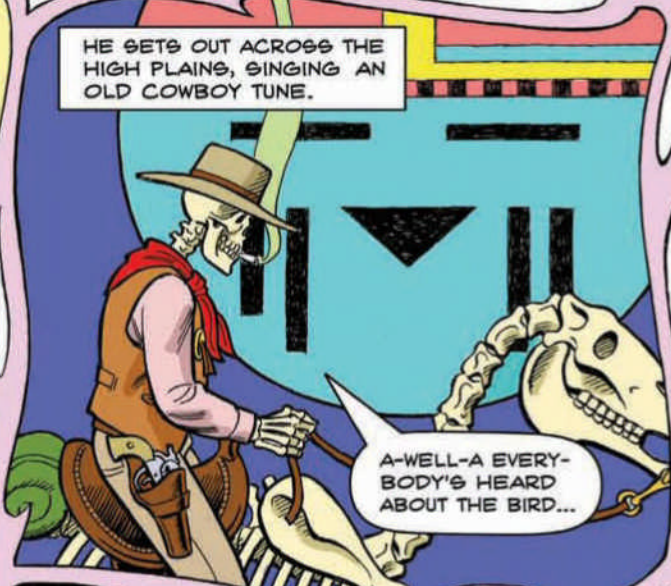
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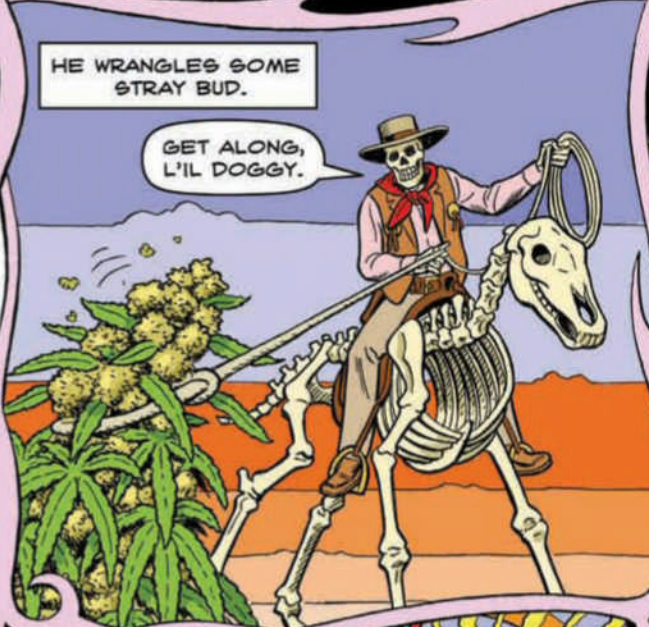
AS THE SUN RISES OVER HIS DILAPIDATED SHACK, DOPE RIDER STARTS HIS DAILY ROUTINE.

BY PAUL KIRCHNER



HE GETS OUT ACROSS THE HIGH PLAINS, SINGING AN OLD COWBOY TUNE.

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I AM PAUL McCARTNEY, AND I AM A

VEGETARIAN

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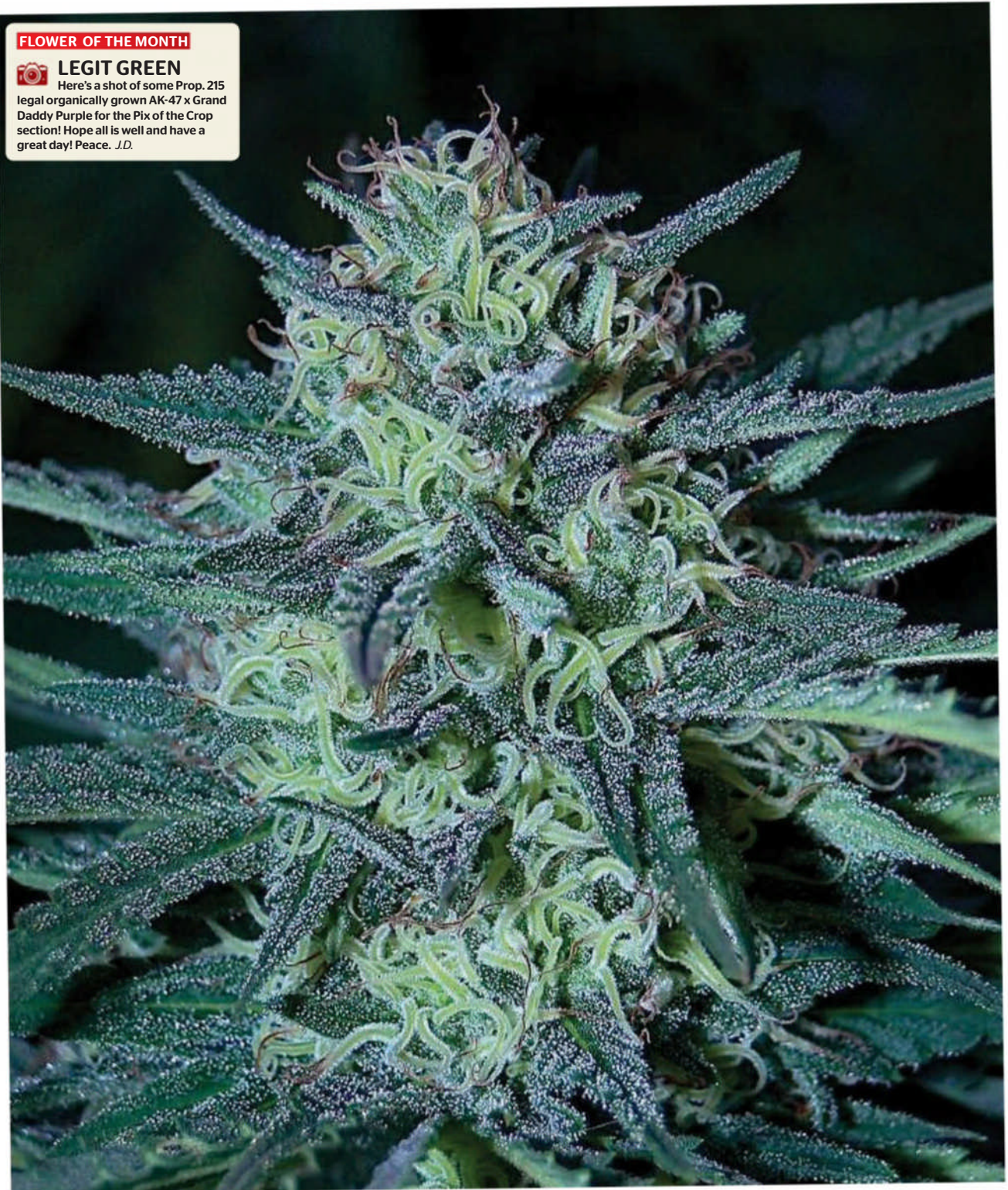
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FLOWER OF THE MONTH



LEGIT GREEN

Here's a shot of some Prop. 215 legal organically grown AK-47 x Grand Daddy Purple for the Pix of the Crop section! Hope all is well and have a great day! Peace. *J.D.*





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GROW OF THE MONTH




THAT'S LIT!

Hey guys here's a photo from Kings Garden Botanicals in Palm Springs, CA. *Cameron M.*



NUG OF THE MONTH

TIGHT GRIND

 Hello my name is Luis, I hope you enjoy this look at what I grew and am about to smoke. Smells *muy delicioso!* *Luis*



CLOSE UP OF THE MONTH

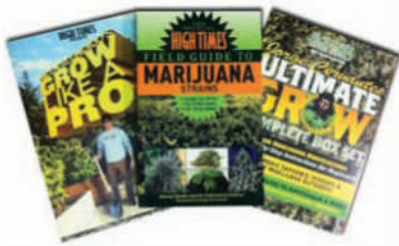


EXTRA WAVY

Salutations! This is a macro photo I took of organically grown Strawberry Cough. Instagram & Twitter: *420focus702*. *Lyndsay Burnett 420FocusPhotography*



Featured Products



HIGH TIMES Cultivation Editors' Combo Pack
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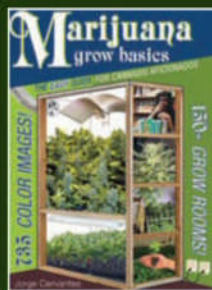
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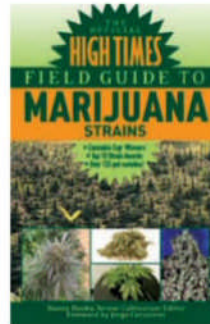
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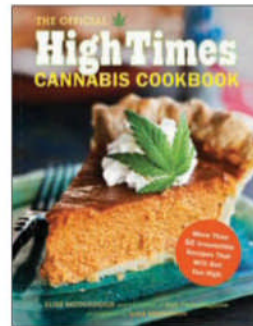
High Times Books



The Official HIGH TIMES Field Guide to Marijuana Strains

By Danny Danko

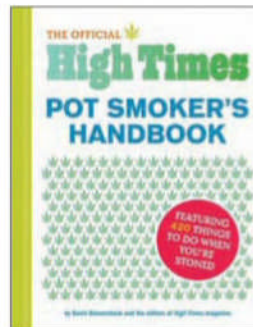
This cannabis compendium covers the world's top pot varieties—all meticulously researched and lovingly described in terms ranging from odors and flavors to potency levels and medicinal properties. **\$14.95**



The Official HIGH TIMES Cannabis Cookbook

by Elise McDonough

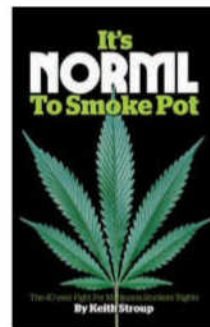
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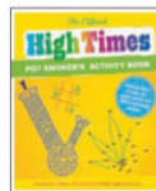
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► 500

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► America's Best Dispensaries

As the cannabis industry continues to grow, the experience of purchasing legal pot-products is reaching new heights. *High Times* breaks down the very best cannabis dispensaries in the country by region.

► Gear of the Year

The *High Times* Cultivation Department reports on the year's greatest grow gear to help you upgrade your garden! If you're looking for the latest in lighting, hydroponics, soil mixes, pest-control products and more, don't miss the 2017 S.T.A.S.H. Awards.

► The Art of Cannabis Photography

High-quality marijuana photography has graced the pages of this magazine since our premiere issue in 1974. We take a closer look at how cannabis photography has grown over the years through some of the choicest pot shots ever published in *High Times*.

MEDICAL MARIJUANA DIRECTORY

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.

BONUS

Interviews with expert growers and professional seed breeders. 'Strain of the Week' and ganja frowing questions & answers.



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1

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6 **WINTERHOP YOU MAY BE GREAT! CHANGERS ARE ALWAYS WELCOME!**

7 Fuck spinach. A Gentleman brings flowers

8

9

10

11 you must be **THIS** high to ride

12 **4:20**

13 **Gelato**

14

15

16 **Smugglers**

17 **4:20**

18 **Smugglers**

19

20 **Steve Kerr**

21 **Steve Kerr**

22

23 **Gorilla GLUE**

24 **Kyle Kushman**

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27 **NORTHERN WISCONSIN NORML**

28 **Jimi Hendrix**

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30 **Gravity Bongz**

31 **GREEN ENVY**

32 "I get high with a little help from my friends!"

33 **Adamant Oil**

34 **Smoke 2 joints at 8:40**

35 **Don't drink and drive Park and Spark**

36 **Mic Podo Jing**

37 **GROW your own GORGEOUS GANJA**

38 **Who would you rather blaze with?**

39

40 **Take a bite out of Crime... Legalize Weed**

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