

FIRST ANNUAL HASH AWARDS

HIGH TIMES

SEPTEMBER 5/12

SPECIAL 710 ISSUE

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HASH OIL

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EARTH!

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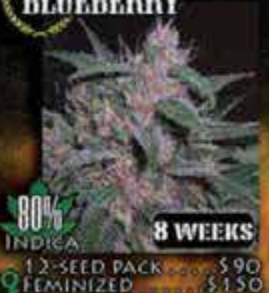
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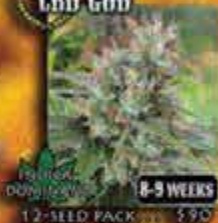
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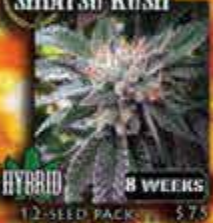
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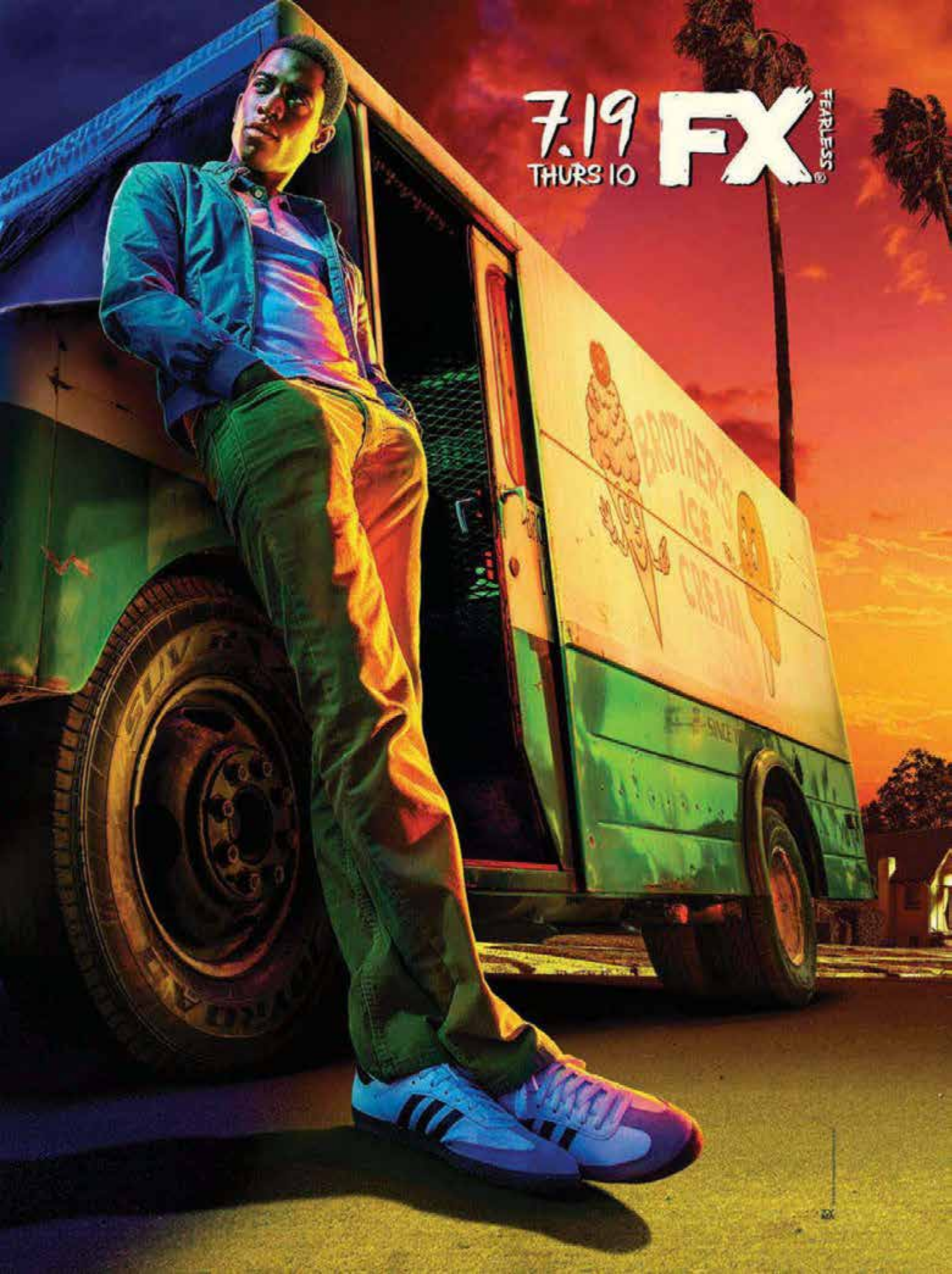
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Grow guru Ed Rosenthal returns to the pages of *High Times* with an excerpt from his new book on cannabis concentrates. In this selection, Ed highlights the basics of dabbing and delves into techniques for making rosin.

58 STRONGEST CONCENTRATES ON EARTH

We're taking a look at the most potent concentrates ever entered in our Cannabis Cup competitions. These dabs pack a punch! Find out who had the strongest hash in the world! *By Nico Escondido*

66 CONCENTRATING IN THE GARDEN

Traits that are desirable in cannabis for consumption are different than those desired for extraction. Learn how to tailor a cannabis crop for concentrates. *By Sean Black*

81 710 AWARDS

July 10 is National Hash Oil Day and to celebrate we're honoring the luminaries of the past and visionaries of the present in our first annual 710 Awards.

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98 VALLEY HIGH

The first-ever, completely legal cannabis event in the country allowed attendees to purchase up to an ounce of pot. Get an inside look at this historic Cup! *By Mike Hughes*

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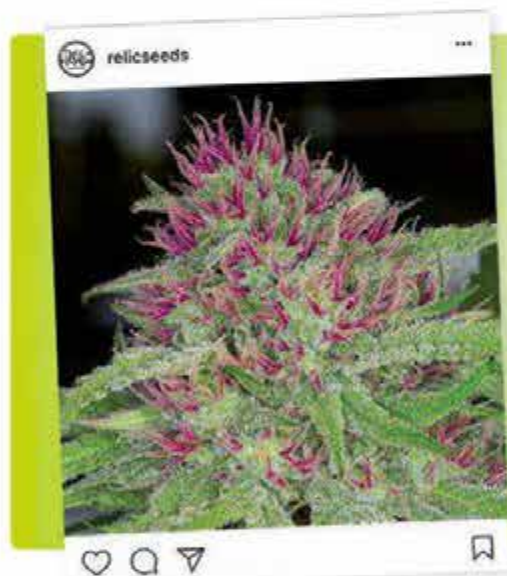
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MARIJUANA GUIDES

The weed world is populated with super hip, veteran smokers. However, as legalization spreads and cannabis becomes more accessible, people who've mostly avoided black market marijuana are giving pot a try. It's not always easy for beginners to ask simple questions—no one wants to seem stupid—but you've gotta learn somehow. Fortunately, *High Times* has you covered. Our Guides vertical offers info on a wide-range of topics beneficial to beginner tokers. Curious about marijuana dispensaries? We breakdown the basics of medical and recreational dispensaries as well as how to access them and what you'll find there. Wondering what terms like "whole plant," "entourage effect" or "pure CBD" mean? We can fill you in. Want to know how to come down from a high? We've got that info too. So, if you're new to the cannabis community and want to learn some of the basics, head to hightimes.com/guides. We're here for you!



Learn more about the plant on hightimes.com.



ON INSTAGRAM

This arresting image was posted by rare genetics lover @relicseeds. The deep pink hues alongside the bright greens make this plant absolutely pop. And, fortunately, this Nuken does more than just look pretty. A heady, *indica*-dominant variety, Nuken is a Canadian strain. This particular plant was grown out by the impeccable sofresh farms in Oregon. Sofresh is dedicated to growing organic craft-quality flowers in an eco-friendly environment. Learn more about sofresh in our January 2018 issue. And give them a follow, @sofresh_farms.

FREE WEED RETURNS

After a brief two and a half year break, *High Times* senior cultivation editor Danny Danko and editor-in-chief Mike Gianakos are back with new episodes of *Free Weed*. *High Times Presents Free Weed from Danny Danko* is a cultivation podcast that features the latest cannabis news, interviews with celebrities, growers and hash makers and, of course, all the grow info you've come to expect from *High Times*. Each week Danny and Mike provide strain profiles, cultivation tips and tricks, and answers to listeners' grow questions. Tune in Thursdays for new episodes or visit hightimes.com/freeweet to hear episodes 1-88. If you have a question you'd like Danny and Mike to answer on the show, contact them at freeweet@hightimes.com!



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@ArtByTLC: @HIGH_TIMES_Mag what do the different colours mean to the plant & effect of bud? thank you learning new things=good for the mind

@snoopro19: @HIGH_TIMES_Mag Nothing tastier than a nicely burning j

@wanderingbear10: Man. I've been smoking weed since 1978. My brain must be real young.

@skohayes: @HIGH_TIMES_Mag How about if we start with not calling it "weed"? Or calling successful women in the cannabis business "girls"? Or calling people who use cannabis recreationally "stoners"? We all need to change our language.

@oh_cocobeann: @HIGH_TIMES_Mag I don't get immune to the effects of weed like I do with melatonin

@kstaton42: @HIGH_TIMES_Mag Mmm love purple haze!

@Cannabistsx: @HIGH_TIMES_Mag One of my favorite pastimes is hotboxing and then walking through a crowded store. #1 comment "something smells good"

@Seandon_MDMRG: Black Hollywood needs to come together and make it legal @HIGH_TIMES_Mag yall should cover that.

@cannaworldsite: @HIGH_TIMES_Mag Haven't tried the white urkle before but have tried and grown bubba few times, it's an easy one to grow with a nice yield and a nice high afterwards. not sure if it's pre 98 or not, most likely not

@cannatelegraph: @HIGH_TIMES_Mag still looking for the planet full of cannabis



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HASHING IT OUT

"If a man wishes to rid himself of a feeling of unbearable oppression, he may have to take to hashish."

—Friedrich Nietzsche

MARIJUANA GROWERS HAVE been creating cannabis concentrates for centuries—extracting the resin from sticky weed flowers and pressing it together into blocks of flavorful and potent hashish. The art of purifying our favorite flower's essential oils was handed down from generation to generation by the farmers of Afghanistan, Nepal, Morocco, Lebanon and other far-flung locales. Consumers worldwide have appreciated the scent, taste and intense potency of these legendary bricks since the earliest days of agriculture.

Today, many amazing advancements have been achieved in the art of cannabis concentration. Hydrocarbon-extracted dabs, live resins, dry sift, sheets of shatter, ice wax, CO₂ oil, distillates, diamonds and solvent-less pressed rosins are just a few examples of how far pot-extract production has come in just the last few years. But these tremendous improvements in purity and variety wouldn't have been possible without the contributions of many pioneers and innovators in the field.

That's why we've compiled our first 710 Awards in this issue (710, sometimes referred to as "the new 420," is "OIL" upside down). We've set out to honor the people who have created and developed the concentrate industry as well as those who are innovating and advancing the way to the future. We've also included a grow feature on the unique techniques necessary to cultivate for concentrate production, and we've highlighted the strongest concentrates on earth, as determined by Cannabis Cup judges and extensive lab-test results.

Another new dank development we're especially excited about is the resinous return of our original "grow guru," Ed Rosenthal! The esteemed and legendary author's homecoming back to where it all started begins with an excerpt from his new book, *Beyond Buds, Next Generation: Marijuana Concentrates and Cannabis Infusions*. Add to that a recap of our first-ever fully legal and licensed recreational Cannabis Cup in Sacramento and you have an issue bursting with buds, hashish and much more...

Danny Danko
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BLAZE DE BLASIO

Finally—after four years under a policy change that was *supposed* to decriminalize marijuana possession in New York City and address the massive racial disparities in pot arrests—the city is conceding that its 2014 approach to weed hasn't worked. And it's about time.

Let's back up in time just a bit so I can explain. In 2014, New York City Mayor Bill de Blasio and former NYPD Commissioner Bill Bratton announced that New Yorkers would no longer necessarily be arrested for low-level marijuana offenses and that police were being encouraged to write a summons instead. But that only applied to people in possession of pot—25 grams or less. Seems nice, but god forbid you get caught with any burning bud. One roach—quickly flung into a back alley, yet still burning—landed my friend in cuffs only a couple of years ago. The joint was practically gone, but because she had been smoking it on the street, she was arrested.

Now de Blasio has announced a new NYPD policy which directs cops to issue summonses for individuals who are caught smoking pot in public. It may not be total reform, but at least it's a step forward.

*Kate
New York City*

FEAR AND LOATHING AT THE CONVENTION CENTER

It all started with the edibles in the gift bag. I'm thinking to myself I'm tired, I have a headache, this is a weed convention, this is Vegas... why not?

I had just taken the trolley to the Vegas Convention Center. As an ad sales rep for a pot business, I knew it was going to be a long day. I needed a lift.

So, there I was high as fuck trying to convince a guy to change the name of his CBD drink to something like "Wham" or "Pow." I cruised out to the smoking area and met up with a friend who gave me a one-gram cartridge of Louis XIV. Yes, so I was really, really high.

I went back inside to chill. Across the hall were two ladies. One told me she was an erotic yoga instructor and was doing some over the top body to body sensual yoga moves. This is too unreal to be true. I know I'm not hallucinating. I was beyond tripped out.

By then I had a meeting in the smoking area. When I got there a huge joint was being passed around. I took one huge hit and wow it was like high school. I am high as fuck. At that point, I



THERE I WAS HIGH AS FUCK TRYING TO CONVINCE A GUY TO CHANGE THE NAME OF HIS CBD DRINK TO SOMETHING LIKE "WHAM" OR "POW."

knew I needed to get out of there.

So, I found my way back to the tram station. By this time I thought someone was following me. It was around dusk and the shadows and Vegas were freaking me out. I somehow dodged the shadows but now found myself lost in Harrah's Casino. Literally lost...

Flash to the next day. I was back in tram on the way to the convention. I was telling a handful of people this story and one dude broke out some concentrate and said, "Wanna smoke?" I'm like "Sure!" And so, another day began...

*Patrick
Los Angeles, CA*

OFF SCHEDULE

The federal government lists marijuana as a Schedule I drug. This means the government wants you to believe that pot is just as dangerous, addictive and as harmful as meth and heroin. Am I here to tell you that marijuana is not addictive? With anyone, anything can become addictive. Whether it's sex, caffeine, nicotine, alcohol, or thousands of other things. We all have our own vices. What I am here to tell you though is that marijuana is most definitely not as harmful or dangerous as those other drugs! And, by putting marijuana in the same class as those hard

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drugs, the government is leading people who have consumed cannabis to

think, "Well, if marijuana is not that bad then these other drugs in the same class must not be either." Once I had smoked marijuana that's exactly what went through my young mind when someone offered me a line of blow. Eventually I realized marijuana was way more like medicine than it was like cocaine.

I see how it has helped me in my own life and I refuse to go back to the way I used to feel and live.

Daniel

FREE WEED REBOOT

Danny and Mike, or, as I always referred to ya'll many years ago, Batman and Robin, I'm so glad to hear you back on the air, especially in a weekly format. Exciting! If you need an alternate host, someone to conduct interviews in Washington or Oregon or anything else you can think of, please hit me up. I love you guys!

Chad

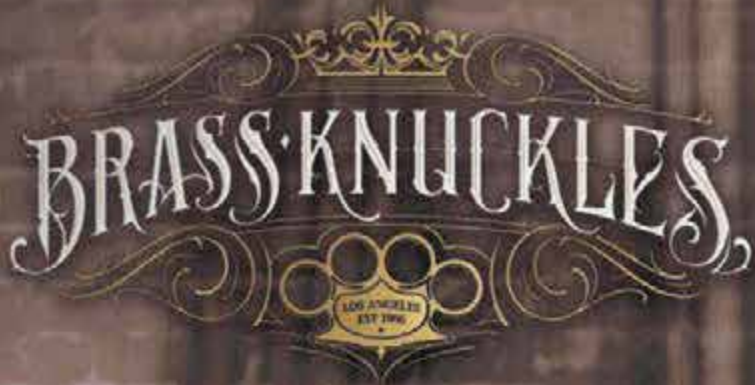
Thanks Chad. We're excited to bring the *Free Weed* podcast back. We'll be dropping new episodes on Thursdays moving forward. Thanks so much for sticking with us during the hiatus.

THEORETICALLY SPEAKING

I'm writing about a theory of mine, which is that over time we can shock a strain in a household setting so that it'll grow and re-bud on its own as if it was naturally growing in Mother Nature's environment. The only difference is we'd be able to clip buds off the lower limbs while the cola dies to regenerate itself later as the seasonal barometric and atmospheric pressures change the temperature. I just think that farming seeds and household-style plants can come off the same plant due to how the cola is the main flower and the rest are like those on a rose vine, plucked off this year, only to grow back next.

*Joe
Vermont*

Danko says: Although cannabis plants can be manipulated into regeneration, they're actually annuals and not perennials. The idea of perpetually harvesting buds from one plant over and over is far-fetched and ill-advised. Better to start new seeds and clones when necessary.



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GROWING FOR CONCENTRATES As the concentrates industry continues to grow, hash makers are changing their approach in the garden. Traits like high potency and yield are taking a back seat to terpene and oil production as concentrate makers tailor their grows to optimize their extractions. Find out how to grow for concentrates on page 66. *Photo by Sly Vegas*







VALLEY HIGH The Central Valley Cup was the first fully legal Cannabis Cup in High Times history. Sanctioned by both state and local governments, the Central Valley Cup, held at the Cal Expo fairgrounds in Sacramento, CA allowed attendees to purchase up to an ounce of pot! Read all about the performances from Rick Ross, Cypress Hill, Lauryn Hill and more on page 98. *Photo by Jesse Faatz*

**CONTACT
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STRONGEST CONCENTRATES In honor of our 710 awards, we decided to dig through the data and present the strongest concentrates ever entered in our Cannabis Cup competitions. While these are not necessarily the best concentrates from each event, they're certainly the most potent. Find out who had the fire on page 58. *Photo by Justin Cannabis*



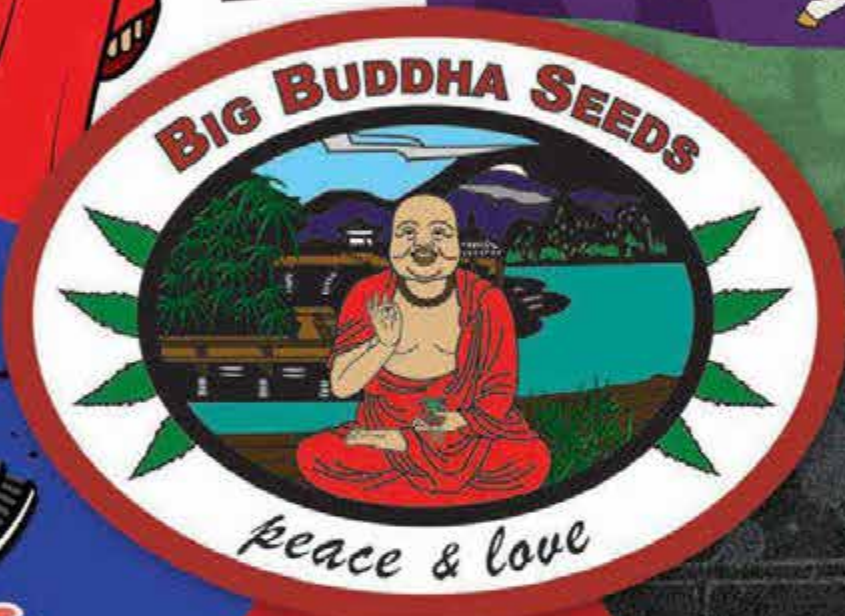
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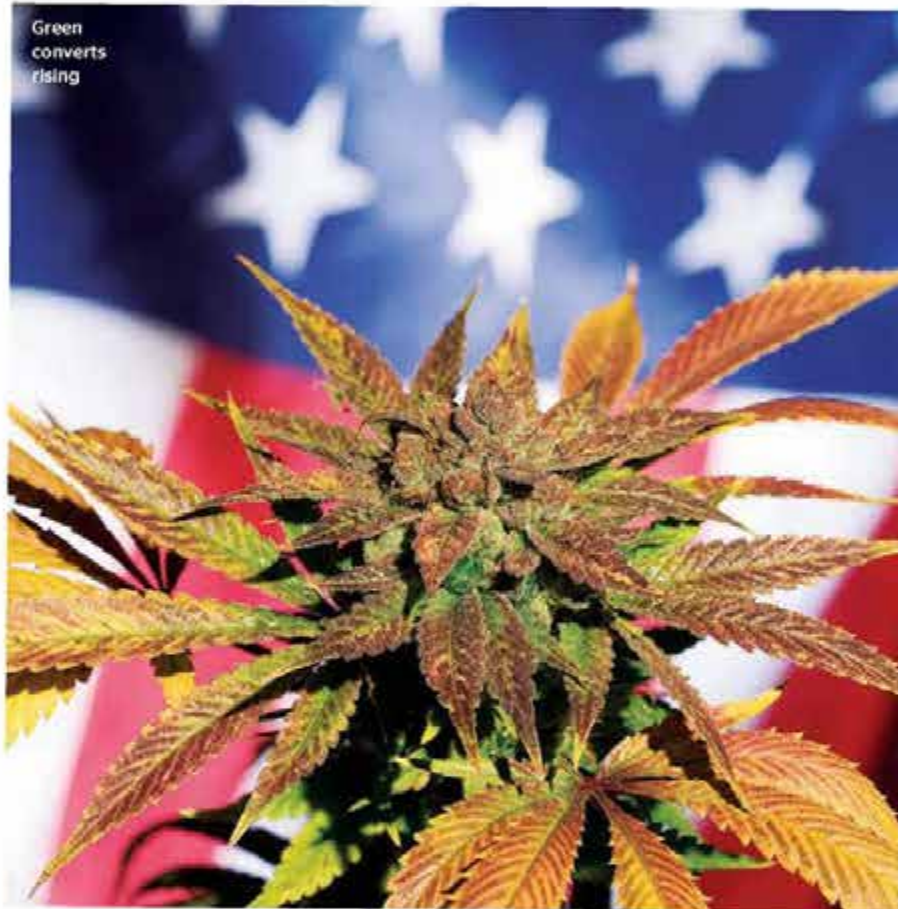
California's Lowell Herb Co. is offering jobs to people convicted of cannabis crimes. p.26



ENTERTAINMENT

L7

Feminist indie rockers L7 are kicking ass and taking names 17 years after breaking up. p.32



Green converts rising

CHANGING HEARTS AND MINDS

PROHIBITIONISTS ARE COMING AROUND TO UNDERSTAND THAT WEED IS GOOD. NEW CONVERTS ON THE BANDWAGON ARE EITHER CHASING CANNA-BUCKS—OR ARE JUST LEARNING THAT GOING GREEN IS SMART POLITICS. BY MIKE DIPAOLO

POLITICIANS DON'T LIKE to be accused of flip-flopping on any issue, but many are coming around to the radical notion that marijuana is awesome—or at least that it's not the demon weed they'd imagined it to be. These 180-degree conversions are not profiles in courage so much as the realization that prohibition is a political loser.

Witness Donna Shalala, who, as the (unelected) secretary of the Department of Health and Human Services under Bill Clinton, was a continual scold about the dangers of cannabis and an annoying critic of the heroic pioneers in med-pot states. Now that she's running for Florida's 27th congressional-district seat, however, she is all in for weed.

Assuming contemporary democracies function as intended, these changes of heart might simply mirror public opinion, and that's a good thing. We want our leaders to accurately represent our interests. Colorado Governor John Hickenlooper was, not that long ago, chilly on cheeba. He was against legalization when Rocky Mountain State voters demanded it in 2012, but he's successfully overseen its implementation since. He first said that voters were "reckless" for legalizing it, but later softened that to "risky." By 2016, Hickenlooper was telling audiences that his job was to "deliver on the will of the people of Colorado."

But conversions among policy-makers are not merely reflective of the zeitgeist; they can also be drivers of the green revolution. When Justin Trudeau was a rookie Canadian MP in 2009, he voted for a bill that would have imposed mandatory minimum sentences for marijuana-related offences (the bill mercifully died in Parliament). In 2012, he began the year expressing doubts about decriminalization, but by year's end was dissing the failed War on Drugs. Shortly thereafter, he declared he would pursue full legalization, and as prime minister he's blazed the trail to free the weed

ever since; the happy results in Canada are imminent.

Then we have pols like Senator Dianne Feinstein (D-CA), who these days says she "strongly supports" the legalization of medical marijuana, but it wasn't that long ago (2015) that she voted against preventing the use of federal funds to prosecute dispensaries in med-legal states. Feinstein's office said the senator has had a change of heart after meetings with constituents, McClatchy reported, especially meetings with young children whose lives are improved, perhaps even saved, by medical cannabis. That revelation notwithstanding, Feinstein still says

« that she has seen too many criminals who “began with marijuana and went on to hard drugs,” a gateway-drug mentality apparently too ossified to dislodge. As Feinstein now faces a challenge for her Senate seat from the left by State Senator Kevin de León (who is not very vocal about cannabis but always votes the right way), it will be interesting to see if her position “evolves” even more as Election Day approaches.

We can see this dynamic playing out in New York’s gubernatorial race. Incumbent Andrew Cuomo has been lukewarm on cannabis, taking only the most incremental steps toward reform. But now progressive challenger Cynthia Nixon has made full legalization the hallmark of her campaign. “There are a lot of good reasons for legalizing marijuana, but for me, it comes down to this: We have to stop putting people of color in jail for something that white people do with impunity,” Nixon declares in a campaign video. “If there was more political courage coming out of Albany, we would have done this already.”

Compare that passion with Cuomo’s tepid, passive approach: “It’s no longer a question of legal or illegal,” the

THESE 180-DEGREE CONVERSIONS ARE NOT PROFILES IN COURAGE SO MUCH AS THE REALIZATION THAT PROHIBITION IS A POLITICAL LOSER.

governor droned recently. “It’s legal in Massachusetts. It may be legal in New Jersey. Which means for all intents and purposes it’s going to be here anyway. The facts have changed.”

One fact that changed for John Boehner is that he is no longer in office. The former Republican speaker of the House recently joined the board of directors of Acreage Holdings, which claims “the most diverse portfolio of any company in the American cannabis industry.” Boehner explained to CNBC that his views on weed, “like that of millions of other Americans, has evolved as I’ve learned more about the issue,” adding, “I decided to get involved because of the struggles of our country’s veterans and the opioid epidemic, after learning how descheduling the drug can potentially help with both crises.” (Translation: “This gig is going to make me a shit-ton of money.”)

It is instructive to note that while

there are many examples of pols changing their views on cannabis, we find zero examples of the change going in the other direction—from pro-weed to anti-weed. We asked Morgan Fox of the Marijuana Policy Project if he’d heard of such a conversion, but he had not. Does the MPP target prohibitionists, in order to persuade them to pursue saner policies? “Not necessarily,” Fox says. “We just use information and reason to get our points across. We generally wouldn’t target a staunch cannabis opponent, except to refute the arguments they have for opposition. Some people just refuse to be convinced regardless of the evidence.”

Whether politicians are craven hacks merely chasing the perceived political winds or principled leaders unafraid to change positions based on facts, the trend is clear: The world is getting greener, and even the buzzkills are getting on board. ✨

HIGH FIVE

THE DARK SIDE

MARIJUANA’S ENEMIES HAVE WORKED TIRELESSLY TO KEEP WEED ILLEGAL. BY FRANK GREGORY



ANDREW MELLON

Mellon was the secretary of the Treasury under President Herbert Hoover and owner of Mellon Bank. His bank financed the petrochemical company DuPont, which was developing a process for turning wood fiber into usable paper. However, the chief scientists at the US Department of Agriculture favored paper made from hemp pulp. Mellon appointed his niece’s husband, Harry J. Anslinger, as the head of the Federal Bureau of Narcotics, and Anslinger spent his career demonizing hemp and cannabis.



DAVID FRUM

As an influential author, journalist and media presence, Frum has propagated the tenets of the anti-legalization movement via major outlets. His writings for the *Daily Beast*, CNN, *Newsweek* and many other mainstream publications invoke the theme that Americans need marijuana-policy decisions made for them. While Frum does oppose incarceration for marijuana users, his high-profile platforms allow him to continue his inane crusade against marijuana legalization, paired with please-think-of-the-children rhetoric.



RICHARD NIXON

More than 40 years ago, the Controlled Substances Act was passed and a presidential commission, appointed by President Nixon, was chartered to determine how to classify marijuana. The commission recommended that cannabis use not be a criminal offense under state or federal law. Shocked by the findings, Nixon himself overruled the commission’s research. As a result, marijuana was doomed to its current illegal status with assistance from the Eastland hearings of 1974.



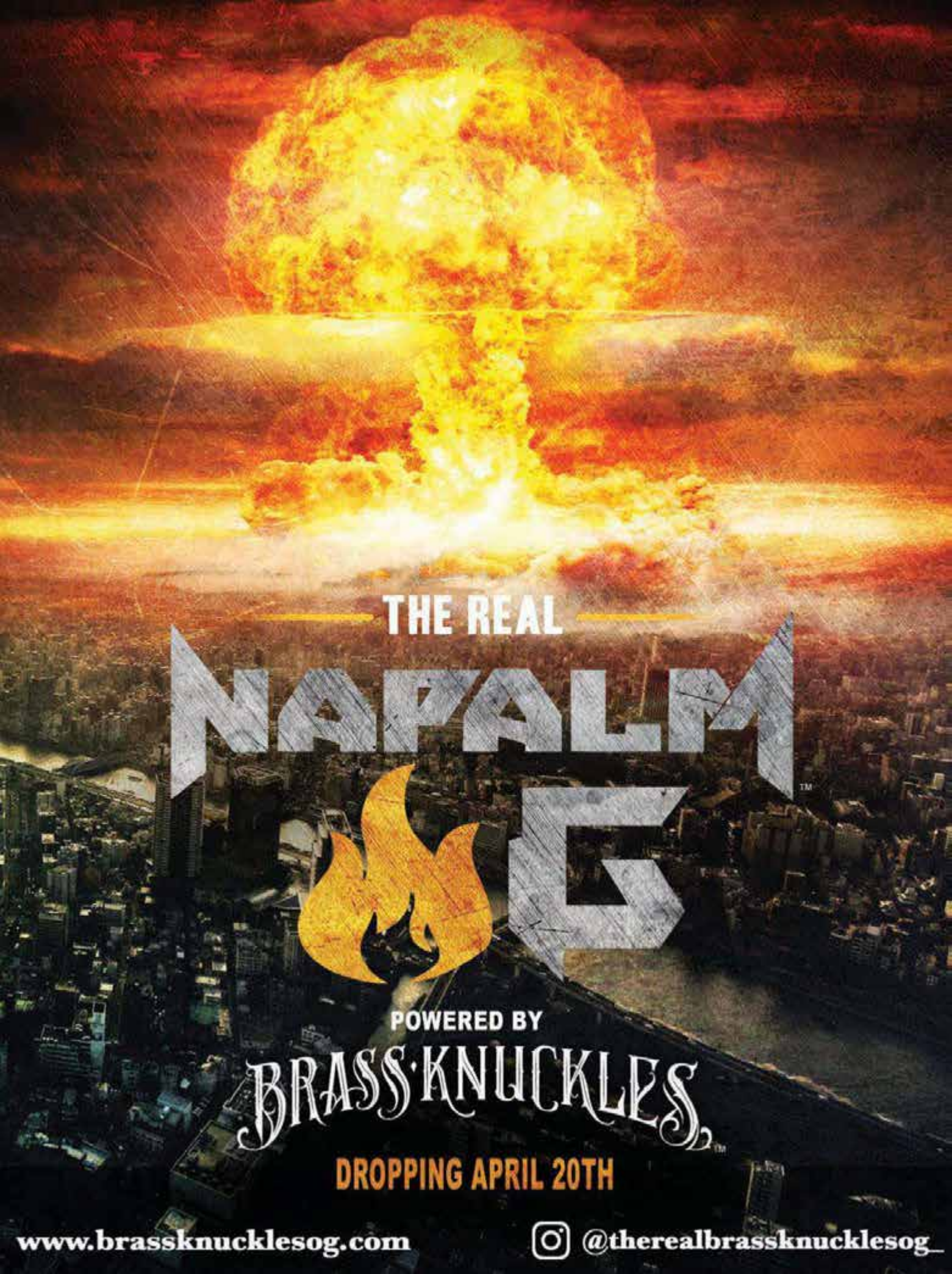
JAMES EASTLAND

After Oregon ruled for marijuana decriminalization in 1973, a major counteroffensive in the form of Senate hearings began in 1974, led by Senator James Eastland of Mississippi. Eastland handpicked anti-marijuana scientists as his star witnesses. There was testimony given that marijuana caused an “amotivational syndrome” that made young people unwilling or unable to work, study or defend their country. Additional testimony posited that pot caused insanity, psychosis, impotence, deformed children and violent crime.



PATRICK KENNEDY


Kennedy, a former congressman for Rhode Island and a son of Ted Kennedy, founded Project SAM (Smart Approaches to Marijuana) with former White House adviser (and all-around dickhead) Kevin Sabet and journalist David Frum. Project SAM claims that cannabis on the black market is less of a threat than the potential of big, powerful marijuana businesses. With affiliates in 22 states, Project SAM is one of the nation’s most outspoken and visible anti-weed groups facing down legalization.



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GREEN JOBS

Ex-convicts often have a hard time finding work on the outside, but California weed grower Lowell Herb Co. is there to help. "Out of respect for the men and women who kept cannabis going in darker times," the company website declares, "we give special consideration to candidates recently pardoned for nonviolent cannabis offenses in California." Provisions in the Golden State's Proposition 64 allow for people convicted for cannabis infractions to clear their records and, so far, thousands have done so. It's a testament to the policymakers who crafted the adult-use legislation, and we give gigantic props to companies like Lowell Herb that are actively bringing Drug War victims back into the fold. The Central Valley grow company is, unsurprisingly, also committed to sustainable agriculture, eschewing synthetic pesticides and using only organic fertilizers. It puts out an excellent line of pre-rolls as well. For more info, check out lowellsmokes.com/jobs.

SALT LAKE SHITTY

If you can't beat 'em... cheat? That's the apparent tactic of anti-weed scolds in Utah, where voters will be considering a medical-cannabis initiative in November. Some canvassers trolled petition signers of the Utah Medical Marijuana Initiative in an effort to convince them to rescind their signatures, thereby making the initiative ineligible for the November 6 election. A video posted by local news affiliate Fox 13 shows a woman making false claims about the initiative at the doorstep of a petition signer, who refused to rescind her Jane Hancock. The video was released by Together for Responsible Use and Cannabis Education (TRUCE), a group that supports the initiative. TRUCE director Christine Stenquist described the canvasser's spiel as "fanciful confabulations, outright untruths and attempts to manipulate the person being visited." As it happens, the underhanded tactics didn't work. Lieutenant Governor Spencer Cox has declared the initiative and its signatures valid, and now it will be up to Utah voters in November.

INSIDE
THE WIDE
WORLD OF
WEED



HERB YOUR ENTHUSIASM

Jeff Garlin likes being lifted, but not too high. On a recent *Conan*, the comic actor extolled the virtues of *indica*, which he likes to imbibe after a long day of accruing regrets. Garlin was not into weed until the advanced age of 50, when he was turned on to the delights of the vape pen by none other than Whoopi Goldberg. Following an appearance on *The View*, Whoopi gifted Garlin some kindness, and his life has been mostly sublime ever since. Garlin, who plays an unrelated Goldberg on another show, tried to share the good news with Conan O'Brien. "I think you would be good smoking some pot!" he enthused, but the talk-show host demurred and mostly riffed on the pitch, calling Garlin "a sommelier of pot." The actor's final piece of advice for the high-strung: "Don't you be smoking *sativa*, my friend. That will send you down the wrong path."



Trigger hippies

WAR GAMES

"I absolutely just loved altering my mind" is the kind of thing you like to hear after a good party, but it is mildly disturbing to hear it from the Air Force personnel who man the country's nuclear stockpiles. Documents unearthed by the Associated Press show that a number of US servicemen of the 90th Missile Wing—whose fingers are on the launch buttons of Minuteman III

intercontinental ballistic missiles—bought, distributed and of course consumed LSD and other mind-altering drugs for months. In 2016, one of the uniformed stoners posted a Snapchat video of himself blazing weed, thereby setting off an Air Force investigation. Although none of the 14 airmen disciplined were accused of tripping while on duty, six were convicted in courts-martial. The AP noted that the military had discontinued screening personnel for LSD in 2006 since the drug was showing up so infrequently in tests. It may want to rethink that one.



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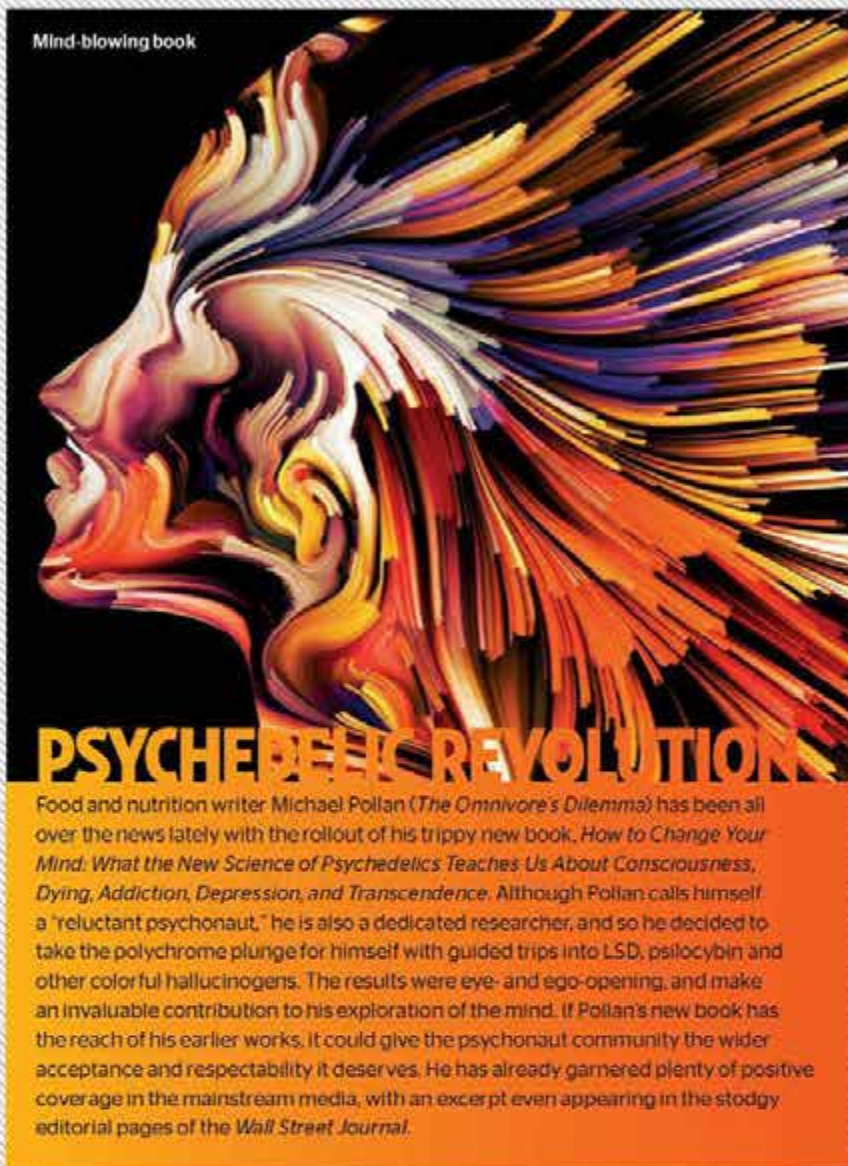
Bad retirement plan

SHOOT THE DOG

What do we do with canines trained to sniff out ganja when pot goes legal? An Illinois law-enforcement official speculated that the soon-to-be-obsolete K9 cops would likely have to be euthanized. Detective Chad Larner of the Decatur Police Department made the unfortunate and morbid suggestion to a local news outlet, and was subsequently roasted by experts for his idiotic comment. "It was a bad choice of words, and it's a statement [Larner] wishes he didn't make," Decatur's chief of police, James Getz Jr., told the *Chicago Tribune*. "There are so many uses for these dogs... We anticipate those dogs are going to work with us for a long, long time." There are currently about 275 certified narcotic-detection K9 cops in Illinois (which may well become the 10th US state to legalize for adult use), but they are usually chosen for their sociability, and the four-legged retirees end up living with their handlers anyway. So no, please don't shoot the dog.

DRUG WAR COLLATERAL DAMAGE

For the past dozen or so years, the US Justice Department has been covertly seizing drugs from dealers, then making their busts look like burglaries. The dealers then lash out to recover their stash, putting lives at risk. Recent busts in Oregon and Ohio have put innocent bystanders in the crosshairs of angry drug dealers who didn't realize they were actually ripped off by the feds. So-called "delayed-notice" search warrants that allow this chicanery stem from the 2001 Patriot Act enacted subsequent to the September 11 attacks. The *New York Times* reported that the number of these warrants has jumped from about a dozen in 2002 to more than 9,000 by 2016—but that less than 1 percent of the warrants are used in actual terrorism cases, as the law originally intended.



Food and nutrition writer Michael Pollan (*The Omnivore's Dilemma*) has been all over the news lately with the rollout of his trippy new book, *How to Change Your Mind: What the New Science of Psychedelics Teaches Us About Consciousness, Dying, Addiction, Depression, and Transcendence*. Although Pollan calls himself a "reluctant psychonaut," he is also a dedicated researcher, and so he decided to take the polychrome plunge for himself with guided trips into LSD, psilocybin and other colorful hallucinogens. The results were eye- and ego-opening, and make an invaluable contribution to his exploration of the mind. If Pollan's new book has the reach of his earlier works, it could give the psychonaut community the wider acceptance and respectability it deserves. He has already garnered plenty of positive coverage in the mainstream media, with an excerpt even appearing in the stodgy editorial pages of the *Wall Street Journal*.



Taking time bomb

VAPE-PEN TRAGEDY

A Florida man became the first known vape-pen casualty when his e-cigarette exploded, killing him and starting a fire in the bedroom where he was found. Thirty-five-year-old Tallmadge Wakeman D'Elia was at his home in St. Petersburg when his vape pen exploded and delivered a "projectile wound to the head," according to an autopsy report filed in Pinellas County. Medical

examiner Bill Pellan said the pen was a Smok-E Mountain Mech Works, a type of unregulated mechanical-mod e-cigarette, according to *ABC Action News*. A spokesman for the vape-pen company claimed that the devices do not explode, and that the accident was likely an atomizer or battery issue, hinting that problems arise when other companies clone their batteries, rendering them unsafe. According to a report issued by FEMA in 2017, "Fires or explosions caused by the batteries are uncommon; however, the consequences can be devastating and life-altering for the victims."

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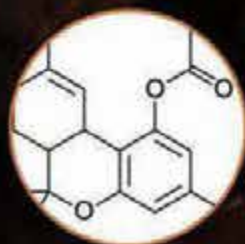
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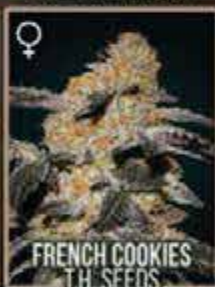
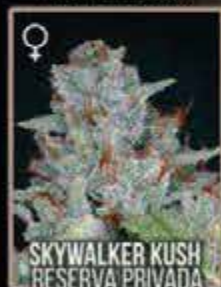
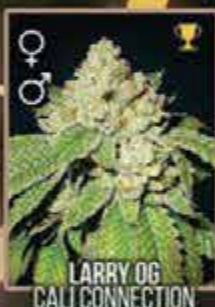
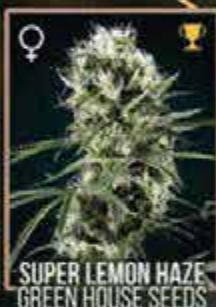
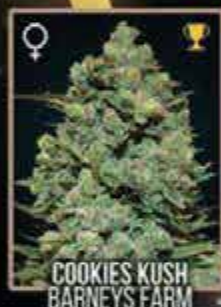
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BACK FROM PRETENDING THEY'RE DEAD

FEMINIST ROCKERS L7 RETURN TO FANFARE AND FESTIVAL BOOKINGS 17 YEARS AFTER CALLING IT QUILTS. BY CHRIS PARKER

SOME EXPERIENCES ARE so good, you just have to return to them. Grunge rockers L7 were a first kiss and brush with death rolled into one—heart-pumping excitement cut with a bottom-heavy pulse of danger. Rising out of a Los Angeles music scene still besotted with mascara-and-hairspray hard rockers, L7 were the real specimen penning such feral hits as “Fast and Frightening,” “Andres” and “Pretend We’re Dead.”

Donita Sparks and guitarist Suzi Gardner founded the band in 1985. For Sparks, the sound of Gardner’s early demos was pure Goldilocks: “Heavy but catchy; not too punk, not too metal and not too new wave.” Their lyrical approaches meshed as well.

“I lean more toward social commentary. Suzi gets a little more personal with her stuff,” says Sparks. “Sometimes we come together and write a song like ‘Shove’ that has a little bit of both.”

The band enjoyed a fine 16-year run, the last few pocked with departures and disappointments before they disbanded in 2001. Fifteen years later, Sparks

teamed up with director Sarah Price for the documentary *L7: Pretend We’re Dead*, which turned the group’s photos, home movies, interviews and commentaries into a moving survey of their career.

The experience of making the movie brought the band back together—some members hadn’t spoken to each other in the interim—and the positive reaction to the film encouraged them to hit the road. The response has been electric.

“The audiences have blown me away. We’ve had grandparents bringing their grandchildren to shows,” says bassist Jennifer Finch. “We’ve had people who never heard of L7 before the last few years come to shows, and old fans too. It’s been great.”

During their absence, the band’s stature only grew. The group recently returned from a hard-rock festival in Mexico where they shared the main stage with Judas Priest and Ozzy Osbourne. L7 will actually follow Ozzy at some European festivals this summer, including Download

Festival Madrid. “That should be interesting,” Sparks cracks.

Since returning, the band’s penned a couple of new songs, including “I Came Back to Bitch” and “Dispatch from Mar-a-Lago,” which they hurried to release last September.

“We thought Trump was going to be swiftly impeached,” Sparks says. “So we rushed and we rushed to get it out, but lo and behold, he’s still in office. So we kind of scored that he didn’t get impeached, and then are all really fucked because he didn’t get impeached.”

L7 started a PledgeMusic campaign for their new album, which they will begin writing in earnest this July. The group hopes to release it next year.

Drummer Dee Plakas is the band’s resident hasher, who can be

spotted in the documentary rolling up a joint on the cover of a Nirvana album. She recalls her juvenile-delinquent days when she’d disappear to wooded suburban Chicago creeks to smoke pot. She still enjoys a post-show puff.

Plakas’s bandmates aren’t really smokers. In fact, L7 is composed of four very different characters. But their differences make them stronger, helping them form a cohesive unit capable of sticking together through decades of touring.

“When we started, there were so few women in rock that there’s a little bit of alpha in all of us,” Sparks says. “There’s no pushovers in this band. I think with a lot of male bands there’s like an alpha and then everyone kind of falls in line, but with us we were sort of like four alphas in our personal lives and [we formed a] band of alphas, which is pretty badass.” ✨



HOLE LOT OF LOVE

Bassist Jennifer Finch formed a dream pop band with Courtney Love (of Hole) and Kat Bjelland (of Babes in Toyland) in 1984. Love later met Kurt Cobain at a 1991 Rock for Choice show with Hole and Nirvana, headlined by L7.

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Dean Ween's
not afraid to
mix it up.

THE DEAN OF WEEN

DEAN WEEN TAKES A BREAK FROM SAILING THE HIGH SEAS TO ROCK YOUR FACE OFF WITH HIS LATEST SOLO EFFORT, *ROCK2*. BY JOHN PAYNE

ALONG WITH PARTNER GENE in the on-again, off-again alt-rock-whatsit veteran duo Ween, Dean Ween has carved a career out of affectionately eclectic, genre-crushing tunecraft replete with puerile sex jokes and choice observational stuff about the more pressing banalities our funky world has laid on us like some kind of sick, sick joke. While Ween takes its little breaks, the Deaneer (birth name Mickey Melchiondo) has been making solo records, the second of which, *Rock2*, is just out.

Rock2 was custom-crafted in Dean's own purpose-built studio buried in the bowels of Lambertville, NJ. When he's not out on his boat (Dean's a licensed sea captain who takes tourists for spins on the ocean and the Delaware River), his studio is where he spends most of his time; the guy does a lot of recording.

"Yeah, it's almost a problem," Dean says with a laugh. "I always have to be in motion for some

reason. It can be a drag."

Rock2 is by design nothing fancy, with an organically fun thing going on that doesn't come off forced or contrived. Refreshingly, it doesn't sound remotely "contemporary," either.

"My point of reference musically ends in about 1979," Dean says. "I've never even heard the Pixies or the White Stripes, honest to god. I love the Allman Brothers, the Beatles, Zep, Funkadelic, the Clash, Public Enemy. That's where I come from, and it'll never change."

A classic vintage-rock vibe glows off tracks like the slow'n'sleazy horn-honker "Fingerbangin'," whose lyrics are solely composed of the titular word for, uh, hitting one's hand with a hammer; "Love Theme From 'Skinheads Kicking Your Ass'" is a jolly lil' shitstomper with dancey guitar figures rolling out like a Scottish reel; the greezee guitar squawker "Showstopper" could've been ripped out of the

Grand Funk Railroad songbook, and maybe it was. There's a veritable shitload of great Friday-night party fodder on *Rock2*, each wad of which briefly occupies the listener's personal space, makes its excellent sonic points, then gets the hell outta your face.

Best of all, none of these songs drip with significance; when it comes to lyrics, Dean Ween does not have a lot of grand overarching themes bouncing around in his cranium.

"My lyrics are totally autobiographical," Dean says. "Every song has a back story to it that has something to do with the time when that song was written. It can be fun, it can be funny, it

"I COULD TELL YOU STORIES FOR DAYS ABOUT HOW MANY TIMES I'VE MESSED [EDIBLES] UP... THE FIRST TIME I WENT TO AMSTERDAM, WHEN I WAS LEAVING THE COUNTRY, I STILL HAD ALL MY HASH, SO I ATE IT ALL. AND I JUST, LIKE, CAME UNDONE AT THE AIRPORT..."

can be miserable, and if it doesn't resonate with people? That's not my fault, I'm just being real.

"I fish, and I make music," Dean adds. "Those are the two things I do."

At times, he also indulges in a little cannabis, which, Dean says, gives him the strength of a mule and the open mind of a real live artist.

"It gives me energy—I call it 'playing weed,'" Dean says. "But I'm very particular; I'm into *sativas*, majorly, but I smoke Lamb's Breath and Tangerine Dream."

Dean doesn't much trust edibles, as they're a bit harder to control, timing-wise.

"I could tell you stories for days about how many times I've messed that up," Dean says. "The first time I went to Amsterdam, when I was leaving the country, I still had all my hash, so I ate it all. And I just, like, came undone at the airport..."

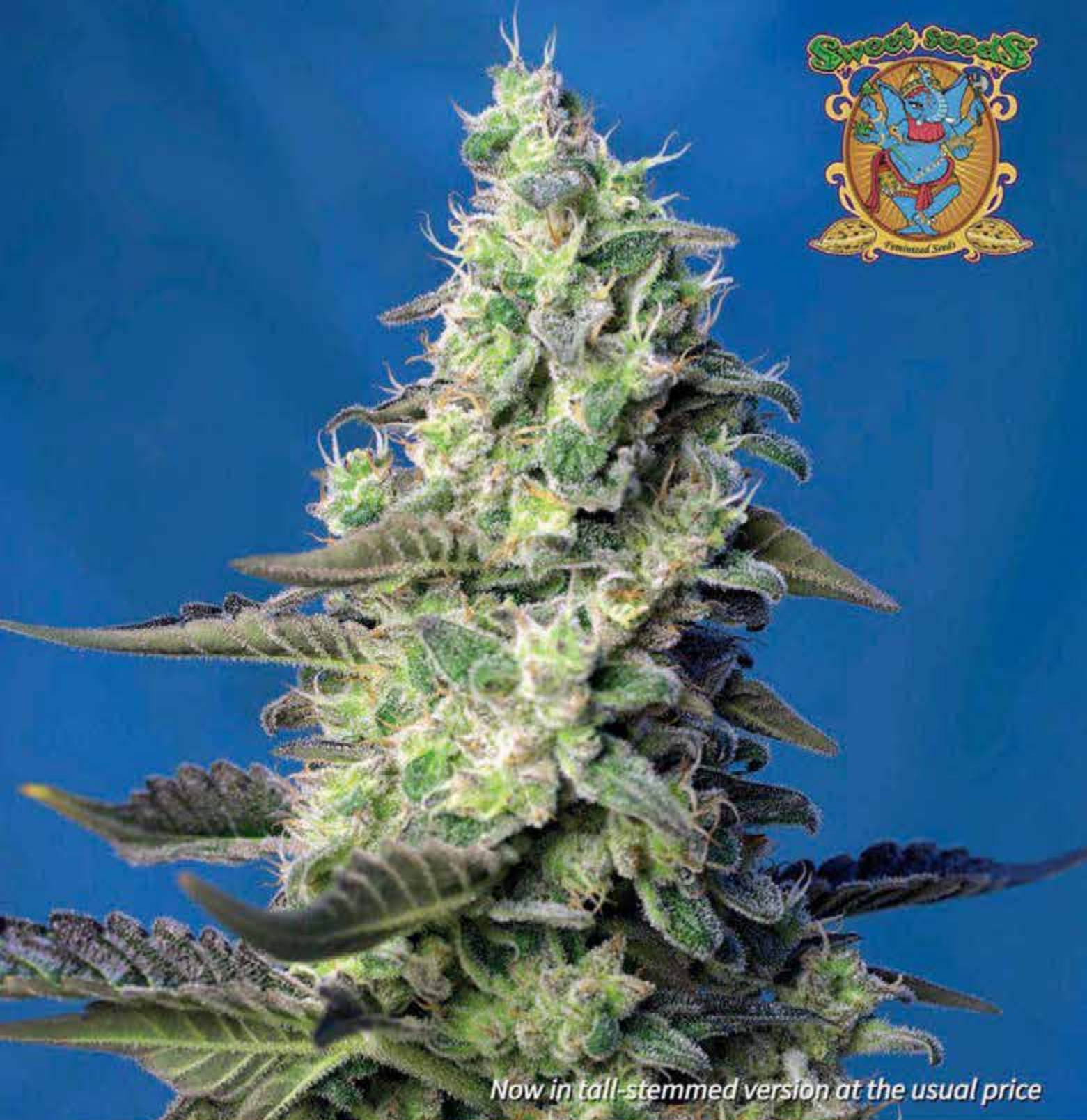
When the weed is good, Dean finds himself verily becoming the music—though he himself would never describe the transformation in such corndoggy terms.

"If you haven't smoked weed and tripped to Jimi Hendrix or 'Dark Side of the Moon,' then there's something about life that I know that you just don't know," Dean says. "Weed enhances music, period. If it doesn't, you're listening to the wrong music!" 🌿



ROUGH RIDE

Dean's "Yellow Pontiac" (from *Rock2*) addresses the timeless issue of people who drive around in lame-o rides ("Piece a shit, stupid-ass fuckin' ugly yellow Pontiac!"). In these trying times, Dean Ween is the hero we deserve.



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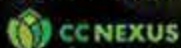
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Kratos is on a quest in *God of War*.

FATHER-SON BONDING IN BLOOD

THE LATEST ITERATION OF THE MYTHOLOGY-LADEN GAME IS A FAMILY AFFAIR.

AS THE FIFTH INSTALLMENT in a critically acclaimed franchise, and the first one on Sony's newest system (minus the remasters), *God of War* has a lot to live up to. As it turns out, it doesn't live up to the quality of its predecessors—it surpasses them by far.

God of War mixes everything up for the best. Kratos is joined by his son, Atreus, on a quest to spread his wife's ashes, meaning this isn't a solo journey, and Atreus isn't a kid that needs taken care of: Several times (especially after some

upgrades) he saved my ass—more often than I care to admit.

Kratos also swaps out his trademark dual double-chained blades for a battle axe, capable of pinning enemies to walls, slicing and dicing, and all other manner of badassery (but don't worry—the blades are still there). The smooth upgrade

system means you're constantly learning new ways to rip your enemies apart, and thankfully it never gets old.

Being a Sony-produced game, it's gorgeous from start to finish. Midgard and its giant Lake of the Nine, Niflheim and its poisonous fog, and the trials of Muspelheim are all visually unique and beautiful in their own way. Traversing the areas is even better, as the tight controls and great combat make exploration a joy instead of a chore.

The overall plot involving enemies is interesting, but this isn't about Kratos chasing down a big bad guy bent on destroying the world: At its heart, it's about a father taking his son on a journey to fulfill a mother's dying wish. Seeing Atreus grow almost makes you feel proud, believe it or not. Kratos is a father who says little, but he's obviously taught Atreus a great deal, making the game's backstory that much more impactful. *Casey Holiday*



GOD OF WAR
(PlayStation 4)

MUSIC RECOMMENDATIONS



ON HIGH
Never Die EP
(Rufftone Records)

Brooklyn sextet On High's groove-laden swag is fueled by Kareem Bunton's gruff, sinewy vocals and the soul-shouter soar of Konstance Patton, exploring a gentrifying soul/rock neighborhood not far from where Daptone Records set up. The gritty wah-riddled rumble of "Tragic

City" illuminates the city's dark shadows. "Sisters and Brothers" drives a thrilling '60s psych-rock melody. The highlight is "Jailbirds Theme," a thoughtful soul-jazz tale from a returning ex-con's perspective that could've dropped straight off a '60s blaxploitation flick. An intriguing debut. *Chris Parker*



ICEAGE
Beyondless
(Matador Records)

Singer/guitarist Elias Rønnefelt's self-possessed vocal swagger recalls Julian Casablancas's jaded sneer while Iceage's music is similarly inspired by grimy urban art/post-punk. The Danish quartet's fourth release, *Beyondless* continues their swift evolution from rudimentary rumble

to noisy, richly textured mood pieces that evoke the desolate grind of Nick Cave's Bad Seeds, Dream Syndicate's expansive guitar thrum and the foreboding feel of the fall. Horns find homes on several tracks as Iceage grow increasingly cinematic. On the verge of greatness. *CP*



VELVETEEN RABBIT
"Mind-Numbing Entertainment"
b/w "I Wanna Be Your Woman"
(HoZac)

This slick lil' disc neatly encapsulates the boogie-tinged junk-shop glam of the early 1970s. Layering the breathy vocals of never-was-but-should-have-been Brett Smiley over shamelessly copped and perfectly performed T. Rex lixx, Brooklyn's Velveteen Rabbit offer listeners a sexy, sleazy good

time. The flange-soaked, piano-driven "Mind-Numbing Entertainment" conjures the X-rated Times Square of yesteryear, while the gender-bending "I Wanna Be Your Woman" promises an equal-opportunity roll in the hay. Bonus: The smooth, retro production is *insane*. Worth your shekels! *Polly Watson*



AT THE GATES
To Drink From the Night Itself
(Century Media)

At the Gates, originators of Sweden's genre-defining "Gothenburg melodic death metal," emerge from their wintry world with another sacrificial aural offering to the stoner music gods. Dank deities will approve of the Mastodon-like "In Nameless Sleep" and the precision of "Palace of Lepers," as well

as the furious title track, but probably wouldn't want to be lost either in "A Labyrinth of Tombs" or on the "Seas of Starvation." The quintet also permits more introspective musical moments, adhering acoustic and classical elements to opener "Der Widerstand" and goth finale "The Mirror Black." *Mark Miller*

BOOK RECOMMENDATIONS



CANNABIS: MARIJUANA UNDER THE MICROSCOPE
Ted Kinsman
(Schiffer Publishing)

Get to know the cannabis plant intimately with this work showcasing the details of pot's makeup. See the beloved plant transform from seed to fruition through incredible photos taken by microscope. "The goal is that these images will establish a bridge between the world of science and

the world of art to allow the viewer a deeper understanding of the workings of a cannabis plant," states Kinsman in the book's introduction. Each image in this photo-heavy book is accompanied by an exemplary explanation that goes beyond the scientific and feels deeply personal. *Mary Schumacher*



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BIG PHARMA SET TO RELEASE FIRST CBD DRUG

EPIDIOLEX COULD BE THE FIRST PLANT-DERIVED PHARMACEUTICAL CBD MEDICATION APPROVED BY THE FDA.

Yona Torres is Senior Contributing Editor for New Frontier Data



AS MOST INFORMED marijuana consumers know, cannabidiol (CBD) and tetrahydrocannabinol (THC) are two chemical compounds found in the cannabis plant that act on the brain's neurotransmitters. While THC is primarily responsible for the “high” sensation people feel when consuming cannabis, CBD has been clinically proven to be effective in treating serious medical conditions. This summer, the FDA will decide whether to approve the first plant-derived pharmaceutical CBD drug, Epidiolex.

An oral solution used to treat seizures associated with Lennox-Gastaut syndrome (LGS) and Dravet syndrome, Epidiolex would be the first pharmaceutical drug to use CBD—and the first to use a natural compound from the cannabis plant itself. The FDA has approved only two other cannabis-related medicines, dronabinol and nabilone (the active ingredients in Marinol, Syndros and Cesamet), which use either a synthetic form of THC or a synthetic compound that replicates THC's effects.

Epidiolex promises to be a strong competitor to other antiepileptic drugs, with sales estimates of the new drug indicating it could capture a third of the antiepileptic-drug market. Dravet syndrome is a childhood epilepsy disorder associated with seizures in infants that has a high mortality rate. LGS is a severe, childhood-onset epilepsy requiring lifelong treatment. Both conditions are considered “drug-resistant” to existing pharmaceuticals. Despite this, pediatric neurologists continue to prescribe antiepileptic drugs, with mixed results. The introduction of Epidiolex as a treatment option is intended to provide a solution.

Versions of CBD oils have been on the shelves of natural grocers and specialty shops for years. In 2017, a CBD trial published in the *New England Journal of Medicine* attributed these natural treatments as the inspiration for the current focus on CBD and stated: “Interest in cannabidiol for the treatment of



epilepsy was generated by media reports of its efficacy in children with the Dravet syndrome.”

Epidiolex could displace its predecessors in the complementary- and alternative-medicine market, as consumers might prefer the perceived legitimacy that comes with FDA approval. However, the biggest lure will be the potential low cost to patients if Epidiolex receives prescription-drug insurance coverage. According to the latest “CBD Report” released by *Hemp Business Journal*, a division of New Frontier Data, total Epidiolex sales in 2018 are forecast to be \$30 million, before jumping to \$180 million in 2019—a 500 percent increase.

Epidiolex was fast-tracked through the preliminary stages of the FDA review process and then given priority review, a designation that expedites the new-drug application-review process down to six months from the standard 10 months. Priority review is given to applications that demonstrate promise in treating a serious or life-threatening disease, address an unmet medical need and, if approved, would create significant improvements in the safety or effectiveness of the treatment, diagnosis or prevention of the conditions when

compared with standard applications. Subsequently, the FDA advisory committee gave a unanimous recommendation to approve Epidiolex. The FDA will make its determination on Epidiolex on June 27, 2018. If it ultimately achieves FDA approval, the drug will be on shelves later this year.

What's on the minds of many in the medical-cannabis community, of course, is whether existing producers, operators and retailers of non-pharmaceutical CBD products should be concerned about Epidiolex's potential for market disruption or product displacement. But that's not necessarily what might happen. Epileptic patients who have benefited from the use of non-pharmaceutical CBD products may be wary of changing an effective treatment method. More importantly, Epidiolex is only intended to treat LGS and Dravet syndrome, thus limiting its potential customers to only a fraction of the entire CBD market. According to Sean Murphy, director of *Hemp Business Journal*, “The entire CBD market is expanding. Our forecasts show a dramatic increase in total CBD sales for the hemp-derived and marijuana-derived CBD markets as well as the new pharmaceutical market.” 🌿

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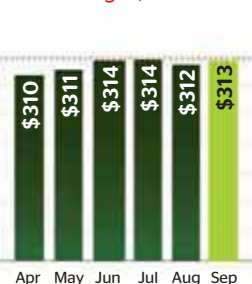
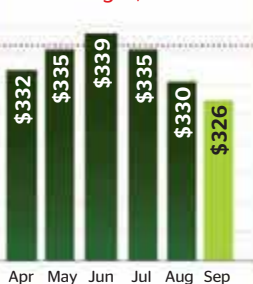
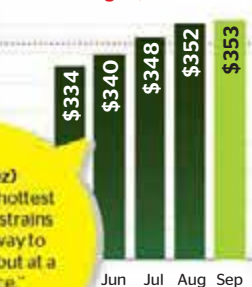
(Pennywise)
"This high-CBD strain shares its name with the evil clown, but this bud doesn't kill, it cures!"
-Tucson, AZ

(Girl Scout Cookies)
"Such a great strain. Delivers every time."
-Boston, MA

MARKET ANALYSIS

Prices by the ounce

All indices, with the exception of the Eastern Index, finished September above their previous month's average. The Eastern market continued to drop, bringing its YTD average down to \$336. Meanwhile, the Southern Index stabilized, finishing just \$1 above its previous month's average. Despite prices dropping precipitously in Oregon, the Western Index rose to an average of \$260 an ounce.

US Price Index
YTD Average: \$314Eastern Index
YTD Average: \$336Southern Index
YTD Average: \$346Western Index
YTD Average: \$261

(Zkittlez)
"One of the hottest indica-dominant strains makes its way to Tennessee, but at a high price."
-Memphis, TN

TRANS HIGH MARKET QUOTATIONS

STATE	CITY	STRAIN	PRICE
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ALASKA	Sitka	Blueberry Kush	330
ARIZONA	Phoenix Tucson	Pineapple OG Pennywise	189 270
ARKANSAS	Camden	Gas	175
CALIFORNIA	San Francisco	Cannalope Haze	200
COLORADO	Denver Pueblo	Sour Tangle Tres Star	175 150
CONNECTICUT	Waterbury	Kush	250
FLORIDA	West Palm Beach	Kamikaze	400
GEORGIA	Carrollton Covington	Gelato Purple Hindu	350 280
IDAHO	Boise	Orange Kush	280
ILLINOIS	Chicago	Maui Wau	320
INDIANA	Indianapolis South Bend	Sour Diesel Girl Scout Cookies	280 360
KENTUCKY	Richmond	Gorilla Glue	420
LOUISIANA	Abbeville	Pineapple Express	400
MARYLAND	Baltimore Hagerstown	Blackberry Kush Sour Diesel	280 300
MASSACHUSETTS	Boston	Girl Scout Cookies	350
MICHIGAN	Detroit Ypsilanti	Sour Diesel The White	320 400
MINNESOTA	Minnetonka	Blue Dream	240
MISSOURI	Columbia	Pineapple OG	420
NEBRASKA	Norfolk	Northern Lights	300
NEVADA	Carson City Las Vegas	Blue Dream Sundae Driver	326 355
NEW MEXICO	Roswell	Blue Dream	390
NEW JERSEY	Camden Middlesex	Gorilla Glue Grape Ape	400 440
NEW YORK	New York City Spring Valley	Girl Scout Cookies Gorilla Glue	200 320
NORTH CAROLINA	Raleigh	Mendo Purps	400
OHIO	Dayton	Kush	420
OREGON	Eugene Portland	Blue Dream Chong's Choice	190 215
PENNSYLVANIA	Sharon	Moonshine Haze	450
RHODE ISLAND	Woonsocket	Super Lemon Haze	336
SOUTH CAROLINA	Beaufort	Girl Scout Cookies	420
TENNESSEE	Memphis	Zkittlez	420
TEXAS	Tyler	OG Kush	280
UTAH	Salt Lake City	Platinum Kush	170
WASHINGTON	Seattle	Lemon Skunk	120
WEST VIRGINIA	Fairmont	Cherry Pie	320
WISCONSIN	Milwaukee	Gorilla Glue #4	260
INTERNATIONAL			
AUSTRALIA	Carlingford	Northern Lights	AU\$360
CANADA	Vancouver	Hindu Kush	C\$168
MEXICO	Jalisco	Sativa	\$260
PUERTO RICO	Bayamon	Mother Tongue	\$400

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).

(Kamikaze)
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-West Palm Beach, FL

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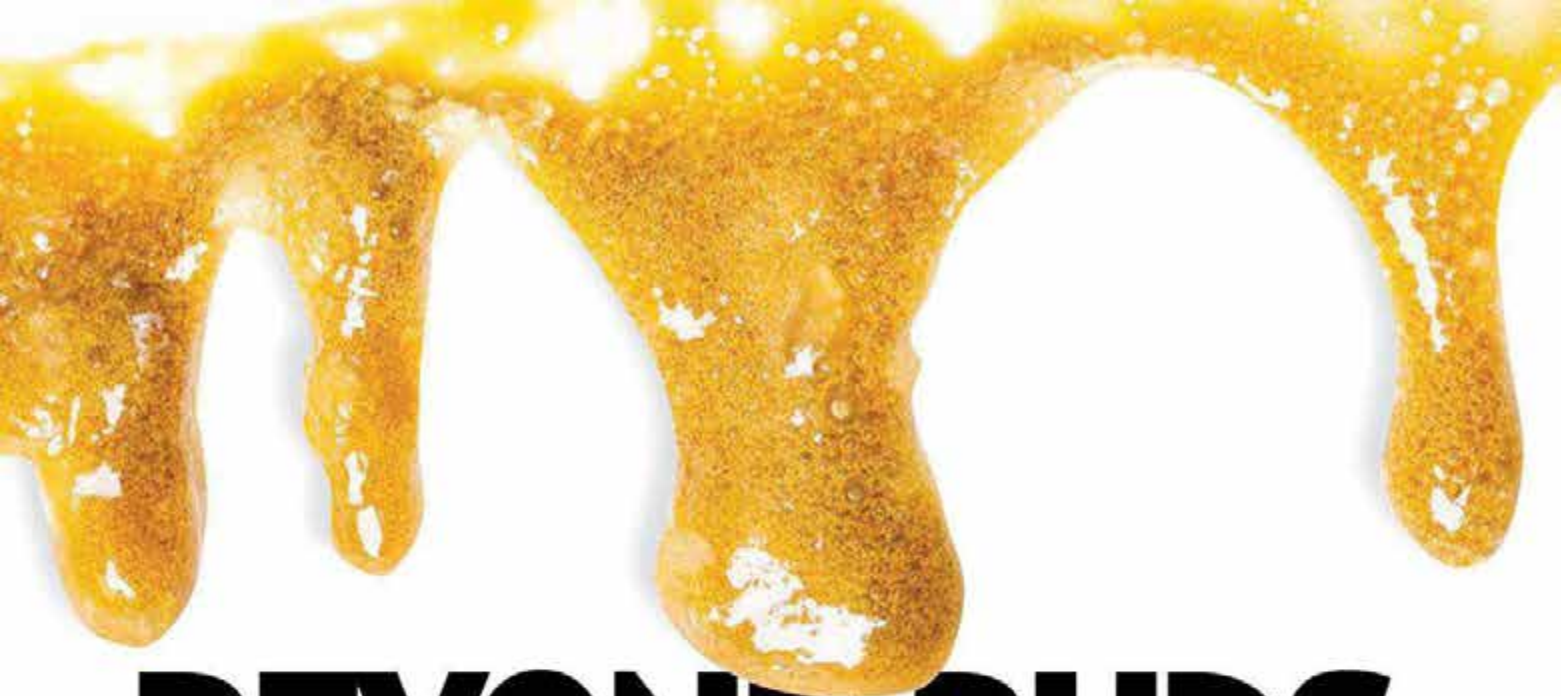


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BEYOND BUDS: NEXT GENERATION

THIS EXCERPT FROM ED ROSENTHAL AND GREG ZEMAN'S FORTHCOMING BOOK BREAKS DOWN THE BASICS ON MARIJUANA CONCENTRATES AND PROVIDES A PRIMER ON ROSIN HASH—FROM PRESSING TO STORING TO CONSUMING. *BY ED ROSENTHAL AND GREG ZEMAN, PHOTOS BY FRED MORLEDGE*

THERE WAS A FIRST lucky human who discovered the intoxicating powers of cannabis. Perhaps this early hominid collecting tinder and kindling inadvertently snatched up a few sticks of *sativa* and tossed them on the fire, realizing the powerful effects the smoke had only after awaking the next day to the grisly evidence that he'd eaten an entire antelope.

It is certain that once humans discovered the power of cannabis, we immediately poured our collective energy into harnessing it.

Consuming cannabis through inhalation is an ancient practice, so there aren't too many truly new ideas when it comes to getting the active ingredients into your lungs. Still, it's hard to point to a more revolutionary shift in contemporary cannabis consumption than the emergence of dabbing. Concentrates used to serve a supporting role to the undeniable "star" of the cannabis market: raw buds. Now, with the widespread embrace of dabbing, concentrates have taken center stage in the commercial and cultural conversation around cannabis.

With high-potency cannabis concentrates, a person can experience the effects of smoking an entire joint or more in a single breath, using only enough product to cover a pinhead. Think of it as the difference between drinking beer and liquor. If you drink a standard can or bottle of beer with an ABV of 5 percent, you're drinking 12 ounces of liquid but only 0.6 ounces of actual alcohol; if you drink a typical "shot" of 80-proof spirits, you're still consuming 0.6 ounces of alcohol, but you're only drinking 1.5 ounces of liquid.

A side-by-side comparison between raw buds and

concentrates can't be done quite as precisely as comparing beer and liquor. But the analogy provides a foundation for understanding their relative potencies. You might drink a 12-ounce beer at a picnic, but you (probably) wouldn't chug half a fifth of vodka—and if you did you'd almost certainly regret it, even though you'd be consuming roughly the same volume of liquid. In the same way, you might be able to take a massive bong rip of raw buds, but trying to use the same approach for your first dab could result in an unpleasant experience. If you keep this in mind when dosing your dabs, you'll avoid the potential discomfort and anxiety of overloading your senses.

LOW-TEMP DABS: THE FIRST-CLASS TICKET TO TERP TOWN

Hot dabs are how most dabbers were introduced to dabbing, but thankfully this is no longer a necessary rite of passage now that low-temp dabbing has become the majority practice. The key to effective dabbing is finding the ideal balance between preserving the terpenes while activating the cannabinoids and THC. The problem is that the volatilization point of most terpenes is far below the boiling point of most cannabinoids. Compromises must be made. Lower temps mean more terps and less activated cannabinoids; higher temps mean less terps and more cannabinoid activation. Thankfully, low-temp dabs utilize low pressure, achieved through restricted airflow via a carb cap. Carb caps restrict and direct airflow, lowering the pressure and by extension the boiling points of both the terpenes and cannabinoids present. This allows for a flavorful, low-temp dab that still contains higher levels of active cannabinoids.



Preserving
precious terpenes
has become a
dabbing priority.

Getting started:
Hash, buds and
kief can be used to
make rosin.



Rosin-specific
presses help you
dial in your hash.



THE ROSIN REVOLUTION: MAKING CONCENTRATE YOURSELF

Dabbing rosin is where many new dabbers start. Rosin is a concentrated blend of terpenes and cannabinoids extracted using a method called “rosin tech” (RT). It’s the simplest, least-expensive way to extract concentrate from raw buds or to refine hash for more effective dabbing. Instead of using a chemical process, RT uses heat and pressure to squeeze cannabinoids and terpenes from the source material. It is a very fast process. A batch of rosin can be produced in moments and consumed immediately. Another advantage of RT is that it poses a minimal risk of physical injury.

The physical science of RT is simple. Applying heat melts the terpenes and cannabinoids into a pliable resin inside of the source material. When the material is squeezed using a press, it pushes the resin outward. This results in a flat patty of starting material surrounded by an aura of rosin. The finished product is not as refined as what is produced using some other methods. The three trade-offs are RT’s low start-up costs, speed and ease of use.

A wide range of tools and equipment can be used to make rosin. The choice depends mostly on the quantity being pressed. On the hobby level, you can use household items like a flat iron. Industrial processors use pneumatic or hydraulic presses.

ROSIN STARTING MATERIAL

There are three basic types of material you can press rosin from: buds, hash and kief. Within those categories there are different types and grades. In this article, we describe the process for creating rosin from buds. Hash and kief production are described in detail in our book *Beyond Buds, Next Generation*.

BUDS: Freshly cured resin-rich flower (small buds and trim are ideal) results in the best rosin because it is rich in terpenes and high in cannabinoids. Conversely, older, drier material results in lower yields of a darker, less flavorful and less potent rosin.

KIEF: Dry-sift kief generally contains a high percentage of plant material. The more plant matter removed from the trichome heads, the greater the yields and the cleaner and smoother the resulting rosin.

HASH: When rosin is pressed from hash, it’s a secondary concentration, a refinement of an already concentrated product. This results in a higher concentration of cannabinoids in the resulting rosin.

PRESSING ROSIN

Rosin processing, though not a cold process, occurs below the volatilization point for most of the terpenes, and doesn’t reach the temperatures needed for decarboxylation. The rosin is mostly a concentration of THCA and/or CBDA, the acidic precursors to the cannabinoids. The result: The material is great for smoking but will not be intoxicating if eaten.

CHOOSING A PRESS

One option for those new to concentrate production is to choose an entry-level, midsize tabletop-model press that offers a higher-volume capacity than a hair straightener without the investment and storage concerns of a large press.

If you do choose to purchase a press, a big factor is the amount of pressure it produces. You don’t have to purchase expensive equipment you don’t actually need. You don’t need to buy a press that produces 25 tons of pressure when all you need is two to five tons. That is all that is required to press small quantities of hash or bud. Pressing several ounces of bud or hash at one time requires more pressure: 10 to 25 metric tons.

Most commercially available rosin-specific presses are designed to press hash only. If you’re planning to press flower, choose a machine that is designed to handle it. Flower requires more pressure than hash-pressing models.



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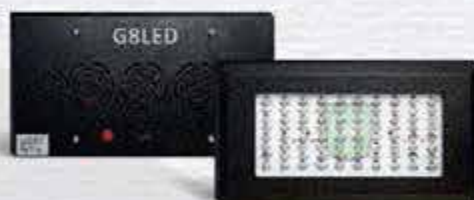
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TIMES



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TOOLS FOR MACHINE ROSIN

PRE-PRESS MOLDS: In addition to the press, there are a number of other items to consider. Press molds are a crucial component for many smaller rosin presses, so it is important to pay attention to the specs. Pressure affects yield. To maximize pressure, use the same force in the smallest area possible.

FILTER BAGS: It's possible to do a “naked press” on a bud—pressing it without the use of a bag, using a prepress or just pressing the bud as is. A press allows you to squeeze more material in a smaller surface area, creating more pressure to larger amounts of material. But if you want to further refine your product and confine your material to a condensed area (without the trichome loss incurred using molds or hand-pressing) filter bags are an excellent option.

PARCHMENT PAPER OR PTFE SHEETING: No matter what approach to RT you choose, parchment paper is absolutely essential. That's parchment paper—not waxed paper! Make sure the paper you choose doesn't have any coating.

MACHINE-PRESSING FLOWER

Pressing buds yields between 10 percent and 35 percent of the original material—roughly corresponding to the cannabinoid content of the starting material. If a strain tests at around 20 percent, expect a yield of about 20 percent of the material's weight in rosin under optimal conditions. An ounce of buds yields about five grams of rosin.

Before pressing, make sure the relative humidity of the material is just right: Too low and your yield and quality will suffer; too high and your rosin will be difficult to collect or will smell and taste like chlorophyll and may even turn green. Generally speaking, you'll want to use material with a moisture level of 10 to 12 percent, stored at a relative humidity of up to 55 percent. If your bud is too dry, you can use a humidity pack like those sold by Boveda specifically for cannabis use.

Always cut and fold the parchment paper before pressing. Filling or ripping parchment paper in the middle of a job is messy, awkward and inefficient.

Lowering the temperature usually results in higher quality, but this is not always the case, and lower temperatures will reduce yield, sometimes drastically; it depends on the starting material quality and its “personality”—the collective idiosyncrasies and physical quirks that affect how it reacts to pressing. A good way to judge how long to keep the bud under pressure is to watch the color of the oil and the degree to which it is flowing. Once the flow starts to darken and slow down, it's time to remove pressure.

Some producers choose to start at a high temperature and work their way down, but we recommend starting at a low temperature and working up until you notice a deterioration in quality. Your goal is to find an even balance between yield and quality. You should be able to roughly dial in your ideal temperature for a given strain after four or five test runs. If you want to refine your temperature to the precise “Goldilocks zone” for pressing, you might need eight to 10 test runs. But once you have a batch dialed in, you'll be able to use the setting, or

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Oil extracted from flower remains on the parchment paper.



combination of settings, for the rest of that batch.

Most rosin extractors heat the material in the 150° to 250°F range. This varies based on the material's relative humidity, which also affects yield. Always check yields and rosin quality at different temperatures to determine the best setting for a particular batch.

Make sure to be consistent with the amount being pressed. Spread the bud so it forms an even layer. Don't overprocess your buds before pressing. Many processors feel like they get a better press from mostly intact buds versus broken or ground material, but others just break everything down to the same size and make an even layer.

Once the stems are removed and the flower is weighed to the desired amount, use a bag-opening tool to keep your bag open and place two small buds in first, making sure they're packed into the corners tightly. This prevents a loss of oil to the corners. Once it is packed, fill the bag with the remaining material evenly with no voids and an even thickness of between a quarter-inch and a half-inch, leaving a one-inch flap for a fold. There will be two additional corners after the fold; fill these voids to ensure even flow and to prevent any loss.

Once you've preheated and the trichomes have melted, apply full pressure. You should start to see oil flowing from the platens. Depending on how fast the extraction is happening and the amount being pressed, keep pressure on the material for 35 to 90 seconds. The reason for the time variation is that flow rates vary by variety and freshness. Slow-flow flowers require pressure and heat for a longer time period. Fresh flowers with fast-flowing oil should be pulled off the heat sooner.

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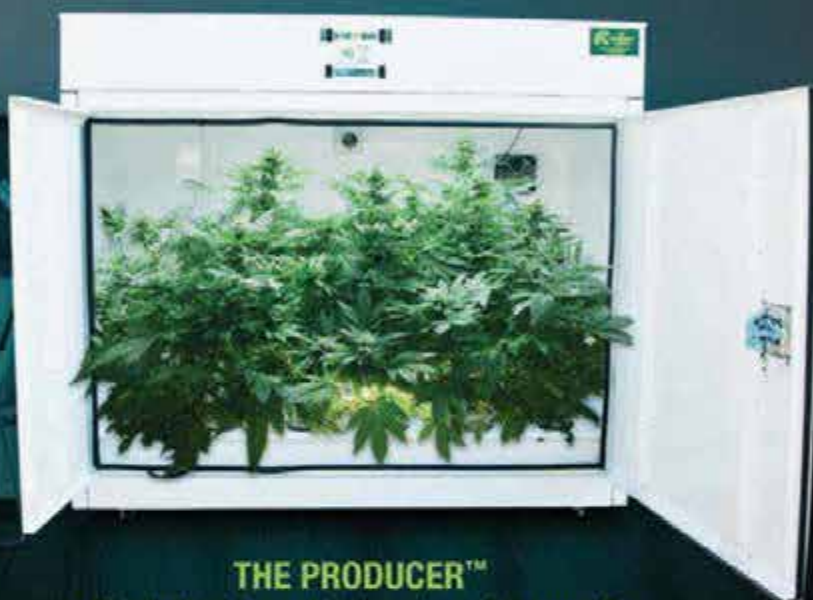
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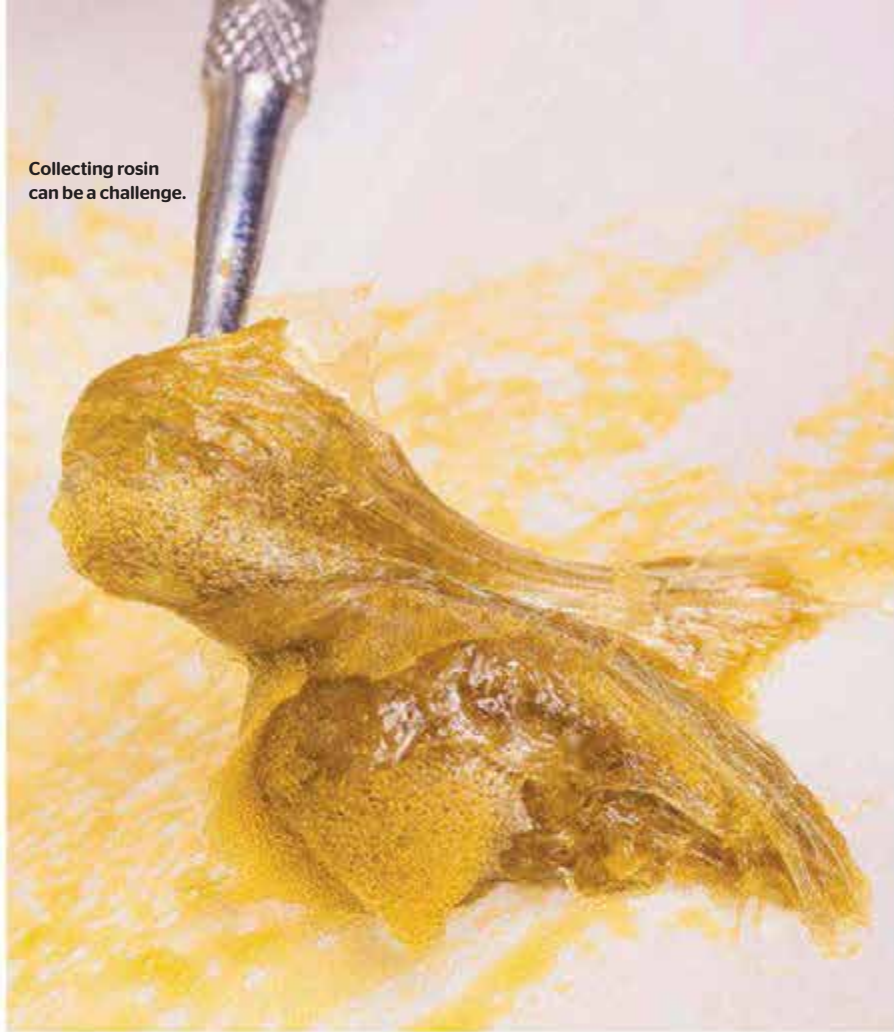


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Collecting rosin
can be a challenge.





COLLECTING ROSIN

Gathering up rosin after pressing is often more challenging than the press itself. Depending on the starting material, its moisture, temperature and timing, a wide range of consistencies can result. It can be a stable, easy-to-gather material or a sticky sap. Hash rosin is more stable (less sticky and gooey) than flower rosin, which is often difficult to gather.

No matter what consistency you're working with, it's probably best to work in as cold a room as possible, ideally with cold work surfaces, to increase or maintain the rosin's manageability while you collect and package it. Make sure you wear gloves to prevent contamination of the rosin with skin oils and to avoid getting rosin stuck to your hands.

After pressing out the rosin, leave all the papers in the refrigerator for about five minutes to cool everything down and stabilize the oil. Cold plates or blocks can be used to help with collection—an aluminum plate left in the refrigerator or sitting on a block of ice is an ideal cold surface.

Avoid scraping parchment paper, as this can result in paper particles contaminating the final product.



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Cooling rosin after pressing helps it stabilize.



CURING AND STORAGE

After collecting the rosin and rolling it into a ball, there are several ways to cure it. A large ball is a good way to protect most of it from oxidization and to prevent the evaporation of terpenes.

Always store rosin in a sealed container in the refrigerator. This preserves terpenes and prevents oxidization. If you do not plan on weighing it out, leave it in a large ball inside of a sealed container. ✱

This article was excerpted from Beyond Buds: Next Generation, by Ed Rosenthal and Greg Zeman. Beyond Buds is a completely updated edition of Rosenthal's best-selling book on marijuana concentrates. It will be available in August 2018 at bookstores everywhere.

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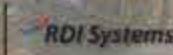
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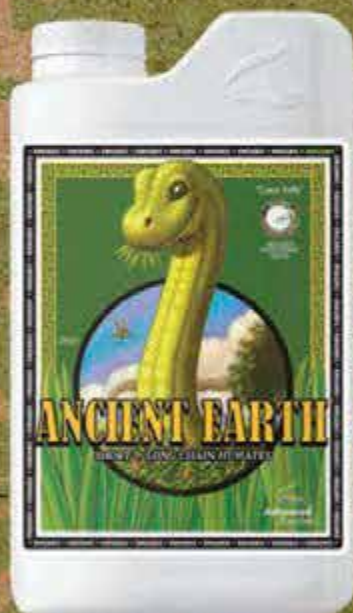


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THE STRONGEST CONCENTRATES ON EARTH

**A SMATTERING OF
THE GOOD, THE BAD
AND THE POTENT
FROM THE HT VAULT.
BY NICO ESCONDIDO**

FOR OUR SPECIAL 710 issue, we thought we would try something new and review some of the strongest concentrates to ever grace our hallowed Cannabis Cup competition. The idea is great in theory, but in reality it was a daunting task to pore over nearly a decade's worth of data stored in the vast archives of the High Times scorebook—the largest cannabis-products database in the world. With tens of thousands of entries, we decided to provide our readers with a snapshot of some of the “best” concentrates to ever be produced... Okay, to be fair, some of these were not the best, but they were either very unique or extremely potent for the year and location. Remember, concentrates five or six years ago were not exactly what they are today—nor will today's products stand up against those out in 2023.

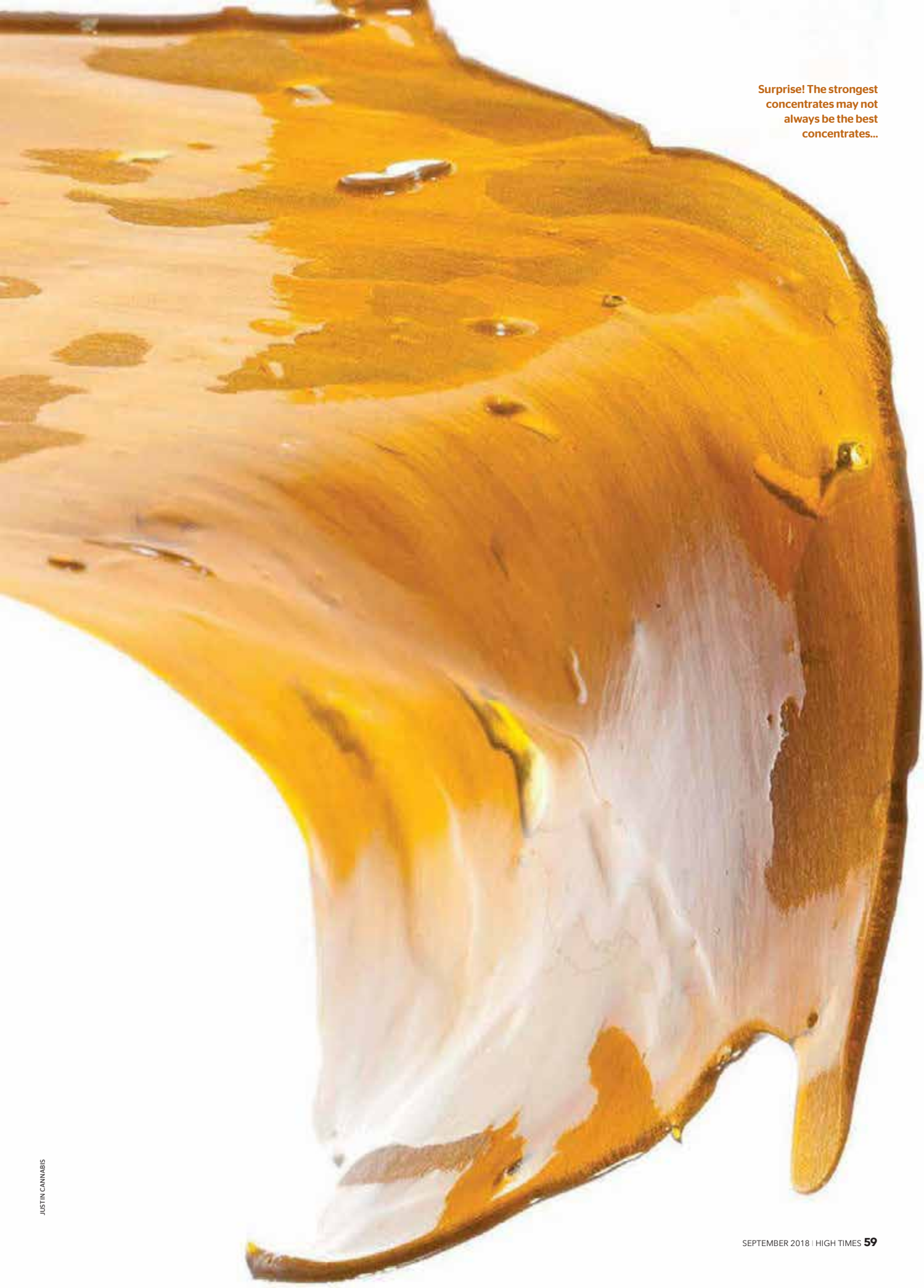
In the following pages, you will find not just product names and manufacturers, but also competition scores and comments from judges, as well as notes on cannabinoid and terpene levels. To help you understand some of the stats provided, here are a couple of notes to help you along the way.

● “Competition Scores” range from 0 to 100. Scores in the 60s are just above average. Scores over 70 are generally considered very good, and anything over 80 is considered excellent. And 90 and above? Well, that's extremely rare. (Hey, our judges are tough critics.)

● “Activated THC Level” means that an equation is applied to the lab data such that the final percentage is more in line with how much THC a user actually inhales when smoking a product. When analyzed by high-performance liquid chromatography, the formula looks like this: $(\text{THC-A} \times .87) + \text{THC}$.

Also, please note the date and location of the competition of some of these entries, as that tells you more than you might initially realize. And finally, please always take note of our testing labs. We strive very hard to choose the best testing partners for our competitions and they all do excellent work. Without labs like these, our industry would be eons behind where we are now.

Thanks, everyone, and enjoy!



Surprise! The strongest concentrates may not always be the best concentrates...



OG 18 x Tangie
Dream

THE LIST

OG 18 x TANGIE DREAM SHATTER

Company Name: Imperial Extracts

Activated THC Level: 91 percent

Competition Score: 69.52

Cannabis Cup: San Francisco 2015

Competition Category: Hybrid Concentrates

Testing Lab: CW Analytical, Oakland, CA

Notes: One of the highest-potency, non-distillate concentrates to ever enter a Cannabis Cup, this OG x Tangie shatter from Imperial Extracts had a balanced high and fresh taste. Judges noted the complexity of the flavor and incredible “cut-through effects,” though it lacked on aroma as any shatter would—the likely cause for a lower overall score.

CHERRY AK 47 OIL

Company Name: Gold Drop with the Village and Blue River

Activated THC Level: 90.17 percent

Competition Score: 68.69

Cannabis Cup: LA October 2016

Competition Category: Hybrid Concentrates

Testing Lab: CannaSafe Analytics, Murrieta, CA

Notes: Off-the-charts THC levels combined with high CBG gave this hash a powerful punch. Unfortunately, the distillate did not have enough added terps to turn the judges’ palates, and its placing in the competition suffered for it, going to show that potency alone does not guarantee a win in cannabis competitions. Still, the terp profile showed massive amounts of myrcene, which added to the heavy effects and put it in the middle of the pack in scoring.

IVXX PRE-’98 CROSS

Company Name: Terra Tech Corp.

Activated THC Level: 88.7 percent

Competition Score: 69.42

Cannabis Cup: San Francisco 2015

Competition Category: Hybrid Concentrates

Testing Lab: CW Analytical, Oakland, CA

Notes: Once again, high potency with low flavor equaled the demise of this entry. Judges noted its excellent *sativa*-dominant high, but they couldn’t get over the off ratio between distillate and terps. “Diamond” extractors beware.

CAAG OG

Company Name: Guild Extracts

Activated THC Level: 88.6 percent

Competition Score: 73.55

Cannabis Cup: San Francisco 2015

Competition Category: Hybrid Concentrates

Testing Lab: CW Analytical, Oakland, CA

Notes: This entry likely would have placed had it not been for one overly critical judge. With THC levels dipping below the 90 percent threshold, concentrates like this tend to have better flavor and aroma, which contribute to the overall experience. But Guild Extracts knows what it’s doing, and this concentrate was a THCA crystallite well mixed with single-source OG terps. Judges reported a fuel-like yet unique and fruity flavor for an OG.

BANANA KANDY

Company Name: Loud Pack Genetics

Activated THC Level: 87.7 percent

Competition Score: 77.03

Cannabis Cup: San Francisco 2015

Competition Category: Hybrid Concentrates

Testing Lab: CW Analytical, Oakland, CA

Notes: One of the top competition scores on this list, the Banana Kandy from Loud Pack Genetics placed fourth in the 2015 SF Cup and was only 1.44 points out of first place. Judges noted that the taste matched the aroma, which is a big plus for concentrates and easier to attain in bud products. With a fruity sherbet flavor and hard-hitting potency, this entry was one of the best overall products we’ve seen.

CROWN OG LIVE RESIN

Company Name: Moxie Genetics

Activated THC Level: 87.5 percent

Competition Score: 72.50

Cannabis Cup: San Francisco 2015

Competition Category: *Indica* Concentrates

Testing Lab: CW Analytical, Oakland, CA

Notes: A powdery white wax that was clean to hit with excellent bouquet and high potency? Yep, sounds like Moxie wax. This entry was one of epic proportions, but fell victim to a particularly tough field of competition in the *indica* category. Still, judges raved about its flavor and clean purge.



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MEGA WELLNESS OG BUDDER

Company Name: Gold Coast Extracts with Nameless Genetics

Activated THC Level: 87.4 percent

Competition Score: 75.05

Cannabis Cup: San Francisco 2015

Competition Category: *Indica* Concentrates

Testing Lab: CW Analytical, Oakland, CA

Notes: With another close finisher at fourth place, the folks at both Gold Coast Extracts and Nameless Genetics know what they are doing when it comes to the iconic Mega Wellness OG. From the flowers straight through the extraction and purging processes, this live resin concentrate did not disappoint and always leaves you wanting more. Judges noted the deep citrus flavor, and the lab backed it up with huge levels of limonene.

CROWN OG LIVE RESIN

Company Name: Crown Genetics with Titanium Labs and Kind Bill

Activated THC Level: 87.2 percent

Competition Score: 73.27

Cannabis Cup: 2015 World Cannabis Cup; competition in California, awards in Jamaica

Competition Category: Hybrid Concentrates

Testing Lab: Steep Hill Labs, Berkeley, CA

Notes: This sticky shatter came in with high levels of THC and CBG, creating a strong *indica*-dominant stone. Large amounts of

limonene, pinene and myrcene were also present. This entry could have been a Cup winner had there not been small amounts of residual solvents left in the hash. Judges still raved about the effects of the product and its overall flavor, but some harsh undertones kept it out of the running at the World Cannabis Cup.

BRAINWRECK x GIRL SCOUT COOKIES SHORT PATH DISTILLATE

Company Name: Cannonymous Labs of Michigan

Activated THC Level: 86.2 percent

Competition Score: 76.62

Cannabis Cup: Michigan Cup, June 2017

Competition Category: Hybrid Concentrates

Testing Lab: PSI Labs, Ann Arbor, MI

Notes: This viscous distillate came in a syringe applicator and surprised judges with its clarity, flavor and potency. Taking down the highest lab component score in last summer's Michigan Cup, this product likely would have placed had the aroma been more accessible to judges. Still, 86 percent THC with a strong *sativa*-dominant high is nothing to scoff at.

PINEAPPLE CHUNK THC-A CRYSTALLITE

Company Name: Element Extractions

Activated THC Level: 83.1 percent

Competition Score: 79.60

Cannabis Cup: Michigan Cup, June 2017

Competition Category: Hybrid Concentrates

Testing Lab: PSI Labs, Ann Arbor, MI

Notes: At just a tick under 80 for its competition grade, this entry placed third in the June Michigan Cup last year with only three-quarters of a point separating first and third places. The Pineapple Chunk carried a heavy tangerine-citrus aroma with "amazing visual aesthetics," as noted by one judge. Terpene data provided by PSI Labs showed that small amounts of rare terps such as guaiaol, linalool, ocimene and terpinolene helped to create a unique flavor profile.

WHITE FIRE OG KUSH BHO

Company Name: Olympia Mike

Activated THC Level: 81.4 percent

Competition Score: 55.62

Cannabis Cup: Seattle 2014

Competition Category: Medical Concentrates

Testing Lab: Steep Hill Labs, Seattle, WA

Notes: Selected for this list due to the efficacy of the product, this particular entry was not only rich in THC, but it also had very high levels of THCV and CBG. However, this BHO lacked stability and consistency, forcing judges to score it lower despite its powerful effects.



FRIENDLY FARMS

The folks at Friendly Farms began their careers in the cannabis industry exactly where the name implies, the farm.

For several years Friendly Farms built relationships with the 420-friendly people of Northern California, and forged bonds with cultivators, processors, and those who simply enjoy cannabis.

As time passed the team saw an opportunity to move into cannabis extractions and selected live resin as its product of choice. In May of 2017, Friendly Farms launched its brand in a new direction and presented to the world its high-quality concentrates.

Every flavor is a hit for Friendly Farms, and its menu of extractions offers a variety of strains with something for everyone to enjoy. Friendly Farms' house strains include potent and flavorful contenders that delivers clean, tested, and effective dabs with every concentrate.

For more info contact us:

Email: friendlyfarmslive@gmail.com
IG: @FRIENDLYFARMS420





Brainwreck x Girl Scout Cookies Short Path Distillate

PINEAPPLE EXPRESS SHATTER

Company Name: Cascadia Concentrates

Activated THC Level: 81 percent

Competition Score: 65.29

Cannabis Cup: Denver/First US Cannabis Cup, 2013

Competition Category: US Mixed Hash

Testing Lab: Herbal Synergy, Denver, CO

Notes: This dark amber shatter impressed with cannabinoids, but less so with flavors. A likely culprit noted by one judge was a suspected secondary isopropyl wash, which can sometimes impart an unpleasant taste, pushing scorecards in the wrong direction. Cascadia is known to make excellent concentrates, and it's taken home numerous Cannabis Cup awards in the years since, and the company's inclusion on this list as an 80-percent at the first US Cannabis Cup back in 2013 is certainly noteworthy.

PURPLE ROMULAN BUTTER

Company Name: Rocky Mountain High

Activated THC Level: 77.9 percent

Competition Score: 69.50

Cannabis Cup: Denver/First US Cannabis Cup, 2013

Competition Category: Medical Concentrates

Testing Lab: Herbal Synergy, Denver, CO

Notes: Another US Cup entry, this one from renowned medical dispensary Rocky Mountain High, finished eighth in the competition, but it was the highest-potency hash in the medical-concentrates field. One judge wrote it had "a nice blond color and crumbly consistency, [and] it hit hard and is an overall winner." Other notes indicate the aroma was overpowering as well; however, 2013 was long before labs began testing for terpenes, so specific data here is not available.

THE TANGERINE TOKIN

Company Name: River Rock

Activated THC Level: 76.8 percent

Competition Score: 68.79

Cannabis Cup: Denver/First US Cannabis Cup, 2013

Competition Category: Medical Concentrates

Testing Lab: Herbal Synergy, Denver, CO

Notes: Another top-10 entry from the first US Cannabis Cup, the Tangerine Tokin was another Tangie pheno (which is really a pheno from Soma's NYC Diesel) extracted by River Rock dispensary. The Tangie was just hitting the scene at this time, and judges were excited about its rich citrus flavor. Combined

with nearly 77 percent THC, this was a smooth and hard-hitting hash that could have placed higher in a more localized competition field.

DOUBLE OG

Company Name: Resin Seeds Extractions

Activated THC Level: 60 percent

Competition Score: 55

Cannabis Cup: Amsterdam/26th Annual Cannabis Cup, 2013

Competition Category: Import Hash

Testing Lab: Steep Hill Labs, Berkeley, CA (via a QC-2 machine housed in Amsterdam)

Notes: Of course, we would be remiss if we did not include at least one concentrate from an Amsterdam Cannabis Cup—although five years ago, solvent extractions were hard to come by in Holland. While we managed to field a strong "Import Hash" category, concentrates around this time were not what we see today. This entry finished just outside the top 10, but it makes the list because it was the most potent in the field at 60 percent, which was pretty darn good back then. As one judge put it, "Tastes and smells boring, must be purged very well LOL. Looks interesting, like old red rock opium. Got me extremely bent though." And there you have it. 🌿

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CONCENTRATING IN THE GARDEN

AN ENORMOUS PART OF THE CANNABIS INDUSTRY RELIES ON CONCENTRATES, INSPIRING CULTIVATORS TO EXAMINE AND CHANGE THEIR APPROACH TO FARMING SO THAT THEIR CROPS PRODUCE QUALITY OILS AND TERPENES. LET'S TAKE A LOOK AT SOME TECHNIQUES BEING USED TO COAX THE MOST OUT OF THE PLANT. *BY SEAN BLACK, PHOTOS BY SLY VEGAS*



Concentrate producers are tailoring their grows for extracts.





THE CANNABIS WORLD is experiencing an incredible evolution. More favorable common-sense laws allow businesses across the country to join in on the green rush, providing a safer environment to produce cannabis and a legal framework to purchase and consume it. A greater amount of cannabis is being produced today than ever before in a more professional environment with experienced and knowledgeable cultivators. Nowhere is this more evident than in the world of concentrates, where passion meets science, cultivation and ingenuity. The quest to extract the best-quality concentrates has had a marked influence on the cultivation of cannabis, changing how some approach growing. The results are a greater understanding of cannabis cultivation and a wave of cleaner, more


enjoyable concentrates entering the market for consumers to enjoy.

Before considering the environment and the growing techniques involved in producing top-shelf concentrates, it's important to understand how genetics play a role in extractions and how they can influence both yield and quality. Intimate knowledge of and experience with a specific strain or a strain's particular phenotype can aid in choosing the right genetics for the production of concentrates. Multiple Cannabis Cup winner Ozi, a.k.a. the Cuban Grower, explains, "I like to use old-school, frosty strains like Cookies and Cream which will dump loads of kief and trichomes." He prefers using *sativa* and *sativa*-dominant hybrids to make water hash and kief as "they seem to be more stable

and stay sandy as opposed to greasing up too much." Ozi adds: "The landrace, *sativa*-dominant strains seem to have more stability, especially at higher temps, making extraction easier."

Perhaps this is inherent in equatorial strains, as they are accustomed to higher environmental temperatures and produce terpenes that are more stable. Conversely, more *indica*-dominant strains like OGs, Kushes and Purples are accustomed to cooler temperatures and tend to be volatile at higher temps, greasing up and becoming harder to extract via non-solvent methods that produce kief and water hash. Some terpenes begin to volatilize at temperatures as low as 74°F, while others are stable up until nearly 400°F-plus.

Cannabis Cup winner Nikka T of




Hash makers seek certain traits in the flowers used in extraction.

Essential Extracts California prefers the approach of choosing strains that exhibit a high oil-to-wax (fats and lipids) ratio. While he loves Cookies and Cream for its large yields, he “prefers strains like Forbidden Fruit, which returns a smaller yield but tends to have more terpenes and a larger nose.” Nikka adds: “Cookies and Cream doesn’t have the huge terpene profile. The best of both worlds would be OGs and Kushes, which have a decent yield but also the greasy, heavy terpene count.” The key here is that different strains will result in variations in quality and yield. Some strains lend themselves to kief while others provide a higher quality when extracted with cold water or via solvent extraction.

SETTING THE ENVIRONMENT

Cultivation specifically for Cup-worthy concentrates means setting an environment that yields greater terpene and oil content. This can often conflict with an established garden objective, as big fat colas accompanying huge yields don’t necessarily mean a better percentage of high-quality concentrates. Intense lights that help produce massive flowers should either be replaced with lower-wattage ballasts or be placed farther away from the garden’s canopy. Lowering the temperature of the growroom to as low as 68°F can reduce flower yields but help retain precious terpenes that add to the flavor and quality of the end product. Remember when walking into a garden that those terpenes that fill the air are degassing off the plants, resulting in less essential oils and flavor in your flower and therefore in your concentrate. The Cuban Grower advises, “I use an infrared gun to monitor my canopy tops and try to remain below 75°F to avoid cooking the tops.”

Proper pruning and the use of trellising, stakes, and stem-bending or -twisting methods can help ensure that flower sites receive as much exposure to light as possible. This gives the plant enough energy to produce as much oil in the buds below the canopy as well as those on the top. And, as *High Times* senior cultivation editor Danny Danko teaches, “The more the root, the more the fruit.” Plants that have larger root-balls can divert more energy to the flower and into oil production. Providing an environment rich in CO₂ gives the plant more fuel to produce a greater number of better-developed trichomes, and it’s a fairly easy means to boost concentrate performance. Some growers refer to themselves fondly as “terp farmers.”



Greater terpene and oil content is valued over bigger yields.



Flushing prior to harvest helps ensure smooth and flavorful concentrates.

YOU ARE WHAT YOU EAT

One of the unforeseen consequences in the explosion of the popularity and the production of concentrates has been the way that it has illuminated some of the poorer practices in the cannabis community. What was once undetectable or present in very low numbers in flowers has now been concentrated and revealed in unacceptable amounts in extracts. While a flower may have 20 percent THCA, once concentrated it can reach 85 percent and higher. Any pesticides, heavy metals and contaminants can also increase in similar fashion, highlighting the need to grow without the use of chemicals, pesticides and other additives. Nikka T warns against “using feeds heavy in salts or synthetic sugars as they are harder to flush out, which creates a larger wax-to-oil ratio, resulting in inferior concentrates.” When growing specifically for concentrates, foliar feeds should never be used, especially in the flowering period, as any substance that gets on the flower material will wind up concentrated in your final material. Flushing at

the end of a grow becomes paramount to the quality of your concentrate. Any salts, nutrients or non-cannabis elements will contaminate the flavor and smoothness of the smoke. Avoid foliar sprays as much as possible, as these can easily find their way into your finished product. Although it might be unnoticeable when smoking the flower, a discerning palate can detect a contaminant in its concentrated form. Harsh, bitter or unenjoyable flavors in your dab can often be attributed to neem oil or too many sugars or nutrients.

In the modern concentrate market, there’s an overall emphasis on keeping the concentrate as pure to the plant’s genetic expression as possible. Plants shouldn’t be fed or encouraged to grow to a freakish point. Steroid-fueled hulking nugs fed to the brink with PGRs (plant-growth regulators) will not produce smooth, favorably flavored top-shelf material. The flavor shouldn’t represent the terroir of the environment like old-school hash from overseas, containing impurities from the mountains from

which the plants came. Distinct water and nutrient combinations as well as less-than-favorable extraction locations and methods lend their own uniqueness. Pounding stalks of cannabis against concrete walls and collecting kief from the dusty floor to press into hashish imparts flavors that are impure and complex. Modern extraction knowledge and improved palates have elevated the art of concentrates.

The modest use of some beneficial teas, finishers and bloomers can be used to increase terpene production, as long as they can be fully flushed away. The Cuban Grower prefers to use a feed finisher that makes the plant think it has a bacterial infection with the idea that this helps increase resin and terpenoid production midway through flowering.

When it comes to feeding, last-minute sugars, blackstrap molasses and many other finishers add too many sugars and nutrients that become difficult to fully remove from the plant and don’t have enough time to be converted into useful energy.

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Drying and curing at lower temperatures helps preserve terpenes.

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Providing the best path to the greatest concentrates doesn't quite end in the growroom, a fact often overlooked. Drying and curing your flowers destroys terpenes and changes the overall freshness of the flavor. Older material and dried-out trim can result in an undesirable hay-like, earthy flavor, diminishing the boldness and burst of flavor. Putting your fresh-cut material into a cold environment and even freezing it to preserve those precious terpenes is the most popular way to run water hash. Solvent extractions usually use drier material, often resulting in loss of flavor and oil. Cold curing is slowly becoming more popular, cutting out that tinny flavor that often accompanies concentrates made from wet material. Lowering temperatures to the high 50s or low 60s and providing a small amount of airflow can help achieve a good ratio of dryness to terpene retention.

Intimate knowledge and experience with a specific strain, even a particular phenotype, can be a fundamental key in the craft of extraction. Providing cool and clean grow spaces that follow proper standards and practices gives the plant the greatest probability of producing the best extracts possible. Giving the plant enough sustenance to thrive without pushing it, ensuring that it only receives beneficial nutrients and water and avoiding any foliar contact to prevent foreign contamination, provides the best material to process into concentrates. The remarkable advancements of cannabis concentrates are primarily due to the growing practices of our cultivators. While we continually strive for the best-grown and cleanest cannabis possible, the truth is that, on the whole, cannabis has never been as clean as it is now. When the passion of cultivators and the modern techniques of extractors meet, the results can be the most effective and greatest gift that cannabis can provide. ✨

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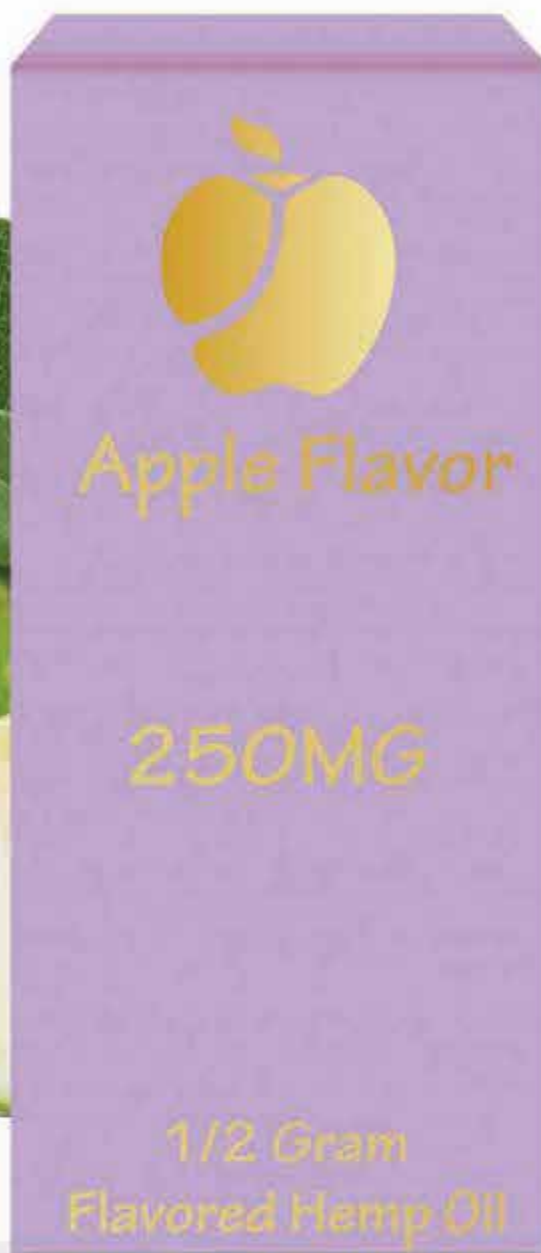
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And to everything we can accomplish, together.



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HIGH TIMES



710 AWARDS

CONCENTRATES HAVE BECOME A MAJOR FOCUS OF THE CANNABIS INDUSTRY. ADVANCES IN THE ART AND SCIENCE OF EXTRACTION HAVE IMPROVED THE POTENCY AND FLAVOR OF YOUR FAVORITE DABS AND EDIBLES WHILE ALSO HELPING CREATE CLEAN, EFFICACIOUS MEDICINE. INDEED, IT SEEMS THE FUTURE OF CANNABIS IS IN EXTRACTION. SO IN HONOR OF NATIONAL HASH OIL DAY (7/10), WE'RE PROUD TO ANNOUNCE OUR FIRST-EVER 710 AWARDS, RECOGNIZING THE PIONEERS OF CANNABIS EXTRACTION—WHO PAVED THE WAY FOR THE CURRENT MARKETPLACE—AS WELL AS THE VISIONARIES WHO ARE TAKING THE INDUSTRY TO NEW AND EXCITING PLACES.



PIONEERS

**DAVID
"SAM THE SKUNKMAN"
WATSON**

The Skunkman helped jump-start the Dutch seed business in the 1980s with his company Cultivator's Choice and won the first Cannabis Cup in 1988 with his seminal Skunk #1. He's the founder of HortaPharm, the first company to be granted a license to grow cannabis for pharmaceutical research in the Netherlands and the UK for GW Pharmaceuticals.

**ROBERT CONNELL CLARKE
AUTHOR**

A renowned cannabis writer, Clarke is the author of *Marijuana Botany: An Advanced Study: The Propagation and Breeding of Distinctive Cannabis* (1993) and the influential book *Hashish!* (1998). Clarke is also a cannabis researcher and project manager for the International Hemp Association in Amsterdam.

**HOWARD "MR NICE"
MARKS**

At the height of his infamous smuggling career, Mr. Nice was running as much as 30 tons of hash at a time. He served seven years of a 25-year sentence before publishing his best-selling autobiography *Mr Nice* in 1996. He spent the rest of his life fighting for legalization, until his death in 2016.

**KENNETH MORROW
TRICHOME
TECHNOLOGIES**

Morrow is one of the most sought-after cannabis consultants on the planet—particularly regarding the isolation of terpenes, which he believes is the future of pot and extracts. The founder of Trichome Technologies, Morrow has over 35 years of experience in site design, breeding, manufacturing, extraction, and terpene and cannabinoid isolation.

**JAYSON "GIDDY UP" MAYS
EMOTEK LABS**

An inventor, entrepreneur, consultant, activist and producer of award-winning concentrates, Giddy Up is the owner of EmoTek Labs and Giddy Up Extracts. He's also the co-inventor of live resin, one of the most popular forms of extractions in the concentrates scene.

**MIKE BRUNSON
FOUNDER & CEO OF
CAVIAR GOLD**

As a dispensary owner, Brunson began experimenting with extraction and infusion techniques, eventually creating the concept for his flagship product. His original Caviar Gold oil and kief-infused nuggets became known for their potency, leading to Cavi Cone pre-rolled joints, edibles and other concentrates.

**CHRIS DRIESSEN
PRESIDENT OF ORGANA
BRANDS**

Organa Brands, the Colorado-based parent company of O.penVAPE, is the largest cannabis distributor in the United States, with ancillary products sold in eight European countries. As president, Driessen is responsible for operations, strategy and overall performance of the organization and has helped make O.penVAPE a globally recognized brand.

**MILA JANSEN
CREATOR OF THE
POLLINATOR**

Jansen, the original "Hash Queen" and owner of the Pollinator company in Amsterdam, made her big contribution to the concentrates industry with the Pollinator in 1994. This revolutionary dry-sift system was the first machine created to separate crystals. Jansen also created Ice-O-Lator bags and the Bubbleator, which aids ice-water extraction.

**MARCUS "BUBBLEMAN"
RICHARDSON
FRESH HEADIES**

Bubbleman created the revolutionary Bubble Bag in 1999, which popularized ice-water

extraction. Since then, he has been at the forefront of extraction from wet washing, dry sifting, mechanical-screen separation and rosin. Bubbleman promotes methods that avoid chemical solvents while still producing a purity of 99.9 percent gland heads.

**RICK SIMPSON
RSO**

Simpson developed a new method for extraction, creating Rick Simpson Oil (or RSO), which has been used to treat myriad illnesses. Simpson discovered the healing potential of hash oil in 1997. Since then, he's helped treat over 5,000 patients while facing raids and eventual relocation to Europe.

**FRENCHY CANNOLI
EXTRACT EXPERT**

Cannoli has been called the "King of Hashish." During the 1970s and '80s, he traveled the world visiting hashish-producing countries, working with local farmers and producers. His focus today is on discovering the science behind traditional and modern techniques in an effort to pass on factual knowledge and information to the next generation of Hashishins.

VISIONARIES

**JENNIFER HENDRICKS
(JENN DOE)**

Hendricks was the first woman in the United States to bring home a Cannabis Cup for non-solvent hash (growing and processing her winning entry solo). She works tirelessly on new extraction techniques and is always hunting for the next pheno to convert into her handcrafted, water-extracted hash.

THE CUBAN GROWER

The Cuban Grower is a self-taught hashmaker who's won non-solvent Cannabis Cups with water hash, rosin and dry sift. He and his wife, the Cuban Hash Queen, were the first in the United States to win the Cup with 99 percent dry-sift hash.



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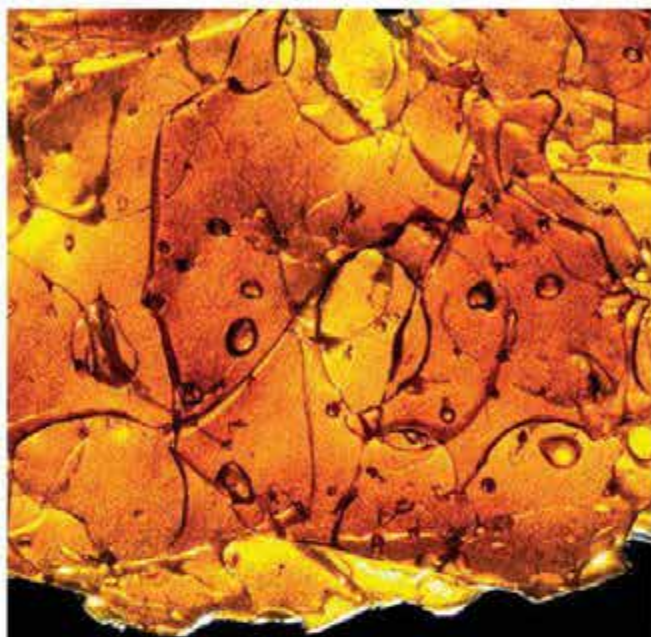


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DOUGLAS DRACUP
CHALICE FESTIVAL,
HITMAN GLASS

Dracup has built an empire inspired by hash. A seasoned extract artist, he co-founded Hitman Glass in 2009 and started the Chalice Festival in 2014. Most recently, he opened Hitman Coffee Shop in Los Angeles. Dracup also recently partnered with fellow 710 Awards winner Mila Jansen in a joint operation called HashQueen.

MATTHEW VANBENSCHOTEN
TC LABS MANAGEMENT

TC Labs Management (Beezle Brands, Extract Outfitters) is a leading innovator in the medical-cannabis manufacturing industry. TC Labs Management has developed a wide variety of both volatile and nonvolatile medical-cannabis extraction processes and refinement and product-delivery methods to satisfy market demand across the globe.

VINCENT D'ACCOLTI
CO-FOUNDER OF ROSIN
TECH PRODUCTS

D'Accolti founded SHO Industries in 2015, producing a single line of Rosin Tech Products. He became a major purveyor of solventless-extraction equipment and concentrate-smoking accessories, now with five brands—Rosin

Tech Products, Pollen Masters, Dab Nation, the Electric Nail and SHO Industries.

TONY VERZURA
BLUE RIVER EXTRACTS

Verzura is the creator of the ACT Now Program, Prana Medicinals, Blue River Extracts and Advesa Wellness, and he's the lead inventor at United Cannabis. Verzura has been credited with over 65 cannabis awards to date, and he continues to push innovation.

BRENDAN PERRY
FOUNDER OF
DABBLCIOUS

As the founder of the Dabblicious brand, Brendan has pioneered the development of extraction techniques for the creation of fresh-frozen live-resin concentrates. He's also developed a process to infuse natural fruit terpenes into all types of cannabis extracts, which has helped shape extraction products and competitions.

ALEX QUEUPUMIL
FOUNDER OF CRITICAL
CONCENTRATES

Queupumil has refined and retooled his extraction processes for years, and that hard work has made him a perennial Cannabis Cup champion. Queupumil is the founder and

owner of Critical Concentrates, a Southern California-based extraction company that specializes in dabable THC and CBD products.

NICHOLAS "NIKKA T" TANEM

ESSENTIAL EXTRACTS

Essential Extracts was the first licensed non-solvent extraction facility in the United States when Nikka T founded the Denver-based company. He has won over 15 Cannabis Cups with Essential, and clients using his products and techniques have won more than 100 Cups. Nikka T plans to launch Essential Extracts California in 2018.

JOSEPH ENCINOSA
FOUNDER & PRESIDENT
OF GOLD DROP CO.

Encinosa has dedicated the last 10 years of his career to innovating in the concentrates market. As a pioneer and expert in cannabis concentrates, Encinosa has created extracts and formulations that have earned him 85 awards from every medical-cannabis competition in the United States.

SEIBO SHEN
VAPEXHALE

Shen is an activist and entrepreneur who focuses on the health and wellness aspects of cannabis. After discovering marijuana as an alternative to opioids, he sought out healthier and more enjoyable ways to deliver cannabinoids to the body. Shen currently runs VapeXhale and he co-founded CannAthlete with Jim McAlpine.

JORDAN LAMS
CO-FOUNDER & CEO OF
MOXIE

Lams has dedicated his life to the medical-cannabis industry after losing a family member to cancer. Under his leadership, Moxie has become an international enterprise with facilities in four states and over 40 countries. Lams continues to advocate for accessible, standardized, pharmaceutical-grade cannabis products.

ADAM LUSTIG
CEO & FOUNDER OF
HIGHER VISION CANNABIS

Higher Vision Cannabis was formed with a mission to heal the world with cannabis. Lustig developed Higher Vision's extraction process, Conscious Cannabis Chemistry, to produce terpenes, distillate and the company's signature Super Oil using organic alcohol as the only solvent. This method produces clean, potent and flavorful award-winning extracts.

ADAM BERGMAN
KING PEN, LOUD PACK &
GREENWOLF

After opening GreenWolf dispensary in 2014, Bergman noticed a shift away from flowers and toward extracts and vapes. This led him to found the Loud Pack and King Pen brands. They continue to be the world's most awarded dispensary and vape-pen brands on the market.

LUCA ANDREA COLLINS
FOUNDER & CEO OF
BISCOTTI

Born in Italy, Collins learned of traditional hashmaking in Lebanon, Palestine, Nepal and India. He was inspired to merge these traditions with the craftsmanship of his own culture. Biscotti's modern approach to old-world hashish is redefining the cannabis experience.

DAVID AGUILAR
CO-FOUNDER OF BRASS
KNUCKLES

Aguilar and partners Mike Healey and Alvin Joiner have taken the THC-cartridge scene by storm, quickly becoming industry leaders in super-premium CO₂-extracted cannabis-oil products. The flavorful and potent one-gram high-quality quartz oil cartridges from Brass Knuckles are among the most desirable products available.

DEAN CURTIN
PRESIDENT OF EUREKA
VAPOR

Curtin founded Eureka Vapor in 2011, and he's spent nearly 20 years developing processes for

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extraction. When Eureka first opened its doors as a medicinal service, the company began its commitment to improving patients' lives. Eureka sells its signature brand while also consulting for multiple collectives and companies.

RUBEN CROSS

OWNER OF KUSHY PUNCH

With a background in consulting for several LA-based collectives, Cross successfully developed and now manages the edibles company Kushy Punch—among other enterprises. Cross is an active member of the National Cannabis Industry Association, the only organization representing pot-related businesses at the national level.

DAN ANGLIN

AMERICANNA

A US Marine veteran, Anglin founded Americanna, a marijuana-infused-products manufacturer and cultivator of both medical and recreational pot products. Since 2011, Anglin has been a high-profile leader in the cannabis industry, having co-owned one of the largest marijuana-manufacturing companies in the world, EdiPure.

JERETT WASSERMAN

WEST COAST CURE

Wasserman owns and operates the LA-based extraction company known best for its fiery OG waxes and oils culled from some of the top OG Kush phenotypes in the world, most notably Paris OG. West Coast Cure has taken multiple Cannabis Cups for concentrates.

CHRISTOPHER L. PHILLIPS

DABBPORTR EXTRACTS

Phillips has been a leader and innovator in the US cannabis community for 18 years. An activist and caregiver, he has helped countless patients live better lives. Phillips's products have won scores of awards and he has consulted as an expert on CO₂, hydrocarbon and water extraction, as well as other various distillation methods.



DENNIS HUNTER

ABSOLUTEXTRACTS/CARE BY DESIGN

The CEO of AbsoluteXtracts and Care by Design continues to advocate for marijuana-law reform after serving a six-and-a-half-year federal prison sentence for cannabis cultivation. Hunter and his products have helped innumerable patients with cancer, epilepsy, PTSD and chronic pain.

JEFF HULL

MICHIGAN MADE MELTS

Michigan Made Melts takes pride in producing the best non-solvent hash available for patients and caregivers. Hull founded the company in 2015 after many years fine-tuning his craft. Michigan Made Melts uses cold-water extraction to create its concentrates, going to great lengths to ensure trichomes are undamaged and intact.

GRAHAM GIBSON

PRESIDENT & CEO OF KANDYPENS

Gibson has built KandyPens into one of the largest vaporizer lifestyle brands in the world, featuring over 20 different product lines. Gibson leveraged the power of celebrity endorsements and music-video integration by pursuing game-changing collaborations with A\$AP Rocky and Amber Rose.

SEAN MERRY

710 SAVANT

710 Savant is Michigan-based extraction company specializing in high-quality concentrates

and producing clean meds for patients. Merry has a passion for finding unique terpene profiles and perfecting them. He has taken home multiple awards throughout his career and continues to do so today.

JASON DELAND

CO-FOUNDER OF DOSIST

Sensing the opportunity to bring a higher level of design, innovation and marketing to the cannabis industry, DeLand created Dosist in 2016. Dosist is the result of a partnership of experts in device innovation, design, science and branding. The company has become one of the most recognized and successful brands in the space.

JOSHUA HORTON

OWNER OF STIIIZY

A long and successful history as a VP in the e-cigarette and vaporizer industry prepared Joshua for success as director of the innovative vape pen company Stiiizy. Not only does he bring his expertise regarding distribution and logistics, but he's also been a medical-cannabis patient and advocate since 2005.

BRAELYN DAVIS

MARKETING DIRECTOR OF FLAV

Davis has helped reduce the negative stigma cannabis has been burdened with by creating a positive and accessible brand in Flav. He and his team have created a line of CO₂-extracted THC- and CBD-infused drops, salves, edibles and bath bombs as well

as outstanding solventless and glycol-free cartridges, all available in California and Washington.

TREVAR MAZZA

FOUNDER AND COO OF CHEMISTRY

Mazza comes from the start-up world and has years of experience helping to build, launch and manage small businesses. He spent six years as media director for a leading online conference and event video company. Now he's helming Chemistry, an Oakland company dedicated to providing high-quality cannabis-oil cartridges, tincture and crystalline products.

DAVE MAGGIO

COO OF CHEEBA CHEWS

Cheebe Chews is one of the cannabis industry's most iconic brands. Along with his partners, Maggio started the company in 2009, long before any legal recreational use existed, and it soon became a guiding force in the space. Maggio's love for cooking and cannabis shines through in the products he creates.

RYAN COOK

COO OF THE CLINIC

Since its inception in 2009, Cook has overseen the day-to-day operations for the Clinic, including cultivation, processing, distribution and sales, inventory tracking, marketing and compliance. Cook was extensively involved with developing Colorado's marijuana laws and regulations, and also helped draft the rules and regulations for concentrate testing and safety.

JASON BOZE

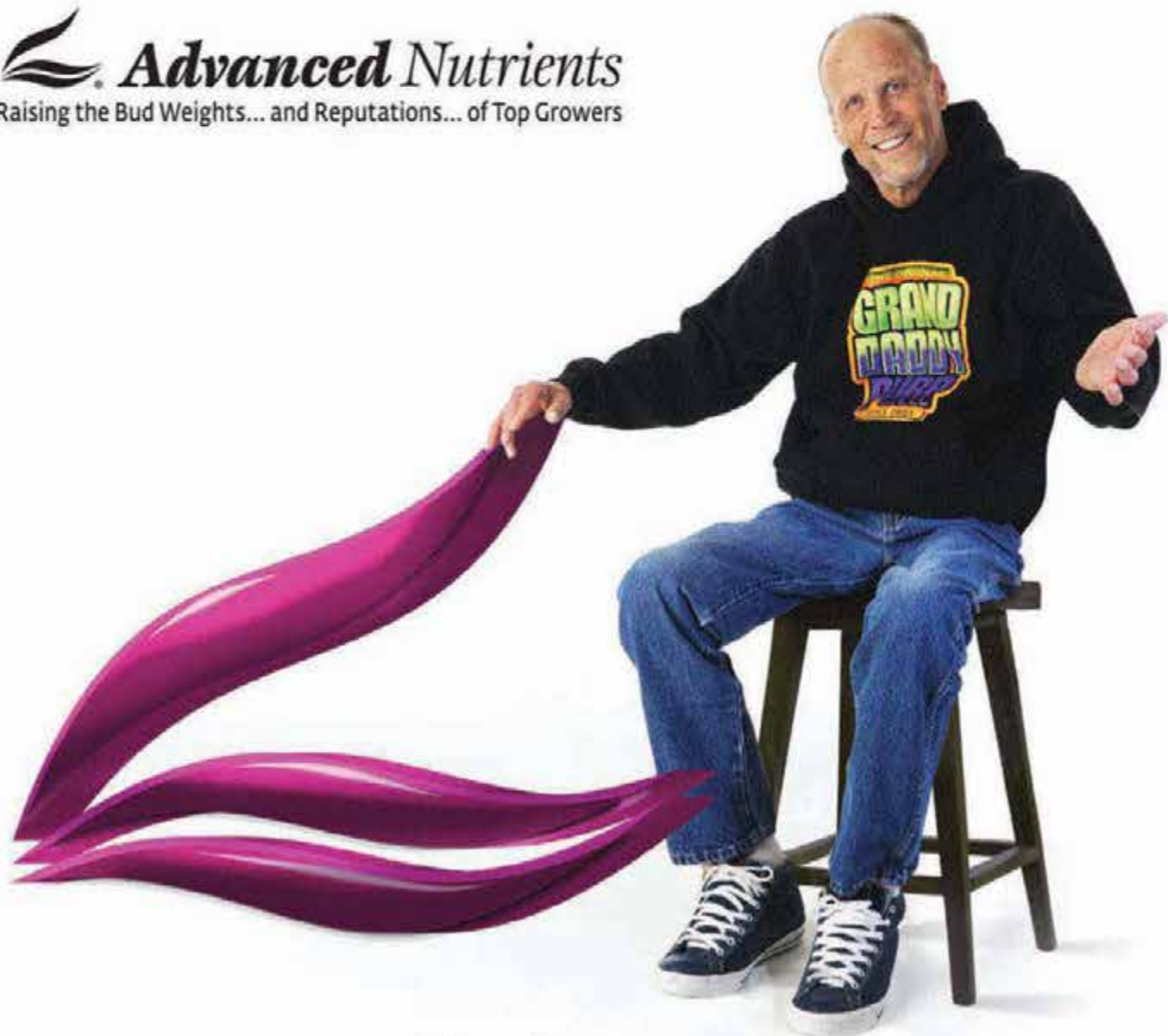
CO-FOUNDER & CEO OF COBRA EXTRACTS

Cobra Extracts is a premium cannabis-oil company specializing in cold-processed CO₂ extraction. Boze heads the extraction research and development arm of Cobra. The company's product line includes the award-winning distillate line Elev8, full-profile all-natural vape cartridges, cartridge-refill sticks, CO₂-based shatter and non-hydrocarbon extracted saps and waxes.

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Ken Estes, Grand Master Grower and originator of the world-famous medical marijuana strain **Grand Daddy Purp**, puts his faith in Advanced Nutrients to get bigger, more potent yields.

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DEREK LAVELLE
COCO EXTRACTS

LaVelle has been involved with cannabis for 30-plus years. He discovered homemade concentrates in *High Times* in the '90s and has been honing his extraction skills ever since. Together with his wife Renee and son Cody, LaVelle and the team at Coco Extracts craft connoisseur cannabis, edibles and, of course, concentrates.

KRISTI KNOBLICH PALMER
CO-FOUNDER & COO OF KIVA CONFECTIONS

Kiva Confections's mission is to produce safe, consistent and delicious edibles. Kristi Knoblich Palmer is the driving force behind the company's customer-service philosophy, employee development and best practices in manufacturing, business and marketing. She and her team have successfully grown the company to more than 100 employees.

ERIK KNUTSON
KEEF COLA

Knutson has worked with a number of licensed medical-cannabis organizations to establish operating procedures. He has helped shape industry standards surrounding super-critical CO₂-extraction techniques and medical-marijuana delivery systems. Knutson has overseen the development of award-winning products, including beverages, edibles and CO₂-extracted oil for cartridges.

VITALY MEKK
BLOOM

Mekk is an entrepreneur and pioneer in the cannabis market. He's established a successful business model for retail dispensaries and cultivation facilities, and he's owned, founded and managed five licensed dispensaries. In 2013, Mekk co-founded a leading full-service extraction and purification laboratory, which formulates and produces numerous oil-based cannabis products.

ANDREY BARANCHIK
BEAR LABS

Andrey's hydrocarbon extractions have earned multiple awards for superior quality thanks in part to his knowledge of cannabis chemistry. His skills at branding and marketing are unparalleled within the industry. After creating CE Solutions, he has moved on to his new venture, BEAR Labs, offering high quality concentrates at affordable rates.

STEVE
EXCLUSIVE MELTS

Exclusive Melts is focused on quality and consistency. Small and quaint, this company lives up to its name, producing exclusive craft batches and specializing solely in live resin extracts. Life's too short for the trim run.

RICHARD YOST
INDIGO PRO

Richard Yost created Airo Brands, a leader in innovation in the inhalation category on a national level. The company's first brand, Indigo Pro, leverages a superior closed system vaporizer to work

synergistically with scientifically advanced oil formulations of the highest standards, both in quality and in consistency.

DEREK CUMINGS
CO-FOUNDER OF INCREDIBLES

With over a decade of experience in the cannabis industry, Derek Cumings uses his own genetics and technology to create high-quality pot products. As a lab manager he honed his skills and pioneered processes such as single solvent winterization. He also invented The Incredible Extractor, utilized by extraction labs around the world.

VERNON PHILLIPS

Vernon Phillips is an epileptic brain-tumor survivor who first started to make hashish in order to treat his own medical condition in 2002. Vernon went on to become one of the foremost innovators of water hash, and has won Cannabis Cups for concentrates, non-solvent hash and CBD edibles. ✨

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TROUBLESHOOTING FOR BEGINNER GROWERS

NEW CANNABIS CULTIVATORS MUST LEARN TO IDENTIFY AND TREAT VARIOUS CONDITIONS IN THE GROWROOM PROMPTLY AND ACCURATELY. HERE ARE THE MOST COMMON MARIJUANA-GROWING PROBLEMS AND HOW TO SOLVE THEM QUICKLY AND EFFECTIVELY. **BY STONEY TARK**

My leaves are turning yellow and falling off. What gives?

This is an indication that your plant is short on nitrogen, an essential nutrient. As a result, the plant is using the available nitrogen stored within its leaves for photosynthesis and chlorophyll production. You may have returned to the garden to find that a few of the most significant fan leaves have become lifeless and the connecting part of the leaf can be flicked off.

What you want to do here is remove the yellowing leaves for a few different reasons. You will want them out of sight and out of the garden as insects are attracted to the color yellow. (This is why sticky strips made for catching flies are yellow.) Another reason to lose the leaves is that they're useless to the plant and removing them will allow more light to the lower parts of the plant that the fan leaves were covering.

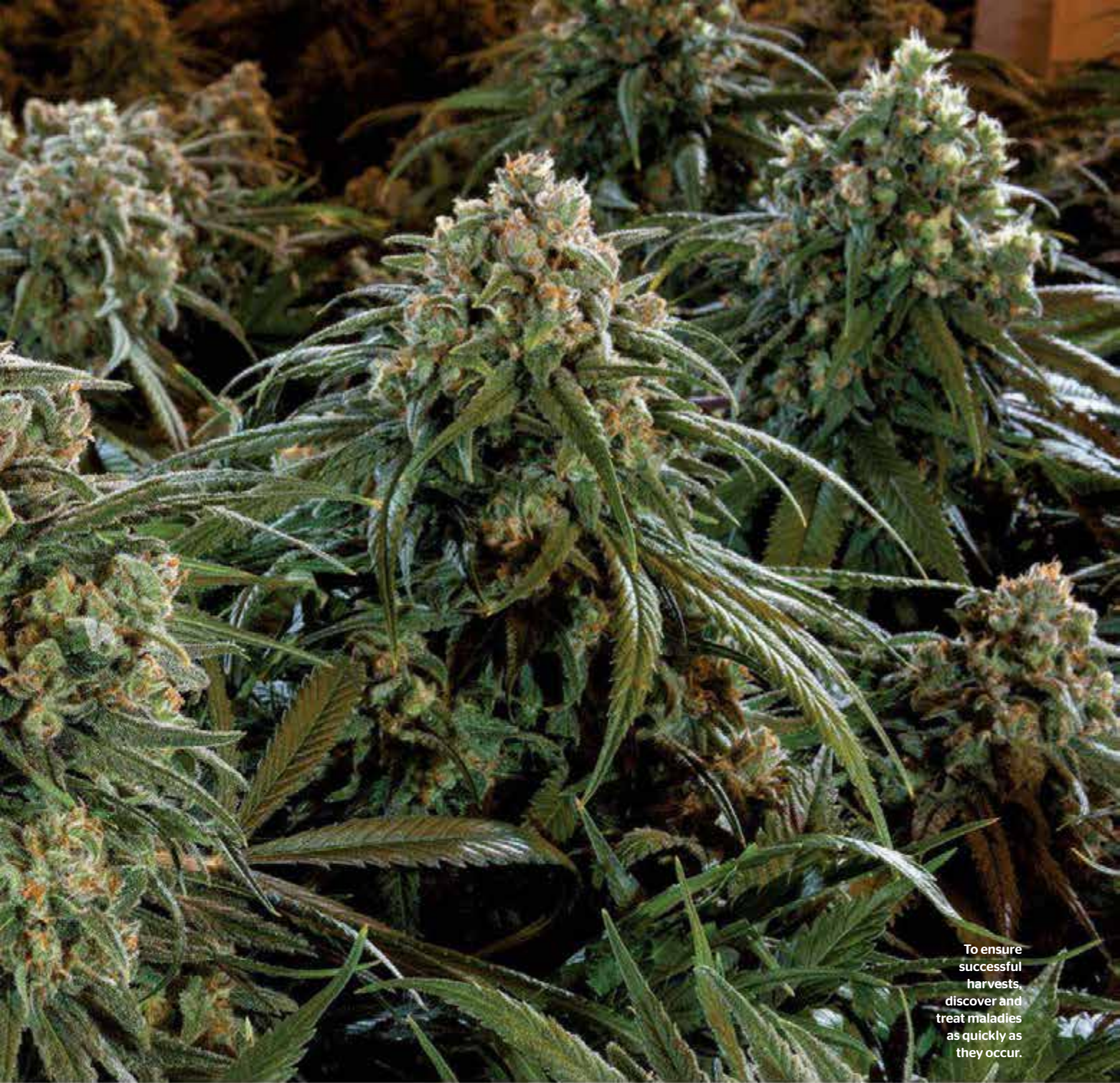
If you find that the newest smaller leaves are becoming

bright yellow and brittle, then you need to immediately add nitrogen that's readily available. Add organic matter that's in a state of humification, such as worm humus or tea, liquid seaweed, fish emulsions, blood meal or other things that are naturally high in nitrogen.

Why is there rotten-egg-like smell coming from my growroom?

This will most likely happen when you are growing organically. That foul sewer-like smell is produced by a microbe that is in the growing medium. The bacteria are anaerobic, which means they thrive in environments that are waterlogged with low oxygen—basically, swamp conditions. If you get a whiff of sulfur and rotten egg, then you know this is the cause.

To prevent this, introduce hydrogen peroxide into the



To ensure successful harvests, discover and treat maladies as quickly as they occur.

growing medium at 3 percent strength. This is distilled water with an extra hydrogen molecule attached, an unstable molecule. Once it is in contact with any bacteria, it will starve the organism of oxygen and kill it. It will also kill any beneficial bacteria you have in your grow medium; however, your roots will revive and the anaerobic bacteria will disappear.

A good tip here is to make sure your growing medium is not waterlogged. If you're bottom-feeding, never let your plants sit directly in a tray of stagnant water. This is precisely how anaerobic bacteria are formed, and even more so if you're using organic nutrients.

Why do the leaves of my plant have tiny yellow or white dots on them?

If you've noticed under close inspection that your fan leaves

and newest growth have tiny yellow blotches on them, then, sadly, you have signs of spider mites. You will not notice these tiny pests with the naked eye; you can only see the collateral damage they leave behind.

A spider-mite infection at any stage of the grow can be devastating, so my advice here is to be careful where you source your clones from. It's important to limit any potential threats that are being brought into the garden. You'll also want to reduce your humidity, as spider mites thrive in a clammy environment.

It's always good to have living predators on standby ready to patrol your garden. Once you have introduced these predators into your grow space, the results will be a slow reduction of the number of spider mites or whatever problematic insects you're dealing with.

Webbing is a sure sign of a spider mite infestation gone awry.



I tried to cut the top of a shoot to create two shoots, but I missed. What will happen now?

Don't worry, as this is a technique practiced on a broad spectrum by all types of growers. It entails the removal of about 70-80 percent of a shoot so that enough is left behind for the plant to reduce the growth hormone auxin but also promote lateral growth from the lowest parts of the shoot that was cut. It's called "fimming," for "Fuck, I missed."

If you intended to grow two new shoots from one, this can still happen, but you need to wait about 10 days for the plant to recover and become bushy. Then you can start the process to top the plant again.

My once white and fluffy roots are now thin, fragile and brown. What happened?

You've got what's called root rot, and this happens when the growth medium becomes waterlogged. Roots need oxygen to breathe during their search for moisture and nutrients. Again, using hydrogen peroxide will help bring the roots back to life, but so will repotting the plants into a medium that contains plenty of air pockets.

A good idea is to use a 50 percent coco and 50 percent perlite mix as a medium, and adding worm castings, blood meal and any humate rich in nitrogen. You will notice your roots bounce back to life and form new fluffy root hairs, so ensure that the growing medium is dry more often than wet.

I noticed spiderwebs forming around the leaves. What is this?

This is not a web from a spider that has somehow entered the garden, but instead a full infestation of spider mites. These pests can lay eggs and multiply in a short time in the right environment, so controlling that situation with clinical effect is necessary.

When you inspect your plants, you need to look at each one in the garden and remember that the spider mites are so small that they can move from plant to plant using the air currents from the fans in the room.

Get a magnifying glass and get close up and personal in order to identify their presence; once you do, you can then try and control the problem with predators that will depopulate the spider-mite colony.

There are tiny gray flies on the surface of my growing medium. Where did they come from?

These little fly larvae can be frustrating, and they can even be inside the soil or coco from a grow store. There is not much you can do about these apart from setting up sticky fly traps. You can also keep the top of your grow medium dry and maintain a constant air flow, as adult flies cannot lay their eggs in dry growing medium.



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Supporting branches by using a screen increases yields substantially.

I've been told to use a screen on my next grow for a more significant yield. Why should I do this?

Using a screen at canopy level is a growing technique in which leaves above the screen are kept and leaves below the screen are removed. The screen not only adds support for heavy branches; it also allows you to expand your canopy greatly by training your plants during the vegetative stage.

The idea with a screen is to pull the new trained shoots through each square strategically, so that when the plant flowers, the area above the screen is dedicated to producing dense buds. When you have efficiently filled every square of the screen and removed the irrelevant lower growth, the plant will now focus all its energy on the upper canopy above the screen.

Why are my temperature and humidity so high?

There can be several factors why you cannot get your temperature under 80°F

and your humidity is uncontrollable. This is not good and can lead to all sorts of problems, particularly during the flowering period. If you have your ventilation system dialed in, it should remove and recycle the air in your space between 15 to 20 times per hour. One reason that many growrooms fail is that the ventilation is not on par with what is required to remove the hot, stagnant air and to bring in carbon dioxide.

The other reason why your temperature can be sky-high is that you have your lights too low. Hot air will rise, and cool air will sink. You should have cool fresh air blowing in from an intake fan that is smaller in volume than the outtake fan. The space should perform as a vacuum—dispelling hot air from the grow lights and ballasts and replacing it with fresh air from the lowest part of the space.

Another tip is to keep your carbon filters and wall fans on even during the lights-out period. If you consider how the

hot temperature and high humidity levels build up, you can see that the heat cannot escape and adds to the moisture that forms on the walls and the surface of the plants. This is how powdery mildew and mold become a threat, so make sure you have constant fresh-air cycles and persistent blowing fans that mimic nature.

There's white powder all over the leaves when I check my plants. What is this?

This is called powdery mildew (PM), a living spore that attaches itself to the surface of your leaves. This fungus will grow on fresh foliage and can cause problems to an entire growroom in a short time. PM travels through the air and requires wet and damp conditions with little airflow.


This unwanted fungus can be treated with acidic-based washes, or with hydrogen peroxide and then rubbed off. It can take several days to entirely remove a PM infection, so keeping a close eye on your plants is essential at this stage.



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Root-bound plants should be transplanted into fresh growing medium.

What do I do about the rusty-brown and yellow spots on my leaves?

Rusty-brown spots on the lower leaves are your plant's way of telling you that it is deficient in calcium and magnesium. Calcium plays a huge role in the cell division of plants, alongside potassium. Use Epsom salts to boost your nutrients, or get a Cal-Mag supplement from your grow store.

The grow shop told me that my plants are showing a deficiency and that I should feed them trace elements. What do they mean?

Well, nitrogen, phosphorus and potassium are the three primary nutrients for your plants. The other remaining nutrients, called micronutrients or trace elements, are calcium, magnesium, sulfur, manganese, boron, zinc and copper. Cannabis requires this full lineup of nutrients to be able to do complex jobs deep down at the cellular level.

My plants are root-bound. What should I do?

Root-bound pots may look good, and many naive growers will show them off with pride without realizing that their plant has become restricted. When growing in a fabric pot or a pot with air holes in the bottom, roots will have a chance to come into contact with air and, as a result, react by pruning themselves. Fibrous roots will multiply and turn back on themselves and repeat this process like a spider does when building the structure for a web.

Prepare a larger container with a new medium into which to transplant. Wet your existing grow medium and turn the plant upside down with your fingers around the base of the main stem, carefully removing the entire root ball and placing it into the new medium.

When I touch my grow medium with my hands, the soil is cold and wet. Is this good or bad?

Cold temperatures are never good when it comes to growing cannabis. A cold medium can mean several things: poor air circulation, inconsistent wet and dry periods, the breeding of anaerobic bacteria, roots unable to take up phosphorus efficiently or sparse microbial life.

You want your grow medium to be warm, and a good tip here is to use felt pots and have a temperature of 75°F around the base and tops of the plants. Lifting your pots off the ground and making sure they're not touching the cold floors can make a big difference. Add a heater set at a low temperature to keep the air nice and warm for the roots. "Big roots mean big fruits," as the adage goes, so keep the roots and microbes warm and happy.

If you are hand-watering or bottom-feeding, use half as much nutrient solution twice as often. This can be more beneficial in the long run than finding out the hard way and having to work backward to find out where you went wrong.

Good luck in growing your killer plants, and I hope these diagnostics have helped you already. 🌿



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VALLEY HIGH

IN MAY, THE FIRST-EVER FULLY LEGAL CANNABIS CUP TOOK PLACE IN SACRAMENTO, CALIFORNIA.

BY MIKE HUGHES, PHOTOS BY JESSE FAATZ







Concentrate samples were plentiful.



Lauryn Hill headlined the fully legal Cup.

HIGH TIMES HAS been hosting the Cannabis Cup for over 30 years. What began as a clandestine meeting of cannabis enthusiasts in Amsterdam in 1988 has blossomed into massive pot festivals held throughout the United States. As marijuana legalization began to take hold in America, beginning with the medical-cannabis movement, High Times brought the Cup stateside for the first time in 2010. Yet despite recreational-cannabis laws spreading throughout the country, a fully legal Cup remained elusive. That is, until now. While High Times has hosted events in Colorado, Michigan, Washington State, Nevada and Rhode Island, we return most often to California. The Golden State's medical-cannabis law, Proposition 215, allowed for legal pot patients to medicate on site, and so the event grew in Southern and Northern California. However, with the passage of Proposition 64 in 2016, which legalized adult use in California, an opportunity to host a fully legal Cannabis Cup presented itself.

The painstaking task of corresponding with state and local governments—crossing every t and dotting every i—eventually paid off as High Times hosted the nation's first-ever legal, licensed cannabis-consumption event in Sacramento on May 4-5, 2018.

"This has been a long process, but we're proud to say that we're finally licensed and 100 percent legal," says Adam Levin, High Times publisher and CEO. "It has always been important to us that our events comply with all local laws while providing the best possible experience for our many thousands of attendees. With this week's state and city approvals, we're thrilled to announce a history-making event on the road to complete legalization."

The historic 2018 Central Valley Cannabis Cup took place at the sprawling Cal Expo fairgrounds.



Dabs were a big hit!



All adults, 21 and older, could purchase up to an ounce of flower.



Rick Ross took the main stage Friday.

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Cypress Hill : Sen Dog, B-Real and Eric Bobo



Purple strains, purple strains...

The event represented a giant step forward for cannabis freedom as it was the first ever in which anyone attending (ages 21 and over) was free to purchase up to an ounce of marijuana.

The event, which was granted a temporary cannabis-event license by California's Bureau of Cannabis Control, won approval from both state and local regulators to allow all adult attendees to receive and consume cannabis—both firsts.

"I can distinctly remember thinking at my first Cup in Amsterdam in the 1990s, 'How awesome would it be if we could do this back home?' and, since 2010, we have 'done it back home' at Medical Cups, but this is something entirely different," *HT* senior cultivation editor Danny Danko explains.

It's true that High Times hosted a Cannabis Cup in Denver after Colorado voters legalized pot by approving Amendment 64. However, that event in 2013 was supported at the state level but not at the local level. The Central Valley Cup checked both boxes and represented another barrier broken in the effort to legalize cannabis everywhere.

Fortunately for attendees, the event wasn't merely a celebration of sensible cannabis laws. It was a massive marijuana festival with plenty of pot to go around.

As Cup-goers poured into the gigantic Cal Expo fairgrounds, they were greeted by vendors showing off the latest pot products, gear, pens, rigs and

more. And of course, free samples of concentrates, flower and edibles were readily available.

The event in Sacramento also had the benefit of gorgeous weather throughout the weekend. On Friday afternoon, Rick Ross kicked things off with a dazzling performance before giving way to Ludacris, who lit up the stage as the sun went down. Gucci Mane closed out day one of the Central Valley Cup, sending attendees home happy.

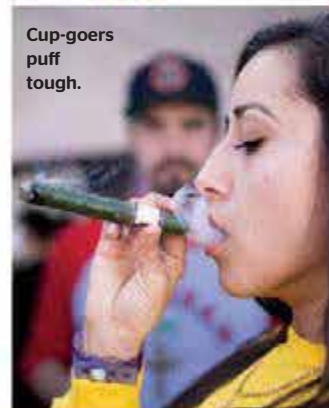
The Cannabis Cup awards show kicked off the main stage for day two of the Cup. Hosted by HT's own Danny Danko and head of programming Jackee Stang, it even featured a surprise marriage proposal. For a full list of winners, check out page 104. Awards were also handed out for the World Cannabis Cup, which was open to winners of Cups from 2017. You can see those results on page 106.

Following the awards, HT faves Cypress Hill took the stage followed by Lil Wayne. Finally, Cup-goers were treated to an eloquent performance by the one and only Ms. Lauryn Hill.

As the curtain closed on this truly historic event, everyone—attendees, performers and staff—seemed more certain than ever that the future for cannabis in the country is bright. While progress has been incremental, there's no denying the massive gains reformers have made. And High Times is dedicated to pushing for, and celebrating, those gains over the next 30 years. 🌿



Body art on display



Cup-goers puff tough.



Friendly Farms took home multiple awards.



Terp hunters on patrol



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CENTRAL VALLEY CANNABIS CUP WINNERS

BEST EDIBLE

1st Place: Cannabis-Infused Mocha Crunch Milk Chocolate by NUG
2nd Place: Ember Caramel, Cashew and Cayenne by Atlas Edibles
3rd Place: 24K Gold Encrusted Cannabis Infused Brownie Bite by Bud Bites

BEST CBD EDIBLE

1st Place: 50 ML Pure CBD Peppermint Tincture by Americanna
2nd Place: Acai Berry Blast CBD Dark Chocolate by Chill the Highest Chocolate in collaboration with Sol Distro
3rd Place: Delta 1:1 CBD Tincture by Mr Natural

BEST CBD VAPE PEN CARTRIDGES

1st Place: Basil & Chamomile 10:1 Vape Cart by Honey Pot

BEST CBD FLOWER

1st Place: Pac Man CBD by The Kaiser Select in collaboration with Urb Delivery

BEST CBD CONCENTRATE

1st Place: King Louis CBD Live Resin by NUG
2nd Place: Full Spectrum CBD Sauce Blueberry Sauce by Pure Terps with Humboldt Solutions
3rd Place: Kashmir Kush CBD Sub-Zero Rosin by Mr Natural

BEST VAPE PEN CARTRIDGES

1st Place: Gelato Live Resin Cart by Friendly Farms
2nd Place: Uplift Disposable Vape Pen by Aces powered by Critical Mind
3rd Place: Mowie Wowie by Medi-X

BEST NON-SOLVENT HASH

1st Place: Cuban's Strawberry 1st Pull 90 Micron Whole Plant Fresh Frozen Rosin by Critical Gardens in collaboration with CubanTech and POTUS710
2nd Place: Strawberry Banana Premium Rosin by Field Extracts in collaboration with Essential Extracts
3rd Place: Fruity Pebbles Live Resin by Papa's Select

BEST INDICA CONCENTRATE

1st Place: Reckless Rainbow Sauce by Critical Concentrates with Lumpy's Flower
2nd Place: Double OG Sour Live Resin Sauce by Rebel Grown with Humboldt's Finest Raw and Uncut
3rd Place: Gelato #41 by Connected Cannabis Co

BEST SATIVA CONCENTRATE

1st Place: Forbidden Fruit by Atrium in collaboration with Beezle
2nd Place: Jack Herer by Friendly Farms
3rd Place: Sour Apple Haze by Shaman Extracts with Lumpy's Flower

BEST HYBRID CONCENTRATE

1st Place: Sweet Tea Sauce by Critical Concentrates with Lumpy's Flower
2nd Place: Mimosa #A5 by Atrium in collaboration with Beezle
3rd Place: Golden Grahams Live Resin Sauce by Rebel Grown with Humboldt's Finest Raw and Uncut

BEST INDICA FLOWER

1st Place: Gelato #41 by Connected Cannabis Co
2nd Place: Banana Fig #8 by Fig Farms
3rd Place: Lemon Trill by Lumpy's

BEST SATIVA FLOWER

1st Place: Melonade by Alien Labs
2nd Place: Super Lemon Haze by The Village presented by South Sacramento Care Center
3rd Place: Shoreline by The Kaiser Select in collaboration with Urb Delivery

BEST HYBRID FLOWER

1st Place: Wedding Cake by Alien Labs
2nd Place: Cali Berry by Lumpy's
3rd Place: Mimosa V6 by The Village presented by South Sacramento Care Center

BEST PREROLL

1st Place: The Kimber Cannon by Garrison Lane
2nd Place: Dosidos Sauce Joints by Humboldt Solutions and Pure Terps
3rd Place: Naked J's by Cali Roots and Remedies in collaboration with Amplified Cannabis

BEST SUNGROWN

1st Place: Gelato #41 by Connected Cannabis Co

BEST TOPICAL

1st Place: Val's Hawaiian Cream by Val's Organics with the Weed Studio City and Critical Mind
2nd Place: CBD Pain Cream by Carter's Aromatherapy Designs
3rd Place: 3:1 Transdermal Relief Patch by Papa & Barkley

BEST BOOTH

1st Place: Friendly Farms
2nd Place: California Gold Concentrates
3rd Place: Heavenly Sweet / Zen Garden Wellness

BEST GLASS

1st Place: IDAB x DAB NATION- Rosin Tech
2nd Place: Bongzalla - Jerome Baker Designs

BEST PRODUCT

1st Place: Friendly Farms - Full Spectrum Live Resin Cartridge
2nd Place: Rosin Tech - Rosin Press
3rd Place: ExoticGenetix - Mint Chocolate Chip Seeds

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WORLD CANNABIS CUP WINNERS

BEST TOPICAL

- 1st Place:** The F'in Miracle Pack by Sunnabis
2nd Place: Balanced Aromatherapy Healing Spray by Honey Pot
3rd Place: CBD Living Freeze 1 by CBD Living

BEST EDIBLE

- 1st Place:** Tea Pot Calendula Guava Mango Black Tea by Honey Pot
2nd Place: Ritual Daytime Drops 20:1 by Elite
3rd Place: Velvet Sunshine Spicy Mango Limeade by Mary Jane Juice Bad Wizard

BEST CBD EDIBLES

- 1st Place:** Tea Pot Chamomile Lavender Peppermint by Honey Pot
2nd Place: Acai Berry Blast CBD Dark Chocolate by Chill in collaboration with Sol Distro
3rd Place: High CBD Full Spectrum Cannabis Tincture by Chemistry

BEST CBD FLOWER

- 1st Place:** C4 by Herbal Solutions with Walker Wade Labs
2nd Place: ACDC Cookies by Brown Dog with Med Tree Seeds
3rd Place: CannaGlue by Radicle Genetics in collaboration with Pincanna RX

BEST CBD CONCENTRATE

- 1st Place:** CBD Strawnana Grown By Ohmega by Critical Concentrates in collaboration with Moxie and LA Kush
2nd Place: Star Tonic by Lightsky Farms
3rd Place: Goji DC by Moxie

BEST MEDICALLY INFUSED CANNABIS

- 1st Place:** The Lemon Rock by Got Meds in collaboration with Hurricane Hydroponics
2nd Place: Wizard Wands by A.H.H.S.
3rd Place: Sunset Sherbert Plus by Critical Concentrates with Connected Cannabis and Brass Knuckles

BEST VAPE PEN CARTRIDGES

- 1st Place:** Lemon Skunk Super Oil by Indigo Pro in collaboration with Higher Vision and the Cure Company
2nd Place: Big Lemons by Gold Drop
3rd Place: Los Angeles Kush by LAK Vape with Los Angeles Kush

BEST NON-SOLVENT HASH

- 1st Place:** H*A*S*H Superior Solventless GMO Rosin by Lake Effect in collaboration with Divergent_flowers and Harambe_grows
2nd Place: OG #18 by Greenwolf and Rosin Brothers
3rd Place: Black Dog Live Rosin by ICEextract Equipment in Collaboration with Nugsferdaze & Bugatti Extracts



BEST INDICA CONCENTRATE

- 1st Place:** Exclusive OG by Exclusive Melts
2nd Place: Bloodwalker OG by Critical Concentrates and LA Kush with Farmer StraightFire
3rd Place: Motor Breath by Herbal Solutions in collaboration with Five Star Extracts.

BEST SATIVA CONCENTRATE

- 1st Place:** Hi Tech by Critical Concentrates with Connected Cannabis and Brass Knuckles
2nd Place: Blue Print by Nameless Genetics in collaboration with Moxie
3rd Place: Super Lemon Haze Live Resin by Herbal Solutions in collaboration with element extractions

BEST HYBRID CONCENTRATE

- 1st Place:** Umami by Exclusive Melts
2nd Place: Lemon Gelato Diamonds by Connected Cannabis Co in collaboration with Gold Nugget Extracts and Alien Labs
3rd Place: Strawberry Blondie by Critical Concentrates and LA Kush with Farmer StraightFire

BEST INDICA FLOWER

- 1st Place:** Fruit Roll-Up by Lumpy's Flowers
2nd Place: Casino Kush by Cannabiotix
3rd Place: Creme de La Crème by Team Elite Genetics

BEST SATIVA FLOWER

- 1st Place:** J1 by Team Elite Genetics
2nd Place: Jack by LoudPack
3rd Place: Nick's Famous NTB Eastside by Herbal Solutions with Leaf Doctor

BEST HYBRID FLOWER

- 1st Place:** Kush Mountains by Cannabiotix
2nd Place: Peach Oz by Team Elite Genetics
3rd Place: Dosickey's by Northstar Holistic Collective

BEST PREROLL

- 1st Place:** King Tarantula Lemon Tree Preroll by Ganja Gold
2nd Place: Loaded by Loaded with Connected Cannabis
3rd Place: World's Finest Cannabis Leaf Magar by Midnight Roots in collaboration with Jean Calor Magar

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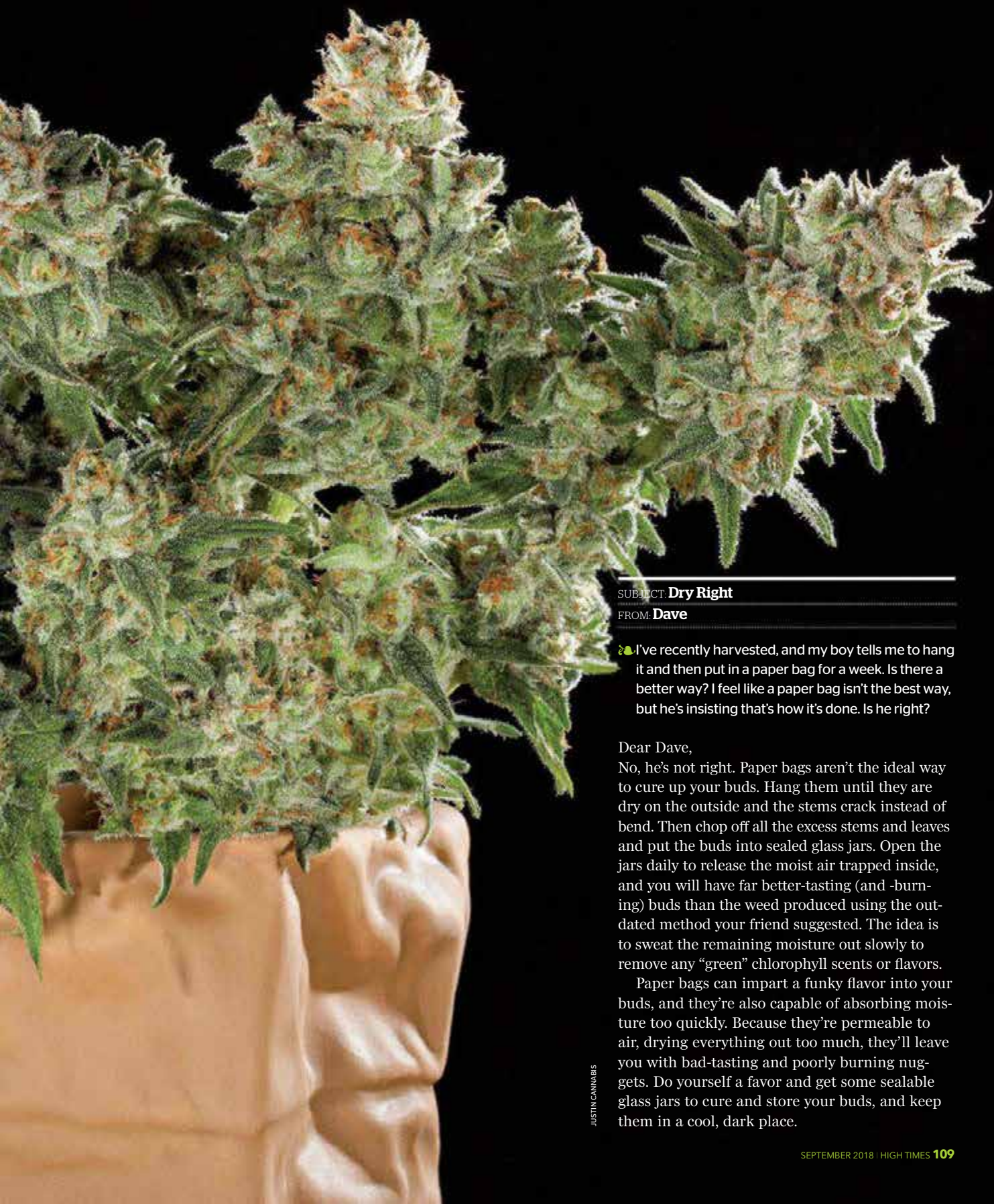
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Don't dry or cure
your precious pot
in paper bags.



SUBJECT: **Dry Right**

FROM: **Dave**

🌿 I've recently harvested, and my boy tells me to hang it and then put in a paper bag for a week. Is there a better way? I feel like a paper bag isn't the best way, but he's insisting that's how it's done. Is he right?

Dear Dave,

No, he's not right. Paper bags aren't the ideal way to cure up your buds. Hang them until they are dry on the outside and the stems crack instead of bend. Then chop off all the excess stems and leaves and put the buds into sealed glass jars. Open the jars daily to release the moist air trapped inside, and you will have far better-tasting (and -burning) buds than the weed produced using the outdated method your friend suggested. The idea is to sweat the remaining moisture out slowly to remove any "green" chlorophyll scents or flavors.

Paper bags can impart a funky flavor into your buds, and they're also capable of absorbing moisture too quickly. Because they're permeable to air, drying everything out too much, they'll leave you with bad-tasting and poorly burning nuggets. Do yourself a favor and get some sealable glass jars to cure and store your buds, and keep them in a cool, dark place.

JUSTIN CANNABIS

Danko Tip: Feed fragile newly sprouted seedlings lightly to avoid burning them with too much nutrients.

Plants at House of Cultivar in Seattle are lit with a combination of multi-spectrum ceramic metal halide (CMH) lighting and double-ended high-pressure sodium (HPS) fixtures.



SUBJECT: **Lighting Choices**

FROM: **Ivan C.**

🌱 I'm a first-time grower after reading tons and tons of books and articles about growing. The only confusion I have is this: What lights are best to use? I will be running a 3' x 3' x 5'11" Gorilla Grow Tent, so it will be a small garden, but I would like to yield as much as possible and I'm also looking for quality dense buds. Would you please recommend the best light for this grow space? I was thinking of a Gavita 600/750-watt HPS or a SolisTek C1 315-watt CMH.

Dear Ivan,
Both of the grow lights you've researched would certainly be ideal for your intended space. A 600- or 750-watt HPS (high-pressure sodium) light will create a bit more heat than a 315-watt CMH (ceramic metal halide) light, so if heat is an issue, choose the lower-wattage lamp. Of course, the higher-wattage lamp

will produce a bigger yield of denser buds as long as you can manage and remove the heat appropriately. Remember: Small spaces heat up quickly, so be sure to get an exhaust fan strong enough and consider using an air conditioner in the room where you plan to keep your grow tent.

SUBJECT: **Is CO₂ a Must?**

FROM: **PolarMan**

🌱 Do I really need to supplement my space with CO₂ to grow really good bud? I've heard it both ways, and I'd like your opinion.

Dear PolarMan,
As long as you have good circulation with plenty of fresh air entering your grow space, then it's not absolutely essential to supplement it with carbon dioxide (CO₂). High CO₂ levels can

increase bud size by quite a bit when all the other factors are properly in place, but CO₂ injection isn't necessary to grow cannabis flowers unless you are using a completely sealed room that gets no fresh air.

CO₂ levels in the air are approximately 300-400 parts per million (ppm), and cannabis can handle up to 1,500 ppm and thrive. Your plants can also handle higher temperatures when there's more CO₂ in the air if heat is an issue for you. Plants that receive high levels of CO₂ will thrive even when the temperature reaches 85°F.

SUBJECT: **Foliar Feeding**

FROM: **Walter L.**

🌱 I was reading your article about foliar feeding. Thanks for the great information. I saw that you recommend spraying in the morning. I'm kind of worried about spraying and possibly burning the leaves when



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DEAR DANKO

Danko Tip: Wash and manually remove scale clusters from plant stems using an insecticidal soap.

my lights come on. I have my girls under two 600-watt lamps. No glass, just cheap wing reflectors about 30 inches above the plant tops. I keep the temperature in the mid- to upper 70s (around 65° to 70°F when the lights come on), and humidity is around 40 percent. I know I may be overly paranoid, but they're my babies. Do you think I'll be okay?

Dear Walter,

You certainly don't want to spray anywhere near your unprotected bulbs as this can damage and even destroy them. Turn off all your fans before any spraying and raise your lights as high as you can. If you spray early in the "morning" (when lights are just coming on) with the lights raised, and only lower the lights when your leaves have dried, you will not risk burning the leaves. Just be sure not to get any droplets on your bulbs and you'll be fine. Discontinue foliar feeding once flowers have begun to form to avoid encouraging mold and bud rot.

SUBJECT: **Cal-Mag**

FROM: **Nitrogen**

🌱 I'm new to reverse-osmosis (RO) watering but not new to growing. There's a lot of conflicting info out there regarding how much base Cal-Mag I need to put in my water and how much is too much. My base nutrient has calcium and magnesium in it, but I ran into a deficiency at the start of this. I had claw fans that twisted under at the top and some older lower ones were turning yellow-brown, so I doused the tank with 5 milliliters per gallon of Cal-Mag, and that came out to be about 300 ppm. Everything seems good now, but what does too much Cal-Mag look like? I also have taken note that most companies that make nutrients have a recommended dose that puts the ppm way over 1,500, and that's not good. Thanks for your time!

Dear Nitrogen,

Cal-Mag deficiencies are much more common than toxicity due to too much. An overabundance of Cal-Mag is hard to discern, but it causes nutrient lockout, particularly of potassium, magnesium and iron. In extreme cases, leaves become diseased and damaged-looking.

You're correct that many nutrient companies recommend greater amounts of their plant foods than necessary. They want you to finish the bottle and purchase a new one. My advice is to start with half the listed dosage and work your way up as necessary. It's always easier to add more than to take it away.

SUBJECT: **White Residue**

FROM: **Ken**

🌱 I'm growing in fabric bags and have a question. I have white residue on the outside of my bags. What is this, and will it be a problem? I hope you can help.

Dear Ken,

The residue you're seeing is accumulated salts from your nutrients. These mineral deposits build up over time as the grow bags get wet and dry out. The good news is that roots that



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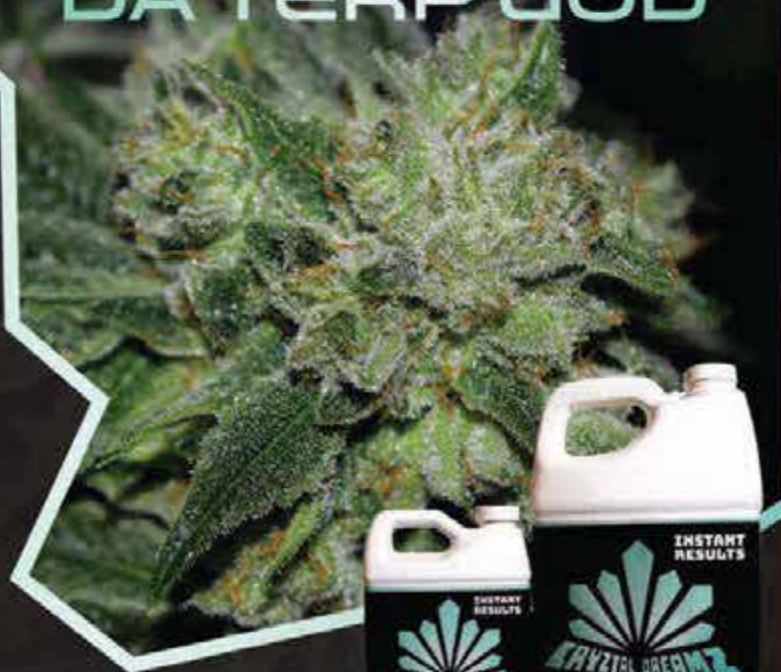
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DEAR DANKO

Danko Tip: Keep warm ballasts outside of your grow space to reduce temperatures significantly.

reach the outside of your grow bags quickly turn around and go back into your medium without serious exposure to concentrated salts. Use plain water on occasion to flush away excess minerals and you shouldn't have a problem with them at all.

SEXING **Mother Plants**

FROM **Richard**

🌱 I plan on growing from clones, starting my mother plants from regular/non-feminized seed. I'm wondering what would be the best technique for sexing out mothers. Would it be to first flower them out, then revert them back to vegetative growth? Or would that be too much stress for a mother plant? Would it be best to take clones before flowering the moms and determining the plant's sex from the clones? (Although this would be extremely inconvenient for those of us trying to follow state guidelines with regard to plant limits.)

Dear Richard,
Unfortunately, the latter solution you offer up is clearly the best one. Mother plants suffer stress when they are flowered in order to determine their sex and then reverted back to vegetative growth. The confusion caused by this unnatural process can result in slowed growth, twisted leaves and other negative symptoms.

On the other hand, determining the sex of the mother plant by taking a cutting and then flowering it out will not stress the mother plant, and it can continue growing in its vegetative stage throughout the process. Taking the cutting from the main stem of the mother plant will help it stay bushy as well, a very important characteristic to consider if space is a concern.

Some states with plant limits only restrict the number of flowering plants you can have, but if your state doesn't, consider that the cutting only needs to indicate the sex of the mother and can be discarded shortly after completing this task, limiting your time at potential risk to a couple of weeks.

SUBJECT: **Triple Leaf**

FROM **Vash**

🌱 Is it normal for a plant to sprout with three leaves instead of the usual two? This is the first time it's ever happened to a plant I've grown, and I don't know whether to keep it or toss it onto the compost heap. Any advice?

Dear Vash,
Your plant is a trifoliate, meaning it suffers from a deformity or mutation in which three cotyledons emerge from the first node instead of the usual two. This condition usually only affects plants in the earliest stages of life, and they tend to discontinue the weird behavior as they mature (i.e., after the fifth set of nodes or so). Keep in mind, however, that trifoliate plants and those with whorled phyllotaxy tend to exhibit more hermaphroditic behavior and are also much more likely to turn out to be males when flowered. It's best to get rid of them. The benefits don't outweigh the hassles. 🌿

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It's important to have a safe and secure place to store your buds and concentrates, and the Original Curidor takes it to the next level. It's a climate-controlled, security-locked safe in which you dial in the temperature and humidity for up to two pounds of flowers in jars. With a platinum finish, UV-blocking tint, removable racks and an adjustable thermostat, this sleek platinum-finished unit provides prolonged quality and ease of mind.

2 NUTRIENT RICH

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mammothmicrobes.com

What good are the nutrients in your growing medium if your plants can't access and utilize them immediately? The highly concentrated microbial inoculant from Mammoth Microbes breaks down phosphorus and many other nutrients for easier root absorption and an increased availability of essential plant foods. Beneficial bacteria further help in unlocking micronutrients, and this formation works in soil and soilless systems alike, and in hydroponic reservoirs too.

3 FIND YOUR OASIS

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oasisgrowersolutions.com

Successful cloning requires warmth, moisture and the correct air-to-water ratio in your rooting medium. Oasis Grower Solutions Rootcubes are sterile and pathogen-free foam media that help reduce disease and insect issues and are specifically designed for the development of root calluses. They come in sheets with easy-to-separate cubes, and they also contain starter nutrients. The new retail pack is available in 104-count and 50-count sheets.

4 FAN DUEL

\$26.95

htgsupply.com

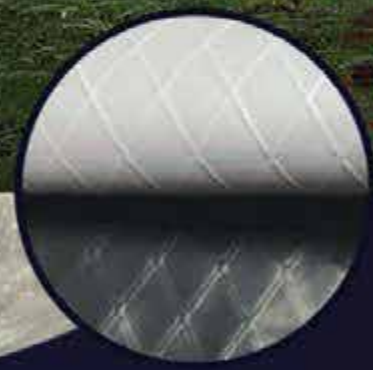
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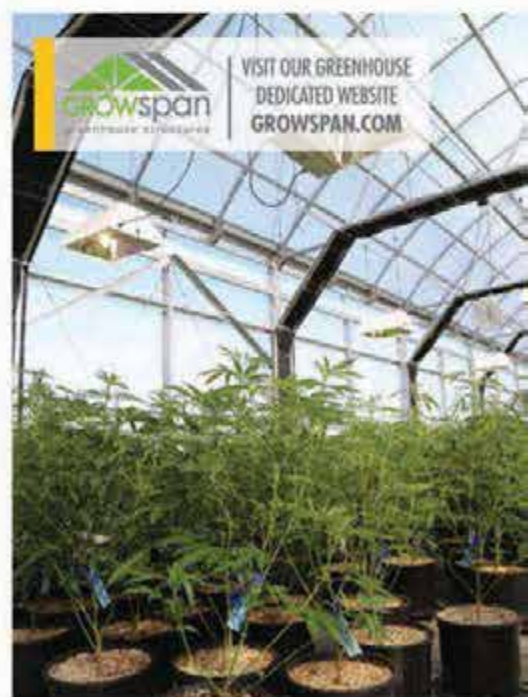
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CANNA-BANANA BREAD: ENHANCING A CLASSIC

PAIRING DISHES WITH SPECIFIC TERPENES ADDS A NEW DIMENSION TO CANNABIS CUISINE! *BY JOANNA O'BOYLE*

WE LEARN MORE AND MORE about terpenes and their characteristics every day. By utilizing a terpene-precise approach in the kitchen, a whole new world of cannabis-infused cuisine with customized, strain-specific experiences and flavors can be explored.

A great basic example of this is a banana bread that uses extract selected specifically for its caryophyllene content—from strains like Fire OG, Girl Scout Cookies or Sour Diesel. The spicy, earthy elements of the nutmeg and walnuts in the banana bread perfectly complement the peppery-clove aroma and taste of the caryophyllene, which is also known for its anti-anxiety and anti-inflammatory properties. The result is an instant all-time favorite and an easy go-to for a healthy, delicious edible to share and enjoy anytime.* 🌿

INGREDIENTS

2½ cups vegetable oil (for oil bath)
1 gram cannabis concentrate extracted from a strain high in caryophyllene
½ cup coconut oil
¼ cup unsweetened almond milk
½ tsp. apple-cider vinegar
1 cup dark brown sugar
3-4 overly ripe bananas, mashed
2 tsp. vanilla extract
1¾ cups flour
1 tsp. baking powder
2 tsp. baking soda
1 tsp. nutmeg
1 tsp. cinnamon
½ tsp. sea salt
1 cup walnuts, toasted and crushed

DIRECTIONS

Heat the oil to 175°F in a medium saucepan. Place the concentrate in a Pyrex dish, then carefully put the dish in the oil bath. Stir the concentrate as it melts, then whisk in the coconut oil. Remove the dish from heat when the extract is fully melted and mixed, carefully wiping the hot oil off the outside of the dish with an old rag or dishtowel. Cool to room temperature—about 25 minutes.

Preheat the oven to 300°F, then grease and flour a 9" x 5" loaf pan. In a small bowl, stir together the almond milk and the apple-cider vinegar. Set the mixture aside.

In a large mixing bowl, beat together the cannabis-infused coconut oil and the brown sugar. Add the bananas, vanilla and almond milk/vinegar mixture, then mix thoroughly. In a separate bowl, sift together the flour, baking powder, baking soda, nutmeg, cinnamon and salt. Add the dry ingredients to the wet ingredients and gently mix, just until all the flour is moistened. Fold in the walnuts.

Pour into the greased loaf pan and bake for 55 minutes, or until a toothpick comes out clean and the top of the loaf is golden brown. Cool 10 minutes in the pan, then slide the loaf gently onto a wire rack to cool fully before slicing.

Serve fresh, or wrap the loaf tightly in plastic wrap and label clearly. It can be frozen for up to three weeks.

**Know your tolerance and plan accordingly. Potency will vary depending on the starting cannabis material, serving size, etc. So take it easy and allow at least 45-60 minutes before eating more in order to gauge your recipe's effect.*

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



I AM PAUL McCARTNEY, AND I AM A

VEGETARIAN

PETA.org

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New Jersey's
Alcoholic
Beverage
Community**

**A Pioneer
in Serving
New Jersey's
New
Cannabis
Industry**

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We are proud to welcome Jeffrey Warsh to establish a new cannabis industry practice group. Jeff is an alcoholic beverage and cannabis law attorney and registered governmental affairs agent with over 30 years of experience in highly regulated industries. Our practice group advises entrepreneurs in the complex and evolving field of cannabis law, providing guidance and insight into entity formation and capital raising, real estate and zoning, permitting and regulatory compliance, and enforcement and transactions related to the licensing of alcoholic beverages and cannabis.

Contact us to learn more:

- Paul D. Strauchler
- Jeffrey A. Warsh
- Douglas J. Sherman
- Jerry Fischer

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How does cotton mouth work?
I thought it was from smoking
pot, but then I got it after eating
an edible.

Arid Jered

Hey AJ,
It turns out that human
salivary glands have both
CB1 and CB2 receptors.
Anandamide, the body's own
natural cannabinoid named
after the Sanskrit word for
"bliss," apparently stimulates
both of these to stop salivation.
THC does the same.
Nobody's exactly sure why
this trait would have evolved
in humans, but I like to think
it's to keep us from drooling
all over ourselves when we
get completely blissed-out.
(Other lubricating parts prob-
ably work this way, too.)

Can marijuana really create spon-
taneous orgasms?

Daniel Stormy

Hi Stormy,
The *Journal of Sex and Mari-
tal Therapy* has a case report
of a woman who smoked quite
a bit and noticed spontaneous
orgasms after a recent period
of "intense pounding sexual
activity." (I'm not sure what
strain she had, but email me
if you hear anything.) As odd
as it sounds, a couple of anti-
depressants and at least one
ADHD drug have created this
same effect a few times in the
published literature, too.

What does "sativa" really mean?

Armand Verba

Howdy Armand,
The word "sativa" means



**Cannabi-
noids stop
salivation.**

"cultivated" or "domesticated."
Lots of plants that humans
have grown for a long time
share this species name. So
Allium sativum is everyday
garlic, and *Avena sativa* is the
common oat plant.

My physician claims that there's
no human data on cannabis and
IBS, so he won't prescribe for me.
HELP!

Bell Lee Hertz

Hello Bell Lee,
At least one study of a CBD-
rich formula has created some
promising results for humans
with IBS, and there are over
50 compelling experiments
on rodents suggesting that
cannabinoids should help. I
should add that negative side
effects are more likely with a
lot of the other medications.
Perhaps it's time to find a new
physician. 🌿

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

THE RESULTS ARE IN

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ALS

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it to be used to defeat lawfully administered drug tests.

PATIENTS

Sifting through the changing landscape of medical marijuana laws in your state can become overwhelming. MarijuanaDoctors.com is here to help.

Our site is designed to serve patients and physicians alike, providing information about state legislation information, practices nearby, and dispensaries in your city for patients and comprehensive outreach services for physicians to connect with patients in the area.

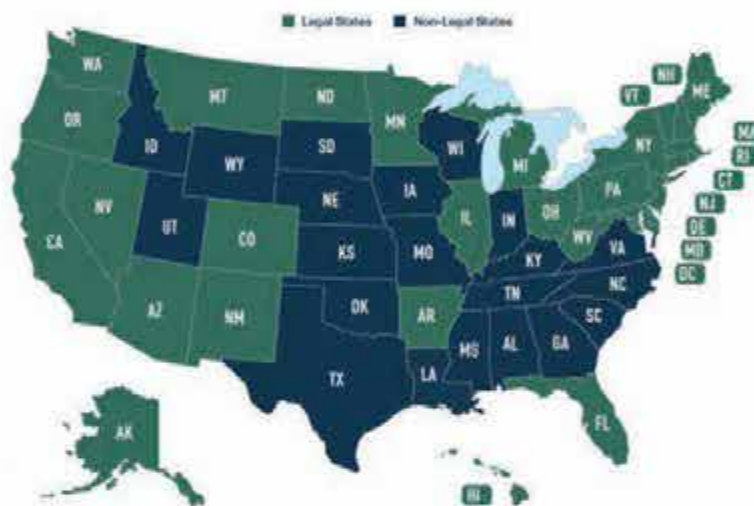
Your Journey with MARIJUANADOCTORS.COM

Patients can start by checking our database of legal and non-legal states to learn about medical marijuana laws in their states. Our state database includes information about qualifying for medicinal cannabis and how to complete the registration process.

For patients with limited mobility, we have information about telemedicine services in qualifying states -- which helps bring care right into the patient's home.

Find a QUALIFIED PHYSICIAN

Once the registration requirements are known for each state, patients can check out our list of physicians certified to recommend medical marijuana. Not only can patients search for physicians that are nearby, but they can also view reviews and ratings for physicians to get a feel for a practice before making an appointment. We've made it easy for patients to pick the right physician -- including practice information, office hours, and pre-visit requirements. Patients can schedule their appointment online right from the comfort of their home. A recommendation from a qualified physician in our database helps patients obtain the legitimate medical documentation they need in order to start the registration process for a medical marijuana card in their state.



Fill Your Recommendation CLOSE TO HOME

After patients have completed the registration process and obtained their medical marijuana card, MarijuanaDoctors.com can help them find a dispensary to fill their recommendation. Not only do we constantly update our list of dispensaries in legal states, but we have our finger to pulse of non-legal states with changing legislature and are first on the scene when dispensaries open in these states.

Patients can find rating and review information about local dispensaries to help them find the best budtender for their needs. Soon our team will be integrating ordering functionality so that patients can order directly from dispensaries, making it even easier to get the medical marijuana they need to treat their qualifying conditions.

The Nation's #1 Medical Marijuana Network

1

Book With
A Doctor



No Booking
Fees

2

Book With A
Dispensary



Trusted &
Proven

3

Follow-Up With
The Doctor



Safe &
Secure

4

Order Medicine
Products



Strict Doctor
Standards

5

In-Store Pickup Or
Home Delivery



Proven Low
Risk System



Help Along
The Way

Marijuana Doctors: One-Stop Portal

If you're a medical marijuana patient or doctor, finding the resources and dispensaries you need can be difficult.

If you're a medical marijuana certified physician, MarijuanaDoctors.com has the resources to connect you with thousands of patients every month.

PHYSICIANS

Our subscription services help us optimize your profile to help draw more patients to your practice. We are constantly adding services to help physicians connect with patients in this digital age.

Digital Appointment Assistant PRACTICE MANAGER

We are happy to offer a paperless HIPAA Compliance Check-In System for physicians registered on our site. Practice Manager, the new electronic check-in system, will process forms and instantly store files into the EMR. The system will make processing patient paperwork easier, leaving physicians and practice managers just to review notes and schedule follow ups. The check-in system will also have functionality to set up reminders for patients about scheduling follow-up appointments through the Marijuana Doctors site, text, or email. The system will also give patients the opportunity to rate the practice and their experience, helping boost the practice's credibility with great reviews and testimonials.

At Your Fingertips TELEMEDICINE

Our new registration and digital signature automation will technically streamline workflow for practices using telemedicine. Doctors can connect with telehealth patients by simply clicking a few buttons in their Practice Manager. Once a doctor connects with a patient through Practice Manager, patients have the ability to see when doctors are available for a live chat about their medical marijuana treatment options. Doctors have the ability to use MarijuanaDoctors.com to have patients fill out telehealth forms, process payments, receive medical records, schedule a HIPAA compliant virtual appointment, add notes, finalize appointments, and schedule follow-ups to boost patient retention. This system is the most

seamless way to manage your practice's patients and reach out to new patients by connecting with the tens of thousands of unique visitors that use MarijuanaDoctors.com every day to understand medical marijuana.



New Functionality BUDTENDERS & DISPENSARY OWNERS

Catering even further to the medical marijuana industry, MD also provides marketing solutions for producers, dispensaries and cannabis clinics. Once a patient has received a medical marijuana recommendation and the physician has registered the patient on the state's department of health website, patients can now request an appointment with local dispensaries using our network.

MarijuanaDoctors.com gives producers the

ability to vertically integrate within their market, understanding that patients using medical marijuana to treat debilitating and chronic conditions hold a lifetime value as customers of a dispensary.

As with physicians, producers now have the ability to create profiles optimized for their location and benefit from the patient funnel that is generated by our network's skillfully developed infrastructure. Producers will now share the

automated-functionality of scheduling patient appointments, and have access to the telehealth portal by which they may consult with patients online, instead of in-person. Furthermore, producers may also choose to become featured advertisers, opting for advanced placement in the state and city static listings, which always come up first in the search results.

ABOUT



patients to have their medical marijuana needs met in one location. In order to best serve our patients, we will provide information about medical marijuana laws, availability of physicians in patients' areas, on-demand access to physicians and pharmacists,

Marijuana Doctors seeks to educate patients in states where medical marijuana is legal. Our goal is to be one-stop resource for

information about dispensing options, delivery services, ancillary products, easy online ordering, and automated product ordering. As we continue to expand our patient resources, we are excited to offer 360-view tours of featured dispensaries, the cultivation process, the manufacturing process, and products. Our patients are able to do everything—from research to ordering to reordering—from the comfort of their homes.

As a MSO, Marijuana Doctors can facilitate these services on behalf of medical organizations with medical marijuana licenses in qualifying states. We have created security checks and balances to ensure that deliveries and sales can only be obtained legally, taking the pressure off our patients. As your go-to resource for marijuana, we will keep adding the information you need to make receiving the medical marijuana you need to treat your qualifying condition as easy as a click.



THE EVOLUTION OF WOMEN IN CANNABIS CULTURE

LEADERSHIP FROM FEMALE ENTREPRENEURS, CELEBRITIES AND POLITICIANS HAS HELPED CHANGE PERCEPTIONS OF WOMEN WHO CONSUME CANNABIS.

Carly Wolf is NORML Political Associate. Visit norml.org.



Women are changing how cannabis use is viewed.

I F YOU WERE to Google “women and marijuana” 10 years ago, there was really only one type of image you would see: half-naked busty, tan women covered in tattoos smoking from enormous bongs. But this distorted representation of women and cannabis started *much* earlier. Early- to mid-20th-century *Reefer Madness*-style movies and pulp novels like *Marijuana Girl* depicted disrobed women descending into sin after they consumed cannabis.

The typical stoner stereotype was that anyone who partakes in marijuana is lazy, unambitious and a deviant from society’s social norms. Due to this unappealing caricature of a stoner, any woman who smoked marijuana was likely in the cannabis closet. She kept her marijuana use a secret because she didn’t want to be judged or labeled. Marijuana smokers displayed in the media and pop culture largely adhered to this cliché, with movies like *Pineapple Express*, *The Big Lebowski* and *Harold & Kumar* playing into silly, overexaggerated stereotypes surrounding marijuana use. In addition to tired tropes, not one of those movies featured women using cannabis in a positive light.

The media have spent much of the last 80-plus years telling us that women

who smoke pot can’t be responsible. Any display of women casually smoking pot was the exception rather than the rule. We had characters like Annie Hall (Diane Keaton), whose boyfriend didn’t like the fact that she smoked pot; Elizabeth Halsey (Cameron Diaz), whose pot smoking contributed to her *Bad Teacher* persona; and Nancy Botwin (Mary-Louise Parker) of *Weeds*, who was depicted as a criminal and was unable to maintain her suburban-mom life once she got involved with cannabis. Due to these portrayals, real mothers were (and still are) labeled as bad parents who maintain unfit living conditions if they consume marijuana, even if used for medicinal purposes.

Thankfully, with 47 states having reformed their marijuana laws to some extent, times are changing for women in cannabis culture. We’re seeing more and more women come out of the cannabis closet as entrepreneurs, pop-culture icons and policy-reform champions. The concept of women smoking pot has become more normalized, partly because women generally approach cannabis use in different ways than men.

We often see women approaching their consumption from the health-and-wellness perspective, which has helped change the perception of stoner

stereotypes. Female entrepreneurs are emerging: Mara Gordon founded Aunt Zelda’s, a line of cannabis-extract medicine; Cindy Pinzon and Leone Posod co-founded Treat Yourself, a wellness company featuring female-friendly cannabis products; even celebrities such as Melissa Etheridge and Whoopi Goldberg are operating their own cannabis brands. These women have paved the way for others to redefine what it means to be a woman who enjoys cannabis.

Women-run advocacy organizations nationwide have been leading the movement for sensible marijuana-law reform. Jamie Kacz of Kansas City NORML successfully led efforts to pass a decriminalization bill, and Sharon Ravert of Georgia founded Peachtree NORML. Groups led by mothers are becoming increasingly widespread, such as Moms for Marijuana International and Mothers Advocating Medical Marijuana for Autism. Whether it’s a mother whose epileptic child sees significant relief from medical cannabis or simply a mother who is tired of the stigmatization and criminalization of cannabis, it’s a changing landscape for families.

Female politicians are increasingly coming out as advocates and champions of marijuana-policy reform in Congress. Representatives Tulsi Gabbard (D-HI) and Dina Titus (D-NV), along with Senators Kirsten Gillibrand (D-NY), Elizabeth Warren (D-MA) and Kamala Harris (D-CA), have all spoken out against prohibition and recognized the benefits that sensible marijuana policies bring to society. They have been facilitating these important conversations with their colleagues, aiming to bring about the legislative changes that a majority of Americans support.

The role of women in the cannabis-reform movement is pivotal, as they have been the driving force for cultural change and the normalization of cannabis use. If you Google “women and marijuana” now, you will see fewer women being used as props in marijuana imagery and infinitely more everyday sophisticated women in professional settings smoking a joint, because, frankly, that’s who’s been smoking pot this whole time. 🌿

**REMEMBER
PROHIBITION?**



IT STILL DOESN'T WORK.

Fight Drug Violence. Legalize Marijuana.

Join NORML Today!

www.norml.org/join



COMPLIANCE IS THE KEY TO LONGEVITY

Scott Holthby is a Freelance Writer With A Pulse On Cannabis Industries.

Over the last few years, we have seen an unprecedented push towards greater legalization of cannabis in a number of key markets, most notably in the U.S. and Canada. Unlike Canadian markets, pushed forward through federal support, U.S. legalization efforts have been driven by state legislation. This has led to a worry that the legal cannabis industry is in a "wild west" phase, crying out for greater regulation and enforcement.

Despite strong public support and a powerful movement of entrepreneurs and activists in key states like California and

Colorado, there remains heavy pushback from much of the public. For cannabis to fully integrate into the mainstream of American life, clearer rules and stronger enforcement surely will be necessary. In particular, this will likely be a key part of the inevitable federal legalization of cannabis. State governments from both sides of the political spectrum in the United States are leaning consistently in favor of greater cannabis legalization. This is a common theme from both Americans concerned with freedom from government control, to Americans concerned about unevenly

enforced drug laws that unfairly target minorities.

This consensus is steadily increasing day-by-day, but the final hurdle will involve skeptics concerned about public health and child safety.

In order to satisfy the demands of a concerned public that represents a large portion of the American population, it is inevitable that cannabis will see greater enforcement. This includes a long list of possible regulations. An example could be a law restricting dispensaries from operating within a given distance of a school or daycare.

Or a law capping the total volume of cannabis a customer can buy in a given timeframe.

Businesses currently operating legally at the state level need to be ready for a shift in cannabis regulation. So far, the Federal Government has stayed largely outside of legal cannabis at the state level, but there has never been a clear sign this would be the case forever. Should the Federal Government take a strong stance on cannabis, companies need to be ready to meet the scrutiny and necessary commitments that likely would be needed.

Companies already operating at a level of compliance and transparency are on the right track to ensuring their practices will fall in line with any eventual mandate set out by the Federal Government to regulate the cultivation, sale and distribution of cannabis.

Industry actors like *Alternate Health Corp.* (OTCQB:AHGIF) recognize this need to be prepared and are building compliance and transparency directly into their products and services. Companies also need to be prepared as governments and political parties change and electoral whims get passed into law. They need to recognize that regulators will have a wide range of flexibility on how they choose to enforce their mandate.

Therefore, cannabis companies need to prepare for government changes and protect themselves from risks in the future. And for investors, the key to longevity will be embracing the regulations of the marketplace.

AlternateHealth.com

Women In Cannabis

► Any advice for emerging female entrepreneurs in the Cannabis Industry?

Come prepared to work hard. This is a unique space that is writing the rules as we grow. Most people entering are expecting the same support and guidelines as other industries, but the industry is not there yet, so if you have the expertise, bring it, because it is needed. This is a wonderful opportunity to be a part of an industry, where you can contribute to building. Come with an open mind and flexible shoes ready to pivot at any moment. This

is an exciting time to work with thought leaders and game changers. Ladies, network constantly, join cannabis member organizations where for profit or not profit. Those circles are important. Stay up to day on the news in the industry, subscribe to magazines like *High Times* and most importantly find a mentor in this space. Create a circle of contacts you can build relationships with.

Lastly, begin to learn the businesses in this industry. It will help guide you in the direction you will want to land.

► What is the biggest trend in the cannabis space right now?

It depends on location. What jumps out most are the ancillary services coming to market. These businesses are coming up with creative solutions to support businesses and consumers. From convenience to luxury services whether door to door service to 420 friendly mobile vehicles for safe and easy consumption I am seeing more family owned businesses entering this space. Old school practices meets legal industry. More college students

Continued... ►►



Gia Morón

Executive VP, Women Grow



NEW OPPORTUNITIES ARISE IN CANNABIS COMPLIANCE

Nick Swan is an avid investor and advocate for Medical Cannabis Industries

The shift to legalized medicinal and recreational marijuana is underway in many states and this process is opening up new opportunities in regulation and compliance. Public concerns about age verification, child-proof packaging and impaired driving in particular are capturing the attention of businesses and the public alike.

Although the issue of impaired driving is nothing new, legal cannabis is pushing this debate to the forefront of the public conversation. More attention has been placed on how to monitor, test and control cannabis to ensure no one operates a vehicle under the influence.

Concepts affiliated with controlled substance legislation, like road side testing, childproof packaging, and age verification already have obvious precedents in other markets.

Alcohol, tobacco and prescription medications have long-established guidelines and regulations in place.

The cannabis industry is adapting these models to address public concern, but each model must be redesigned to fit this unique industry. Packaging must address deterioration of the product; age verification online will have to be addressed and a new technology for roadside testing will need to be developed to close all the existing gaps in compliance.

A system that provides a fool-proof method of age verification, especially online, is needed to address the concerns regulators have of cannabis falling into the hands of underage consumers.

That's why companies like *Alternate Health Corp.* (OTCQB:AHGIF) have a built-in application for age verification through their *CanaPass Compliance Blockchain System* that ensures the person who places and receives the order is of legal age.

Like many medications, a child-proof container for cannabis is another step towards safety. However, there are other considerations to be taken into account

that are specific to cannabis in terms of packaging and maintaining the quality of the product within. Over time, the deterioration of an organic compound like cannabis must be considered in packaging. Companies like *eBottles.com* and *Kush Bottles* are already moving into this space, developing custom products for the legal cannabis industry.

There is no technology that mirrors a breathalyzer for detecting cannabis impairment. This concerns regulators and has sparked a race among companies to develop the technology and become the standard in this space. *Hound Labs*, for example has developed a handheld device similar to a breathalyzer that has reached the stage of clinical trials.

In the regulated legal cannabis market, compliance will be key. Companies that are working with governments and regulators to ensure that cannabis is always consumed in a safe and legal manner are the ones that will survive in this industry.

AlternateHealth.com

are looking at cannabis as a serious career path where they can build the next solution. I see rising trends in cannabis-infused feminine products. Women in general are interested to learn how such products could support needs from chronic pain to intimacy accessories. This is a big deal for women of a certain age seeking for solutions as their bodies are changing. Anyone in the cannabis, intimacy and feminine-product space are geniuses, addressing a large pool looking to support them.

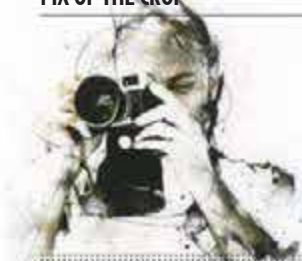
►► How is Women Grow adapting to rapid industry fluctuations?

When the company first launched the focus was female entrepreneurs. In the beginning the company grew fast and we scaled back. Also there was a shift we were beginning to see more female professionals less interested in launching a business, but instead wanted to work for a business in a leadership capacity. Our goal is to remain tapped into both the women business owners and c-suite professionals, along with advocacy leaders.

Our roles are important and must remain connected. We are eager to work with women at all levels of their careers. Those who are familiar with the Women Grow

model know we have markets (formerly known as "chapters") across the country and Canada. We are preparing for growth again but at gradual pace. We are currently making changes to our Market Leaders program. Our goal is to increase education to keep up with industry growth, connect with the next generation of women leaders who are currently exploring this industry - tapping the graduate level scholars for education and opportunities in cannabis and some other soon-to-be-announced projects. Women Grow is preparing for its greater footprint in the market now. We see a bright future for our company.

Connect with - womengrow.com



POT SHOTS

SHOW US WHAT YOU GOT!

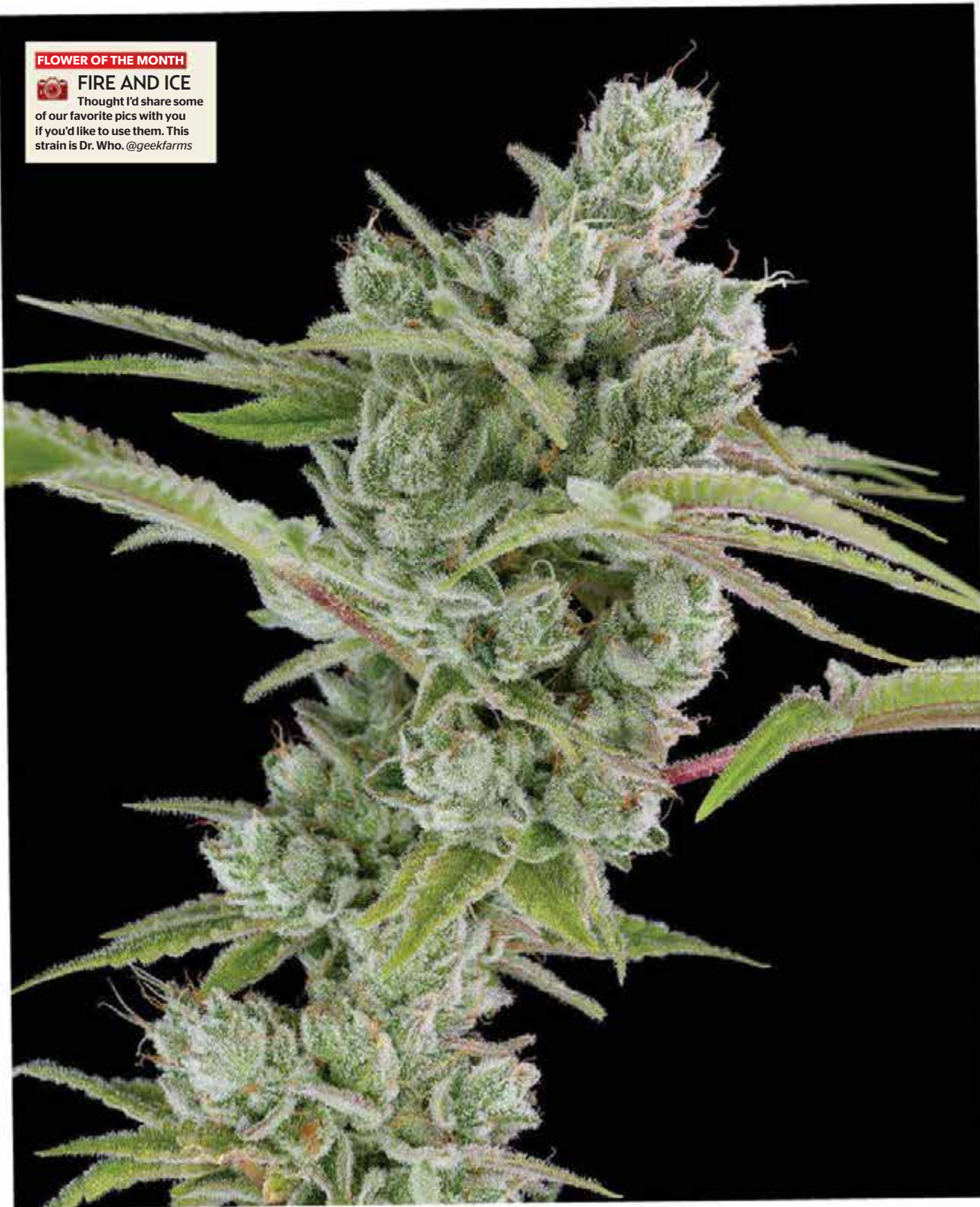
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FLOWER OF THE MONTH



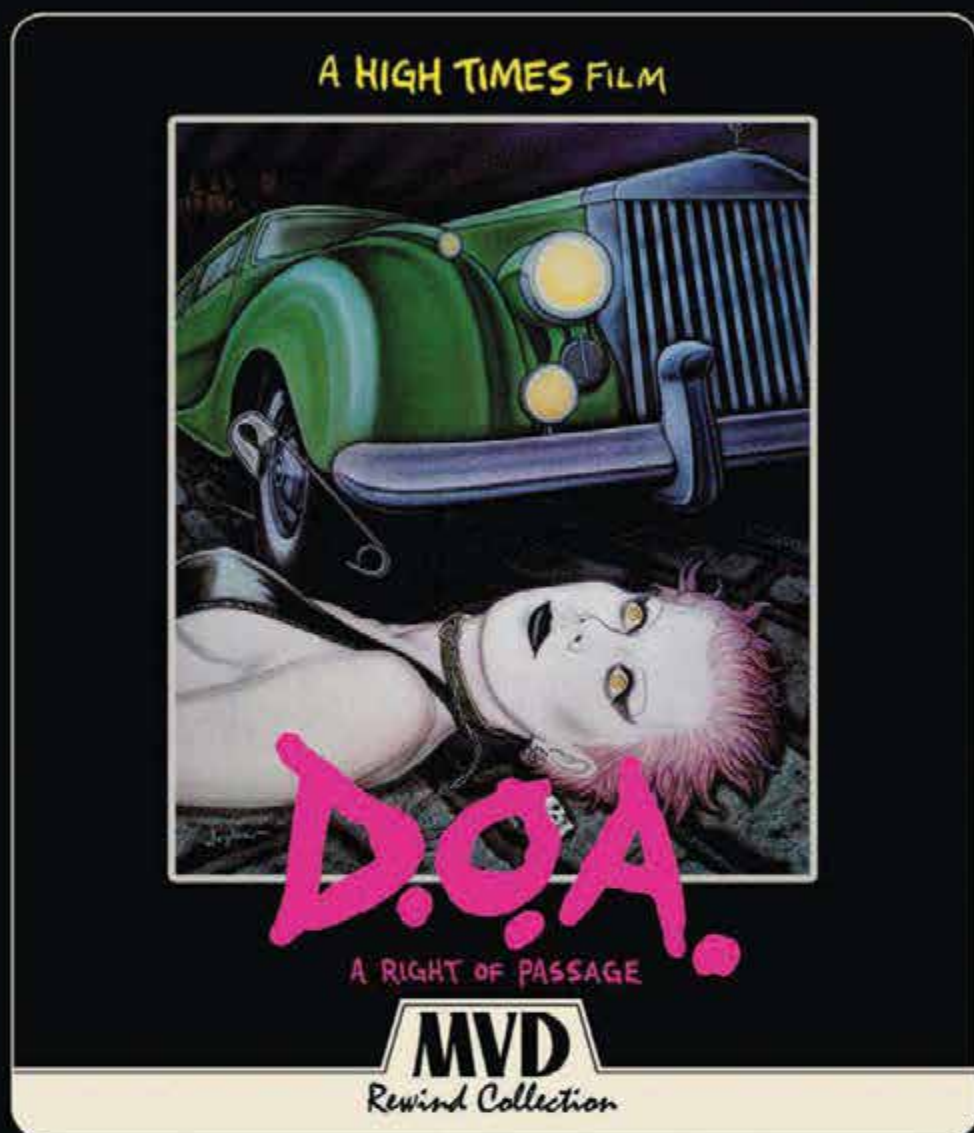
FIRE AND ICE

Thought I'd share some of our favorite pics with you if you'd like to use them. This strain is Dr. Who. @geekfarms



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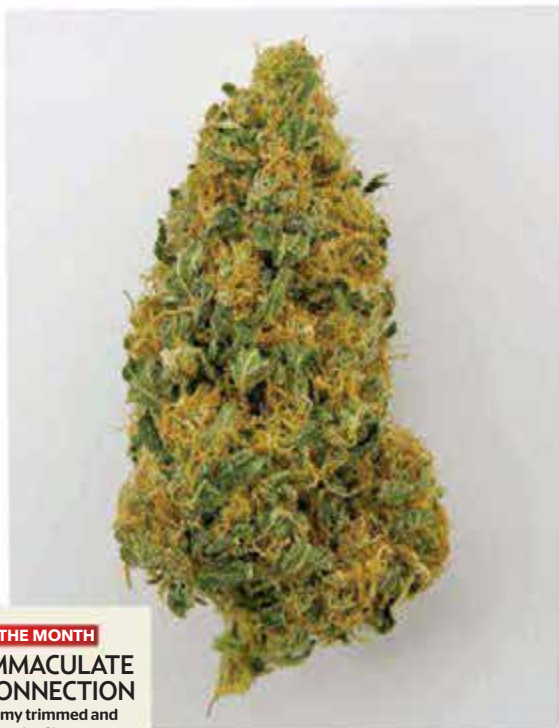
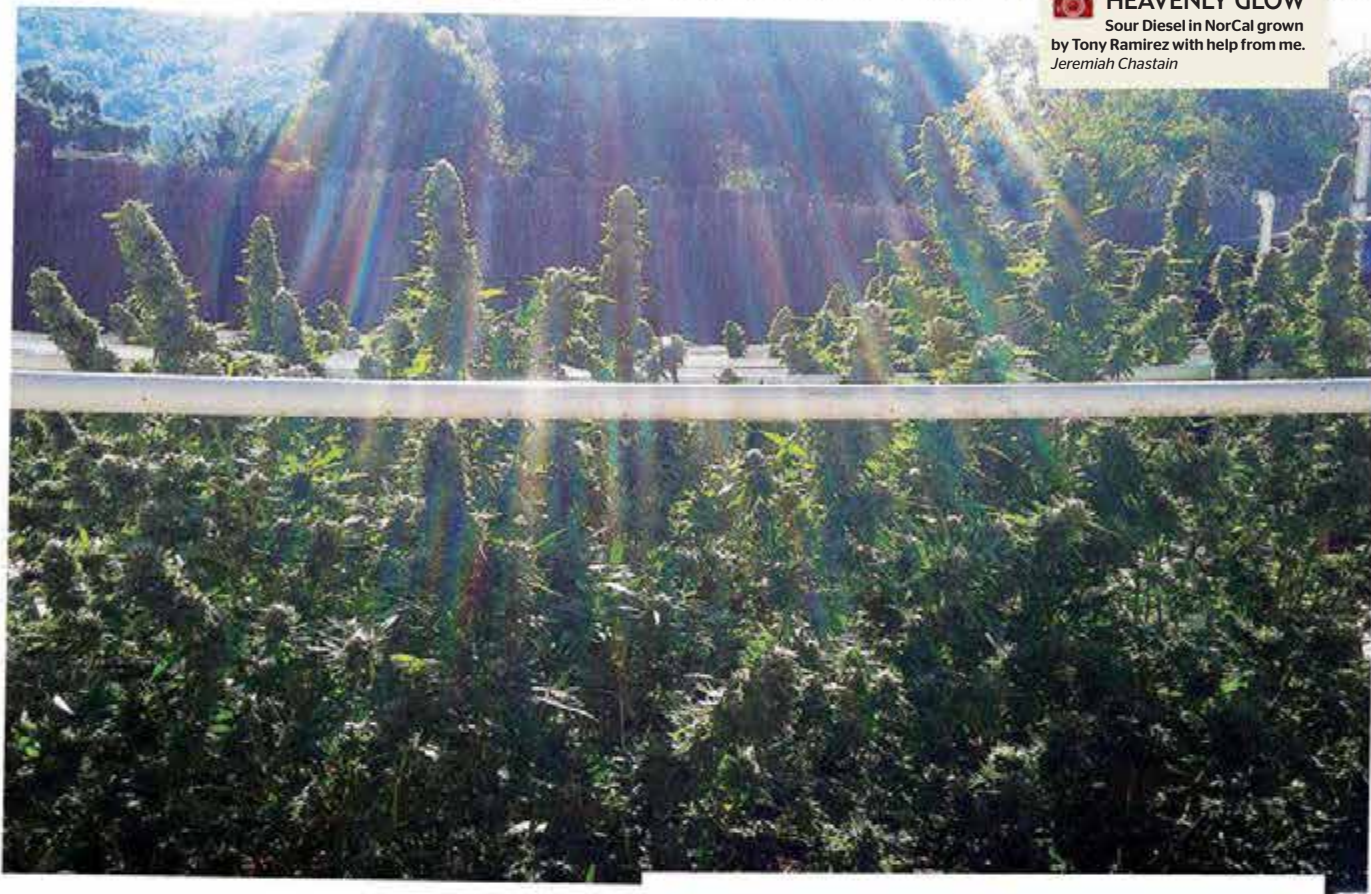
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GROW OF THE MONTH



HEAVENLY GLOW

Sour Diesel in NorCal grown by Tony Ramirez with help from me. Jeremiah Chastain

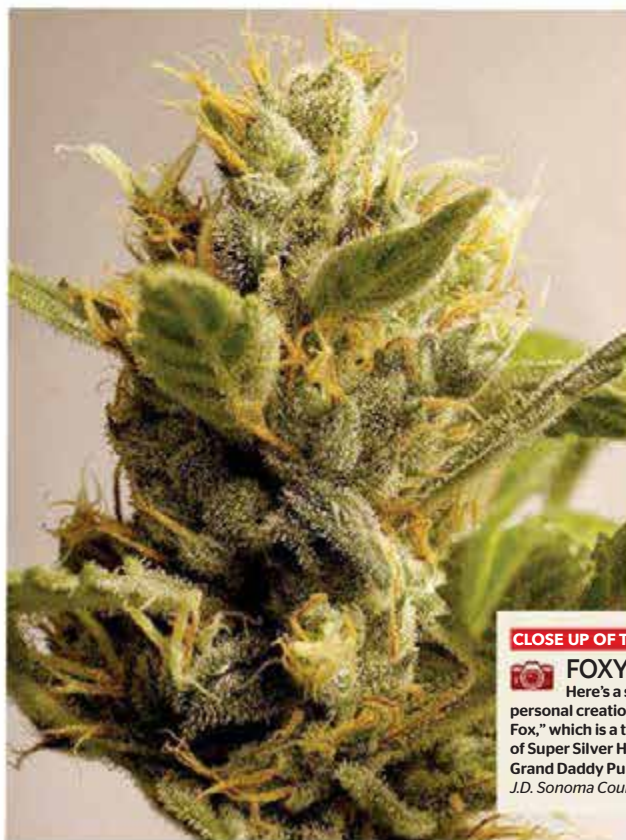


NUG OF THE MONTH



IMMACULATE CONNECTION

Check out my trimmed and ready-to-smoke Cheesus x Cannatonic. Benito M.



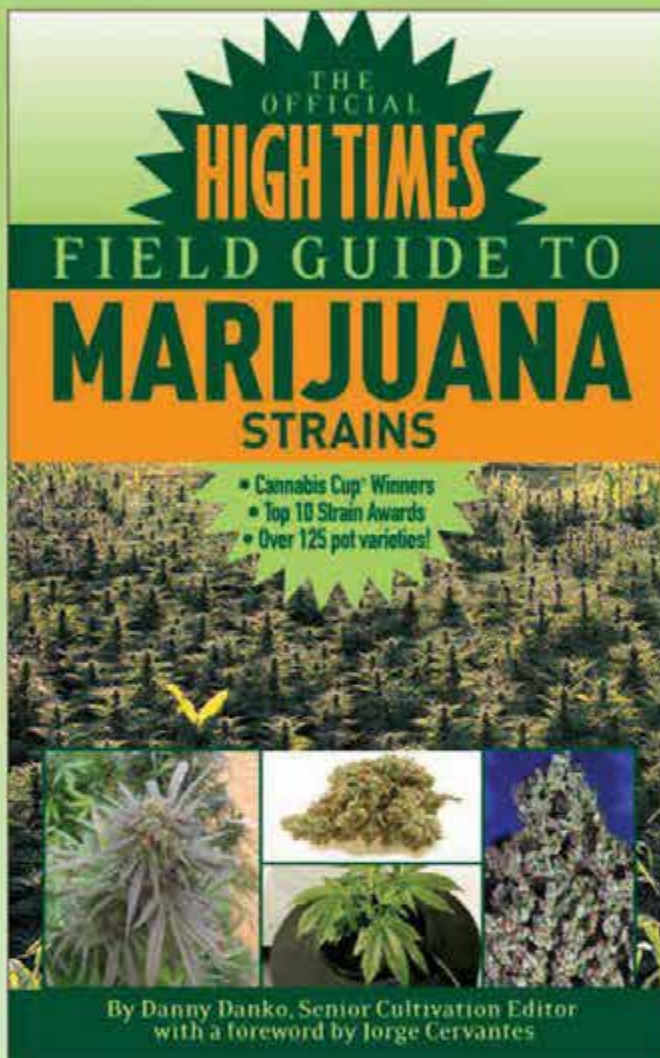
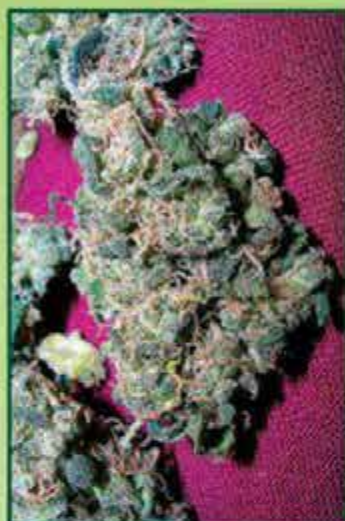
CLOSE UP OF THE MONTH



FOXY LADY

Here's a shot of my personal creation called "Silver Fox," which is a three-way cross of Super Silver Haze x Kali Mist x Grand Daddy Purple. Peace! J.D. Sonoma County

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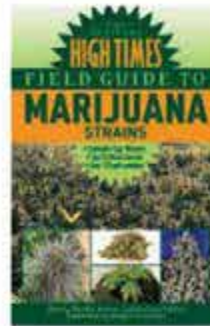


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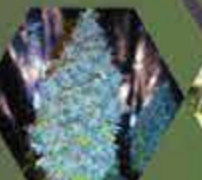
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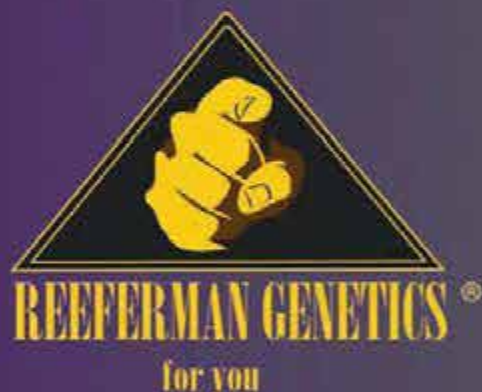


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