
The Case for Hemp in Maryland: A Misunderstood Plant Takes Root Again

By Rona Kobell
With Alexey Furman in Ukraine

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F O U N D A T I O N
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The Case for Hemp in Maryland: A Misunderstood Plant Takes Root Again

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Introduction

For decades, hemp was lost.

Essentially illegal to grow because it shared a root with marijuana, the utility hitter of the agricultural industry was benched after the Marihuana Tax Act of 1937 rendered it almost impossible to cultivate because the cost was too high. Hemp fabric could no longer be spun into American flags, rope for sailboats, or clothing; its seeds no longer fed hungry children; its oils could not relieve wounded soldiers on the battlefield. Though lifted briefly for World War II—when the government actually required farmers to grow hemp for sails and uniforms—the de facto ban was renewed at war's end. Then in 1970, the plant was formally forbidden when President Richard M. Nixon listed both marijuana and hemp as Schedule 1 drugs under the Controlled Dangerous Substances Act.

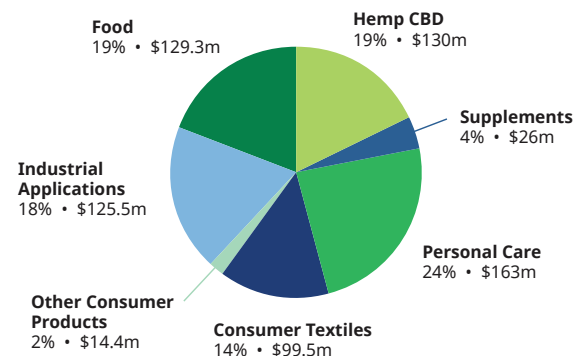
Recently, however, hemp appears to be making a comeback. In 2014, the American Farm Bill opened a window for industrial hemp, the nonpsychoactive part of Cannabis sativa. Several farmers helped draft a provision that allowed states to develop their own hemp programs as long as they were under the auspices of a university or state department of agriculture. Some states have interpreted that provision to mean only research. Others are using it to develop industries that have largely included cannabinoid (CBD) oil plants. The most lucrative part of the industry thus far, CBD oil is harvested from the flower and has been used to treat everything from arthritis to epilepsy, and to wean patients off

addictive opioids. In addition, the plant's stalk is rich in fiber, which can be used to make rope, clothing, sails, and many other products. Its woody hurd is useful as an absorbent for spills and bedding for animals, and its seeds are a nutritious snack.

States that have invested early in hemp are already seeing a change in landscape. The plant has created dozens of jobs and shown a path out of poverty; reinvigorated the soil; reduced pollution from erosion and runoff; improved the health of Americans suffering from chronic pain and seizures; provided raw material for clothing, cars, and home insulation; and increased the nutritional options for those seeking natural proteins and pesticide-free foods.¹

In 2015, just four states grew hemp. One year later, that number increased to 15, and, as of 2018, 19 states are now growing the plant. In 2016, hemp product sales in the United States topped \$688 million. Much of that is still imported from Europe, but the domestic supply is increasing. In fact, states

\$688 Million Total U.S. Hemp-Based Product Sales by Category in 2016



Source: Hemp Business Journal and Vote Hemp estimates (consumer sales)

“Our country decided to discriminate against the plant. I understand what the holdup is (that it’s still listed as a drug), but the governor needs to understand that (legalization) needs to happen.” – Anna Chaney, Anne Arundel County farmer who wants to grow hemp

that permit hemp have found they can go from legalization to a crop in the ground in one year’s time. Colorado, for example, grew no legal hemp in 2013. By the end of 2017, the state is projected to have 9,000 acres.²

Maryland is one of 14 other states that have enacted legislation to grow industrial hemp under certain circumstances but are not actually growing any. For three years, Maryland Del. David Fraser-Hidalgo has attempted to legalize the growing, processing, shipping, and selling of industrial hemp. Each year, more farmers sign on to his cause. At present, about 40 are actively supporting the Montgomery County Democrat’s efforts to introduce another law that will finally allow legal cultivation in Maryland.



Del. David Fraser-Hidalgo of Montgomery County has been trying to legalize industrial hemp in Maryland for four years. He is attempting to do it again in 2018. Photo credit: Rona Kobell

Those farmers include Anna Chaney, who bought a 160-acre farm in Southern Anne Arundel County a decade ago and would like to transition from hay to hemp. Chaney is attracted to hemp because the Environmental Protection Agency has not approved any pesticides for it, so it’s an opportunity to grow organic plants in a former tobacco area that needs soil replenishment.

“It is unreal to me that a plant without any malicious effect in any shape or form would be considered a Schedule 1 drug. It’s just not,” she said. “Our country decided to discriminate against the plant. I understand what the holdup is (that it’s still listed as a drug), but the governor needs to understand that (legalization) needs to happen.”

State officials across multiple departments—agriculture, commerce, the attorney general’s office, and the University of Maryland cooperative extension service—have been reluctant to lead an effort to create an industry out of a plant that the federal government still considers an illegal drug. (The 2014 Farm Bill provision does not remove hemp from Schedule I.) Similarly, City of Baltimore economic development officials have said they can’t provide financial assistance to industrial hemp businesses wishing to relocate to Baltimore because of the plant’s Schedule 1 status.³

Throughout a recent interview, Craig Nielsen, longtime assistant attorney general and principal counsel for the Maryland Department of Agriculture, repeated that hemp is “still a Schedule 1 drug” and that the

“We’ve made quite a few mistakes because we were in the front of the pack. Maryland doesn’t have to repeat the mistakes. They can skip that and go right in. It’s still early enough to get a head start.” – Katie Moyer, founder of Kentucky Hemp Works

state “has to be consistent with federal law.” When told Kentucky built an industry under the same restrictions, Nielsen responded: “Maryland is not governed by Kentucky law.” Current state law, Nielsen said, makes hemp illegal to grow in Maryland outside of a university setting.

“We do what the legislature says we can do,” he said. “I do not have a legal opinion on the rightness or wrongness of this statute.”

Even if Maryland leaders decide to let farmers grow hemp on a wider scale, creating an industry around a plant that the federal government labels a dangerous drug is not easy. Take Montana, for example. A farmer there found she could grow her hemp but could not water it under the federal program that provided irrigation. In Kentucky, Drug Enforcement Administration agents seized

growers’ seeds, throwing the industry’s future into jeopardy until a federal judge ruled in the farmers’ favor. Virginia farmers had their seed delayed so long by U.S. Customs that they wondered if they would have a growing season at all. In Colorado, plenty of farmers lament their inability to get federally backed bank accounts and crop insurance. And Ukraine, which supplies much of the world’s hemp, almost lost its longtime hemp industry because of tightened regulations under the Soviet regime.⁴

But perhaps change will occur soon at the federal level. For four years, a bipartisan coalition of powerful lawmakers—including Senate Majority Leader Mitch McConnell of Kentucky—has been attempting to pass a law removing hemp from the nation’s controlled dangerous substances list. Support now includes influential Judiciary Committee



Andrew Graves, Joseph Hickey Sr., and David Spalding in their fields in Kentucky. Photo credit: Arthur Rouse, Atalo

Chairman Bob Goodlatte of Virginia, Democratic Sen. Ron Wyden of Oregon, and Kentucky Republican Rand Paul. If it doesn't pass next time, the legislators will try to amend the 2018 Farm Bill to decriminalize hemp.

Although some state leaders have decided to postpone growing hemp until Congress indicates it's safe to act, there are others who have decided not to wait. For this report, we interviewed dozens of legislators, farmers, processors, government officials, and attorneys across several states and two countries who have taken the latter path. We asked them, given the difficulties inherent in growing a hemp crop with dubious legal status, would you recommend that other states—Maryland, in particular—do it? They all said yes.

"There wouldn't be so many people interested in growing, manufacturing, and selling it if it weren't such a wonderful crop, changing people's lives, and that makes it worth the risk," said Katie Moyer, founder of Kentucky Hemp Works. "We've made quite a few mistakes because we were in the front of the pack. Maryland doesn't have to repeat the mistakes. It can skip that and go right in. It's still early enough to get a head start."

Frank Robison, an attorney whose Colorado law firm helped write that state's law legalizing both hemp and marijuana and has since added 45 attorneys in a cannabis practice, added: "The states that have embraced industrial hemp have only had successes."

What is hemp?

Hemp comes from the plant *Cannabis sativa*. It differs from marijuana in that marijuana's active ingredient is tetrahydrocannabinol, or THC, while hemp's is cannabidiol, or CBD. Both are types of cannabinoids. Hemp contains low amounts of THC, which has mind-altering properties—usually less than 1 percent, and in many places, less than 0.3 percent, as required by law. Marijuana contains 5 percent to 10 percent THC. Farmers often describe it as the difference between seed corn, which tastes great with butter on a summer day, and field corn, which only livestock and poultry want to eat.

Hemp's main use categories are fiber, fuel, food, and medicine. For fiber production, the plant's stalks are left to rot in the field, a process called "retting." They break down and become separated into bast fibers and woody hurds, also known as pulp. Hemp fibers were famously made into rope and sails for America's ships before 1945. Today, hemp is spun into canvas for shoes and denim, as well as fine fabrics for apparel, carpets, purses, and many other goods. The woody hurd can be used to make building materials, absorbents for wastewater plant spills, cement, and animal bedding.

For food, the hemp seeds are crushed to make meal for birds, livestock, or humans, or shelled to resemble a trail mix snack. Pressing the seeds yields a protein-rich oil that can be used for cooking or salad dressings, and also for soaps and balms. In addition, hemp oil can be a fuel or an additive that makes paint fire-resistant.

Much of the hemp harvest worldwide has been for the seeds, in part because conventional combines used for grain work well in this area. Farmers have been experimenting with a dual crop for hemp, for fiber and oil, as well as a combine (a self-propelled harvest machine) to harvest both. A dual crop is tricky because the best time to harvest the fiber is before the plant has a chance to flower. Currently, most hemp that farmers grow is for fiber, or seed, but not both.

The most lucrative part of the hemp plant is CBD, which comes from the plant's flower. Early Americans used CBD oil to treat a variety of ailments; researchers say it has promise today to treat inflammation, nausea, anxiety, and some mental illnesses. Particularly promising is its ability to reduce seizures in epileptics.⁵

“You can't outlaw a plant that people have used for thousands of years. As I said long ago, you might as well outlaw gravity.” –Mike Rosing, longtime cannabis activist

In this report, we begin with a discussion of hemp in terms of its relationship to marijuana. We then present details from a handful of states that have legalized industrial hemp, outlining why they took that path and the outcomes. To offer international perspective, we also look at Ukraine, which has grown industrial hemp through several bloody conflicts and now supplies much of the world with seed. Finally, we examine where Maryland is on the issue, what it would take to pass a law here, and what advantages such a change might bring.

Divorcing Hemp from Marijuana

Hemp became illegal in the United States because of its association with marijuana. So why are states like Maryland liberalizing marijuana laws while still outlawing industrial hemp? If legislatures can decriminalize small amounts of marijuana and regulate dispensaries for medical cannabis, why can't they let farmers grow hemp to make beds for horses and dashboards for Hondas?

Mike Rosing thinks they will soon and argues it's already happening. A software engineer who once worked for the Argonne National Laboratory outside of Chicago, Rosing lost his security clearance to build weapons at the lab because of his marijuana use. Never shy about his fondness for pot, Rosing led the Illinois Marijuana Initiative from 1989 to 1996.

Most people have used marijuana or know someone who has, Rosing said, and most people understand that it does not lead to madness as public officials claimed back in the 1930s. Those users, he said, are the voters now, and they are demanding change.

Once farmers who wish to grow hemp demand change, Rosing believes, the same

push that has brought marijuana, legally, to the streets of Denver and Portland will bring hemp products to farmers markets and grocery stores nationwide. The tax revenue will be too good to pass up, as will the low cost of making these products domestically.

The desire to legalize marijuana stemmed from understanding not only that the drug was not the destructive substance that the policymakers of the 1970s and 1980s made it out to be, but also that making the drug illegal resulted in uneven enforcement that perpetuated racial injustices. African-Americans and Caucasians use marijuana at the same rates, yet black people (as well as Hispanic-Americans) are far more likely to be incarcerated for that use.⁶

There has been a social cost to prohibiting hemp, too, though it is harder to quantify, and thus the clamor for its legalization had been quieter—until recently. In particular, Rosing said, he sees a paper market for hemp, which preserves forests, and a textile market for canvas, tents, and other outdoor equipment because hemp is so sturdy.



Of the many uses of hemp, CBD oil to alleviate pain and stop seizures is the most promising. This CBD oil is from Atalo Industries. Photo credit: Arthur Rouse, Atalo

It may take time, but eventually, Rosing believes, hemp will be legitimized. Illinois recently legalized medical marijuana, and advocates are pushing for industrial hemp there. His current home state of Wisconsin, which was the latest state to grow a legal hemp crop, passed a law legalizing industrial hemp just after Thanksgiving. In the often-contentious Wisconsin legislature, it passed unanimously, just as it did in Pennsylvania.⁷

“It is a combination of many things driving the legalization. But at the base of all of it is truth,” he said. “You can’t outlaw a plant that people have used for thousands of years. As I said long ago, you might as well outlaw gravity.”⁸

States Where Hemp is Legal

Pennsylvania: A crop to save the Bay

Only a 40-minute drive from Baltimore, Pennsylvania hasn’t had trouble getting hemp in the ground. With unanimous bipartisan support, the often-contentious state legislature legalized industrial hemp—for growth, processing, sale, and research—in 2016. It had a crop in the ground a year later.⁹

The first year, the state only permitted 30 growers and only let them have five acres each—a restriction that turned out to be a blessing, according to state agriculture secretary Russell C. Redding. Only 14 growers ended up becoming certified, a process that required each to pay a \$3,000 fee, plus \$200 for THC testing.

Pennsylvanians are looking into hemp as a fish food, a cattle feed, a biofuel, and an antimicrobial soap. Entrepreneurs have even started a project in an abandoned mine to see if hemp can help erase environmental scars left by decades of extraction industries. (There is precedent: Ukrainians are planting hemp in Chernobyl, the site of a 1986 nuclear catastrophe, using phytoremediation, whereby plants are used to remove waste from the soil.¹⁰)

Although farmers, politicians, and researchers are enthusiastic about hemp’s potential as a

food, fuel, and fiber, they are most excited about hemp’s potential to help clean up the Chesapeake Bay.

The Susquehanna River, which flows through the state, contributes more than half of the pollution to the Chesapeake Bay. Despite funding and warnings from the EPA, Pennsylvania is woefully behind on its progress under a federal-state plan to clean up the estuary by 2025. While its wastewater treatment plants have reduced the nitrogen and phosphorus flowing into the Chesapeake, many of the Keystone state’s farms are lagging. These farmers tend to be Old Order Amish and Mennonite, who loathe taking government funds to help reduce pollution. Most are wedded to antiquated methods of plowing and seeding that promote erosion and the over application of manure.¹¹

Hemp has “real potential” to help, Redding said. State researchers think it can be cover crop to place on fields when nothing is growing, or a buffer between the crops and streams to absorb fertilizer runoff from storms. Hemp also amends soil health, and, like alfalfa, it can “fix” nitrogen, turning it into ammonia and other molecules that are more available to living organisms.¹² Also, because hemp has no approved pesticides, researchers are looking at natural methods of weed control that could not only help with hemp, but also other plants. Pesticides in the waterways are contributing to major aquatic problems, including fish die-offs as well as fish with tumors, blotches, and both male and female sex organs. All such fish have shown up in the Susquehanna and some of its tributaries.¹³

Redding said the state has learned much from its first year in hemp. Seed quality varies; therefore, he hopes to have a consistent, domestic supply of hemp seed from Kentucky and Colorado—and, eventually, his own state. Pennsylvania is also considering broadening the number of acres farmers can grow because it will need scale to have an industry. However, Redding is



Michael Renfro, a botany professor at James Madison University, holds up some leftover hemp. He is surprised anyone would still confuse the plant with marijuana.
Photo credit: Rona Kobell

not sure how many acres are enough to bring in major processors who will invest in equipment. Hemp is a volume business.¹⁴

Erica McBride, a hemp farmer whose fiancé proposed at the state capitol on the day the hemp bill was signed, said the state's slow approach to hemp is working. McBride, who is now executive director of the National Hemp Association and the Pennsylvania Hemp Industry Council, said farmers are elated about the possibility of reducing pollution to the Chesapeake, after decades of being blamed for its problems. Unlike New York, which has put millions of dollars into hemp projects,¹⁵ cash-strapped Pennsylvania started its program without seed money. It is possible, she said, for similarly situated states to do the same.

"We did learn an awful lot, and we get to build on it," she said. "The states that are starting now will be ahead of the game."

Virginia: Better bedding for animals

When Virginia legalized industrial hemp in 2015, four of its universities went to work. Virginia Tech, Virginia State, and the University of Virginia all had their own research farms. James Madison University did not, so it began looking for farmers willing to grow hemp on nearby lands in the Shenandoah Valley.¹⁶

It was not long before botany professor Michael Renfro found Glenn Rodes, a turkey farmer who lives with three generations of his family on 1,000 acres in Port Republic along the Shenandoah River. Rodes has always been game for trying new crops and technologies; he'd recently installed a fluidized bed to turn turkey litter into power to heat his houses. Growing hemp, however, would be different; he would have to ask his whole family, all Mennonite, to be fingerprinted. He endured rumors, quickly quashed, that he was growing marijuana. He also absorbed some good-natured ribbing, followed by serious inquiries, from neighbors who wondered if they might like to try it, too.

Rodes' hemp grew well, without much water, and he and his brothers think there may be a market for hemp as animal bedding, which they could use for their own cattle. A Charlottesville company, Old Dominion Hemp, is importing the product from Europe and finding it is a much better absorber of cattle scat than pine, which has to be treated with chemicals to make it more absorbent. The part of the plant used for bedding is the woody hurd, which leaves the stalk for a fiber market, if Virginia could develop one. Marty Phipps, Old Dominion Hemp's owner, estimates he could cut his costs in half with hemp grown by Rodes and other local farmers.¹⁷

"Me living in Charlottesville, I find it ironic that here I am selling hemp, importing it from Europe, knowing that it grew on the lands that I'm living on," Phipps said. "We have had 80 years of misinformation that has been directed to the public."

“We went from being forbidden to grow it, to being required to grow it; and now, we just want to be allowed to grow it.” – Nelson Rodes, Shenandoah Valley hemp farmer

The problem is that Virginia doesn't have a hemp processor yet, and the plant's legal limbo makes it difficult to send the hemp to Kentucky for processing and then return. Rodes himself has a tractor load of hemp seeds on his farm, awaiting the state and federal law enforcement officials' approval to send it to a customer in Kentucky.

Although medicinal CBD oil is still the most lucrative part of hemp,¹⁸ Renfroe sees huge potential for the crop as an oil or fiber to be used in door panels, insulation, bird feed, and textiles. He started with only two growers and now has 14. And although a federal law would simplify growing hemp, he and his farmers aren't waiting for one. Like Redding in Pennsylvania, Renfroe said the lack of funding to build a state lab should not be an impediment because testing for THC is neither hard nor expensive. Further, hemp's growing season is just 70 days in Virginia's climate, making it an ideal addition to the crop rotation in a state reeling from the loss of tobacco.¹⁹

“There's a lot of hyperbole associated with hemp. Realistically, it's another crop that can be added to the rotation,” Renfroe said.

Nelson Rodes, Glenn's brother, summed up the history of hemp in one sentence: “We went from being forbidden to grow it, to being required to grow it; and now, we just want to be allowed to grow it.”

Colorado: A crop to save the farmer

While most states with hemp laws took action after the 2014 Farm Bill opened the window, Colorado kicked open the cannabis door two years before. In 2012, the state passed a constitutional amendment legalizing both industrial hemp and recreational and medical marijuana.²⁰

Despite the state's snowy winters, hemp has grown well there, and Colorado now has more acres of hemp than any other state. One major growing area has been the San Luis Valley, known as the second largest producer of potatoes in the country, and one of America's most economically disadvantaged regions. According to Beverlee McClure, president of Adams University in the heart of the valley, when potato consumption dropped nearly 30 percent because younger people were not eating as many, Colorado began looking for a replacement crop. McClure and others are hoping they have found it in hemp, which they foresee as fiber for textiles as well as hurd for animal bedding and insulation for homes.

McClure doesn't intend to keep the flower, which is the part from which the CBD oil comes, and stresses the importance of knowing one's markets and community. Hers is relatively conservative, so a CBD crop might be harder to justify to a religious community. But crops that will stay in the community and serve a purpose, for homebuilding and agriculture, are likely to generate support.

“There's no such thing as a plant you can get everything out of,” she said. “You really have to decide up front what it is you're going to plant because there are so many different cultivars.”

Eventually, McClure hopes her 4,000-student university will attract students interested in hemp careers.²¹

Although Colorado is better known for its legal marijuana, which the state regulates as a separate industry, Michael Bowman—a Colorado hemp farmer who helped write the 2014 Farm

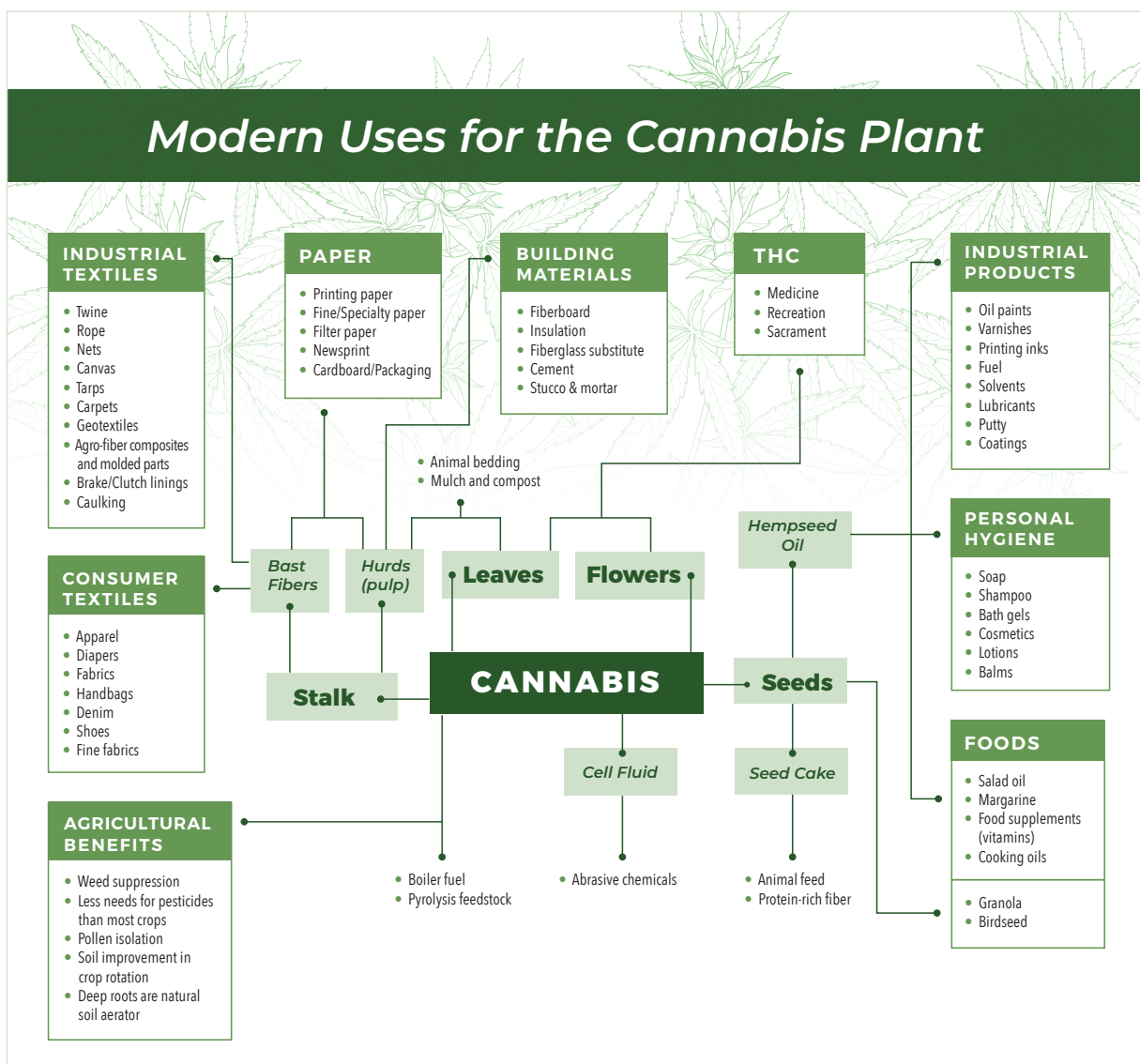
Bill exemption that has allowed hemp to flourish nationwide—believes the state is poised to be a leader in hemp. Bowman is founder of the National Hemp Association and serves on the board of the North American Industrial Hemp Council, and is growing more than 100 acres of hemp himself. His son, a pilot who never showed any interest in farming, now wants to return to the family farm to grow hemp.

“It really does boil down to, what is the temperature of the legislature and the governor? In our case, we’ve been blessed with both a governor and a legislature that understands what this is doing for jobs and

the environment,” he said. “They’re not trying to be bad cop, but good cop, and doing a very good job of it.”²²

Kentucky: A crop to replace tobacco

Colorado may have been the first state to legalize industrial hemp production, but Kentucky was the first to become intrinsically identified with it. Unlike Colorado, the Bluegrass State had no plans to legalize marijuana growth, though it has always been an illicit part of the state’s economy. But Kentucky led the nation in hemp production until the 1930s. Many farmers, among them Andrew Graves, remember when their families



were forced to grow hemp for the war effort at cut-rate prices, and then forced to stop as soon as the government no longer needed their crop.

Graves, a seventh-generation hemp grower, worked with fellow farmers David Spalding and Joseph Hickey Sr. to pass a law in 2000 that would legalize hemp in the state when it was legal nationwide. Two years earlier, they had formed an Industrial Hemp Commission, though it wasn't active.

The situation changed in 2012 when a young, charismatic Republican named James Comer was elected Agriculture Commissioner on a platform of legalizing hemp. He did it with the backing of a coalition of Sierra Club activists, farmers, natural food proponents, libertarians, and university researchers. Comer then ran for governor and narrowly lost, and then for Congress and overwhelmingly won. With Rand Paul and Mitch McConnell in the Senate and Thomas Massie in the House, the Kentucky delegation is pushing for full federal legalization.²³

Comer has said he's optimistic, though Congress has not been able to pass much major legislation. Attorney General Jeff Sessions has made his opposition to marijuana clear, but he has not opposed industrial hemp. When asked about hemp, the Justice Department referred to the U.S. Department of Agriculture's Statement of Principles, which allows hemp to be grown under the Farm Bill.²⁴

But Comer, Massie, and Kentucky hemp entrepreneurs were not about to wait for federal approval. Reeling from the tobacco buyout and the shrinking coal industry, Kentucky was the fifth poorest state in the nation and had nothing to lose.

"No one's going to give you a permission slip to change the world," said Josh Hendrix of CV Sciences, a Lexington company that manufactures CBD oil. "Uber didn't ask for permission to start sharing rides. Airbnb didn't ask permission to start sharing rooms.... People would call me, and ask 'How is this legal?' And I would say, 'You're asking for a legal answer to a moral question.'"²⁵

Kentucky made several strategic decisions early on. It did not restrict growth to university fields or limit the number of acres a person could grow. It wanted an industry to flourish, and one has. In 2016, the company that Graves, Spalding, and Hickey founded, Atalo, paid its 58 hemp farmers a total of \$2 million.²⁶

Perhaps no one is as elated about hemp's return to the fields where it thrived as Graves, whose father, Jake, is still alive, and whose mother, Glenna, rubs hemp oil on her hands to stop them from shaking.²⁷

"For us, going into the hemp business in 2014 was like flipping on the lights in the room," Graves said. "It's the first time in my lifetime that a new crop was introduced."

Hemp in Ukraine

Hlukhiv (pronounced hloo-kheev), a town of 34,000 in northeastern Ukraine, is the hemp capital of the country—and possibly, of the world. Today, many hemp seeds originate in Ukraine, which is helping to fuel the renaissance in the United States.

Hemp has grown on Ukrainian lands for more than a thousand years. Villagers used fiber plants to weave bedding and clothes. They used hemp to make ropes, horse harnesses, sails, and fishing nets. Hemp oil was used in food, paint, soap, and lamp oil. Hemp hurds were used to heat homes and as mats for livestock.

"Cannabis products were in almost every village house," said Yuri Mokher, deputy director for science for the Hlukhiv-based Institute of Bast Crops. For the most part, hemp was produced for sustenance; it was not yet commercialized.²⁸

Thanks to genetic improvements, the amount of Ukrainian land dedicated to hemp grew from 8,000 hectares (about 19,800 acres) in 1913 to 91,000 (about 225,000 acres) in 1938. In Hlukhiv, townspeople collected hemp manually until the 1930s, when the



Sheafs of linen and hemp are seen on the first floor of the Institute of Bast Crops in Hlukhiv, Ukraine, October 25, 2017. Photo Credit: Alexey Furman

Communist-led government established the Institute of Bast Crops. Due to the selectioners' continuous work, the amount of fiber in the hemp stalk gradually rose from 13 percent to 40 percent. The Institute also created a monoecious variety of the crop, where male and female flowers are located on the same plant. In 1987, a group of researchers at the facility generated a variety of hemp with extremely low THC, lower than the amounts found in most hemp at the time.

And while Kentucky and other hemp regions in the United States stopped growing the crop for much of the 20th century, Ukraine never did. It thus has generations of cultivars and seeds. By 1991, 30 factories were doing primary processing of cannabis collected on 82,000 hectares (203,000 acres) of Ukrainian land.

When the Soviet Union eventually fell in 1991, Hlukhiv entered the economic crisis together with the rest of the country. Unfortunately, most of the hemp factories did not survive the challenges of the post-Soviet economy.²⁹ And in the late 1990s, Ukraine's hemp regulations got stricter, nearly killing the crop for good. The country required guards on the fields, which were expensive and getting more so every

year. "Year after year the norms on guarding the fields were getting more severe," Mokher explained. "A couple more years of that, and one could forget about hemp in Ukraine." Meanwhile, in France, hemp was being grown just as farmers would grow corn.

But the dawn of the 21st century brought a ray of hope to Hlukhiv, and so did the hemp that continued to grow there, unchecked and unchanged, in a time when it didn't grow in too many other places. In an isolated corner of the world, a revolution in plant science was quietly being waged.

In 2002, a French-born businessman of Ukrainian descent decided to trace his roots, and in the process, he changed the trajectory of the Hlukhiv economy. Michel Tereschenko was the great-great-great-grandson of Artemy Tereschenko, an entrepreneur whose sugar empire had once dominated the town until the family's assets were seized by the Bolsheviks during the Russian Revolution. When Michel arrived in Hlukhiv almost 80 years later and opened the door to the old family house, he found it was now occupied by the Institute of Bast Crops. Before long he found himself drawn into the hemp business.

“Eight years ago I couldn't sell (hemp) because nobody was buying. And now it is a Klondike.” – Michel Tereschenko, mayor of Hlukhiv, Ukraine

Tereschenko connected the Institute with a hemp federation in France in 2003, and it agreed to buy hemp seeds from the Ukrainians and pay a royalty to the Institute for their use.

In 2007, Tereschenko rented a 90-hectare field outside town and started growing linen flax; then he bought an old Soviet fiber processing plant that was being sold for scrap metal. The enterprise quickly turned a profit, so he expanded the field to 400 hectares and renovated the plant with used machinery he bought in Belgium. He expanded the operation to start growing hemp as well.

At the time, the law said the company could sell only the seeds. The price was low at first—sometimes as low as \$500 per metric tonne. His company's clients were mostly traders who would resell the seeds to exotic bird owners in Syria for bird food. Other customers bought the seeds for fishing. Tereschenko started selling seeds to clients in Belgium, where companies were making full-fat feed for cows. Then eating hemp products became popular for health reasons. As individuals started consuming hemp, first in Canada and then the U.K., the price rose. Small boomlets, as when Madonna said she ate hemp seeds, helped push the price further. Now it's \$1,500 a tonne.³⁰

“Eight years ago I couldn't sell because nobody was buying it,” Tereschenko said. “And now it is a Klondike.”

In 2012, the government repealed its requirements for tight security in the hemp fields, provided the amount of THC in the dried straw of the varieties cultivated did not exceed 0.08 percent.³¹ Although this opened the door for more small and medium-

sized businesses to enter the industry, not many walked through. The damage of restrictions had been done.

Regardless, Ukrainian seed is in high demand all over the world; Pennsylvania reported huge variety in its seed quality, with Ukrainian hemp seed being among the best.³²

Tereschenko also dominates the local hemp market. About 100 locals work for the three companies he founded, which now occupy the first floor of the Institute of Bast Crops. One of his companies, called Elifibre, grows hemp; another, Linen of Desna, processes hemp for fiber. The third company, Desnaland, makes food products such as hemp protein, hemp flour, hemp oil, hemp cheese, and hemp halva (a popular Middle Eastern confection).³³



Hemp shives are seen in the exposition of the Institute of Bast Crops in Hlukhiv, Ukraine, October 25, 2017. Photo Credit: Alexey Furman



Ukrainian designer Oleg Zemnukhov has been making shoes from linen and hemp for over ten years. His desire to make shoes from natural material came from dissatisfaction with the material that shoes are made of.

Photo credit: Alexey Furman

High-Fashion Hemp Shoes

Oleg Zemnukhov, a Ukrainian designer, uses hemp grown from the gardens of elderly Ukrainians to make fashionable hemp shoes. Here is his story, in his own words, as told to Alexey Furman:

"I was selling shoes. And I wasn't happy with the materials. I decided to experiment, so I tried linen and hemp. Hemp is stronger and has healing qualities. I worked with a shoemaker. He was giving me the shoes he was making to sell, so I told him, 'Let's try to do the same thing you're doing from leather but from hemp canvas.' I told him some hints about how it has to look in the end, and we did it."

"In the first season, I sold about 100 pairs, and it gave me confidence that I should be doing it. I had just three models. For the next season, we expanded. At first, it was men's shoes, then women's shoes, and as we were going deeper into this technology, I started using ethnic motifs. It was 2004."

"Before people grew hemp in their gardens, their gardens were huge, and part of the land was occupied by hemp. They grew it for seeds and fiber. And the hemp canvas was enough for the family. For the past 20 years, antiquarians have been gathering old things, and you still can buy this hemp canvas. Can you imagine, for the past 20 years people have been selling this canvas, and you can still buy it?"

"The family of my father that lived in Russia at that time of the great famine, they survived thanks to hemp. They reground seeds and ate them. I don't remember that time, but here in Ukraine I found elderly people who could share this technology."

"I'm mostly using homemade hemp canvas because it has 100 percent hemp. It is a standard of hemp cloth. I also work with companies that process hemp, sow for fiber, and make canvas. But in Ukraine, unfortunately, it is often a mix of cotton and hemp or linen, with additions, and sometimes synthetics are added there. I experiment and make shoes from these materials. But I still prefer homemade canvas."

"At first, I went to exhibitions, fairs. I was popularizing it. Now through the internet, I have regular customers. I have competitors. Mostly they are the companies that grow and process hemp. I was doing it when most people were still thinking about it. Because I am using homemade canvas, I have a little more experience, and I'm sharing my knowledge, so other entrepreneurs can make it when the cloth is as strong as it has to be."

"Cannabis is a plant that grows on our land and it has certain qualities. Our ancestors used it. My father told me stories that cannabis was growing everywhere, and nobody was smoking it. It grew in people's gardens, and people were breathing in healthy air. It was good for people's health. It is a product that gives all the needed elements for life."

Tereza Tereschenko, head of the “Desnaland” company, tells the audience about unique qualities of hemp food products during “WorldFood” fair in Kyiv, October 27, 2017. Photo credit: Alexey Furman



In 2015, Tereschenko was elected mayor of Hlukhiv. Once in office, he arranged for the city boiler that heats the hospital to be fueled with hemp hurds.

“When I came to Hlukhiv for the first time, they told me that the Institute was the first in the world to receive a selection of non-narcotic cannabis, and this was fantastic news because it should have opened the door for massive production, but nobody in the world knew about it. They told me that, unfortunately, they would have to shut down because factories were closed, and they couldn’t grow cannabis because they had to pay guards,” he said. “Ukraine was the first country in the world to get non-narcotic cannabis, and probably the last in the world to have such a strict law about guarding the fields. There had to be a team with a dog to guard the field. It was not profitable, and hemp cultivation completely disappeared.”

Unlike most Ukrainian politicians, Tereschenko is accessible, and every Monday he has office hours. Nearly 90 percent of the people in Hlukhiv are on a subsidy because they can’t make ends meet, earning less than \$500 a year. Half of the people who come to see him are those who can’t afford medical care, especially drugs and therapy to fight cancer.

“These people are left without any help. They can’t do anything, and they are very afraid. They come here as a last resort,” he said.

The only help that he could provide through the city’s budget is a one-off payment of 5,000 hryvnias, about \$200—a pittance compared to prices one has to pay for chemotherapy. Tereschenko couldn’t bear watching his citizens die, so he came up with an idea to use available resources and create a relaxation center that uses CBD derived from hemp. An avid user of hemp oils himself, he believes in the plant’s anti-aging qualities. The center will have a phyto bar and spa, and visitors will be able to get massages. The news about a cannabis treatment center got national attention.³⁴

When Desnaland started selling hemp food products in Hlukhiv, its workers were surprised by the emotional responses from elderly customers who remembered the smell and taste from their childhood. When they were young, hemp had been a part of everyday life. Now it was a part of Hlukhiv once more.

Desnaland head Tereza Tereschenko—no relation to Michel—is quick to extol hemp’s virtues. “Hemp is a unique plant, as it has a zero-waste production. Stalks are used, seeds are used. When hemp grows, it fills the field with nitrogen and other good matters, it doesn’t kill it as a sunflower or corn, and, after hemp, the field is a lot better, it is like a fertilizer. Hemp has a specific smell, although it is non-narcotic, and it frightens different types of grain insects, so hemp doesn’t have to be additionally filled with pesticides. The seeds of hemp are unique because they have all the 20 amino acids, including the nine that are indispensable. Furthermore, omega-3, -6, and -9 are part of its composition, also indispensable acids. There is also a wide specter of vitamins, microelements, and matters such as edestin and chlorophyll.”³⁵

In an interview for Ukrainian TV, Michel Tereschenko once said that hemp is a lifeline to save Hlukhiv from poverty and restore a connection with its ancestry.³⁵ “What sugar manufacturing meant for my ancestors and the city 150 years ago,” he said, “is what hemp and linen-growing mean for me today.”³⁶

“What sugar manufacturing meant for my ancestors and the city 150 years ago,” he said, “is what hemp and linen-growing mean for me today.”

Bringing Hemp to Maryland

History of past legislation

In 2017, Del. David Fraser-Hidalgo was optimistic that would be the year Maryland would legalize industrial hemp.

When the Montgomery County Democrat first tried in 2015, his fellow legislators teased him in the committee meetings about getting stoned. He mounted an education campaign to explain that hemp’s active ingredient is cannabinoid oil, or CBD, where marijuana’s is tetrahydrocannabinol, or THC. They both come from the cannabis plant, but



Confectionery products made with hemp flour are seen during the “WorldFood” fair in Kyiv, Ukraine, October 27, 2017. Photo credit: Alexey Furman

from different parts. Hemp can’t get people high, even if they smoke a truckload. And while it resembles a marijuana plant, hemp grows tall outside, whereas marijuana grows shorter in greenhouses.³⁷

But all he could manage was a law that allowed industrial hemp to become legal in Maryland as soon as it was legal nationwide.³⁸ He tried again in 2016 and was able to pass a law that allowed Maryland to grow hemp for research purposes in conjunction with the University of Maryland and the Department of Agriculture.³⁹ But the Maryland Department of Agriculture interpreted the law narrowly; researchers could only grow hemp on public lands, and they could not process or sell the final product.⁴⁰

Maryland researchers already knew that hemp could grow on their fields. An experiment in the 1990s proved it flourished on farmland owned by the University of Maryland along the Wye River.⁴¹ And in the 1950s, the USDA declared the “Hagerstown series” of soils in Western Maryland among the best in the nation for growing hemp.⁴² What they needed to know, Fraser-Hidalgo reasoned, was the market for products. Everbar, a Montgomery County company, was making granola bars with hemp seeds imported from Washington State. How many more could the company sell with hemp grown in Frederick? Another company, Lady Farmer, sold hemp dresses. What would its

market be if it could harvest Hagerstown hemp instead of importing it from China?

Last year, Maryland seemed poised to get answers. Both Mary and Emma Kingsley of Lady Farmer and Alex Hempfield of Everbar testified in favor of Fraser-Hidalgo's bill to remove hemp from the list of dangerous drugs. Fraser-Hidalgo had bipartisan support on his committee, the House Environment and Transportation Committee, and the House Majority Leader supported it. Legislators reacted positively to the testimony.

Then, just before the House and the Senate had to reconcile their legislation, the Maryland Department of Agriculture added a "fiscal note" to the hemp bill. If it were to pass, department officials said they would need \$1.3 million—about \$750,000 to build a new lab to test for THC, with the remainder funding equipment, salaries for two inspectors and an office secretary, and security for the lab.

Although Fraser-Hidalgo eventually found a lab that could test for THC for \$75, he ran out of time to make his case, and the bill died.

Lessons from other states and countries

States and countries that have embraced industrial hemp over the past decade could not be more different. Kentucky leans conservative, whereas Washington and Oregon both lean liberal. France is libertine, while Ukraine is still grappling with its newfound, precarious freedom.

Yet the fact that all were able to bring hemp back to the land where it once grew is testament to what they have in common. All had a problem they needed to solve (e.g., restrictions on tobacco, decline of the potato market), and a new crop with the potential to reinvigorate their struggling industries. All had local leaders willing to push back against arbitrary government restrictions, as well as legislators fighting to change the laws, universities eager to take on the research projects, and state departments of agriculture (or the European equivalent) that supported the mission.

And states were able to bring hemp back relatively quickly. In Pennsylvania, a state notorious for its gridlock on budgetary matters,



Glenn Rodes uses this combine to harvest his hemp crop at his farm in Port Republic, VA. Photo credit: Rona Kobell

hemp legalization passed unanimously the first time legislators—one Democrat and one Republican—introduced the bill. One year later, seeds were in the ground.

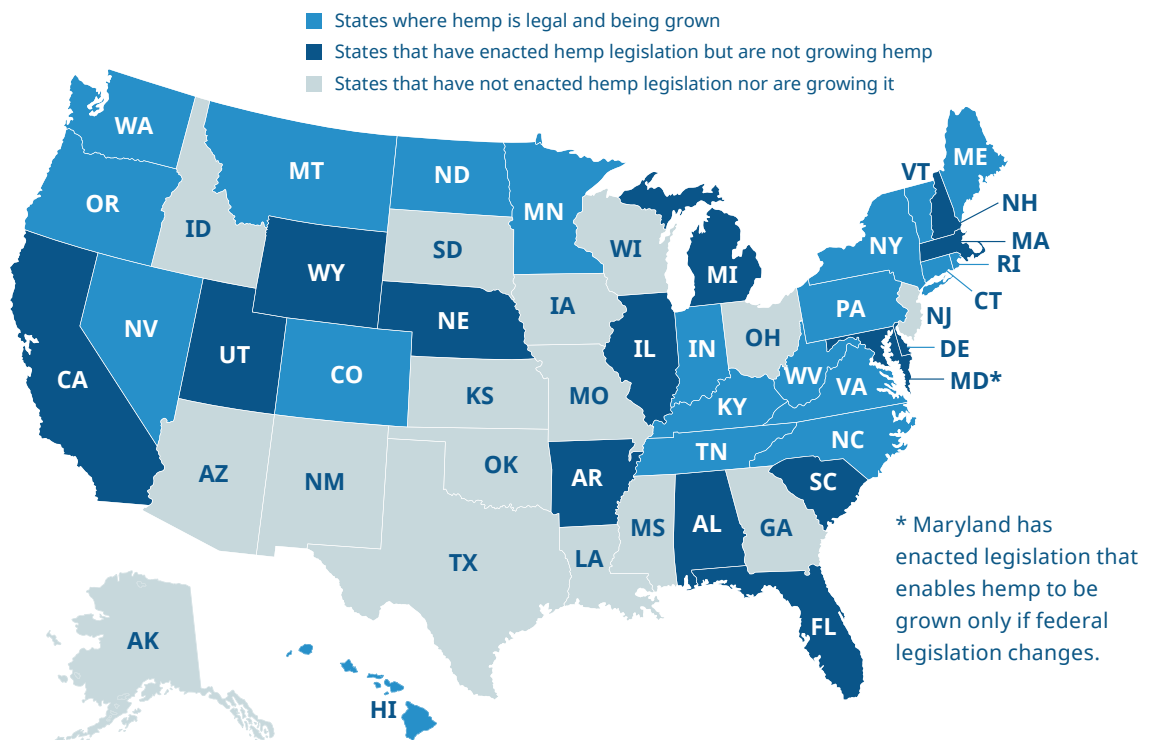
The hemp industry has created hundreds of jobs across the county. Its plants have reinvigorated the soil, and they may help clean the Chesapeake Bay. Hemp can lessen our reliance on synthetic materials that generate waste and increase toxins in our environment. Hemp is on track to replace insulation, plastics in molds for mugs and dashboards, and fiberglass in boats. As a food source, it is full of available proteins and heart-healthy oils.

Hemp is never going to replace corn and soybeans. No farmer will ever be forced to grow it. But it should be an option, and it has cost many of these states that have chosen to make it one almost nothing in public funds. Most states began their programs with little

or no legislative appropriation. The growers pay a registration fee that covers the costs of running the program, including testing for THC and inspecting the fields. Some states, like Pennsylvania, use a state lab. Others, like Colorado, use the same private labs that test for marijuana. Kentucky uses a mix of private and university labs. There is no need to wait for a state-built lab to begin a hemp industry.

The fact that the federal government labels the plant as a controlled dangerous substance poses challenges. Yet, in dozens of interviews with farmers, government officials, processors, researchers, and community leaders, there was not one who regretted the decision to take on those challenges. Andrew Graves, who grew tobacco before he turned to hemp, said he never felt good about growing a plant that gave people cancer. But hemp, he said, heals people, and he feels good about what he does.

Hemp in the U.S.



Source: Vote Hemp, based on information from the U.S. Department of Agriculture, as of November 15, 2017.

The road to becoming a hemp contender

Maryland would be an ideal location for a hemp industry. The state has excellent soils on farmland close to Baltimore, which has a world-class port as well as excellent institutions for research, among them Johns Hopkins, the University of Maryland, and Morgan State University. It has Under Armour, which is interested in a domestic source of fiber to manufacture its clothing stateside, and the Maryland Institute College of Art, which graduates dozens of students in the fiber arts each year. The weather is good, with a growing season long enough to plant two rotations. Unlike other cities, Baltimore still has affordable warehouse spaces near downtown.⁴³ It has a willing work force, superior accessibility to the interstate highway system, and an international airport. With the possible exception of Nashville, no other city seems as ideal for a hemp capital.

If it's a race, Nashville is on track to win because Tennessee has already legalized industrial hemp.⁴⁴

Or maybe the winner will be Richmond, a former tobacco bastion—Virginia doubled its acreage from 2016 to 2017. Philadelphia would also be a contender; the farms in Bucks and Berks counties are less than an hour from the city, which is also home to large medical institutions steeped in cannabis research. Industrial Louisville and genteel Lexington can already make hemp capital claims; Denver is a nucleus for marijuana and has the infrastructure to be a hemp center, too.

Maryland and Baltimore can catch up quickly, if they can find the political will to legalize the plant that helped found this nation. We can learn from the mistakes others have made. We do not need a capital investment. As Nelson Rodes said, we just need permission. We will not be first. But at least we can make sure we are not last.

About the Authors

Rona Kobell was a reporter for the Chesapeake Bay Journal. For five years, she also was co-producer and co-host with Dan Rodricks of *Midday on the Bay*, a monthly public affairs show on WYPR in Baltimore. She worked for nearly a decade at the Baltimore Sun and has also contributed to *Grist*, *Slate*, *Modern Farmer*, *Columbia Journalism Review*, *The Boston Globe*, *The Washington Post*, *Yale Environment 360* and *National Parks Magazine*. She was recently the main writer for *The Chesapeake Bay and Agriculture Pollution*, an Abell report in 2015, as well as *Hope for Hemp* in 2017. She is a graduate of the University of Michigan and was a 2008-2009 Knight-Wallace Fellow at the university.

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**The Case for Hemp in Maryland:
A Misunderstood Plant Takes Root Again**

**By Rona Kobell
With Alexey Furman in Ukraine
January 2018**

About the Abell Foundation

The Abell Foundation is dedicated to the enhancement of the quality of life in Maryland, with a particular focus on Baltimore. The Foundation places a strong emphasis on opening the doors of opportunity to the disenfranchised, believing that no community can thrive if those who live on the margins of it are not included.

Inherent in the working philosophy of the Abell Foundation is the strong belief that a community faced with complicated, seemingly intractable challenges is well-served by thought-provoking, research-based information. To that end, the Foundation publishes background studies of selected issues on the public agenda for the benefit of government officials; leaders in business, industry and academia; and the general public.

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