

Banned in the USA

Federal law makes it illegal to grow industrial hemp in the United States, but some states have passed bills and resolutions designed to test that ban. Two states have legalized industrial hemp, seven are studying it and five are urging the federal government to reconsider laws against it.

BY CATHERINE COWAN

Christopher Columbus used it in the sails of his ships. Betsy Ross made the first American flag from it. Thomas Jefferson wrote the Declaration of Independence on it. Henry Ford used it in his early cars. The government encouraged farmers to grow it during World War II. Supporters say it could be a viable alternative crop to struggling farmers. Yet it is now illegal to grow in the United States without special permission from the Drug Enforcement Administration.

The crop is hemp, and an increasing number of states are showing interest in its industrial and agricultural potential to shore up their economies. Seven states (Arkansas, California, Illinois, Kentucky, Maryland, Minnesota and New Mexico) have enacted laws authorizing studies of industrial hemp; five states (Illinois, Montana, North Dakota, Vermont and Virginia) have urged the federal government to relax laws against hemp; two states (Montana and North Dakota) have legalized hemp; and one state (Hawaii) is working with the DEA to plant hemp. Legislation to legalize or study hemp is pending in other states, and a group of Hawaii legislators sent a letter to President Bush in 2001 asking him to support efforts to allow industrial hemp to be cultivated as a crop. "Industrial hemp is a state agricultural issue, not a drug issue," the group wrote.



Dr. David West, right, director of the Hawaii Industrial Hemp Research Project, looked over young hemp plants with molecular bioscience professor Harry Akoat at the experimental hemp plot in Hawaii. Photo by Ken Ige, Honolulu Star-Bulletin.

The problem these legislators face is that the federal government prohibits its cultivation in the United States, and federal law takes precedence over state law. Hemp is closely related to marijuana, which produces THC, a substance that delivers a psychoactive effect, or "high." Although hemp has much lower levels of THC than marijuana, the DEA does not recognize any difference between the two, and it is against federal law to grow either one.

In fact, according to the DEA, "hemp and marijuana are actually separate parts of the species of plant known as the cannabis... The marijuana portions of the cannabis plant include the flowering tops (buds), the leaves and the resin of the cannabis plant. The remainder of the plant — stalks and sterilized seeds — is what some people refer to as hemp."

Why then are so many states taking a serious look at hemp? What are the precise differences between hemp and mari-

juana? And how are states dealing with the fact that both are illegal?

Hemp v. marijuana

Hemp and marijuana are both species of the plant genus *Cannabis sativa*, which contains a unique class of molecules called cannabinoids. While the plant has more than 60 different cannabinoids, the one that causes the psychoactive effect is delta 9 tetrahydrocannabinol, or THC. Marijuana has a THC level of 5 to 20 percent. Industrial hemp has a THC level of 0.3 percent.

Central to the dispute over hemp is the difference between marijuana and industrial hemp. The DEA considers hemp and marijuana to be one and the same. In fact, according to the DEA, the term "hemp" is not found anywhere in federal law; federal regulations refer to the plant by its *Cannabis sativa* name only. Hemp fields

could be used to hide marijuana, confusing police and putting an extra burden on law enforcement, the agency says. “Hemp and marijuana are the same plant: the seedlings are the same, and in many instances the mature plants look the same,” Barry McCaffrey, then director of the Office of National Drug Control Policy, wrote in a 1997 letter to Kentucky Gov. Paul Patton.

DEA Administrator Asa Hutchinson said in a press release, “Many Americans do not know that hemp and marijuana are both parts of the same plant and that hemp cannot be produced without producing marijuana.”

Hemp proponents say there is a key difference. Industrial hemp generally has less than 1 percent THC, while marijuana plants can have as much as 30 percent. “The difference between the two plants is like the difference between field corn and

sweet corn—it’s the same species but different varieties,” said David Bronner, chairman of the hemp industry association’s food and oil committee.

Hemp advocates argue that the two plants are distinguishable because they are grown differently. Hemp is grown primarily for its fiber, which is found in the stalk, says Dr. David West, a plant geneticist and director of the Hawaii Industrial Hemp Research Project. For this reason, hemp is planted in narrow rows four inches apart; branching is discouraged and the plant is not allowed to flower. Marijuana is grown for its THC content, which is found in the flower; it is spaced widely to encourage branching and its flowers are harvested.

Moreover, hemp advocates say, because the two plants can cross-pollinate, neither hemp farmers nor marijuana growers want their plants to mix. If they interbreed,

hemp farmers find that marijuana lessens the value of their plant’s fiber, and marijuana growers find that hemp drastically lowers their plant’s THC content. “Hemp fields, in fact, could be a deterrent to marijuana growers,” West writes in *Hemp and Marijuana: Myths and Realities*.

Hemp is grown in more than 30 countries. Canada, which legalized production of hemp in 1998, has issued a series of regulations for hemp farmers. Among these regulations, all importers or exporters of hemp must be licensed and must obtain a permit for each shipment; imports of hemp must come from certain countries and must be certified as containing no more than 0.3 percent THC; and only approved varieties of hemp seeds may be planted.

It is from these sources that hemp is legally imported into the United States and used in numerous foods, cosmetic items and textile items.

Harvesting hemp

Industrial hemp (*cannabis sativa*) is a hardy plant that grows in a wide variety of climates. Plants can grow to 14 feet high in a few months; the short growing cycle means more than one crop can be harvested each year. Although hemp requires substantial nutrients, it leaves the soil well ventilated so that crops planted after it see higher yields as well. Hemp is not prone to disease and so requires fewer pesticides than cotton crops also grown for fiber. Because stalks are planted close together, hemp helps clear weeds from fields. For these reasons, hemp can be valuable as a rotation crop to supplement wheat, corn and soybeans.

Hemp is grown for its fiber, woody stalk and seeds. The fiber, located on the outside of the stalk, can be used to make clothing, bags, carpeting, upholstery and rope. The woody stalk can be used to make paper, teabags, cigarette rolls, construction materials, animal bedding, fiberglass and plastics. And the seeds can be used in food products such as bagels, salad dressing, dietary supplements and animal feed; in personal-care products such as skin lotion, moisturizers and shampoo; and in industrial prod-

ucts such as paints, inks, varnishes or biomass fuel. Most farmers grow hemp either for fiber and stalk or for seeds because the dual-purpose crops are of lower quality.

The labor in industrial hemp comes not in growing but in harvesting it. If the hemp is a fiber-and-stalk crop, the first step is to cut the stalks and lay them in rows. The stalks are then “retted,” a process that separates the fiber strands, located on the outside of the stalk, from the stalk’s woody core. Retting can be done in the field, where the fiber separates from the stalk as a natural part of decomposition, or in water. Water retting produces a higher-quality product, but requires more labor, equipment and management. After retting, the hemp is taken to a “decorticating” facility where the fiber is mechanically removed from the stalk, which is then broken up into pieces or “hurds.” Because hemp is a bulky crop, decorticating facilities should be located within 50 miles of hemp fields.

If the hemp is a seed crop, harvesting, transportation and processing is somewhat easier. While hemp seeds can be used as a food ingredient much like

sesame or poppy seeds, as animal or bird feed, or to plant more hemp crops. Milled seeds produce flour or animal meal. Pressed seeds yield an oil that contains essential fatty acids for human or animal consumption, and penetrates surfaces well as a paint, lotion or varnish. Because hemp seed is easily transportable, it can be processed anywhere.



This barn located near the headquarters of The Council of State Governments in Lexington, Ky., was once used to store harvested industrial hemp. Kentucky was one of the primary producers of industrial hemp until the turn of the century. “Kentucky hemp,” a cross between European and Chinese varieties of the plant, was used primarily in rope for cotton bales and clothing for slaves.

How likely to get “high”?

A second point of contention is whether people can get high from smoking industrial hemp. The DEA cites studies in which marijuana with less than 1 percent THC produced a high in experienced users; in one 1971 study, 80 percent of such users correctly identified cigarettes with the lowest dose of THC – 0.08 percent – as marijuana. However, many of the studies

also acknowledged that chronic marijuana smokers are subject to the “placebo” effect, in which they experience a high disproportionate to the THC inhaled.

Other researchers argue that people cannot get high from smoking industrial hemp. Dr. William M. Pierce, professor of pharmacology at the University of Louisville, has written that a user would have to smoke 10 to 12 cigarettes of 1 percent THC hemp in rapid succession to

feel a high, and then would be overcome by smoke, vapor and gas. Someone who tried to eat hemp to get high would have to consume the equivalent of several doses of a high-fiber laxative, causing obvious unpleasant side effects, he said.

In addition, West argues that while industrial hemp is low in THC, it is high in another substance called cannabidiol, or CBD, which actually counters the effects of THC in the nervous system. “Hemp, it

A brief history of hemp

The earliest record of hemp says it was introduced by Emperor Shen Nung of China in the 28th century B.C. Because of its resistance to rot, hemp was prized by the seafaring powers of Europe, which used hemp fabric to make sails and hemp rope to construct rigging for their ships. European settlers brought hemp to the Americas as early as the 16th century. Colonial farmers were required by law to grow it, and after the American Revolution they were allowed to pay their taxes with it.

In the 1850s, American missionaries returning home brought hemp seed from China. This was crossed with hemp seed from Europe to create “Kentucky hemp,” a new type of industrial hemp that grew particularly well in America. This variety was widely used in rope that tied cotton bales and as “Kentucky jeans” that clothed slaves. The pioneers also took it West as the canvas covering their Conestoga wagons. The market for hemp declined after the Civil War, however, as cheaper alternatives such as jute and abaca, a relative of the banana plant, replaced it as rope, and the invention of the steamship pre-empted its use in sails. Kentucky farmers, who had been the largest producers of hemp, gradually switched to more profitable crops such as tobacco.

Other researchers found new uses for the plant. Some used hemp seeds to make oil for human consumption and fuel for early automobiles. Some used hemp’s woody stalk to make paper and newsprint. And some used the plant as a source of cellulose for making plastics such as telephones and car parts. So

many uses were found for hemp that in 1937 *Mechanical Engineering* called it “the most profitable and desirable crop that can be grown,” and in 1938 *Popular Mechanics* touted it as the “new billion-dollar crop.”

Hemp’s newfound esteem came to a quick end, however, with the passage of the Marijuana Tax Act of 1937. Under



Heavy hemp rope was used to manufacture metal parts for bombers and fighters in 1942 at an aviation plant in Inglewood, Calif. Photo by Alfred Palmer, Office of War Information Collection.

this act, anyone buying, selling or growing marijuana had to pay a federal tax, and every transaction was subject to inspection by police from the Federal Bureau of Narcotics. Federal agents used this act to put many hemp manufacturers out of business.

Hemp enjoyed a brief revival during World War II when Japan invaded the Philippines, cutting off America’s supply of abaca. Once again, the military needed a source for rope for its ships, and the U.S. government subsidized farmers to grow hemp in the “Hemp for Victory” campaign. After the war, how-

ever, the government sold most of its hemp mills as surplus, and in 1958 the last industrial hemp crop was grown in Wisconsin.

Hemp’s legacy in the United States took another turn Oct. 9, 2001, when the DEA banned the sale and possession of hemp food products in the United States, effective Feb. 6, 2002. The ban was prompted by a clarification of the way the DEA interprets the Schedule I Controlled Substances Act of 1970, which named THC (delta 9 tetrahydrocannabinol) to the list of banned substances in the United States. The clarification published by the DEA essentially bans any product which causes THC to enter the human body, including hemp foods and beverages.

The DEA said in its interpretation that products that do not allow THC to enter the human body are noncontrolled substances and may be lawfully sold in the United States. These products include textiles and personal care products such as soaps, lotions and shampoos. Foods, however, were immediately placed on the list of banned items, drawing opposition from companies and groups that import and sell the products from Canada and Europe.

That original 120-day “grace period” ordered by the DEA was extended to March 18, 2002, when Daniel Dormant, senior attorney for the DEA, wrote a letter to the United States Court of Appeals for the Ninth Circuit moving the deadline. That court is entertaining a motion filed by various hemp trade associations to stay implementation of the DEA order indefinitely.

turns out, is not only not marijuana, it could be called 'anti-marijuana,'” West writes.

A third argument centers around the possible misuse of hemp for making an illegal substance. Industrial hemp opponents contend the THC in hemp can be extracted and concentrated to make a powerful drug. In November 2000, two Wisconsin men were arrested for making “hash oil” by processing “ditchweed,” the wild remnants of industrial hemp left over from crops grown during World War II. For this reason, the DEA says, ditchweed must be eradicated.

Hemp advocates, however, argue that extracting THC from industrial hemp is such an expensive, hazardous and time-consuming process that people who want to get high would choose to buy marijuana instead. Such extraction also requires chemicals that are themselves restricted, said Dr. Paul Mahlberg, professor of biology at Indiana University.

Additional drug concerns

A fourth item of contention is whether the consumption of products containing hemp can cause a false positive on urinalysis drug tests. The Air Force has banned the use of dietary products containing hemp oil, and the DEA has drafted new regulations under which any hemp product that can enter the human body is considered a controlled substance. (See sidebar, “A brief history of hemp.”)

Hemp advocates, however, argue that hemp oil contains only trace amounts of THC, which have no effect on the human body and only can be detected by highly sensitive drug tests. Such false positives are no reason to outlaw hemp, as people also can test positive for opioids after eating poppy seeds on bagels, West says. In addition, Canada has issued regulations that recognize the tiny amount of THC permitted in hemp oil.

Finally, opponents and proponents argue over whether legalizing hemp would be the first step toward legalizing marijuana. The DEA says legalizing hemp would send the wrong message to children, especially at a time when marijuana use among youths is rising. According to a 1999 survey by Phoenix House, an organization that runs drug-treatment centers, marijuana was the drug

of choice for 87 percent of teens entering treatment programs in New York.

While some hemp supporters do favor legalizing marijuana, others oppose marijuana, and many view hemp and marijuana legalization as separate issues. Marijuana growers “are our worst enemies,” hemp supporter Gale Glenn of Kentucky told *The New York Times*. “If marijuana didn’t exist, hemp would be growing here on hundreds of thousands of acres.”

Economic viability

The federal government maintains that industrial hemp as an agricultural product is not economically viable. “The profitability of industrial hemp is highly uncertain and probably unlikely,” says a 1997 statement from the Office of National Drug Control Policy. “Hemp is a novelty product with limited sustainable development value even in a novelty market ... For



Industrial hemp can be used to make a wide variety of products, such as (clockwise from top right) a hat, backpack, jacket, shoes, paper, soap, lotion, foot scrub, shampoo, conditioner, dress, necklace and purse. These items were on sale at the Hemp Universe store in Lexington, Ky.

every proposed use of industrial hemp, there already exists an available product, or raw material, which is cheaper to manufacture and provides better market results.”

The U.S. Department of Agriculture comes to similar conclusions in its 2000 report *Industrial Hemp in the United States: Status and Market Potential*. In the report, the USDA analyzes hemp’s profitability in the fiber, food and oil markets and finds that it is limited in all three. As a fiber, the report says, hemp would have to compete with current raw materials such as cotton or linen. As a seed, the market would likely be small, similar to markets for sesame and poppy seeds. And as an oil, hemp is limited by low yields, a short shelf life and competition from current materials such as linseed and tung oils.

Some state studies, however, disagree with the federal government’s conclusions. For example, in their 1998 report *Economic Impact of Industrial Hemp in Kentucky*, University of Kentucky professors Eric C. Thompson, Mark C. Berger and Steven N. Allen estimate that given the existing sales, uses and technologies, the U.S. market could support the cultivation of 82,000 acres of industrial hemp. Should cultivation become legal, the report says, Kentucky would likely capture a share of the U.S. market because of its historical role as a producer of hemp seed and its horse racing industry, which might use hemp for animal bedding.

The report traces five scenarios under which Kentucky could capture various shares of the U.S. hemp market. Even under the least optimistic, it finds that 59 full-time jobs would be created. Under more optimistic scenarios, 303 to 717 full-time jobs would be created. And the report analyzes the demand for hemp products in the United States, the amount of hemp produced by other countries, and the prices paid to hemp farmers abroad to determine how profitable it would be for farmers to plant hemp in Kentucky. The results show that industrial hemp would be more profitable per acre than any crop in the state except two kinds of tobacco. While the two tobacco crops bring in more than \$1,000 per acre each, four different hemp crops would bring in \$220 to \$605 per acre each.

Finally, the report points out that these figures represent only a starting point in estimating the economic impact of industrial hemp. As output per acre increased and cheaper ways of processing were found, the price of hemp would fall, making it competitive with products already on the market. In addition, because hemp is environmentally friendly, people may turn to it more in the future. The report also states because hemp increases the yield of crops planted after it, more farmers would use it as a rotation crop.



Jean Laprise, left, a farmer with Kenex Ltd., a Canadian processor of industrial hemp, showed his hemp plants to Noble Villeneuve, then Ontario minister of agriculture, food and rural affairs, during Industrial Hemp Field Day in August 1997. Villeneuve was on hand then to announce a \$500,000 grant for hemp research, and in 1998 Canada legalized the cultivation of industrial hemp. Photo by Mari Kane

Conclusion

Whether industrial hemp is destined to remain a niche market or could become a staple crop in some states is a question that cannot be answered so long as it is illegal to grow it in the United States. Only one state — Hawaii — has been granted a DEA permit to grow hemp. The DEA required the Hawaii Industrial Hemp Research Project to store its hemp seed in a locked safe and to surround the hemp plots with a 10-foot fence topped with barbed wire, 24 hours-a-day lighting and infrared surveillance. Hawaii’s experimental hemp plot was planted in December 1999 under the direction of West.

North Dakota, one of the two states to legalize industrial hemp, did so by recognizing hemp as an oilseed containing no more than three-tenths of one percent THC. The law states that any person in the state may plant, grow, harvest, pos-

sess, process, sell and buy industrial hemp (also referred to in the law as *Cannabis sativa*), provided they follow requirements including licensing, fingerprinting and background checks. Licenses are granted for one year and the crop’s growth and harvest is supervised and monitored by the state.

However, growing the hemp in North Dakota, or any other state, is still prohibited by the DEA regardless of state law. “We cannot grow industrial hemp nor can we import raw industrial hemp until the federal Drug Enforcement Administration (DEA) changes its position on the matter,” said North Dakota Commissioner of Agriculture Roger Johnson when the legislation was passed in his state. “Our state legislature did the right thing in removing state restrictions on hemp production, but federal law still takes precedence. I certainly hope that the DEA will modify its position, and allow our producers the opportunity to grow hemp and to compete in the world marketplace with this versatile and increasingly valuable commodity. But for right now, it’s simply against the law.”

Even if hemp were legalized nationwide, West said, it would have a long way to go to catch up to established crops such as corn, wheat and soybeans. Although farmers began experimenting with different varieties of both corn and hemp in the 1850s, corn has evolved into a staple crop, while hemp was suppressed. (See sidebar, “A brief history of hemp.”) If plant geneticists want to develop a variety of hemp that grows well in the United States, they will have to start over, breeding varieties from China and Europe to once again produce the plant grown in America during the nineteenth century.

Whether that happens depends on whether the federal government changes its policies on industrial hemp. In the meantime, states are taking the lead, whether in studying hemp’s potential, urging the federal government to legalize it, or simply legalizing it themselves as a call to action to the federal authorities. ★

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