HEMPGROWER

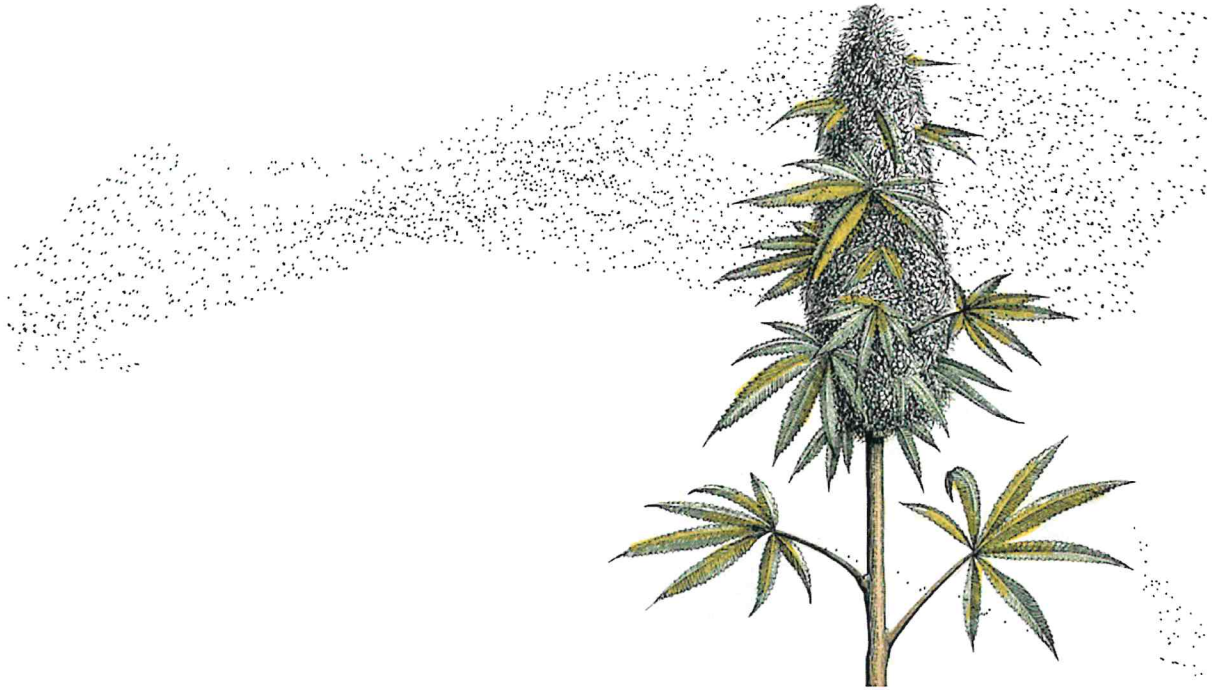
Pollen Drift: Is Your Business Facing Legal Risks?

Columns - Hemp Law

Pollen drift is a growing risk for outdoor hemp cultivators, especially if they have neighbors who are also growing hemp or cannabis.

February 14, 2020

Naav Aschner



Pollen drift is a growing risk for outdoor hemp cultivators.

© chanmarongsds | AdobeStock

One farmer plants four acres of marijuana on the slope of a fertile hill. Another farmer 10 miles away tends four acres of hemp in an idyllic green valley. They grow different crops and do not compete for customers or sales.

But in today's world of cannabis, they might eye each other with suspicion and alarm. There may even be a lawsuit.

The reason? Drift. That is, pollen from male hemp plants (commonly used to pollinate female hemp plants in crops grown for seed or fiber) could drift across those 10 bucolic miles, land on female marijuana plants and fertilize them. In agriculture, the term drift normally refers to pollen from genetically modified corn drifting to fields of non-genetically modified corn, thereby contaminating the crop and posing significant financial setbacks.

Drift wasn't much of an issue in cannabis prior to the Agriculture Improvement Act of 2018, also known as the 2018 Farm Bill, which expanded on existing hemp cultivation pilot programs and legalized hemp cultivation on a national level. The increasing viability (and legality) of industrial hemp farming, enormous demand for cannabidiol (CBD) products and a shift toward outdoor cultivation by state-legal and cost-conscious marijuana cultivators in search of better margins have coalesced to bring this issue to a head. Now that farmers from California to Maine are devoting tens of thousands of acres to hemp (and in many states, marijuana), drift issues are blossoming.

The problem with drifting pollen is straightforward: It effectively destroys crops grown for flower, whether marijuana or hemp grown for CBD. Though regulated differently, hemp and marijuana belong to the same genus and species, *Cannabis sativa L.* The plants can mate with each other and produce offspring.

Cannabis is a dioecious plant, meaning that male and female features occur on different plants instead of the same one. Female marijuana plants produce flowers that farmers grow for their cannabinoid content. Male plants are not used in marijuana cultivation, in part because they do not produce as many cannabinoids.
Also, marijuana growers typically weed out the plants with male characteristics from their crops because if pollen from a male plant fertilizes a female's pistil, the female plant will dedicate most of its energy toward creating seeds. This emphasis on seed development significantly reduces cannabinoid production, and marijuana growers do not want seeds in their valuable flower. Historically, the higher

Also, marijuana growers typically weed out the plants with male characteristics from their crops because if pollen from a male plant fertilizes a female's pistil, the female plant will dedicate most of its energy toward creating seeds. This emphasis on seed development significantly reduces cannabinoid production, and marijuana growers do not want seeds in their valuable flower. Historically, the higher the concentration of cannabinoids—especially tetrahydrocannabinol (THC)—in a crop, the more valuable the crop. According to a 1998 study in the *Journal of the International Hemp Association*, pollination by male plants decreased the yield of essential oils in cannabis flowers by about 56%.

What Does This Mean For Hemp Growers?

Like marijuana, much hemp cultivation also relies almost entirely upon female plants. Most of the hemp grown in the U.S. today is grown for CBD oil—"In the U.S., … about 87% of the 288,000 acres [are] expected to be used for hemp-derived CBD processing in 2019," reported research firm Brightfield Group in sister magazine *Cannabis Business Times'* October 2019 issue—and males are only necessary when growing industrial hemp for fiber and seed. In today's market, a hemp crop high in CBD content can be sold for a higher price than a hemp crop grown for textile production.

Male cannabis plants create a lot of pollen. According to a Michigan State University study, a single male can produce 350,000 pollen grains. In fact, a 2000 study in the *Annals of Allergy, Asthma and Immunology* of airborne pollen counts in Midwestern states found that in the month of August, when most outdoor cannabis plants begin to mature, 36% of all pollen came from cannabis plants. And that pollen can travel many miles.

(See "Buffer Zones: How Far Can Cannabis Pollen Travel" below.)

Buffer Zones: How Far Can Cannabis Pollen Travel?

Pollen from certain types of plants can, in some cases, travel a vast 1,000 to 2,000 miles, depending on the pollen size and type of plant, said palynologist and professor Vaughn Bryant, Ph.D., at Texas A&M during an Arizona State University "Ask a Biologist" podcast. Bryant says most pollen is going to fall about 100 meters (0.06 miles) from the source.

Cannabis pollen, specifically, falls between those two ranges. Most reports *Hemp Grower* has seen places pollens' drift distance around 10 to 30 miles.

"Buffer zones around pollen-producing crops should start with at least a 10-mile radius," wrote veteran hemp and cannabis experts Robert C. Clarke and Mojave Richmond in their article "Seeded vs. Seedless" in *Hemp Grower's* November / December 2019 issue. "Safe distances should be increased to up to 30 miles or more if the pollen source is a broadacre grain seed field or if seedless crops are established down wind of seeded crops."

A 2019 report, "Weighing the Risk of Cannabis Cross-Pollination," from Michigan State University's Hemp Production Extension, supports that estimate: "Industry experts recommend a minimum distance of 10 miles between outdoor cannabis fields. Research has shown that pollen can travel much further than 10 miles, but the amount of pollen transported decreases logarithmically with increasing distance from the source. Therefore, the risk of pollination should be negligible beyond 10 miles from a pollen source." — *HG*

For farmers intent on cultivating female plants with high cannabinoid content, pollen drift from male plants can be disastrous. If male hemp plants are planted too close to female marijuana plants, the males can pollinate the females. That can cause the marijuana to "seed out" by lessening yields, cannabinoid content and potency of the product you sell.

In addition, as more and more cultivators begin to grow hemp for fiber production, pollen from such a heterosexual farm could drift to a hemp field where the plants are being grown for their cannabinoid production, decreasing the field's cannabinoid yield.

Hemp Seed Crops Present Greater Challenges Than Fiber Crops

While farmers growing hemp for grain or fiber will cultivate male plants to pollinate female plants and induce seed growth, not all hemp farming that uses male plants may be of concern when it comes to cross-pollination of "seedless" crops grown for cannabidiol (CBD) or marijuana.

"In Europe and North America, hemp fiber crops have traditionally been harvested upon reaching technical maturity when the male plants begin to shed pollen," wrote veteran hemp and drug-cannabis experts Robert C. Clarke and Mojave Richmond in their article, "Seeded vs. Seedless," in *Hemp Grower's* November / December 2019 issue. "In eastern Asia, hemp fiber crops destined for fine textile production are harvested before they flower, and therefore no pollen or seed is produced. No flowers, no pollen and no problems. The timing of a fiber crop harvest—either before or after it releases pollen—determines whether it poses a threat to neighboring sinsemilla cannabis growers."

However, the authors note the situation is different when it comes to hemp seed crops. "Field-grown hemp seed crops are agronomically and economically incompatible with drug cannabis crops, and growing them within the range of pollen travel will likely result in conflicts." (Editor's note: Read the full "Seeded vs. Seedless" article here: http://bit.ly/seeded-vs-seedless.) — *HG*

Many regulators are aware of cross-pollination concerns and have established regulations designed to mitigate the issue, such as minimum distance requirements between outdoor hemp and marijuana farms. However, these buffer zones are often arbitrary and ineffective.

In recognition of the problem, the U.S. Department of Agriculture recently awarded researchers at Virginia Tech University a $500,000 grant to study pollen drift. The research could prove "critical to establishing appropriate isolation distances for crops and making informed regulatory decisions," associate professor David Schmale, Ph.D., told *Virginia Tech Daily*.

Professor Shane Ross, Ph.D., added: "Long-distance pollination is of concern due to the possibility of unintended cross contamination between different hemp varieties, such as those used for fiber and for CBD."

Enter the Courts

Regulation can only accomplish so much. Legal hemp cultivation remains in its infancy. As hemp agriculture roots and spreads, the industry will likely encounter more and more conflicts between farmers. Such conflicts will inevitably land in our nation's courts, where these cross-pollination disputes are often novel issues.

Due to the plant's longtime status as a Schedule I controlled substance, those growing marijuana and hemp illegally were not resolving their disputes in front of judges. However, litigation has ramped up in recent years, especially in states such as Oregon and Washington, where industrial hemp and marijuana have coexisted for several years. Colorado, too, has seen a number of cross-pollination cases.

Our law firm has been involved in one case that illustrates some of the difficulties drift can present. Our client, Koala Hemp LLC, sought to cultivate outdoor hemp in the southern part of Colorado. The local regulations require that an outdoor hemp farm must be at least five miles from the nearest outdoor marijuana grow. If a hemp farm seeks to cultivate within five miles of an established marijuana grow, the hemp farm must provide evidence to the local jurisdiction that its crop will not contain any male plants.

Our client produced evidence that it was only using feminized seeds for cultivation. But a marijuana grow within five miles objected and petitioned the court for a temporary restraining order, prohibiting our client from planting its hemp crop until the court could resolve the dispute.

The plaintiff contended that it is impossible to establish the gender of a hemp seed, and that the gender of a germinated hemp plant cannot be determined until the plant reaches maturity. The plaintiff further alleged that since the gender of a hemp plant cannot be determined until maturity, the risk of cross-pollination and harm to the plaintiff's marijuana crop was imminent and irreparable.

Without diving any further into the merits of the case, the temporary restraining order was ultimately lifted, though it delayed our client from planting hemp crops for nearly two weeks. Due to shifting weather patterns, our client missed a window of time with ideal conditions to plant the crop. Instead of a germination rate close to 60%, a drought that plagued the region resulted in a germination rate of less than 5%.

Our client is countersuing the plaintiff and seeking damages, which are expected to be close to $1 million.

In states where outdoor hemp and outdoor marijuana overlap, more and more cases have been filed by outdoor marijuana cultivators alleging that male plants from nearby hemp grows have pollinated the female marijuana plants, devaluing marijuana crops to the tune of dozens or hundreds of thousands of dollars. Similarly, as hemp cultivation explodes nationwide and pollen drift begins to impact production, disputes between neighboring farmers will almost certainly end in the courtroom.

From a legal perspective, damages are fairly easy to prove. Pollen from a nearby male plant has cross-pollinated a marijuana crop. If not for such cross-pollination, the marijuana would have yielded a certain amount of biomass at a certain THC content, and a higher THC content commands more money. The same applies for hemp crops grown for CBD.

But the biggest hurdle in a cross-pollination case isn't damages—it's causation. Tracking down the source of the pollen is an extremely difficult endeavor. In 2019, U.S. farmers cultivated approximately 511,442 acres of hemp, according to Vote Hemp, a four-fold increase from the acreage in 2018.

Many of these farmers source the same seeds to propagate their fields. Our client in southern Colorado, for example, breeds and sells feminized hemp seeds to dozens of hemp farmers across the state and the country. Even if genetic testing could determine that a male plant germinated from our client's seeds has pollinated a marijuana grow, how do we find out which field was responsible? Which county or state did the pollen originate from?

Pollen doesn't simply stop drifting because it has reached a state border. Drift litigation will require expert witnesses, which will drive up the costs for both sides of the dispute.

As both outdoor hemp and marijuana cultivation gain widespread traction nationwide, farmers with limited knowledge and experience in cannabis cultivation will attempt to profit from the booming industrial hemp industry. Hundreds of millions of dollars will be spent on developing acreage for hemp cultivation, exacerbating pollen drift issues across the country.

Whether through lack of experience, uncertified seeds that were not what the label promised or simply because hemp farms might become too big for a small group of farmers to maintain, we anticipate more male plants will slip through the cracks, fueling massive amounts of cross-pollination litigation nationwide.

Nadav Aschner is a partner at The Rodman Law Group, a full-service law firm based in Denver. Note: This article contains opinions and does not constitute legal advice.