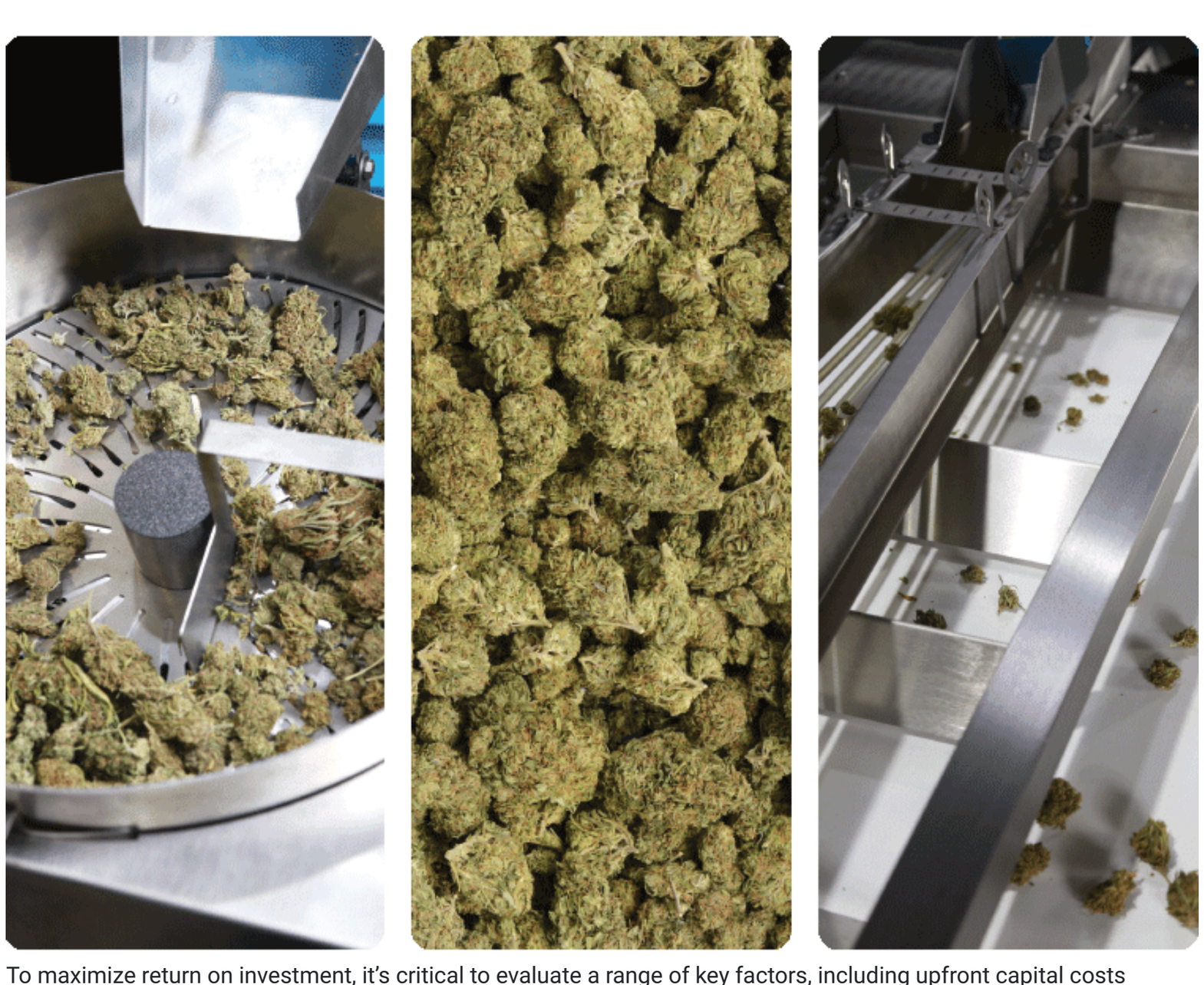
AUTOMATION

Can Your Cannabis Business Benefit from Post-Harvest Automation?

To maximize your ROI, it's critical to evaluate the following key factors against your production goals and processes before investing in automation.

BROOKE BILYJ | MARCH 2022



To maximize return on investment, it's critical to evaluate a range of key factors, including upfront capital costs against your production goals and processes before investing in automation.
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The debate about post-harvest automation rages on among cannabis producers. On one side, growers swear by the unparalleled quality of product that's been carefully harvested, destemmed, and trimmed by hand. In the other camp, growers leverage cutting-edge automated equipment to complete these tasks quickly and efficiently as they scale their operations to meet growing demand and capture market share.

There is no objective way to determine which option is best. Both approaches come with certain costs and trade-offs that producers must weigh before deciding how to handle crops. From labor expenses to upfront capital investments for products such as automated buckers, trimmers, and packaging and labeling equipment, every step of post-harvest processing requires a close assessment of these costs, benefits, and risks to determine the optimal return on investment (ROI).

To maximize your ROI, it's critical to evaluate the following key factors against your production goals and processes before investing in automation.

Evaluating Automated Trimmers

Tedious manual processes like trimming and bucking, or destemming, can add considerable labor strain for cannabis producers.

"The biggest labor components in post-harvest processing are the destemming of the product, trimming, and then packaging," says Andrew Lange, president of Ascendant Management, a consulting firm that has completed more than 2 million square feet of indoor cultivation design across eight countries. "We've helped multiple clients automate all of these steps."

On average, Lange says, one person can hand-trim about one pound of dried cannabis per eight-hour shift—roughly 56 grams per hour. Assuming a base pay rate of $15 an hour, with a labor cost of $18 an hour after payroll fees, the cost to manually trim comes to about $144 per pound.

"If you have 20 pounds of material, you need 20 people if you want to get it done in one day. That means you can trim 100 pounds per 40-hour week," Lange says. "When we look at these productions on larger scale, this becomes a big logistical issue. One of the things that people really don't account for is not only the time that it takes, but also the space."

For larger operations with multiple harvests per week, he says, weekly production can easily exceed several hundred pounds. Keeping pace with this production rate would require approximately 20 people hand-trimming per 100 pounds of material. Since people require at least 25 to 30 square feet of space to work comfortably, he says, you'd need about 600 square feet to accommodate every 20 people. Scheduling and space constraints can quickly make these numbers unsustainable as operations scale.

"That's one of the things we run into quite a bit, is people either falling behind on production or not having enough space to keep everyone going," Lange says. "And that's when we start implementing automation."

An automated trimming machine, by contrast, can trim approximately 15 pounds (or 6,795 grams) of dried cannabis per hour (although this can vary between manufacturers and system models). Even with four employees—one to load and run the trimmer, and three performing quality control by hand-finishing buds as needed—the high-volume capacity of automated trimmers works out to less than $12 per pound.

"Basically, you're looking at being able to save nearly $2,000 a day," Lange says, based on the difference between trimming 15 pounds by hand (at $144 per pound) and by machine (at $12 per pound). Figuring an upfront equipment cost of about $60,000, he says, "it's 30 days of trimming, and you've paid for it."

These cost efficiencies can alleviate the labor strain for producers, which can be a vital benefit in the face of current labor challenges. "The labor shortage is not affecting automated clients as much as those who rely on having 20 to 50 manual trimmers," Lange says. "People had to ramp down their production because there's nobody to trim the product. But if you have automation, you don't need someone who can trim a pound per day; you need someone who can press a button on a machine."

HAND-TRIM VS. MACHINE-TRIM: COST ANALYSIS

HAND TRIMMING

Production Rate Per Hour Total (g)	56
Employees Required for Production Rate	1
Base Labor Cost	$15.00
Labor Cost Per Hour (After Payroll Fees)	$18.00
Total Labor Cost Per Hour	$18.00
Avg Shift Length (hrs)	8

MACHINE TRIMMING

Production Rate Per Hour Total (g)	6795
Employees Required for Production Rate	4
Base Labor Cost	$15.00
Labor Cost Per Hour (After Payroll Fees)	$18.00
Total Labor Cost Per Hour	$72.00
Avg Shift Length (hrs)	8

HAND TRIMMING

Total Production Per Hour (g)	56
Labor Cost Per Hour ($)	$18.00
Labor Cost Per Day ($)	$144.00
Cost Per lb ($)	$144.00
Cost Per g ($)	$0.32

MACHINE TRIMMING

Total Production Per Hour (g)	6795
Labor Cost Per Hour ($)	$72.00
Labor Cost Per Day ($)	$576.00
Cost Per lb ($)	$11.80
Cost Per g ($)	$0.03

Data provided by Andrew Lange

Maintaining Quality in Automation

That's not to say that running automated equipment is as simple as pushing a button. In fact, it's quite the contrary—especially if quality is a top concern.

Lange equates automation technology to buying a personal computer off the shelf, because you can't expect a computer to run all the programs you want right out of the box. "If you just throw product into an automated trimmer, you're not going to get the best results as if you took some time to set it up properly," he says. "This is where most people start to fail with automation. You can get the same level of quality through machine trimming as you can with hand trimming; it just takes a lot more effort on your setup."

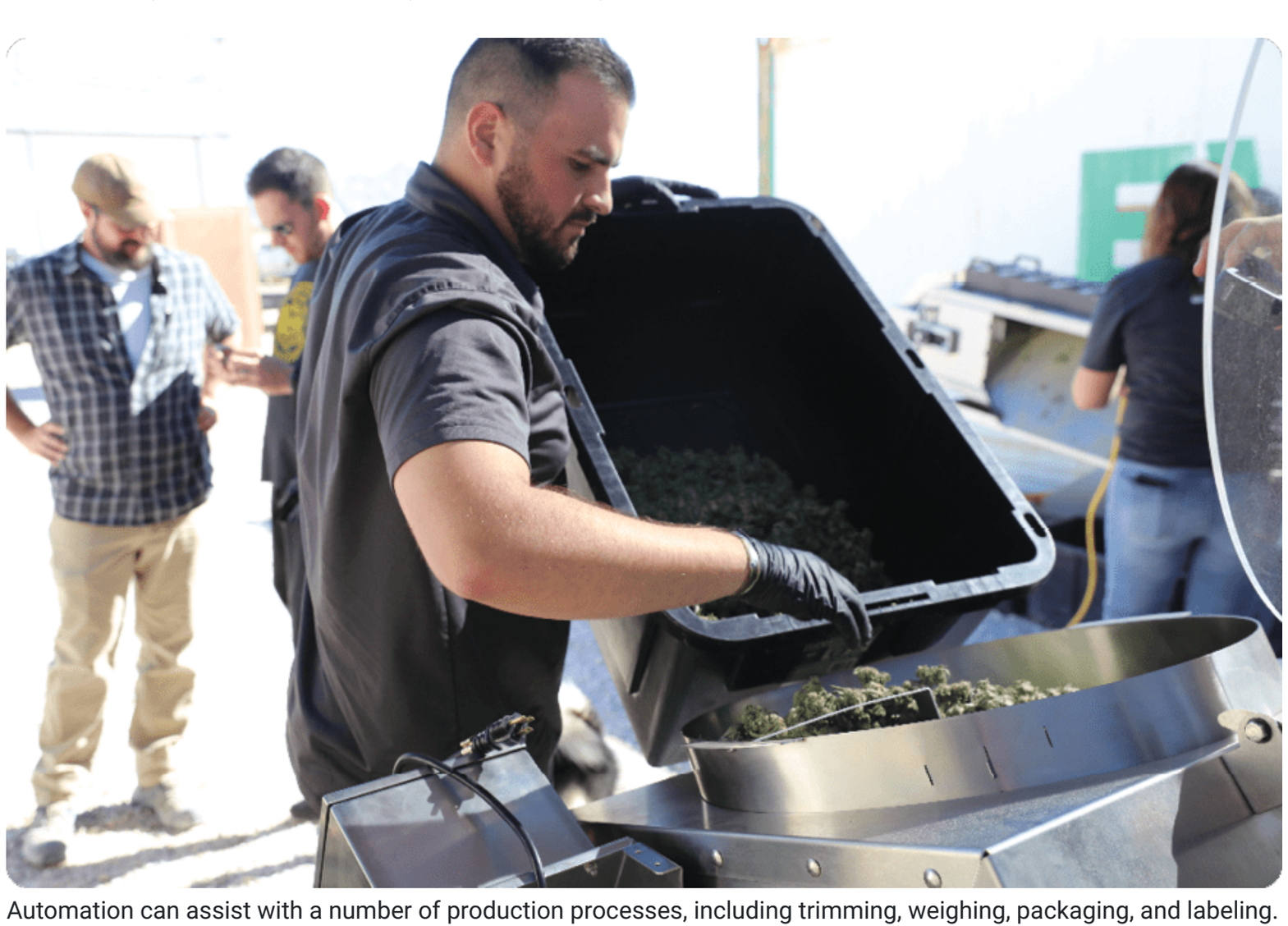
Just as each cultivar demands a tailored approach to growing, different varieties require different handling techniques post-harvest to optimize results. Factors such as the size, density, and moisture level of the bud can all impact the ideal trimming settings and the technical learning curve.

"The biggest problem that I see people have in the post-harvest production side of their facilities is that they treat all the product the exact same," Lange says. For example, a very dense bud with close internodal spacing can be trimmed a bit drier than a "larfier" bud that is fluffier and less dense. "If you trim them both at the same moisture level," he says, "the machine is going to beat the hell out of one of those products and not trim the other one enough."

That's why, as important as proper calibration can be, Lange also recommends that producers follow up mechanical trimmers with a final manual touch. "Machine trimming can't replace humans 100%," he says. "It does 90% of the work for you, but that's a lot less than if you're doing 100% of the process with a human. If you just want to have 100% machine-trimmed stuff where no human touches it, then it's not going to be as nice as completely hand-trimmed product. But if you supplement a majority of the labor with the machine and you finish it by hand, you get a 90% reduction or more in labor."

Since implementing an automated dry trimmer at The Clinic's indoor cultivation facility in Denver in 2019, Operations Manager Chris Baca has reduced his labor by a third. The company, which operates four dispensaries in Colorado, uses automated trimmers, sorters, and conveyors to drastically streamline production and reduce labor costs—saving hundreds of thousands of dollars, according to Baca.

"The benefits of being able to set our trimming machines to the desired speed and length of processing time to match the desired outcome for specific strains really changed the game for us," he says. "We can machine trim 80% to 85% of our product, and hand trim the remaining 15% to 20%, and still have quality assurance where it needs to be. Machine trimming allows us to have consistency with the mechanized portion of our process, but with the hand finishing, we can also be assured that we've got eyes on everything in the final step of the process. This combination ensures quality, which is important to our customer confidence and, ultimately, to our company's credibility."



Automation can assist with a number of production processes, including trimming, weighing, packaging, and labeling.
Photo by Adam Slyter

Perfect Packaging

Next to reducing labor costs, achieving consistency is often a key driver of the decision to automate post-harvest cannabis production. Whether it's through consistently trimmed bud, precisely weighed eighths, or accurately applied labels, automated equipment can help producers efficiently maintain specific quality standards inside every package.

"For us, it's about speed and efficiency while not sacrificing quality," says Chris Lane, chief marketing officer at Airfield Supply Company, a vertically integrated company in California that began exploring fully automated packaging solutions in preparation for the launch of its premium brand, Aviation Cannabis, in fall 2021.

Over time, Airfield Supply Company gradually added automated equipment to its packaging line in stages, starting years ago with automated label applicators for its other brand, Jetfuel Cannabis.

"Labeling is often the first step people take when it comes to automation in the packaging line," Lane says, "because the amount of time and precision it takes to apply labels is undervalued."

Although it may only take 30 seconds for an employee to apply one label, he says, the challenge is ensuring that it's perfectly straight. If it's not, then peeling it off and reapplying it can more than double the application time. Meanwhile, a properly calibrated labeling machine can apply as many as 50 to 100 labels per minute.

"We know production efficiency can be fundamentally transformed with the right automation processes," says Tom Woods, director of technologies and supply chain at Airfield Supply Company.

Although the equipment adds significant cost—label applicators might run anywhere from $2,500 to $10,000, Woods says—the value that automation adds to packaging, when done correctly, far outweighs the initial cost.

"We're very conscious of brand aesthetic," Lane says. "We know people shop with their eyes, so with Aviation, we spent months designing this beautiful brand, and if you end up with a crooked label on it, you are just discounting that effort and intention. You want to reflect and ideally enhance the quality of the product that's inside."

Now, the Aviation packaging line starts with a weighing machine that accurately doses product directly into recycled tins. Next, the tins are flushed with liquid nitrogen to preserve the product inside, then simultaneously topped with a cap sealer before heading to the labeling machine line. This automated sealing process potentially extends the shelf life up to two years, while preserving the "overwhelming smell moment" customers get when they first open the product.

"Adding a nitrogen doser was something that wasn't there before, so it's an upfront cost increase in that sense," Lane says. "But it's a net positive for the customer experience—which, if someone has a better experience with that product, and they're more likely to be a return purchaser, then it does play onto the bottom line."

"There is no piece of automation that doesn't require some setup and education, so you really have to be dedicated to learning about the products that you're wanting to use," says Andrew Lange, president of Ascendant Management.
Photo by Adam Slyter

Making the Automation Decision

Even if the ROI calculation justifies a new piece of equipment, that doesn't necessarily mean that automation is right for your operation. Lange says the decision ultimately boils down to two main questions.

"The first thing to look at is whether automation works for your product guidelines," he says. "If your entire marketing play is around being 100% hand-trimmed, maybe automation won't work great for you," at least for trimming.

For example, after running some internal tests with bucking and trimming machines, Airfield Supply Company determined that it wasn't the best fit for their small-batch, boutique brands, Lane says. These experiments sealed the company's decision to continue hand-bucking and trimming, while investing in packaging automation instead.

The second question, Lange says, is whether your team is fully committed to making automation work. "There is no piece of automation that doesn't require some setup and education, so you really have to be dedicated to learning about the products that you're wanting to use," he says. "When we're working to integrate a piece of equipment, I highly suggest having the team that's going to operate it, see a demo as it's actually working, and talk to the people who use it. That education component helps the rollout be so much smoother because people are confident in what they're doing."

Many equipment manufacturers provide training and onboarding to help production teams implement automation successfully. High levels of customer service and support are critical factors to consider when investing in these machines, Lange says. "If you can't get the support to get everything working correctly, then the piece of equipment isn't going to be used to its full potential, which extends ROI," he says. "Look for that customer service because without it, it doesn't matter if you could drive down your cost a thousand times."

When carefully vetted, properly calibrated, and fully supported, automated equipment can accelerate post-harvest processes to add efficiencies that preserve your brand promise to customers.

"The biggest piece of advice is being really intentional in the decisions you make and how they reflect on your brand," Lane says. "Don't just bring on a solution because it seems like it's going to be faster. There are some places where slower is better. At the end of the day, when the product hits the shelf and ends up in someone's hands, you don't want to sacrifice quality for speed."

Brooke Bilyj owns and operates Bantamedia, a national award-winning content, SEO and PR firm based in Cleveland. She is a frequent contributor to GIE Media's horticulture publications.

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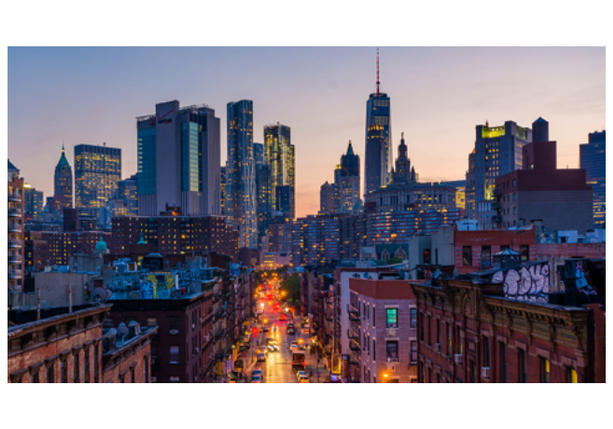
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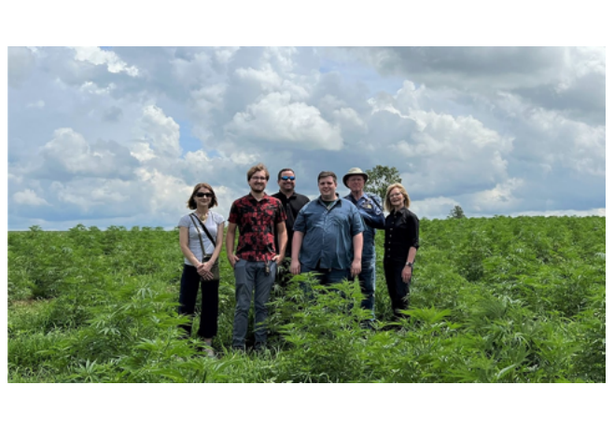
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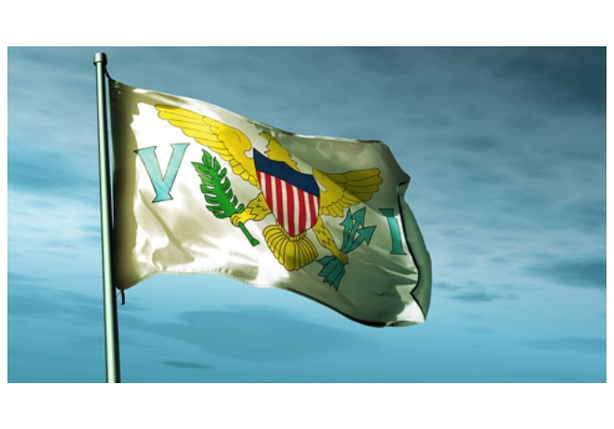
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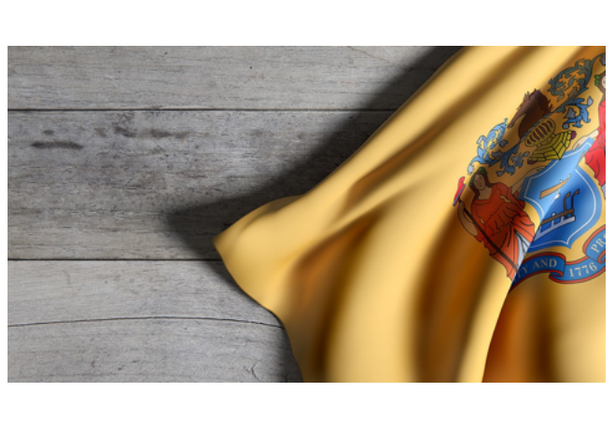
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