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ATTACKING MILDEW

Puradigm offers an alternative to chemical pesticides

By GARRETT RUDOLPH

Powdery mildew continues to be a persistent problem for legal cannabis growers throughout the country, and with the upcoming implementation of the Food Safety Modernization Act, growers will face an even higher level of scrutiny for products that will eventually be used in edibles.

The Colorado Marijuana Enforcement Division has issued almost three dozen statewide recalls of cannabis products that have tested positive for banned pesticides in 2016, in addition to numerous recalls issued by the city of Denver.

The most commonly used banned substance is myclobutanil, a fungicide that is the active

ingredient in Eagle 20. In September 2016, Colorado issued six cannabis recalls — each for products that tested positive for myclobutanil.

Jim Gabriel, the CEO of Puradigm, recognizes the struggle growers face. They have a high-dollar crop that they're trying to salvage at any cost.



A Puradigm air purifier in use at a cannabis grow operation.

"It's a very expensive product," he says. "If you lose it, you've lost a lot of money."

But as growers become more educated about the dangers of chemical pesticides and recognize the importance of staying

YOU'RE ABLE TO CURE YOUR PROBLEM IN AN ORGANIC MANNER

compliant with state and federal regulations, they're increasingly seeking an organic alternative.

Puradigm (www.puradigmsolutions.com) realized that basil farmers were losing 70-80% of their crops to mold. Growers needed a non-chemical solution to powdery mildew and other diseases, and Puradigm's air purifiers turned out to be an ideal solution.

Puradigm's systems are the only active purifiers on the market, as opposed to typical purifiers which passively filter undesirable particles from the air. The system generates hydrogen peroxide "bubbles" that reduce mold and mildew on contact. The byproduct is just air and water, so it's safe for the plants and the people working in the facility.

The patented systems generate some ozone, but are compliant even with the

Humidity Control

By CLIF TOMASINI

There are plenty of good reasons to eliminate the need for pesticides in cannabis production. But more often than not, people discuss the problems, not actual solutions. The best option is to solve the problem before it occurs.

That's where controlling humidity levels in a clean growing environment comes into play. Humidity is a critical factor to consider when attempting to prevent plant diseases that could require a chemical treatment.

Moisture

Here's the simple fact: Too much moisture creates the perfect environment for mold, mildew and fungus to take hold. Numer-

ous agricultural studies from top-tier research hubs, including Purdue University, have proven this for other types of plants.

Once mold and mildew appear, growers have little choice but to spray or harvest early. Even then, they can't always solve the problem. The worst case scenario is total crop loss.

After visiting numerous grow operations, including many that have successfully tackled powdery mildew and various molds without pesticides, it's fairly clear that these plant killers were thriving because of the abundance of water in the air.

By controlling humidity, growers significantly reduce the risk of mold spores and mildew. No mold or mildew means no need for related herbicides and fungicides.

While relative humidity levels vary based on plant maturity, it's generally ideal to keep levels at or below 50% to prevent mold and mildew growth, most experts say.

IF YOU WERE GROWING CANNABIS, WHAT WOULD BE THE NUMBER ONE CONCERN?

strict air pollution standards in California.

"Most of the time, you wouldn't even know it's on," Gabriel says.

The company began looking at other avenues for its purifiers and saw the cannabis industry as a logical target.

Puradigm worked in conjunction with consultant Darryl Hudson, who has a Ph.D. in molecular biology and genetics, to determine the right product for the cannabis industry.

"We asked him, 'If you were growing cannabis, what would be the number one concern?'" Gabriel says.

Hudson said the biggest issue was controlling mold, mildew, bacteria and viruses, while also controlling odor, in a way that doesn't adversely affect the plant.

"You're able to cure your problem in an organic manner rather than looking at chemicals," Gabriel says.

Puradigm manufactures two different purification units, the Pro model for larger facilities and the hexagon-shaped Grow model for smaller operations.

Testing has shown that the units don't impact plants' cannabinoid levels.

The amount of space the purifiers can handle is somewhat dependent on the facility's design, but typically one unit can handle 500-700 square feet, and within

48 hours, growers can perform a swab test and see a significant reduction in microbial particles.

With the Food Safety Modernization Act coming online and the legal cannabis industry moving forward by leaps and bounds, regulators are paying more and more attention to marijuana growers. Eight-figure build-out costs have only drawn more attention on the industry.

"When you're under the radar, and you've got a few individual growers, that's one thing," Gabriel says. "Now everybody's going to want to micro-manage the cannabis industry."



Bugging out

Controlling moisture can help prevent mold and mildew, but it can also act as a deterrent for unwanted insects.

Many insects and mites are attracted to mold and mildew, so eliminating their growth can reduce the chance of pest infestation, thus reducing the need for pesticides. It's not the entire solution, but it can help significantly.

Of course, there's a higher likelihood that pests will attack plants in grow facilities that aren't clean, or are managed by people who aren't careful about what's brought into the operation.

That's why growers need to examine their entire process, not just dehumidification, to ensure a truly clean environment.

More research needs to be conducted, but the evidence is already in the grow rooms. Great growers with truly clean cultivation facilities are seeing amazing success producing pesticide-free marijuana without reducing yield or quality. These

growers focus on prevention through strict control of humidity levels.

Clif Tomasini is the product manager for Quest Dehumidifiers (questhydro.com), which manufactures some of the most energy-efficient dehumidifiers in the world. Quest has supported the cannabis industry for more than a decade, working with growers to improve the quality of their plants through clean growing processes.



www.puradirmsolutions.com

ATTACK mold, mildew & odor.

Revolutionary technology that **eliminates** mold, mildew, odor and VOCS in the air and on the surfaces of crops.

- Reduces mold growth on plants.
- Enhances plant growth and root structure; visibly improves plant quality.
- Increases yields; minimizes plant loss.
- Significantly reduces odors from cannabis grow rooms.
- Eliminates odors from VOCs.
- Scalable to any size room or greenhouse.
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PURADIGM Pro for larger facilities

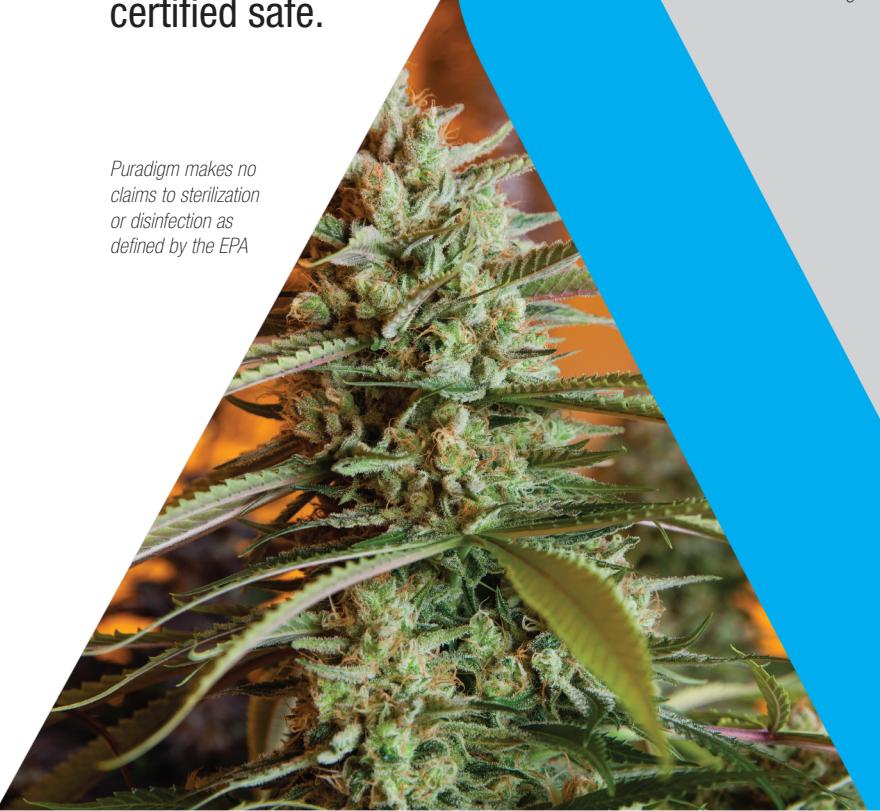


PURADIGM Grow for smaller facilities

Other air purification systems are passive - air flows through them and they filter out the undesirable particles. PURADIGM is different. PURADIGM works as an *active* purification system that takes the solution to the problems. PURADIGM attacks mold, mildew and other potentially dangerous pathogens in the air, on surfaces and even those that cling to surfaces of seedlings, flowers and plants.

PURADIGM consistently delivers high energy clusters and advanced oxidation throughout the indoor space. No other technology on the market can do what PURADIGM does.

Puradigm makes no claims to sterilization or disinfection as defined by the EPA



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