

BioDox™

CONCENTRATED LIQUID STERILIZER



A Severe Threat to the Cannabis Industry. Can BioDox Control Hop Latent Viroid?

In the lush landscapes of California's cannabis farms, an unseen threat lurks, silently endangering the very core of the cannabis industry. Meet Hop Latent Viroid (HLVd), a microscopic but potent pathogen that is silently wreaking havoc on cannabis plants, and could potentially cause billions of dollars in damages to the national weed economy.

Present in more than 90% of the state's cannabis grows,[1] HLVd has emerged as a global concern for cannabis growers, jeopardizing crops and profits.

The insidious nature of Hop Latent Viroid lies in its ability to remain undetected for weeks and even months. It stealthily attacks cannabis plants in flowering by stunting growth, inhibiting phosphorus uptake, [2] and severely limiting crop yields and potency outcomes of cannabinoids, the plant's most valuable active compounds, significantly devaluing the crops. As this viroid continues its relentless spread, it is now a prevalent threat not only in California but has spread its reach to cannabis farms worldwide, from Massachusetts to Europe.

For years, growers grappled with the enigmatic "dudding" effect, a mystery ailment that plagued crops during flowering. Unaware of HLVd's existence, growers were left with diminished yields, compromised plant shapes, and cannabinoid levels slashed by up to 50%. Needless to say, the consequences of this hidden attacker can be financially crippling for the cannabis industry.

However, the dawn of a solution is on the horizon, thanks to the relentless efforts of **Biocentric Solutions** and their pioneering brand of chlorine dioxide, **BioDox**. Biocentric Solutions has been researching and running tests with **BioDox** on various agricultural pathogens and pests, among them Hop Latent Viroid, since May of 2021, with surprising—and definitely promising—results.

BioDox offers a beacon of hope by empowering farmers to swiftly treat infected plants without undesired side-effects to people and the environment. This groundbreaking solution enables them to take immediate action to curb the spread of the pathogen.

BioDox, a liquid sterilizer based on Chlorine Dioxide solution, arms growers with the knowledge and means to proactively safeguard their crops, putting them back in control of their fields.

As HLVd threatens to cast a dark shadow over the cannabis industry's future, **Biocentric Solutions** offers a beacon of hope with **BioDox** and their "solving problems, not symptoms" approach. Their commitment to preserving the environment and keeping people safe through innovative, effective solutions is evident in **BioDox's** chlorine dioxide-based product.

Hop Latent Viroid poses an unprecedented challenge, necessitating collective action and cutting-edge solutions. With the power of **BioDox**, the cannabis industry stands a fighting chance against this invisible enemy. Swift detection and integrated pest management, backed by **BioDox's** chlorine dioxide prowess, will be critical to safeguarding the industry's resilience and longevity.

In conclusion, the cannabis industry must act decisively to combat the looming threat of Hop Latent Viroid. **Biocentric Solutions**, through **BioDox**, empowers growers to tackle the problem at its roots, literally, preserving not just the crops but the future of the cannabis industry itself.

By embracing **BioDox** and adopting proactive measures, the cannabis industry can rise above this hidden menace, secure in the knowledge that they are armed with a powerful, environmentally friendly solution to protect their livelihoods. The dawn of a new era in cannabis farming is here, guided by **Biocentric Solutions'** ethos.

Speak to an IPM specialist at **Biocentric Solutions** by calling **800-956-3576**

Or visit our website at www.biocentric.solutions



**BioCentric
Solutions**

Manufactured in the USA by BioCentric Solutions
12400 Loma Rica Dr. Grass Valley, CA 95945
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The BioCentric Solutions Ethos

BioDox™ was developed by BioCentric Solutions, a company that believes in creating the most effective solutions to dangerous pathogens without harming people or our planet. Our mission is to create safe and effective solutions that improve the health of the world around us.

BioDox™



Pathogen Prevention

Plant Life Cycle	CLONE		VEG					FLOWERING					
WEEK		W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
Soil Sterilization	25ppm	25ppm											
Root Drench		2.5ppm	2.5ppm		2.5ppm	5ppm		2.5ppm					
Foliar Spray		25ppm			25ppm		25ppm		50ppm		50ppm		50ppm

Infection Outbreak Control

Plant Life Cycle	CLONE		VEG					FLOWERING					
WEEK		W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
Soil Sterilization	25ppm	25ppm											
Root Drench		2.5ppm		5ppm		5ppm		5ppm		5ppm			
Foliar Spray		25ppm	25ppm		25ppm		25ppm		50ppm	50ppm	50ppm	50ppm	50ppm

Soil Sterilization

Soil Sterilization is a critical step to insure that colonies of pathogens are reduced or eliminated before the plants are introduced to the soil. This is accomplished by using a 25ppm solution of Biodox in the water system for the farm. This solution travels from the water tank through the pipes and emitters to then fully saturate the soil. Depending on conditions, 60-80 gallons per yard is applied and allowed to completely dry back. It is recommended to allow the product to dissipate for three days before introducing new plants into the soil. Biodox is a gas in solution and will completely dissipate. Additional benefits of this approach include cleaning the tank, lines and emitters of biofilm. Soil Sterilization is recommended at the beginning of the growing season, or between harvesting and planting the next round.

Root Drench

Root Drench is a soil treatment with Biodox performed while the plant is in the soil. The dosage is one tenth of the dosage used for soil sterilization. A preventative approach includes using a 2.5ppm solution regularly and a 5ppm solution if there are symptoms of infection. The root drench method allows for colonies of pathogens to be reduced without destroying good microbes or causing lock out. This allows the beneficial microbes an opportunity to dominate the terrain. Apply product through the watering system during the watering cycle between feedings. Allow the soil to dry back as much as possible until plants begin to show signs of wilt, then resume watering and feeding as usual. For preventive maintenance use a 2.5ppm (1oz per ten gallons) solution every other week throughout Veg and the first six weeks of flowering. If there is an infection, use Biodox at a 5 ppm solution (2oz per ten gallons) every week until symptoms subside and then every other week until harvest.

Foliar Spray

Foliar applications are critical to maintain a sterile environment. Third party studies show that using Biodox as a plant wash removes biofilm from the leaves allowing for greater photosynthesis, creating higher yields and terpenes. Most importantly, Biodox targets pests like PM, Boytritis, and many others agricultural pathogens by selectively oxidizing them in a way no other chemical does. It discourages and oxidizes small pests like mites, aphids and thrips without toxicity or residue. Biodox can be used during the curing phase after harvest to discourage spider mites or pm without reducing THC or terpene content. Biodox is completely non-toxic and made of compounds not tested for in DCC testing, making it ideal for the last weeks of flowering.

[1] More than 90% of Calif. pot farms infected with ‘severe’ pathogen” by [Lester Black](#), SFGATE May 25, 2023. URL: <https://www.sfgate.com/cannabis/article/cannabis-farms-infectious-pathogen-18115205.php>

[2] Whitham SA, Yang C, Goodin MM: Global impact: elucidating plant responses to viral infection. *Mol Plant Microbe Interact* 2006, 19: 1207-1215. [Article PubMed CAS Google Scholar](#)

[3] Adkar-Purushothama, Charith Raj, et al. “Hop Latent Viroid: A Hidden Threat to the Cannabis Industry.” *Viruses*, vol. 15, no. 3, Mar. 2023, p. 681. *DOI.org (Crossref)*, <https://doi.org/10.3390/v15030681>.

[4] The scientific reason for “dud” Plants – Hop Latent Viroid (HLVd) Discovery in Cannabis [Jessica Staha](#) Kristen WatermanKayla Hardwick, PhD. Nov 06, 2019. <https://phylos.bio/blog/hop-latent-viroid-discovery-in-cannabis>.



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