



## PathoSEEK® Virus Triplex Case Study

### How One Cultivator Increased Yield 30%

An east coast cannabis nursery noticed a number of plants that were failing to thrive with curled, brittle leaves and small flowers with very few trichomes. After ruling out nutrient deficiencies and environmental problems, the cultivator suspected a viral infection.

Using the **PathoSEEK Cannabis Virus Multiplex Detection Assay** the team was able to:

- Confirm that a viral infection was causing the problems they observed
- Identify which plants are infected with Lettuce Chlorosis Virus (LCV) and/or Hops Latent Viroid (HLVd)
- Implement a new screening protocol of mother plants to prevent future outbreaks

This premium cannabis cultivator provides medical cannabis to patients on the east coast. The company has partnered with Medicinal Genomics to improve their cultivation operation in a number of ways, including:

- Pathogen Detection
- Environmental Screening
- Genomic Sequencing



## Challenges

Plants that are infected with LCV and/or HLVd do not show signs or symptoms until plants are in flowering. As a result, mother plants that develop an infection in the later stages of development may appear healthy, but her cuttings will carry the infection.

Furthermore, studies have shown LCV and HLVd can spread through water, which means clones from infected mothers can infect other healthy clones that share a water table.

Although infected plants will survive to full maturity, the resulting flowers will have significantly lower cannabinoid content. In some cases, infected plants can have 50% of the cannabinoid content of healthy plants.

## How PathoSEEK Helped

The team used the PathoSEEK Cannabis Virus Multiplex Detection Assay to screen 25 plants in the flower room for Lettuce Chlorosis Virus, Hops Latent Viroid, and Cannabis Cryptic Virus, using DNA extracted from a 4mm hole punch from the plant leaf. They found that 93% of plants were infected with LCV, confirming their suspicion. Additionally, 18% tested positive for HLVd.

Next, the team tested its 80 mother plants with the assay and found that 65 and 15 mothers tested positive for LCV and HLVd, respectively.

Armed with this information, the team tissue cultured the LCV-infected mothers to produce new, virus-free plants that were confirmed clean using the assay. The 15 HLVd-infected mothers were discarded because the process to eliminate the HLVd through tissue culture is much longer and difficult. The team replaced the HLVd-infected mothers with new cultivars they selected from a phenohunt project.

## Return on Investment and Future Plans

The nursery expects the yield from their next crop will increase by 20% to 30% thanks to the PathoSEEK Cannabis Virus Multiplex Detection Assay. As part of their Clean Stock Program, they plan to continue using the assay to screen mothers before taking cuttings, this way they can be sure on the production of the best flower without losing potency and terpenoid content.



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