

## Ensure the continuity of your business, no matter what, by guaranteeing your valuable cultivars are protected and available whenever you need them.

### What is

### "Regenerate & Preserve"?

- "Regeneration" is the process of pathogen remediation, and "Preservation" involves the ongoing storage of clean-stock material.
- Once the process is complete, regenerated plantlets are ready for your exclusive use for future plantlet production, research, and breeding projects.
- Successful initiation into tissue culture takes between 4 and 7 months, cultivar dependent, after which cultivars can be preserved and maintained in our laboratory.

### Why is it so important?

Clonal plants through traditional vegetative propagation naturally see diminished performance over time due to inevitable pathogenic contamination that may include intracellular bacteria, fungi, viruses and viroids. This problem is nothing new in agriculture and horticulture industries. Most established clonal



crop industries, from strawberries to bamboo, have evolved to utilize plant tissue culture technologies to manage ongoing pathogen risks. This is critical to indefinitely maintaining high-value cultivars for production and breeding purposes.

## The Regenerate and Preserve Process:



#### **PATHOGEN SCREENING**

Our best-in-class quality assurance practices ensure there are no pathogens detected before plantlets are shipped to your facility. Utilizing in-house and third-party tests, Segra currently screens for a broad panel of known cannabis plant pathogens, including Hop Latent Viroid (HLVd), Hop Stunt Viroid, Tomato Bushy Stunt Virus, Beet Curly Top Virus, *Botrytis cinerea*, *Phytophthora infestans*, *Sclerotinia sclerotiorum*, *Fusarium oxysporum*.

#### **DNA FINGERPRINTING**

Our DNA Fingerprinting technology allows for extensive internal auditing of plant batches to minimize any risks of cultivars getting mixed up in production. Every cultivar submitted to Segra is fingerprinted upon arrival and assigned a unique "Variety Identification Code" to identify the specific cultivar. Additionally, every order shipped from our facilities is fingerprinted to ensure the correct cultivar is provided to the client every time.

#### **APICAL MERISTEM INITIATION**

True apical meristems are extracted from a mother plant. This process offers the highest probability of pathogen remediation, as the true apical meristem is essentially "floating" and is not attached to the plant's vascular system. This means that plantlets regenerated from meristem are insulated from pathogen contamination, including viruses and viroids. This process takes from 4-7 months, depending on the cultivar.

Segra's preservation services allow for the preservation of cultivars in our secure laboratory environment indefinitely. Off-site storage provides the grower with ultimate peace of mind that clean-stock material can be called into production at any time. Segra maintains a minimum of 50 aseptic "shootlets" for any cultivar in this program. Access is provided to Segra's online dashboard containing real-time updates on your R&P cultivars.

Some cultivars may experience somaclonal variation in the tissue culture process. This occurs when slight mutations happen under the in vitro environment. If somaclonal variation is detected, the grower has the option for Segra to re-initiate the cultivar. This process involves growing a vegetative plant from a tissue culture plantlet and repeating the initiation process.

# What is "Verified Segra Stock™"?

## IDENTITY GUARANTEED

Segra creates a unique "Certificate of Genetic Identity" and a "Variety Identification Code" for each specific cultivar we service. This code helps to confirm cultivar identity across the supply chain.



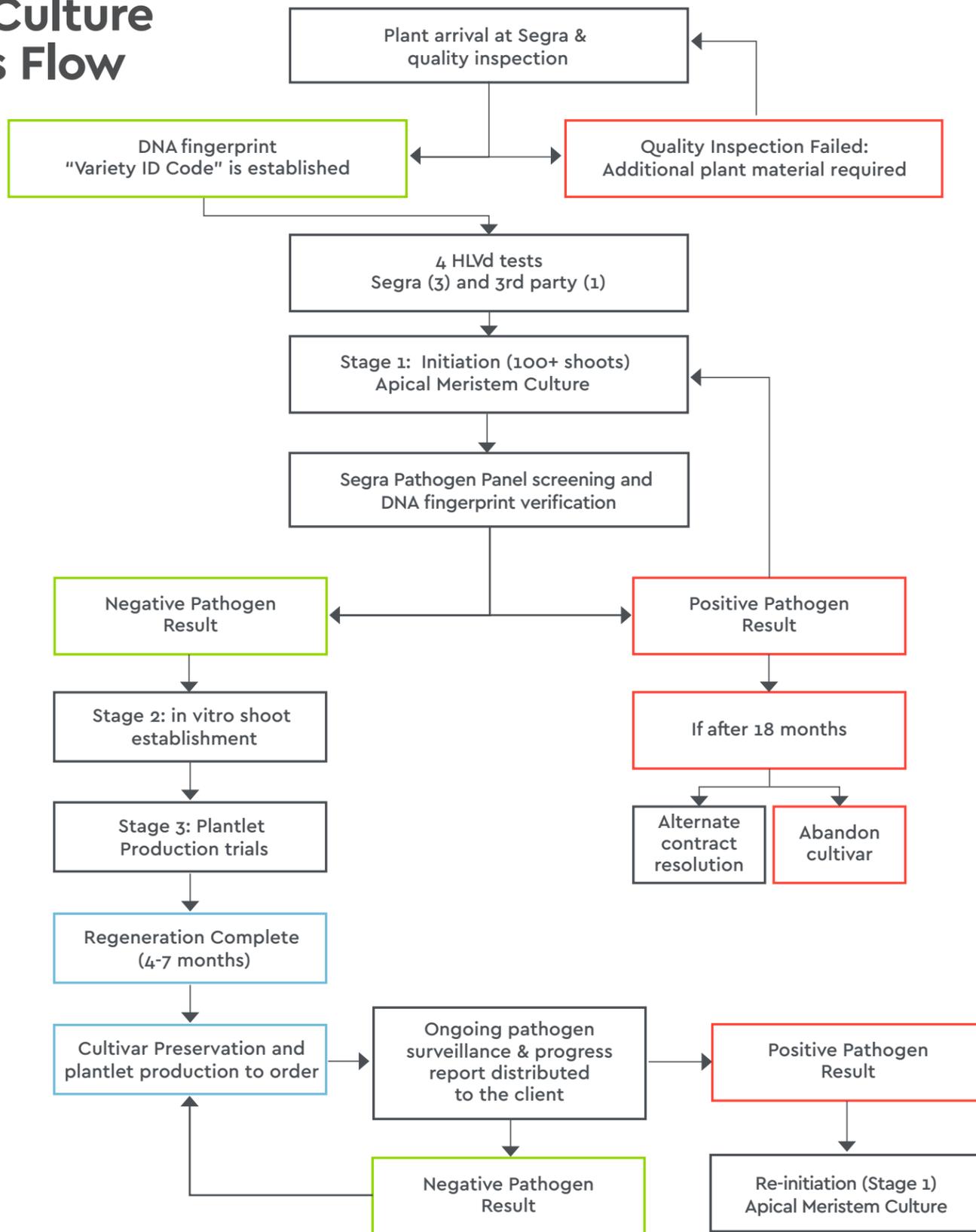
## PATHOGEN TESTING

Segra's quality control systems feature best in class pathogen detection for an ever-expanding panel of known Cannabis viruses, viroids, and diseases leveraging both internal and external lab testing. The current in-house Segra pathogen panel includes:

- Hop Latent Viroid
- Beet Curly Top Virus
- Hop Stunt Viroid
- Tomato Bushy Stunt Virus
- *Botrytis cinerea*
- *Phytophthora infestans*
- *Sclerotinia sclerotiorum*
- *Fusarium oxysporum*

## Segra's Tissue Culture Process Flow

(Version 3.0)



## Getting started is simple. Here's how.

Stay ahead of wide-spread pathogen contamination and always have **Verified Segra Stock™** backup stock ready to go when you need it most.

- If you have a 2-3-month-old vegetative plant, Segra can accept it to get the process started.
- The process of regenerating your prized cultivars can take anywhere from 4-7 months.

If you're looking to reinvigorate core production cultivars and safely store your valuable IP, reach out to [info@segra-intl.com](mailto:info@segra-intl.com) for more information on how to get started.