



Avoiding the Pitfalls of growing a new Crop

Hemp - Boom or Bust

**Genetics Selection, Growing Best Practices
& the Evolving Industry Landscape**

**Hosted by: Harris Seed
Presented by: ClearSafe Labs**





Who is ClearSafe Labs?



Daniel Strack
Chief Executive Officer

Former Managing Director with Goldman Sachs and passionate small business advocate helping to advise, finance, build and run start-ups both in and out of financial services. Innovative change catalyst, with 20+ year record of organizing, consolidating, reengineering, and adapting systems and teams to respond to ever-changing market environment. Rare combination of experience building and running businesses supplemented by technology background resulting in a professional with deep understanding of back, middle, and front office complexities, the evolution of market structure, as well as the ability to understand and anticipate clients' needs and challenges and translate them into actionable strategies





Who is ClearSafe Labs?



Fred Ardehali

President, Chief Strategy Officer

Seasoned professional, serial entrepreneur with over 35 years experience at running small to medium size businesses and over 25 years growing cannabis. AS CEO of Integrity First Group he brings the vast experience acquired from financing, manufacturing, import /export, marketing and distribution of various food products from North, Central and South America as well as the Caribbean (the Americas Region) of agricultural and food products. Fred brings these unique skillsets and experience to the table to the benefit of Clear Safe group of companies and their investors.





Who is ClearSafe Labs?



Colby Riggle
Head of Cultivation

Nearly 2 decades in the cannabis space including consulting, cultivation, and extraction. A few entrepreneurial endeavors on the side, Colby Riggle is a true cannabis industry expert. Cannabis has brought me to over 20 different countries to speak with pharmaceutical companies, doctors, scientists, and governments regarding the potential behind this incredible plant. As head of cultivation for Clearsafe Greenhouses, we've put in place a world class genetics and cloning operation to serve the needs of New York State. We'll be testing and creating new varieties perpetually and we have some amazing developments coming down the line.





Importance of Genetics

Bad Genetics will make a good farmer look bad...

Good Genetics will make a bad farmer look AMAZING!



How you pick your genetics depends on your **end product**, your **environment**, your **method** and federal and state regulations

- Hot/Dry?
- Cold/Wet?
- Tall/Stout?
- Relevant pests in your area?

End Product & Scale

Genetics also depend on your end product...
and scale

- **CBD**
- **Fiber**
- **Grain**
- **Genetics**
- **Flower**
- **Biomass**





Genetics Provider Selection

- **Hemp is a new and evolving business with very few real experts**
- **Are they from a similar climate?**
- **Are they reputable?**
- **What benefits/guarantees do they offer?**
 - Germination Rate
 - Quality/Yield
 - Guidance/Customer Service
- **What do they do when things don't go according to plan?**

Agricultural Scale

- Whether growing one or 100 acres, you'll need knowledgeable labor.
- Hemp grows fast and some common genetics can require supports to avoid breaking under its own weight.
- Other varieties allow for total mechanization. Hemp can grow like bamboo when its being grown for seed or fiber.
- For oil and flower it is typical to have 1,000 – 1,600 plants per acre.
- For sewn seed you typically plant 400,000 per acre.





Seed Choices



Feminized

- Less loss
- No males, no seeds
- Hunting males & unstable traits
- Proper production techniques matter
- Best Feminized seeds have one male in one thousand plants.

Mixed Regular Seeds

- Factors time & experience
- Genetic stability?
- More Risk, Potential Genetic Rewards.
- More typically for smaller scale and breeding



Auto - Flower



- Potential for multiple harvests, depending on your desired end product.
- Allows for both flexible planting & harvest scheduling.
- Inexperienced growers will be able to dabble in larger scale grows
- Inherent Risk for Large Scale
- Once cannabinoid specific strains are further developed, auto-flower genetics will open large scale ag.



Flower

- **Terpene Profiles**
- **Cannabinoids**
- **Structure / Density**
- **Popular Strains**
- **Potency Profile**
- **Additional Testing**
- **Microbials, Impurities, Heavy Metals, Pesticides**

Bio Mass

Striking Oil

- Where % of and variety of cannabinoids and yield can determine harvest methods
- Harvest Methodologies
- Scale
- Industry Rule of Thumb: 700 lbs per acre
- Storage, Storage, Storage!
- Plan Ahead! Have a Strategy.



Growing **Best Practices**



Once you have selected genetics there are a number of best practices to help in keeping up with and maintaining healthy plants during the growing process.

Seeds or Clones depends on a number of critical points

- #1 Scale!
- Climate/length of season
- Do you know what you are getting? **TRUST but VERIFY**
- End Product





Seed vs Clones



Depends on a number of critical points

- Scale!
- Method
- Do you know what you are getting?
- WHO did you get them from?

Clones

- Easier to verify
- When starting out some growers prefer clones to skip germination state.
- Can be preferential if getting a late start, can be grown to size indoor/greenhouse
- Biggest advantage, if done right, is a guarantee to be female.

Seeds vs Clones

Seeds

- Right decision for outdoor grow
- Clones do not possess a “tap root”
 - Less likely to get top heavy and fall over due to tap root
- Higher probability of growing symmetrically
- Tend to do better during water shortages
- More vigorous initial growth
- Often more resistant to pests and mold

Ultimately it is preference but following factors need to be weighed

- Indoor vs Outdoor
- Size
- Timing (do you have a late start?)
- Budget
- Experience
- Labor (Do you have the personnel to hunt males and unstable genetics?)
- Environment (High winds favor seed)

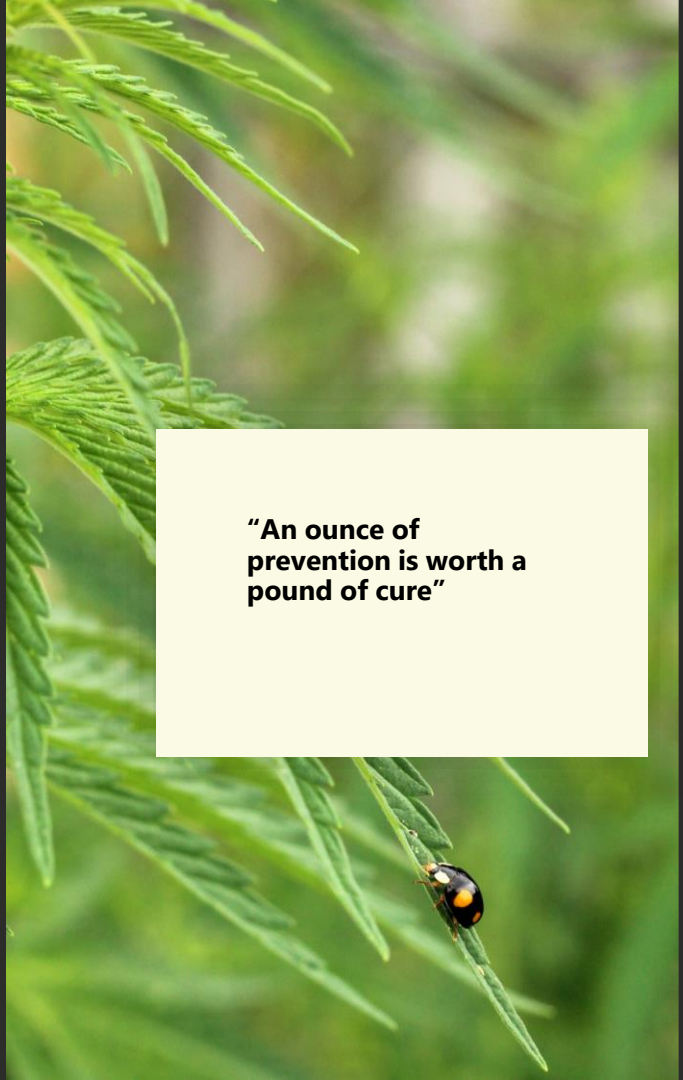


Male / Female Plant Identification



At the beginning it is harder to spot plant sex and depending on genetics that can get even harder. However this is one of the most important things for producing a higher end product when going for flower. It's also important when going for high commercial biomass.





Integrated Pest Management (IPM)



“An ounce of prevention is worth a pound of cure”

Cycling – You need to change it up

**Spraying Techniques –
Need to get under leaves**

Beneficial insects and microbes are important



Seed Starting

There are multiple techniques from soaking in a napkin, planting directly into trays, pot or the ground. Some like to use rockwool for sterility. For those that do small scale with a napkin, please keep in mind that not all napkins are created equal. Watch out for chemicals! Whichever technique you decide we recommend a "pre-soak". Dunk the seeds for 12-24 hours in a solution, preferably distilled water and a small amount of hydrogen peroxide (ZeroTol). Many of the seeds will sink to the bottom. You may have to stir to get the hold outs to drop. Look for the white tips when the seeds crack - they are ready. If you are using many mechanized seeders you may have to be careful not to over soak.

Seed Starting Supplies & Equipment

Quality healthy seedlings are essential for getting your crop off to a good start. To provide the best conditions for germination and the seedling stages, supplemental heat and light should be used. There are also several other supplies that will help in the success of your seed starting, but some of the key items to consider.





Heat Mats or Supplemental Bottom Heating

Proper Soil

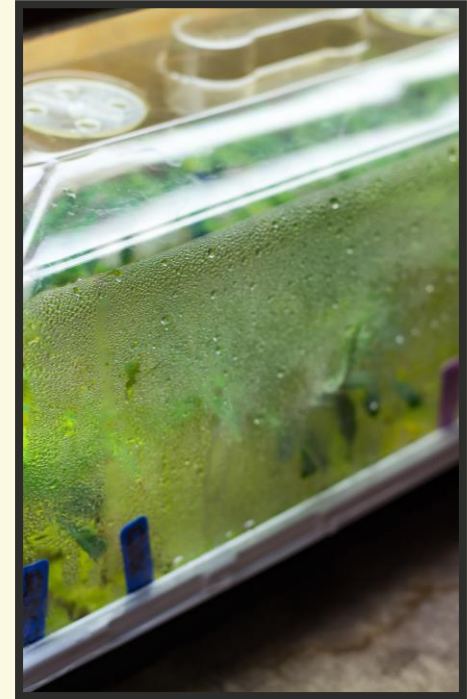
The main reason many people are unsuccessful in starting seed is they are not providing proper soil temperature. The proper temperature for germinating most hemp seeds is 78° F (25° C). While some growers think their seed starting area is warm enough, they fail to realize that soil temperature tends to run approximately 5°F lower than air temperature. This is because evaporation at the soil surface cools the soil temperature. To achieve the necessary soil temperatures for proper seed germination, one should provide additional controlled bottom heat. The germination area should include heat mats, heat cables, or another method of even applying bottom heat, and soil temperatures should be kept constant with little variation over the germination period. Drops in soil temperature during nighttime hours can cause lower germination rates and a prolonged germination period.

Seed Trays Flats & Domes



Good Material Selection

Starting your seed or clone in the proper container is very important. Hemp seed can be started in Jiffy pellets, Jiffy pots and 50 to 128 cell plug trays. These medium to large cells allow your transplants to grow to a healthy size for transplanting directly into the final container, or directly in the field which can save of time and labor. Covering your seedling flats with a dome helps with both heat and moisture retention, but it is important to remove the domes periodically throughout the day to ensure the seedlings receive proper air flow around them.



Clone Machines



Clone Machines are a great way to start your clones.

- Higher Clone Success Rate
- Increases Root Growth Speed
- Sterile Environment
- Helps Develop Consistency
- Increase Automation Level

Soil & Media

Selection

Rockwool, Oasis Cubes, Jiffy pellets and traditional seed starting soils can all be used when germinating your hemp seeds. It is important to make sure you use a reliable sterile seed starting mix. Heavy potting soils can retain too much moisture and may contain larger pieces of media that make rooting more difficult. While seeds and seedlings should be kept consistently moist, beware of overwatering which can cause problems such as root rot, or promote disease issues like damping off.



Grow Lights

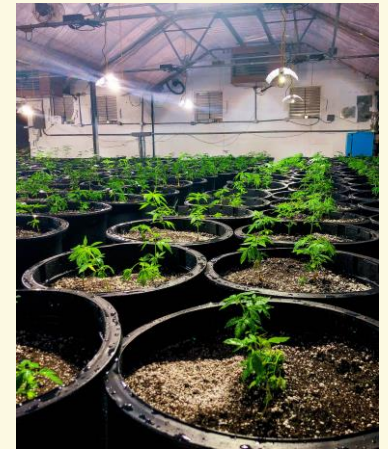
Let there Be Light

Light is the next key element to achieving healthy seedlings. Hemp seedlings require a significant amount of light; most strains need at a minimum 18 hours of light while in the seeding stage. These short nights will keep the cannabis seedlings in the vegetative stage. Even for auto-flowering strains of cannabis, which will go through a normal life cycle no matter what light schedule is provided, seedlings need proper lighting in the seedling stage to prevent stretched growth and getting leggy. Lights should be placed very close to each flat, approximately 1-1/2 or 2 inches from the plants. The close proximity of the light ensures that the plants stay healthy and stocky and will not stretch toward the light.



Regulatory Update

- MRTA – Marijuana Regulation and Taxation Act
- CRTA – Cannabis Regulation and Tax Act
- Tax Implications
- Distribution & Vertical Integration Limits
- Flower Ban / Legal Suit
- NASDA 0.3% vs 1% THC Hemp Rule
- NY Adult Use seems imminent
- NYCGPA – Industry Involvement
- Final impasse centers not on licensing, sales or taxes, but on impaired driving





Q & A

Ask Us Anything. We are Here to Help.



Contact Us



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Thank
You

