

GROWING AND PROCESSING CANNABIS

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PROPAGATION : WHERE IT ALL BEGINS



HYDROPONIC MEDIUM

- Coco Coir
 - Made from coconut husk
 - Optimal water retention
- Rockwool
 - Made from molten rock spun into a bundles
 - Lower labor costs
- Clay pellets
 - Made from clay
 - Very little retention enables more complete control

STAGE 2 : VEGATATIVE GROWTH



VEGATATIVE LIGHTING

- Ceramic Metal Halide
 - Efficient
 - Low heat output
- T5 Flourescent
 - Low power output
 - Low heat output
- LED
 - Optimal spectrum
 - Low heat output

FLOWERING



DOUBLE ENDED HPS



- Excellent production
- Red spectrum great for THC production
- Creates heat
- Excess heat must be counteracted with HVAC

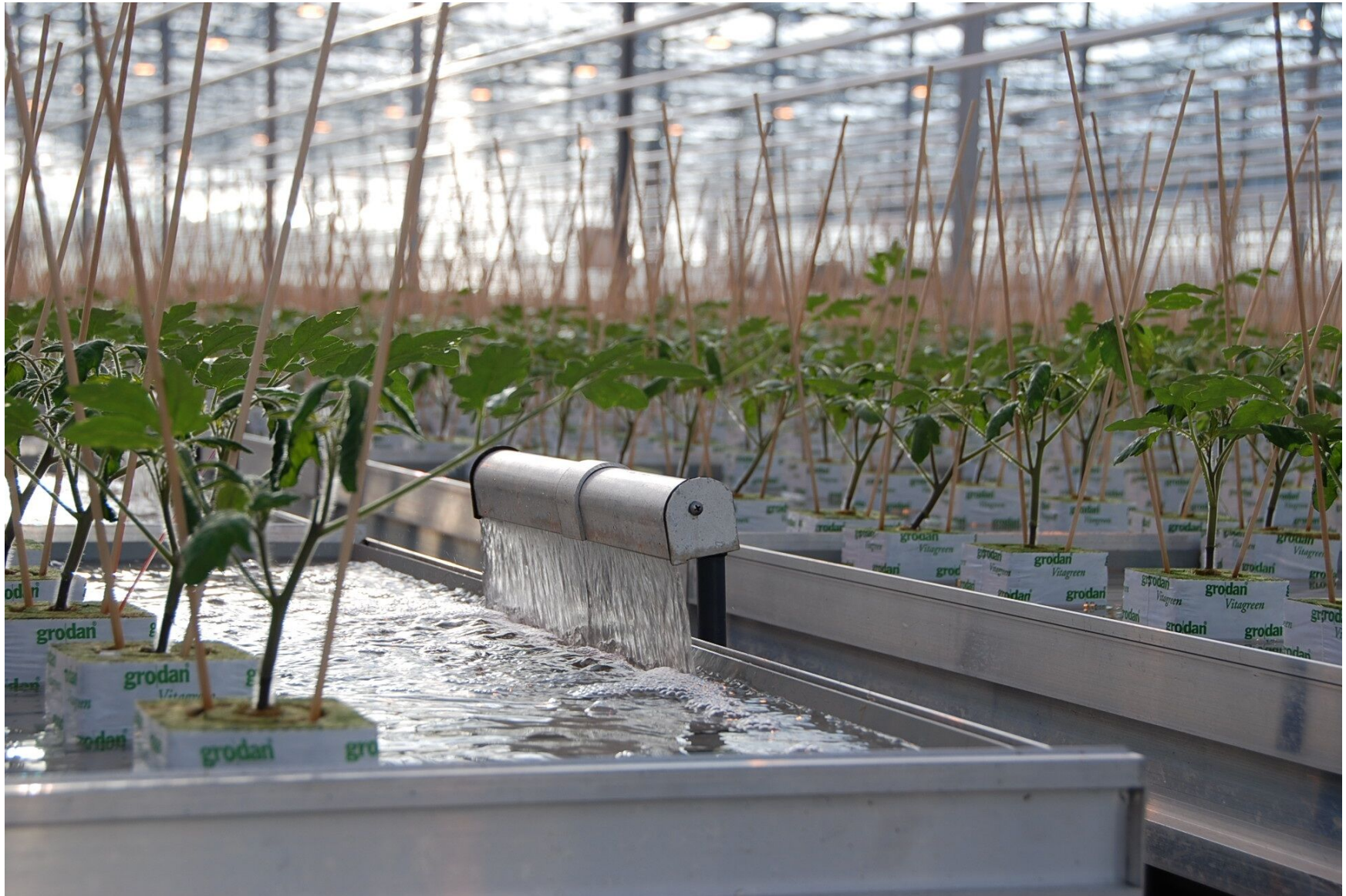
FLOWER LIGHTING

LED LIGHTING



- Optimal spectrum
- Efficiency
- No heat
 - Air cooled
 - Water cooled
- Not proven for cannabis

FLOOD AND DRAIN



TOP DRIP



TRIM



SATIVA



INDICA



- Longer flowering time
- More energetic

- Shorter flowering time
- Larger, denser flower

OUTDOOR CULTIVATION



GREENHOUSE CULTIVATION



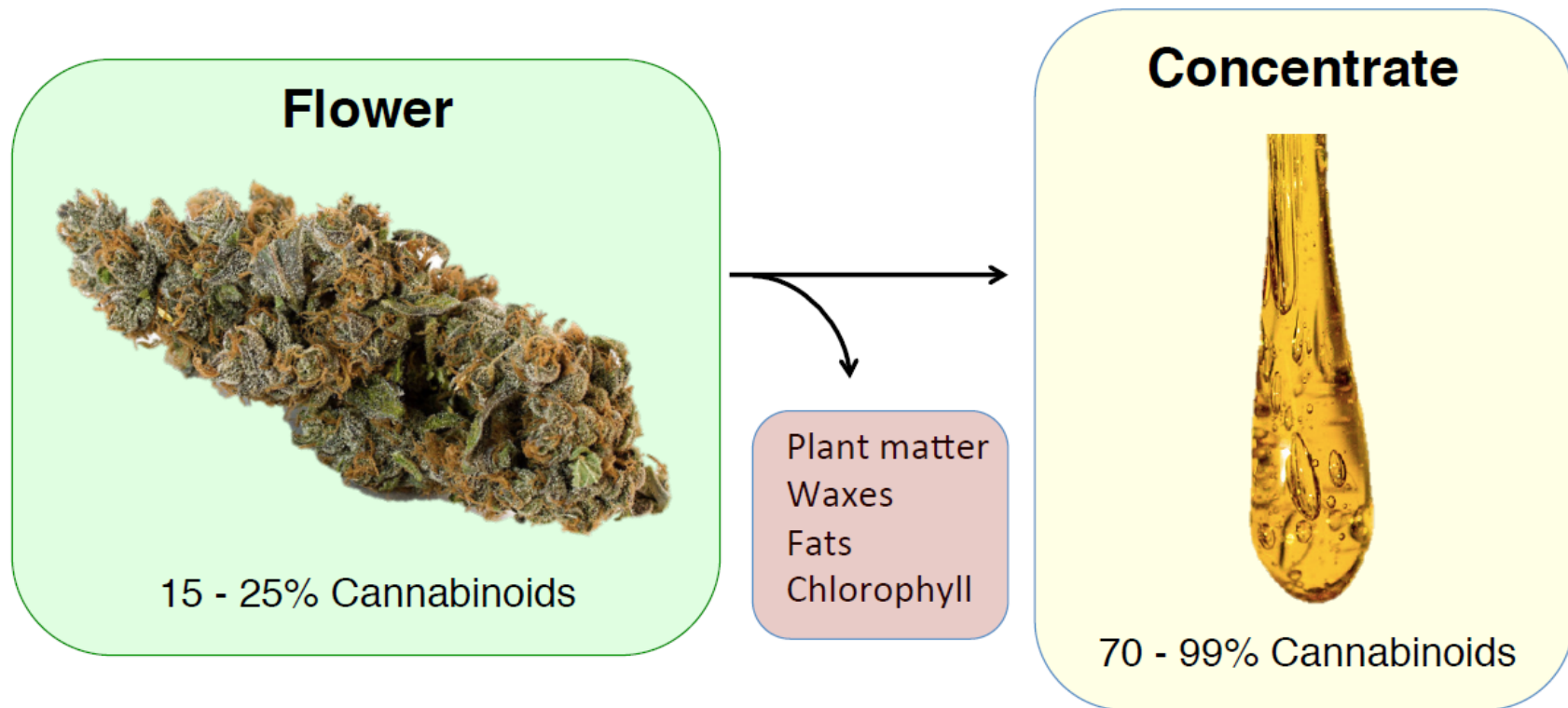
INDOOR CULTIVATION



CARBON FOOTPRINT

- Cogen
 - Producing power locally using natural gas/propane
 - Reusing heat produced
 - Utilizing CO₂ produced
- Renewable Energy
 - Solar power
 - Wind power
- Recirculating irrigation systems
- Water catchment
- Cutting power use
 - LED lighting
 - Water chilled HVAC

PROCESSING FLOWERS TO CONCENTRATE: EXTRACTION AND ENRICHMENT



The processes of extraction and enrichment removes impurities and creates a more concentrated and versatile product.

CONCENTRATES

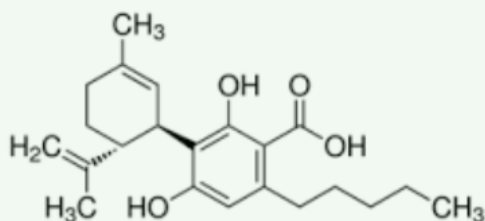
- Fastest growing segment of the market
 - Outpacing flowers and edibles in 2016
 - 125% growth in Colorado
 - 60% growth in Washington state
- New York, Minnesota and Pennsylvania strictly concentrates

- Discreet
- Potent
- Versatile



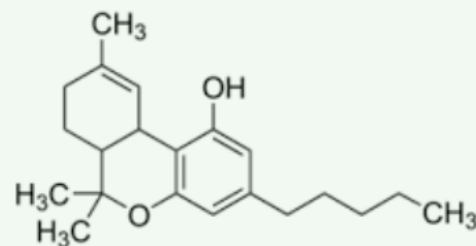
CHEMISTRY

Cannabinoids- Over 70 found in Cannabis, biologically active



THC

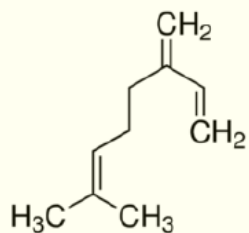
Psychoactive, analgesic, sedative, anti-inflammatory, appetite stimulant



CBD

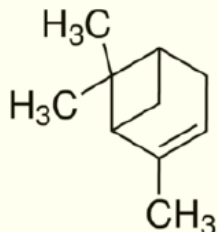
Non-psychoactive, anti-inflammatory, analgesic, anticonvulsant

Terpenes- Aromatic flavor compounds, desirable organoleptic properties



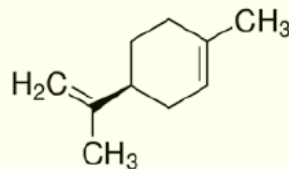
Myrcene

Earthy, Herbal, Citrus



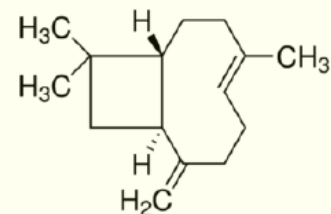
Pinene

Pine, Medicinal



Limonene

Citrus, Floral



Caryophyllene

Peppery, spicy

EXTRACTION TECHNIQUES

- **Supercritical Fluid** Solvent-less, nonhazardous
- **Butane** Terpene rich, high purity
- **Water** Solvent-less, terpene rich
- **Alcohol** Efficient, low cost
- **Distillation** Efficient, high purity, possible to preserve terpenes
- **Isolation** very high purity (97-99%)
- **Pressing Rosin** high purity, maintains terpenes

Products

Bubble Hash
Butane Hash Oil
CO2 Oil
Rick Simpson Oil
Rosin
Sha7er
Sugar
Wax
Tinctures
Sublinguals