



# Cannabis Drying

Maximise Income through Reduction of  
Terpene & Cannabinoid Loss

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# Foreword

## CANNABIS DRYING? CANNABIS CURING? BOTH? HOW?

There is very limited science available.  
The industry does not always have standardized terminology.

For the purpose of my presentation lets define:

Drying = Removal of Water (to target moisture, not zero - tangible)

Curing = Storage to allow flower to balance / mature (equilibrate - non-tangible)

I'm a nuts-and-bolts guy, not a cannabis expert. I will focus on technology and commercials.



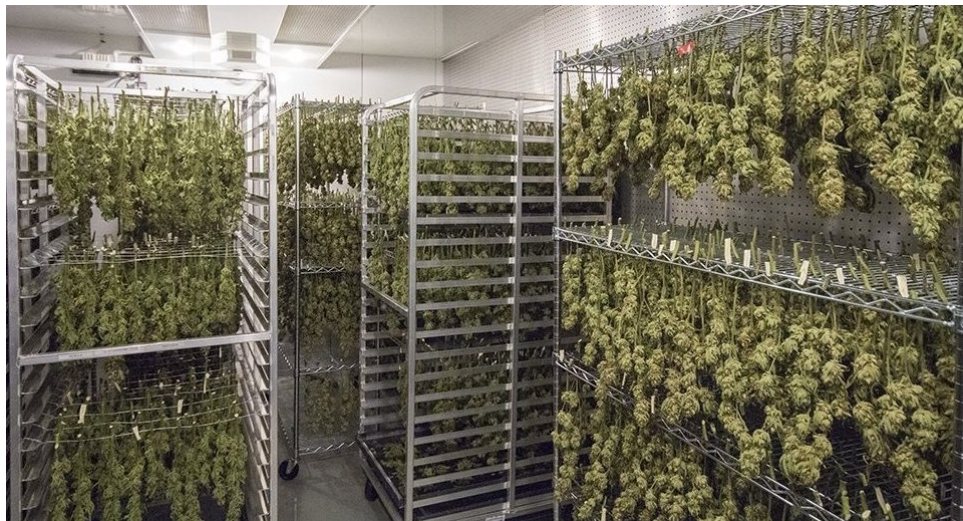
# The Challenge – Air Drying

## PAIN POINTS

- Drying Time
- Poor Residual Moisture Control
- Microbacterial Contamination
- Product Oxydisation / Degradation
- Labour Demand
- Footprint / Facility Cost

## UPSIDES

- Traditional?
- Best Product?
- Low Entry Cost



# Potential Solutions - Technology

	Air Drying	Freeze Drying	REV Drying
Drying Time	6 - 12 days	24 - 72 hours	45 min - 2.5 hours
Lowest Residual Moisture	> 5%	< 0.1%	< 2%
Residual Moisture Control	-	-	++
Micro Growth Risk	-	++	++
Micro Remediation	-	--	++
Oxidation	-	++	+
Cannabinoid Content	-	++	++
Terpene Content	-	+	++
Natural Drying Shrink	++	-	+
Terpene Recovery	-	++	++
Minimum Investment (20t annually, GMP)	300K	>1M	800K
Energy Consumption	-	--	+
Service Cost	++	--	+
Labour Cost	--	+	+

# Potential Solutions - Technology

## Freeze (Vacuum) Drying



## Radiant Energy (Vacuum) Drying



Frozen	Product State	Fresh or Frozen
< - 20C	Product Temperature	30 - 60C
< 0.01 mbar	Vacuum	30 mbar
< - 50C	Condenser Temperature	10C



## THE MICROWAVE ADVANTAGE

- Very fast
- Volumetric heating – unmatched uniformity
- Precise temperature and process control
- Efficient energy transfer at 85-90%
- Reduced energy requirements





# What matters - Money

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## REVENUE – SPEED TO MARKET

Cut 6-12 day drying to <2 hours.

## PROFIT – CANNABINOID & TERPENE RETENTION

Retain 20% more terpenes and 25% more cannabinoids (CBD, THC).

## COST – REDUCED FOOTPRINT

Up to 80% less space than comparable drying room capacity.

## COST – REDUCED LABOUR

Typical <50% compared to hang drying.

## COST – PREVENT IRRADIATION

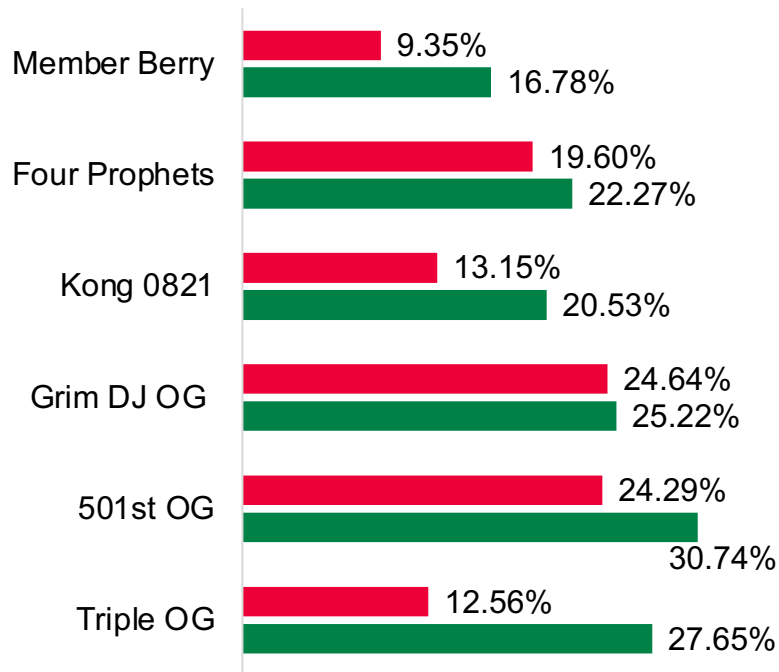
Avoid irradiation logistics, time and cost.



# Dry Potency Results

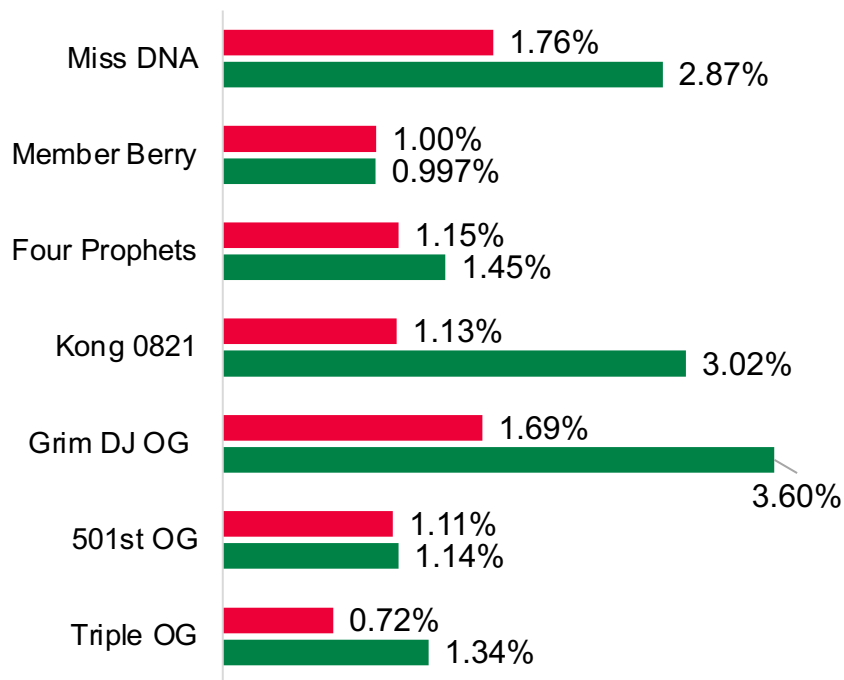
## Cannabinoid

■ HD ■ REV



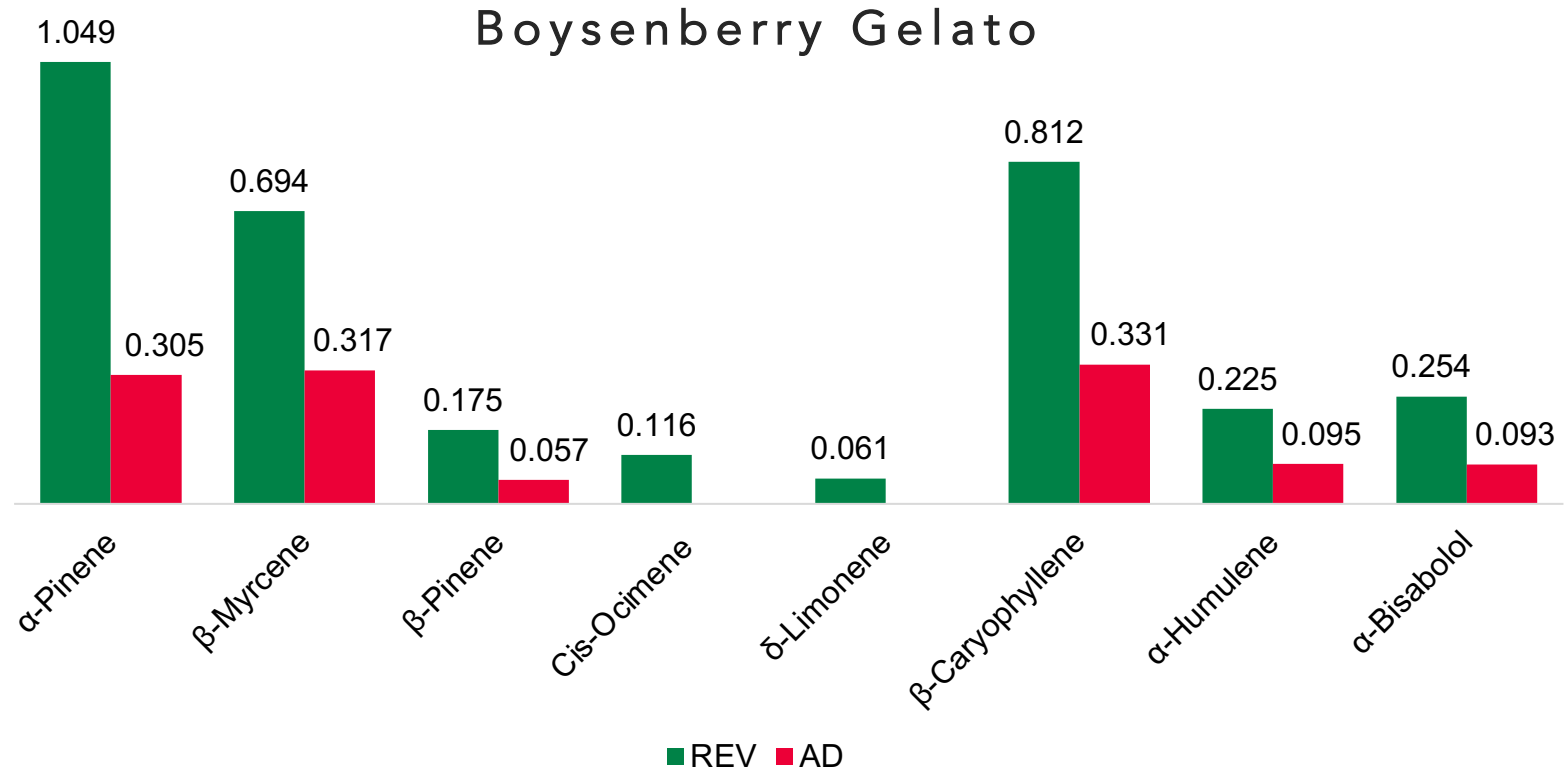
## Terpenes

■ HD ■ REV

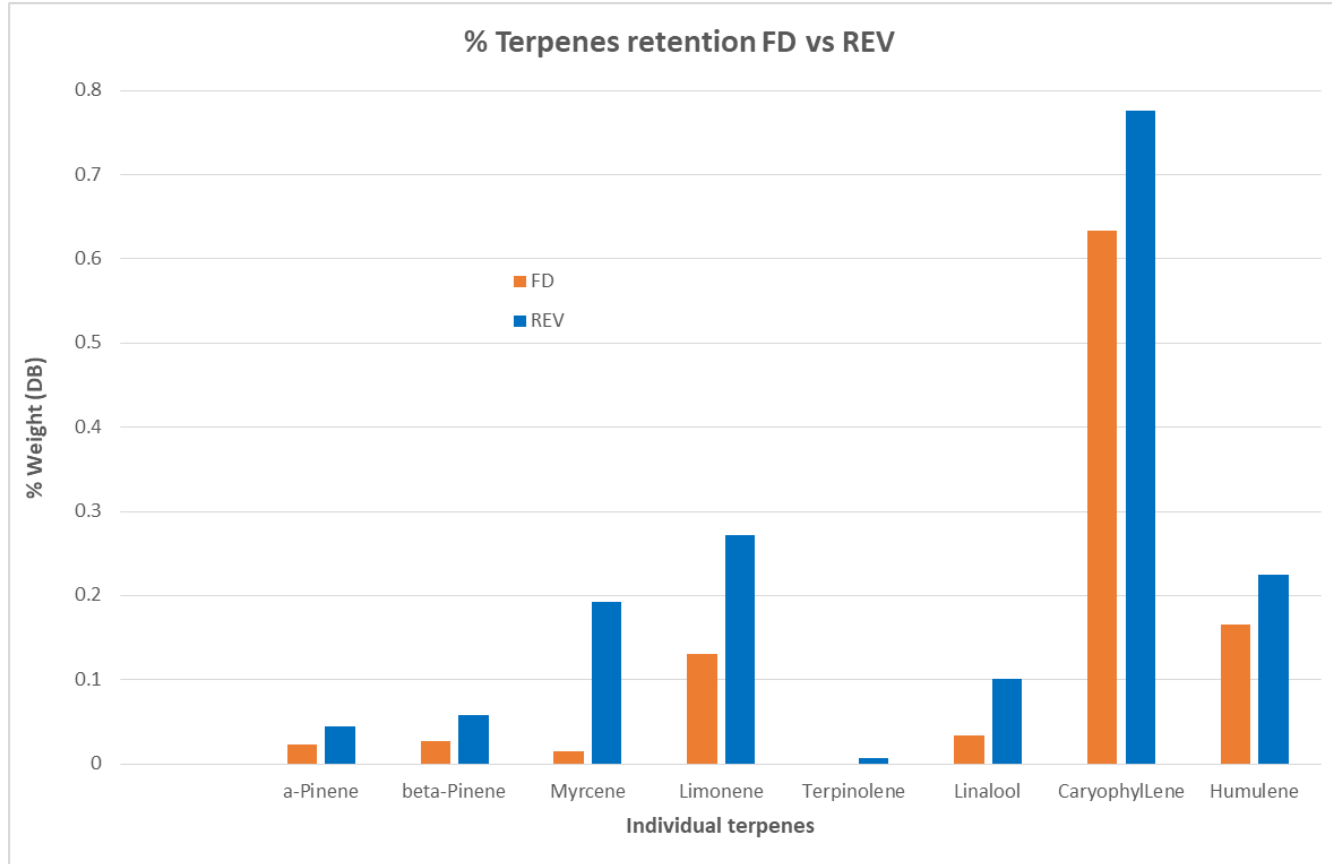




# Dry Terpene Results



# Terpene Results FD vs REV

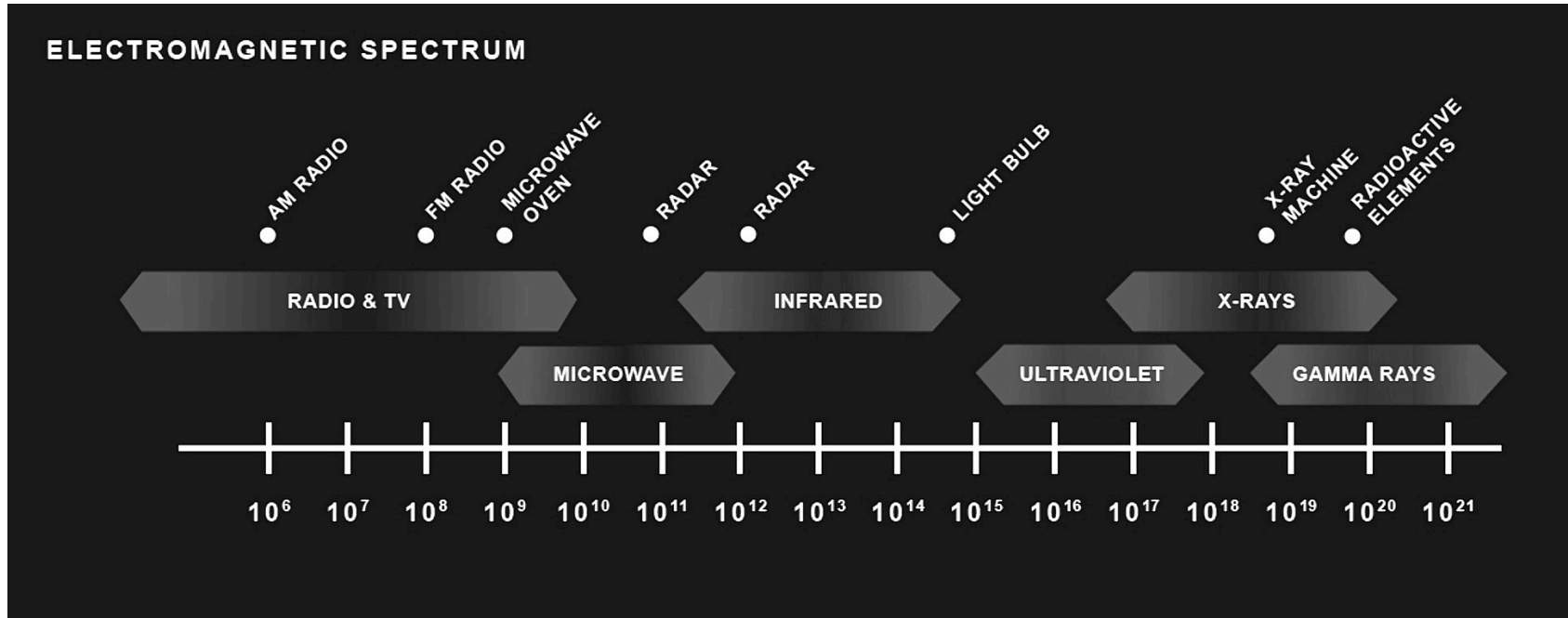


# REV Bioburden Reduction



# Microwave Safety

- Microwaves are non-ionizing radiation which is benign and does not damage flower integrity
- Microwaves are permissible in processing organic certified materials
- Cannabis irradiation is typically done with high energy X-ray or gamma rays



# Thank you!

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