



**YAKIMA
CHIEF
- HOPS -**



DRY HOPPING TECHNIQUES

ALÍ MORALES, CERVECERÍA PRINCIPIA

ERNESTO MORA, CASA CERVECERA MORENOS

JESÚS GUEVARA, CERVECERA CYPREZ

RODRIGO PLANCARTE, YAKIMA CHIEF HOPS



HOP COMPOUNDS

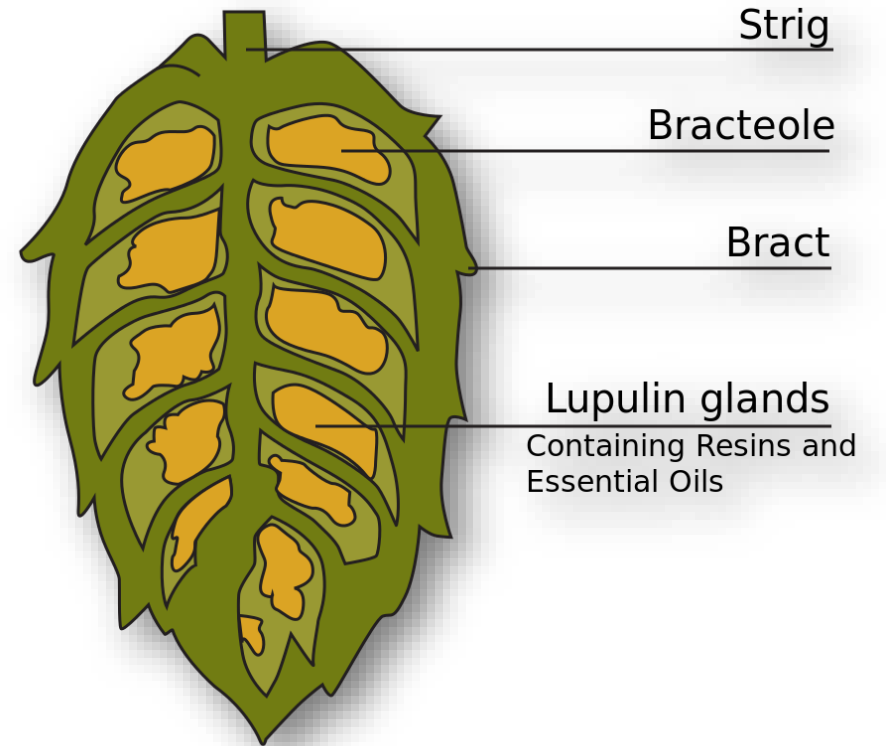
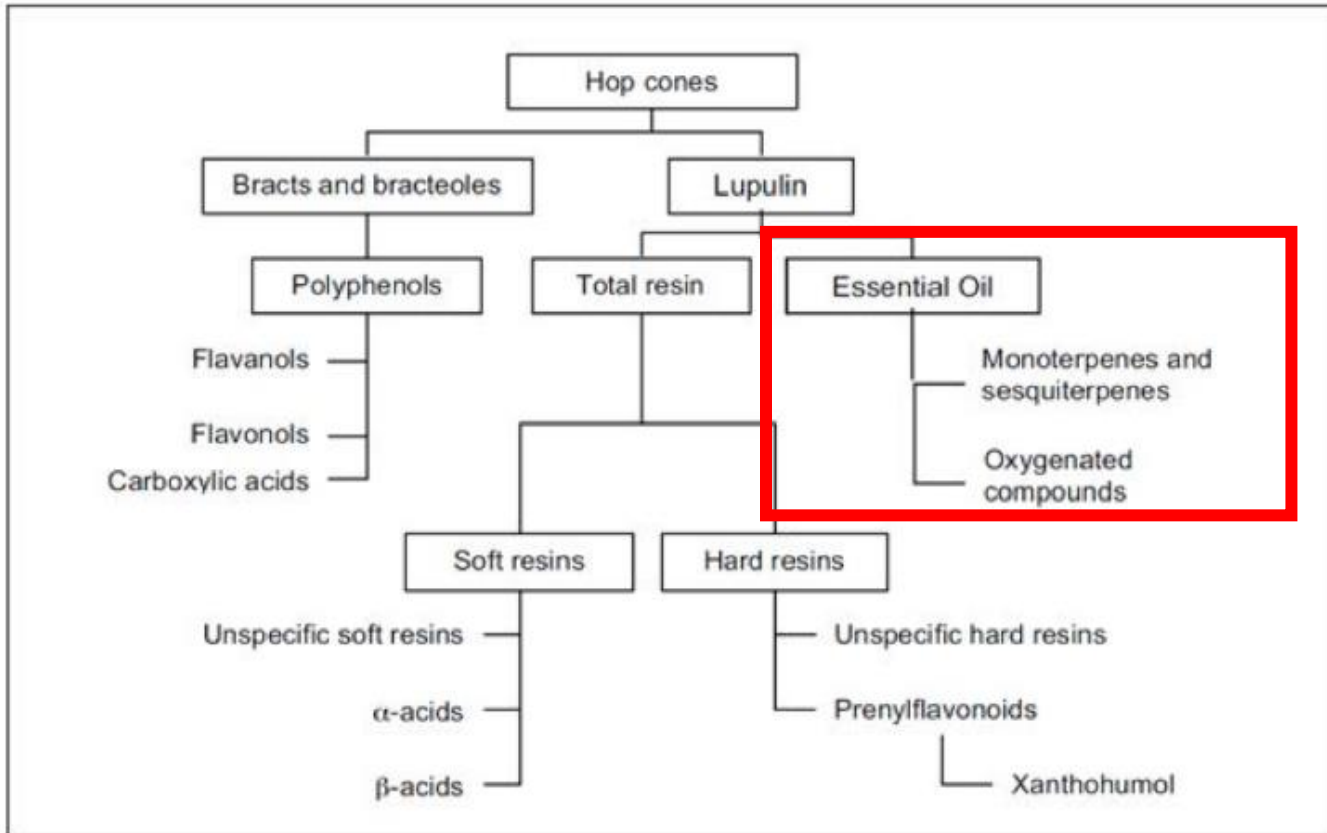


Figure 4: Classification of the most important secondary metabolites in hops

PRESENTATION

	Product	Function	Addition Point
Not isomerized	Leaf	Bitterness/Aroma	B.H., Fermentation and maturation
	Pellet T-90	Bitterness/Aroma	B.H., Fermentation and maturation
	CO2 Extract	Bitterness	B.H.
Isomerized Extract	IKE	Bitterness	B.H.
	ISO	Bitterness	B.H.
Hop Aroma	Essential Oils	Aroma	Kettle



ADDITION OF AROMAS IN A HOT PART

- Mainly in Whirlpool.
- The profile will be obtained depending on the temperature.
 - 95 °C, with greater extraction, you will get citrus, spice and ester notes.
 - 85 °C, you will get more herbal and floral notes.
 - 75 °C, with less extraction, mainly woody notes.

DRY HOPPING

- Addition of post-fermentation hops (cold side)
- Objective: Extract more essential oils.
- Avoid oxygen introduction during the process.
- Make the process more efficient with:
 - Time
 - Temperature
 - Contact Area
 - Agitation
 - Multiple additions
 - Concentrations



TIMES AND TEMPERATURES

At the end of primary fermentation or two days before it is over

1 - 3 days of dry hopping

Temperatures

>15 °C



10 °C – 15 °C

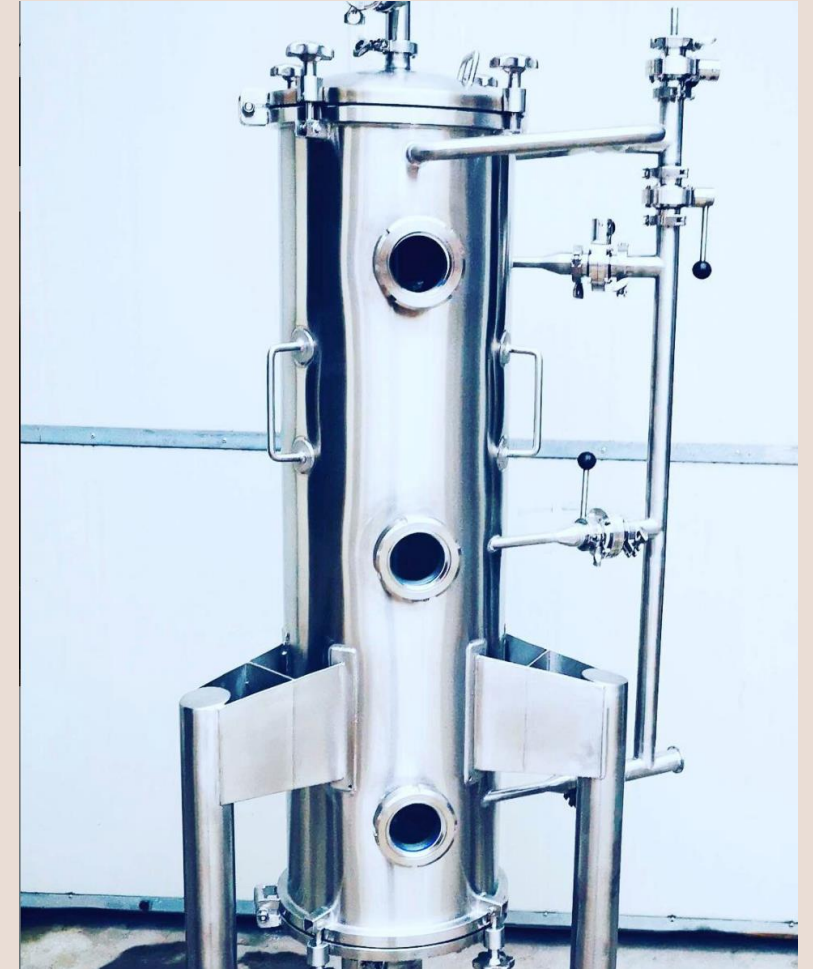


< 10 °C



HOP ADDITION EQUIPMENT

- Hop Cannon
- Hop Slurry
- Hop Torpedo
- Hop Back



VARIETIES

- AMERICAN
- AUSTRALIAN
- NEW ZEALAND
- EUROPEAN



- Focus on component retention
- High monoterpenes in early DH
 - Ie. Linalool: the beer process survives more
 - Blends for diverse flavors/aromas
- Don't focus on sesquiterpenes
- Very volatile compounds.



RATES OF HOPS AND HOP FORMATS

- DH Lager
- Pale Ale
- IPA (West Coast)
- NEIPA
- ETC.....

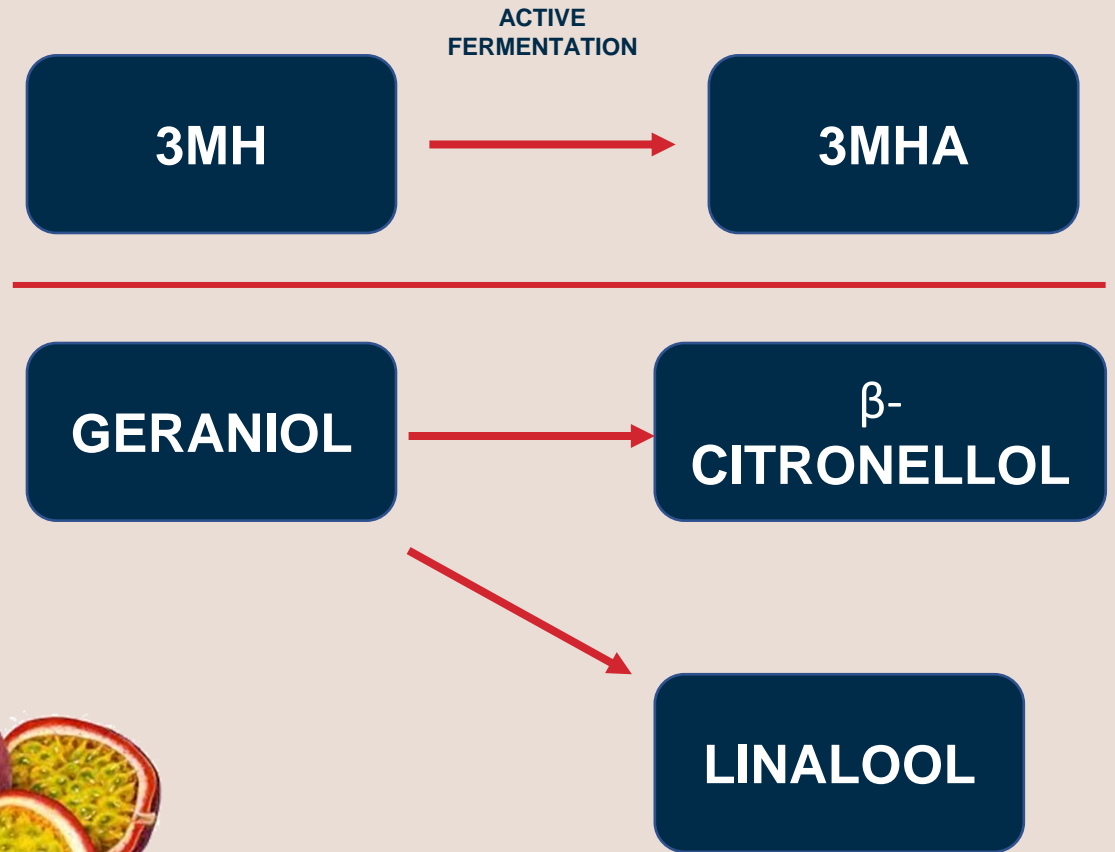
Efficiency

Cryo Hops® vs T-90



BIOTRANSFORMATION

- "... interaction of a hop compound and *Saccharomyces* spp., which results in a new aromatic component through an enzymatic reaction (hydrolysis)"
- Potentialize certain aromas



MAINTAIN AROMA QUALITY

- Proper storage
- Sealed packaging
- Maintain at 0-5°C
 - Take care of the HSI (Hop Storage Index)
 - Yakima Chief Hops Averages .260
 - Good HSI. ≠ Aroma of Quality
 - The aroma quality is maintained with good HSI



CONTACT INFORMATION



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FROM THE
PACIFIC NORTHWEST™

THANK YOU!