



**HOP &  
BREW  
SCHOOL**



# **HOP SENSORY TRAINING**





# AGENDA

- **Introductions**
- **Why evaluate hops?**
- **Hop Sensory Analysis Methods**
  - Traditional Hand Rub
  - Hop Grind
  - Hops in Beer
- **Hop & Beer Lexicon**
- **Interactive Sensory Exercise**





# INTRODUCTIONS

## MISSION

Our Mission is to connect family hop farms with the world's finest brewers, providing the highest quality hop products and uncompromising service for the ultimate benefit of our customers, employees and growers.

## VISION

Our Vision is to be the global hop supplier of choice, focused on sustainably produced, innovative hop products. We strive to be an environmentally and socially responsible company devoted to continuously improving our sustainable practices. We are a responsible neighbor and asset to our communities, enriching the products, businesses and lives of everyone we encounter.

## VALUES

### Passion

For people, product, planet and process

### Respect

Teamwork and collective responsibility

### Integrity

Transparency and accountability in all we do

### Dedication

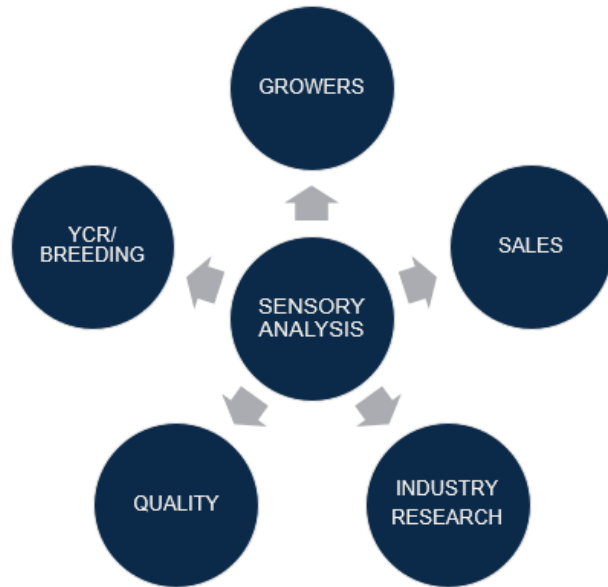
To quality and sustainability

### Excellence

An emphasis on innovation and continuous improvement



We leverage a trained, validated sensory panel to increase return to growers and value to customers through research and innovation as we position YCH as the leader in quality and science in the hop industry.

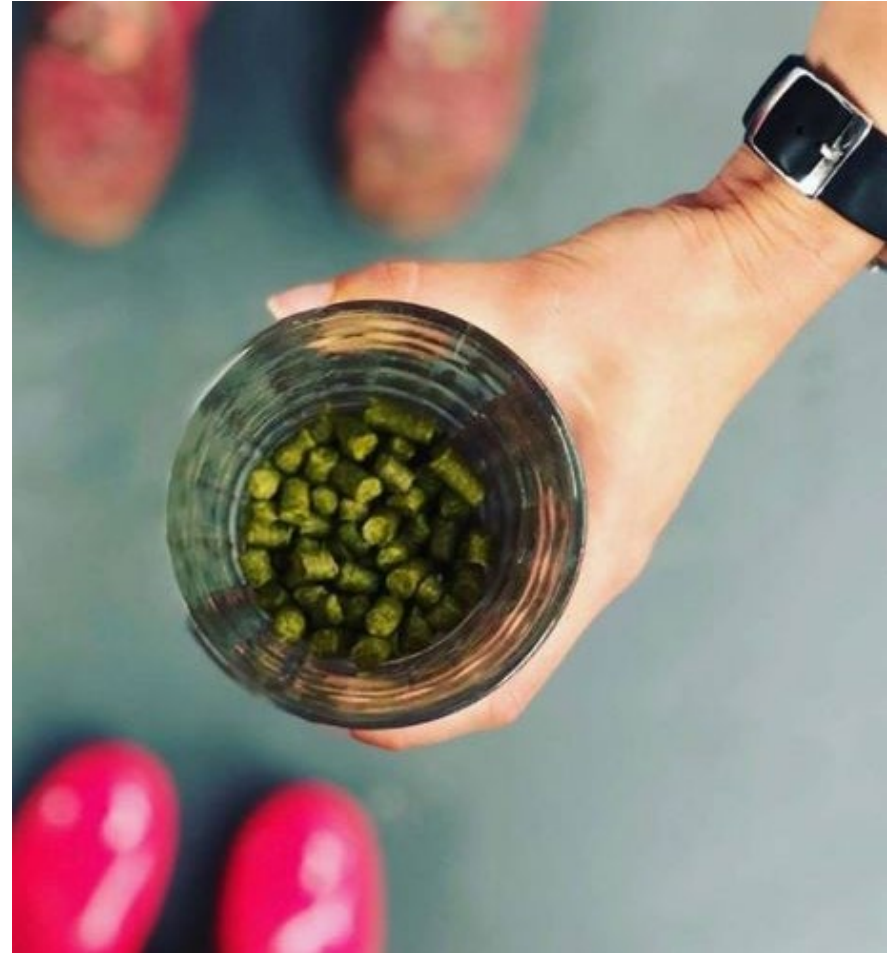




# WHY EVALUATE HOPS?

# WHY EVALUATE HOPS?

- **Quality Assurance**
  - Ensure consistency and quality of core brands
  - Improve communication with vendors
- **Recipe Development**
  - Substitutions/replacements
- **Training**
  - Educate yourself, staff, and customers
  - Prepare for hop selection
- **Variety Development**
  - Feedback to hop breeders







# HOP SENSORY ANALYSIS METHODS



# Traditional Hand Rub Method

- **Overview**

- Grab a small handful of hop cones.
- Rub the cones between your hands, slowly rupturing the lupulin glands.
- Gently fluff the cones in your hands and smell the sample.

- **Advantages**

- Considered industry standard for Hop Selection
- Requires limited sample prep
- Tactile and visual evaluation

- **Disadvantages**

- Aroma carryover
- Fatigue
- Not standardized



# ASBC Hop Grind Sensory Evaluation Method (Sensory Analysis-16)

- **Overview**

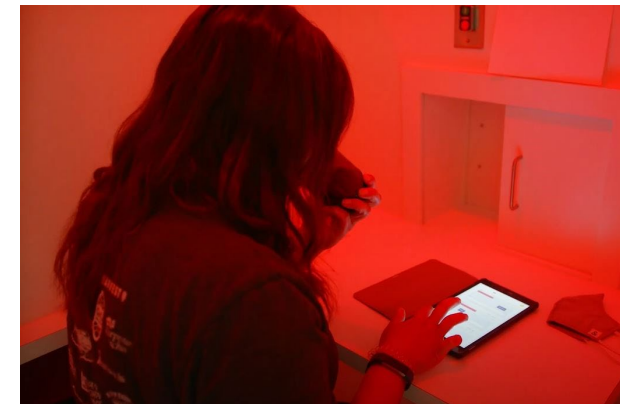
- Weigh standardized amount of hop pellets in jar or dish.
- Pour into blending cup and grind pellets for ~10 seconds until a uniform powder is achieved.
- Pour the ground sample back into the jar or dish
- Evaluate the sample for aroma characteristics within 30-60 minutes of grinding
  - Please reference ASBC Sensory Analysis-16 for more details

- **Advantages**

- Manageable sample prep
- Standardized

- **Disadvantages**

- Fatigue





# Test a Variety in Beer

- **Variety replacement in standard recipe**
  - Should be in a brand you make frequently and have demonstrated consistency
  - Brew both batches closely together so they are at similar ages when you analyze them
  - Evaluate next to the control
- **Single hop beer**
  - Standardized base recipe
  - Basic grain bill to let the hops shine
- **Split batch for dry hop trials**
  - Standardized base recipe
  - Basic grain bill to let the hops shine





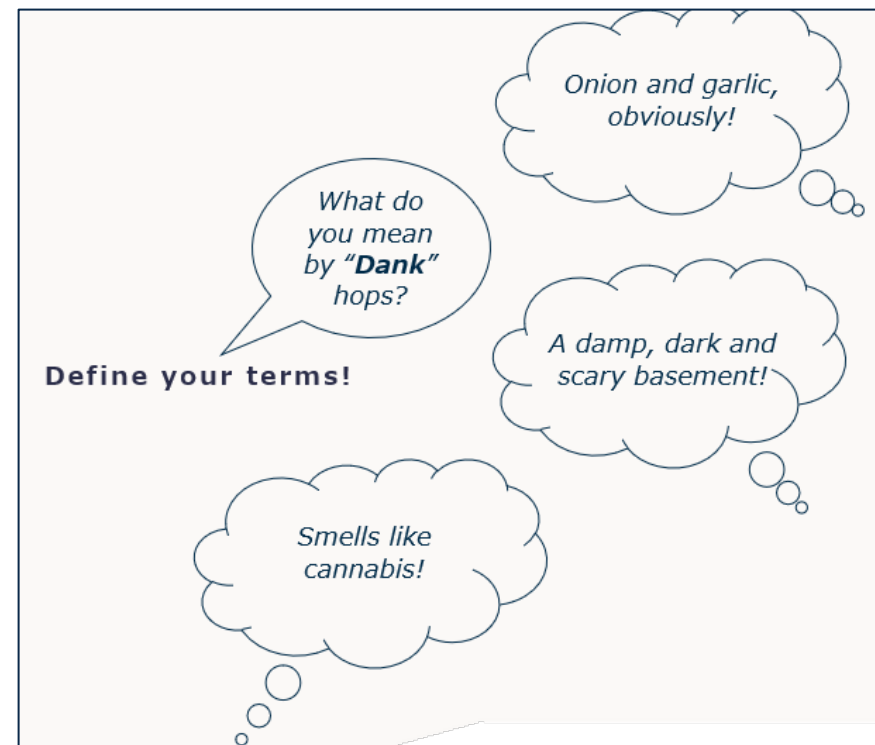
# HOP & BEER SENSORY LEXICON



# Developing a Lexicon

**Lexicon:** the vocabulary of a person, language, or branch of knowledge.

- **Best practices:**
  - Develop a lexicon based off the full range of hop varieties
  - Use *distinct, universally-understood* terms
  - Utilize reference standards for training
- **The Yakima Chief Sensory Panel utilizes a sensory lexicon very similar to the list published by American Society of Brewing Chemists to maintain alignment with the rest of the US industry.**



## AROMA



### DRIED FRUIT

Date • Dried Apricot  
Dried Fig • Raisin



### BERRY

Black Currant • Blueberry  
Grape • Raspberry • Strawberry



### STONE FRUIT

Apricot • Cherry  
Peach • Plum



### POMME

Apple • Pear



### MELON

Cantaloupe • Cucumber  
Honeydew • Watermelon



### TROPICAL

Banana • Coconut • Guava • Lychee  
Mango • Passion Fruit • Pineapple



### CITRUS

Grapefruit • Lemon  
Lemongrass • Lime • Orange



### FLORAL

Cherry Blossom • Geranium  
Jasmine • Rose • Soapy



### HERBAL

Black Tea • Dill • Green Tea  
Mint • Rosemary • Thyme



### VEGETAL

Cabbage • Celery  
Green Pepper • Tomato Plant



### GRASSY

Green Grass • Hay



### EARTHY

Barnyard • Compost • Geosmin  
Leather • Mushroom • Soil



### WOODY

Cedar • Pine • Resinous • Sawdust  
Tea Tree • Tobacco



### SPICY

Anise • Black Pepper  
Cinnamon • Clove • Ginger



### SWEET AROMATIC

Bubblegum • Caramel • Chocolate  
Creamy • Honey • Vanilla



### ONION / GARLIC

Garlic • Green Onion • Onion



### DANK

Cannabis • Skunky



### NUTTY

Almond • Peanut • Walnut



### BREADY

Biscuit • Dough  
Graham Cracker • Oatmeal • Rye



### ROASTED

Coffee • Dark Malt



### OFF-NOTES

Burnt Rubber • Cardboard • Catty  
Cheesy • Diesel • Musty • Plastic/Waxy  
Smoky • Sulfur • Sweaty

\* Acetaldehyde • Butyric Acid  
Diacetyl • DMS • Lactic Acid  
Light Strike • Metallic

*\*Off notes occurring in beer*

## TASTE

**BITTER**

**SALT**

**SOUR**

**SWEET**

**UMAMI**

## MOUTHFEEL

**ALCOHOL**

Warming • Boozy

**ASTRINGENCY**

Drying • Grippy

**BODY**

Thickness • Fullness

**CARBONATION**

Bubble Size • Density

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# Reference Standards & Training

- **Practice makes perfect!**
  - Start with labels, then advance to blind identification tests
  - Train with a partner
  - Incorporate duplicates or dilute concentrations of standards to truly put yourself to the test
- **Look for cues, especially to distinguish between minor aromas**
  - How is lemon different from lime?
  - How is orange different from lime?
- **Informal training helps too**
  - Practice describing what you're tasting/smelling to your partner over a meal
  - "Sniffer Savvy"





# Interactive Sensory Assessment



# SAMPLE OX INSTRUCTIONS

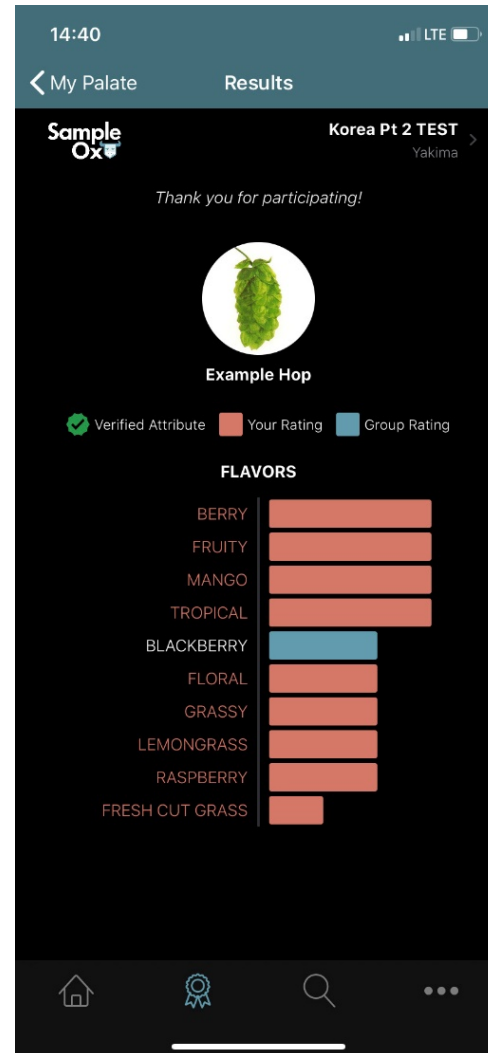
- **Log into your account.**
- **Search for the event. (Join Code: \_\_\_\_)**
- **Click the first sample to begin your analysis.**
  1. Tell us how much you like the sample.
  2. Click + next to Aroma & Taste to see a menu of general aromas.
  3. Click a general aroma that you detect.
  4. You may select specific aromas under that category if you would like. Select the “parent” aroma as well.



# REVIEW YOUR RESULTS



Click “results” at the bottom of the event page to see how your rating compares to your colleagues’!



The length of the bar represents how many people selected that aroma.

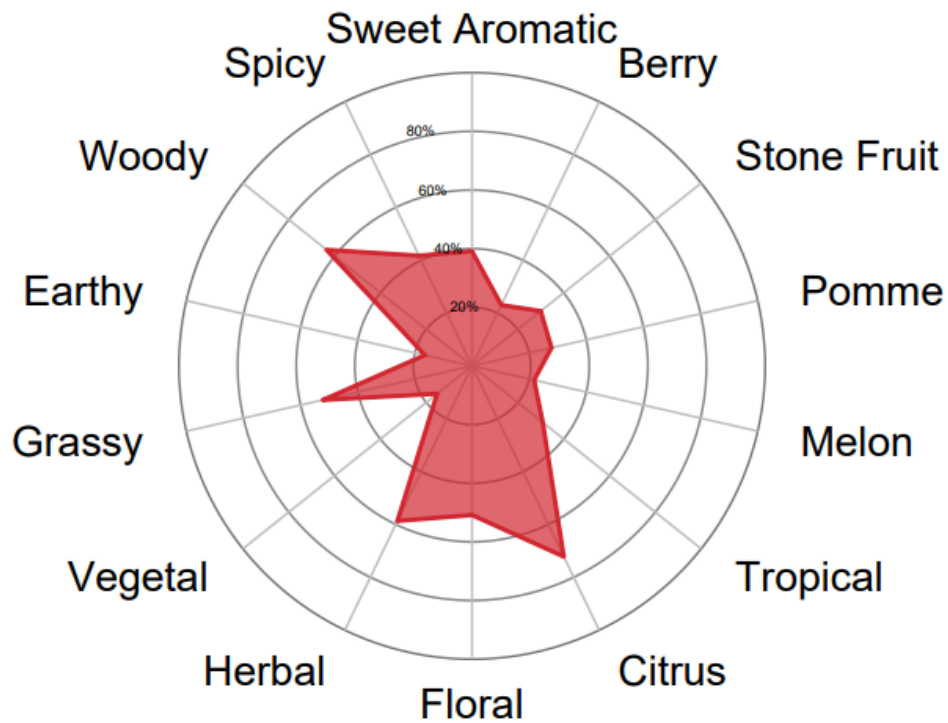
**Red Bars** = your response

**Blue Bars** = group response (aromas you did not detect)



# SENSORY ASSESSMENT: AHTANUM

## AHTANUM



### Variety Highlights

- Alpha: 3.5% - 6.5%
- Beta: 4% - 6%
- Total Oils: 0.5 – 1.7 mL/100g



FLORAL



WOODY



GRASSY



HERBAL

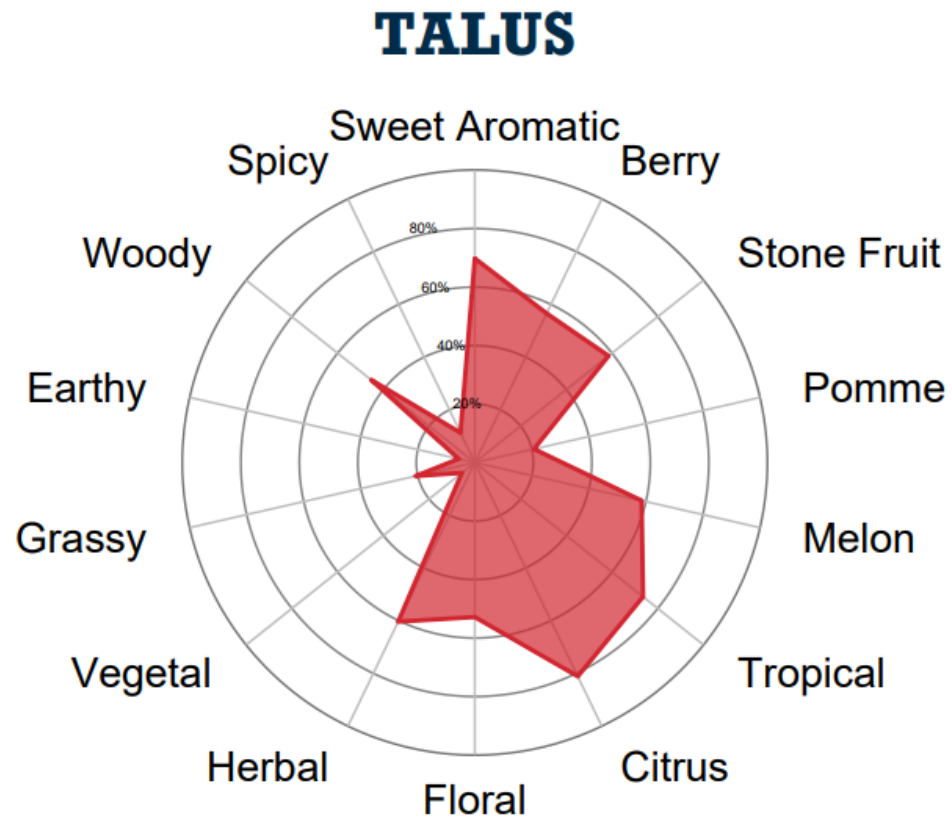


CITRUS



**YAKIMA CHIEF HOPS**

# SENSORY ASSESSMENT: TALUS™



## Variety Highlights

- Alpha: 8.0% - 12.0%
- Beta: 8.0% - 10.0%
- Total Oils: 1.0 - 2.0 mL/100g
- Highest geraniol content of any YCH cultivar.



**TROPICAL**



**WOODY**



**FLORAL**



**SWEET  
AROMATIC**



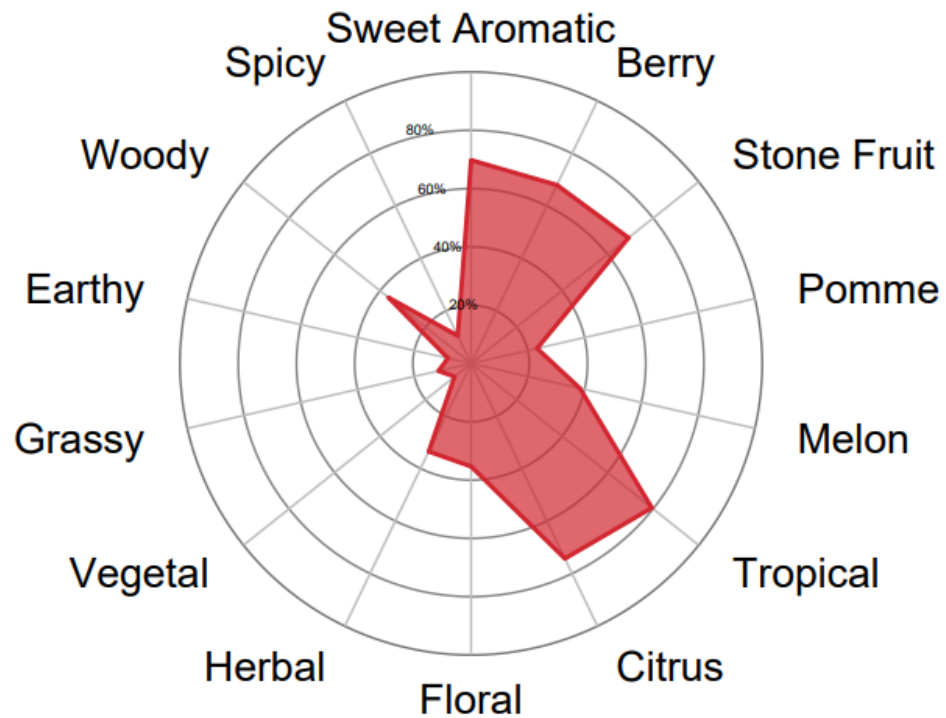
**CITRUS**



**YAKIMA CHIEF HOPS**

# SENSORY ASSESMENT: IDAHO 7®

## IDAHO 7



### Variety Highlights

- Alpha: 12.0% - 14.0%
- Beta: 3.5% - 5.0%
- Total Oils: 1.0 - 3.0 mL/100g
- Highest in soluble esters.
- One of the highest impact whirlpool hops on the market.



**TROPICAL**



**BERRY**



**STONE FRUIT**



**SWEET  
AROMATIC**



**CITRUS**



**YAKIMA CHIEF HOPS**



# INDUSTRY RESOURCES & PRESENTATION REFERENCES



*American Society of Brewing Chemists. (2010). ASBCMOA-Hops-2 Physical Examination.*

*American Society of Brewing Chemists. (2018). ASBCMOA-Sensory Analysis-16 Hop Grind Sensory Evaluation Method.*



## QUESTIONS?

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