



**HOP &  
BREW  
SCHOOL**

# **GOING BEYOND BEER: HOPS IN NON-ALCOHOLIC BEER**



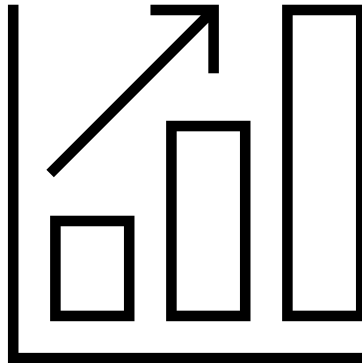
**YAKIMA  
CHIEF  
- HOPS -**

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CANADA

## Non-Alcoholic Beer and Beverages

- The last 10 years has seen the most innovation
  - Improved methods and innovation have increased quality for Macros
  - Improved methods and innovation have given access to Micros
  - Continued growth for Macro and Micro producers in the coming years



## **Non-Alcoholic Beer and Beverages**

### **Get to Know Your Customer**

- Moderation not necessarily abstinence
- Stricter alcohol laws
- Typical Age range is 25-45 of consumers
- Reduced Calories and can be Isotonic – Health Conscience
- **Low and non-alcohol welcomes even more consumers and markets into your potential customer range**

## Non-Alcoholic Beer vs Alcohol Free

- Terms are often used interchangeable
- Strict definition of their use for packaging varies by country
- Examples:
  - U.K.
    - 1.2% abv. or less = Low Alcohol
    - 0.5% abv. or less = Non-alcoholic
    - 0.05% abv. or less = Dealcoholized
  - Germany and Brazil
    - 0.5% abv. or less = Alcohol Free
  - U.S.A
    - 0.5% abv. = Non-alcoholic
    - 0.0% abv. = Alcohol Free

0.5%

or

0.0%?

## Production Challenges of Non-Alcoholic Beers

### Two Choices: Remove the Alcohol or Stop it from being Produced

- **Traditional Methods** for Non-alcoholic beers included arrested fermentation and thermal removal of alcohol
  - Doesn't allow for important ester and other aromas to form during fermentation
  - Often overly **sweet**
  - Strong flavor and aroma of **wort**
  - **Esters** and ester acetate groups are **removed** along with the alcohol
  - **Lack body / mouthfeel**

## Brief Production Overview of Non-Alcoholic Beers

- Reduction in Alcohol being produced

### 1. Arrested Fermentation

- **Existing equipment** already found in brewery
- Wort not completely fermented- **low ester production**
- Increased wort character, **sweet malty/wort flavor**
- **Full bodied**

## Brief Production Overview of Non-Alcoholic Beers

- Reduction in Alcohol being produced

### 2. “Non-alcoholic” Yeasts

- **Existing equipment** found in the brewery
- Saccharomyces strains that cannot use **maltose/maltotriose** effectively
- **Specialty Malts / Mashing Program / Starting Gravity**



## Brief Production Overview of Non-Alcoholic Beers

- Common methods of alcohol removal
  1. Membrane separation
    - **Membrane and Dialysis**
    - No thermal disadvantages for flavor and aroma
    - **High costs** for equipment
    - **Additional space** required in the brewery
  2. Vacuum evaporation, vacuum distillation and centrifugation
    - **Loss of aroma**, body, carbonation, often enhances unwanted flavors
    - Reduced alcohol and calorie versions of an **existing beer**

## Alcohol's Role in Beer

- It plays a **key role** in how we perceive the beer as a whole. It affects almost all of the important aroma and flavor aspects of finished beer.
  - Works as **flavor enhancer** in beer
  - Perceived **Bitterness**
  - Perceived **Body**
  - Perceived **Sweetness**
- Alcohol itself is a part of aroma and flavor profile for many beer styles



## Brewing Non-alcoholic Beer

Hops and Malt can play an essential role in “making up” for any loss of character in beer styles that do not contain the typical amounts of alcohol.

1. Use of **specialty malts** can counteract losses in **mouthfeel/body** and aroma due to the lack of alcohol
  - A **careful hand** should be used here to add **additional body** while not changing the beer from being true to style- malty, caramel, toasty aroma and flavors

## Brewing Non-alcoholic Beer continued

2. **Residual sweetness** found in the beer can be balanced with a **solid bitterness**
  - Choosing the right bittering hops will provide a solid bitterness foundation while keeping the bitterness itself of the highest quality and maintaining a “**smooth**” **character**
  - **Warrior®** is a great bittering hop for use in beer styles that should have a very present and/or smooth bitterness
  - **Columbus** and **Chinook** provide a very solid bitterness and compliment hoppy beer styles very well

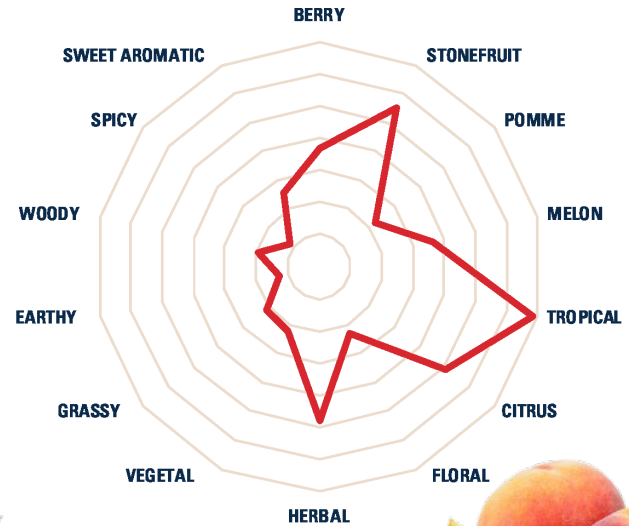
## Brewing Non-alcoholic Beer continued

4. Hops can also aid in providing increased **perceived body**

- **Sabro™, Talus™, HBC 472, HBC 520, and HBC 630** are known to add not only fruit but can also some cream/vanilla/coconut flavors which can add to perceived body in a beer



**SABRO® BRAND**  
HBC 438



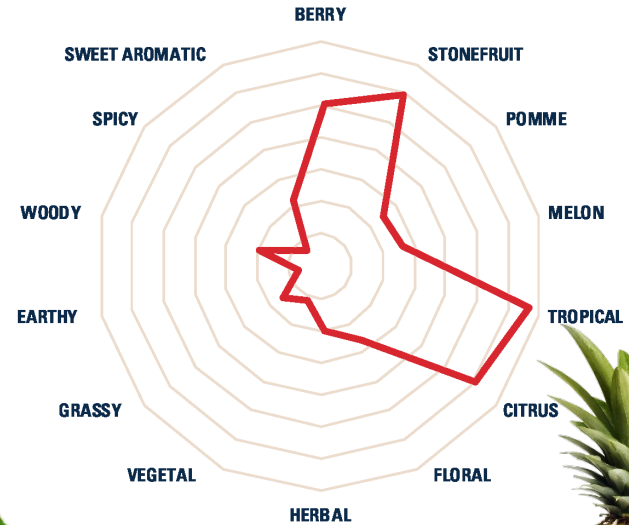
## Brewing Non-alcoholic Beer continued

5. Hops can also aid in providing increased **aroma complexity**

- **Simcoe®**, **Idaho 7™** and **Ekuanot®** can provide a very intense sweet tropical fruit aroma which adds to very nice aroma complexity to a non-alcoholic beer



**IDAHO 7® BRAND**  
J-007



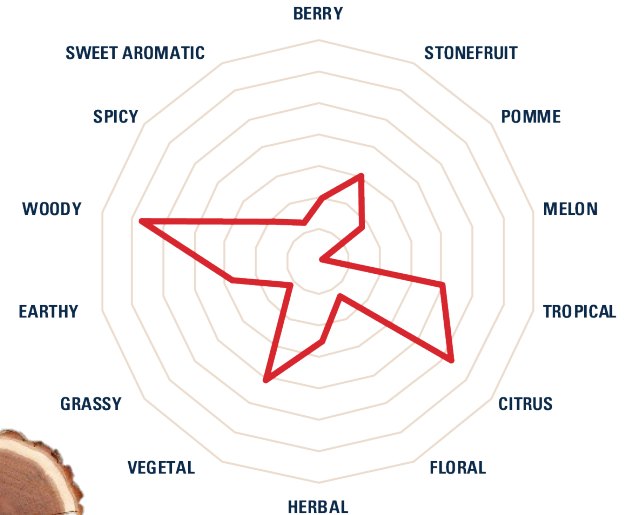
## Brewing Non-alcoholic Beer continued

6. Hops can also aid in providing increased **nuanced depth**

- **Crystal, Columbus** and **Nugget** can help by providing woody, green and pungent aromas to add even more depth and complexity to beers lacking in ester profile and pair well with specialty malt aromas



### CRYSTAL







# THANKS FOR JOINING US!



**HOP & BREW SCHOOL**

Have questions about this session or others?

Email us at [brewschool@yakimachief.com](mailto:brewschool@yakimachief.com) or [brewinghelp@yakimachief.com](mailto:brewinghelp@yakimachief.com)

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