

No Alcohol, No Problem

Brewing and Evaluating Low-and-No Alcohol Beers



#HOMEBREWCON



Homebrew Con

Recording Archive



<https://www.homebrewersassociation.org/seminars/>





Meagen Anderson

Founder + CEO

(AF)icionado™ Certification Program

Learning Objectives

- Hear an overview of the non-alcohol (NA) category, including its history and position today
- Identify sensory differences and expectations for NA beer
- Master how to produce non-alcohol beer at home



Definition of “Alcohol-Free” and “Non-Alcoholic” (AFNA) Beer

Alcohol Free:

- a. Must be verified that there is no detectable amount of alcohol ($<0.05\%$)
- b. Commercial brands – Ceria Brewing; Heineken 0.0; Bud Zero

Non-Alcoholic:

- a. (NA) beer, near beer – Less than 0.5% (between 0.0% and 0.49%)
- b. Commercial brands – Athletic Brewing Company; Lagunitas IPNA Non-alcoholic IPA



Chemical analysis of the bones of ancient Sudanese Nubians who lived nearly 2000 years ago shows they were ingesting the antibiotic tetracycline on a regular basis, likely from a special brew of beer.

The find is the strongest yet that antibiotics were previously discovered by humans before Alexander Fleming discovered penicillin in 1928.

-Wired Magazine, September 2010

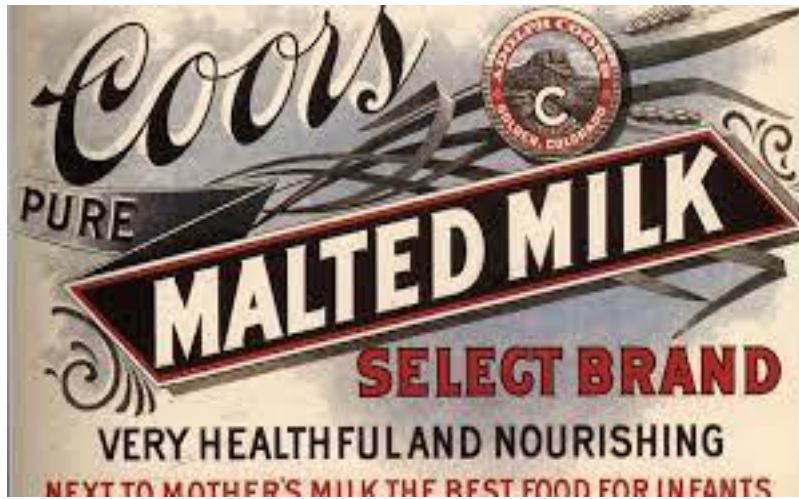
Nubian Brewing, Ancient Egypt 2,000 years ago



History of AFNA Beer



Prohibition's Impact on AFNA Beer



AFNA Beer Market Today

- Makes up 75%+ of no-alcohol sales
- Outpacing anticipated AlcBev growth for the next 5+ years
- Appeals to consumer that is more aware of nutritional/health aspects of alcoholic beverages and is seeking an alternative, intermittently or otherwise
- Global NA Beer Market Valued at \$22BN
- United States is emergent, \$328MM in sales, 0.5% of the category

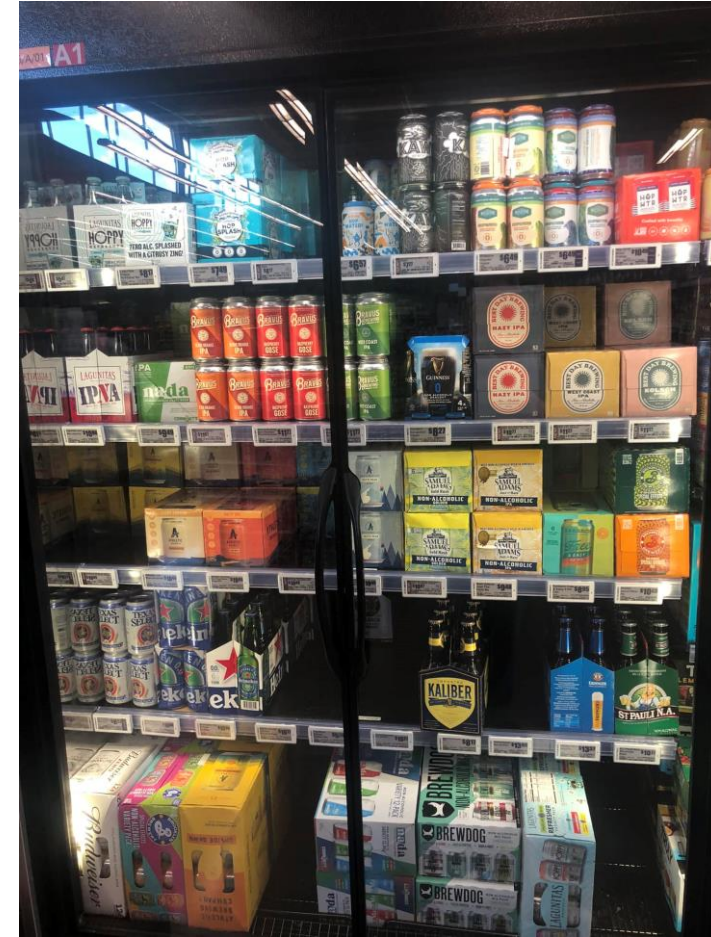


AFNA Beer Market Today

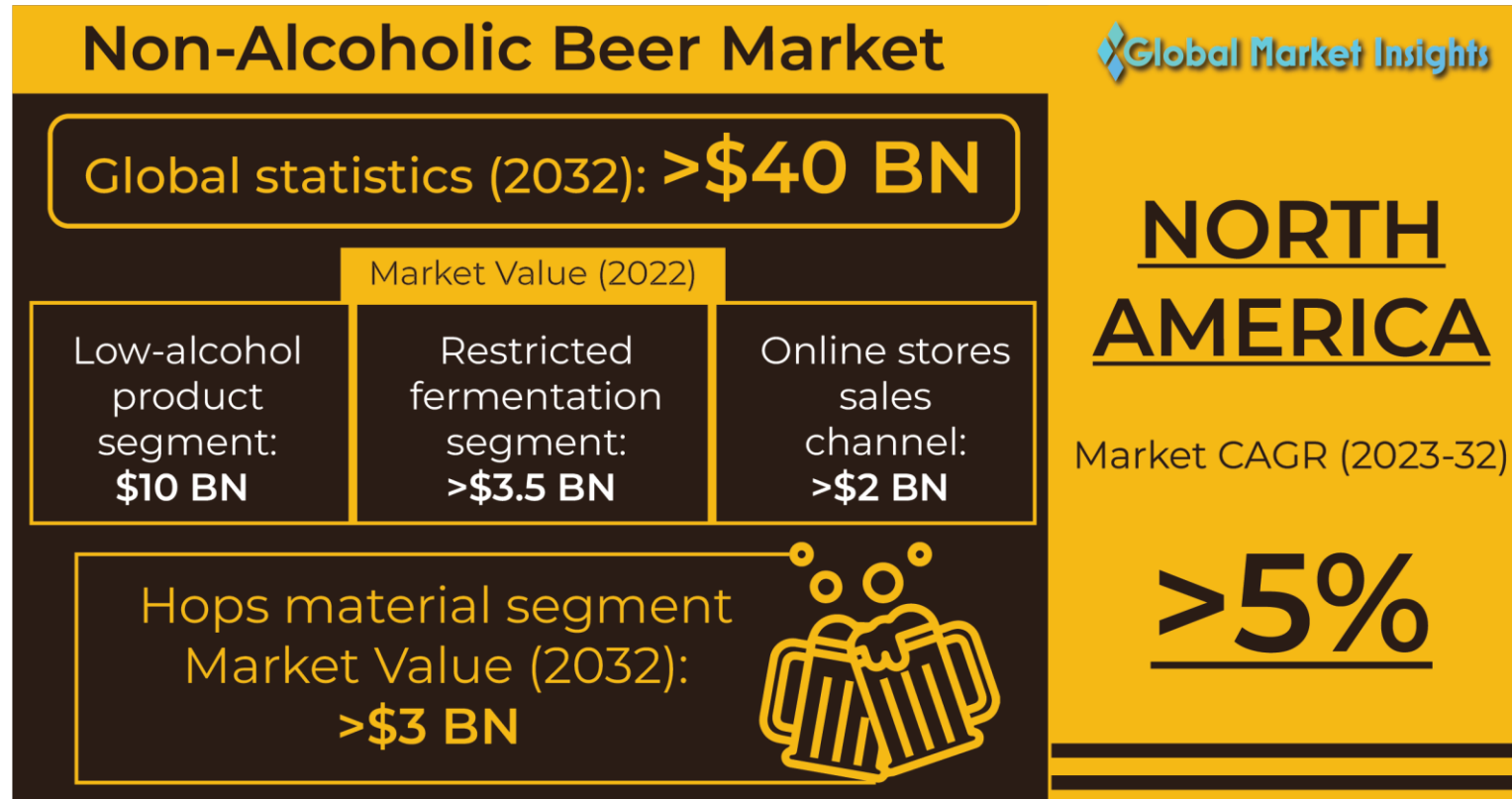


SIMPLEFLYING.COM

JetBlue To Become 1st Major US Airline To Serve Non-Alcoholic Beer On Domestic Flights



Market Potential



Industrial Methods for Dealcoholizing / Fermenting AFNA Beer

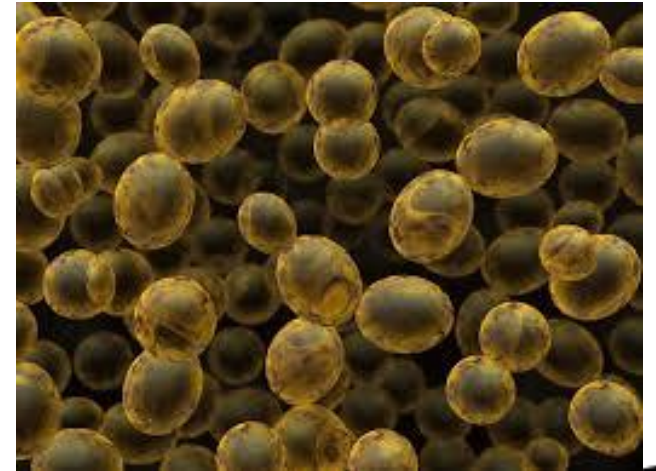
Mechanical - RO



Mechanical – Distillation



Biological



Homebrewing NA Beer

- The most efficient and effective way to homebrew a quality NA beer is using biological methods and restricting the development of alcohol while also controlling and accounting for the growth of pathogens
- Careful coordination of which yeast strain to employ is crucial
- Experimental strains have been isolated from specific environments (e.g., kombucha, rotting fruit), targeted for their desirable characteristics of limited alcohol production



Homebrewing NA Beer with Yeast: Methods

- Arrested fermentation with standard yeast
- Limited fermentation with maltose-negative or maltotriose-negative yeast strain
- Cold contact fermentation

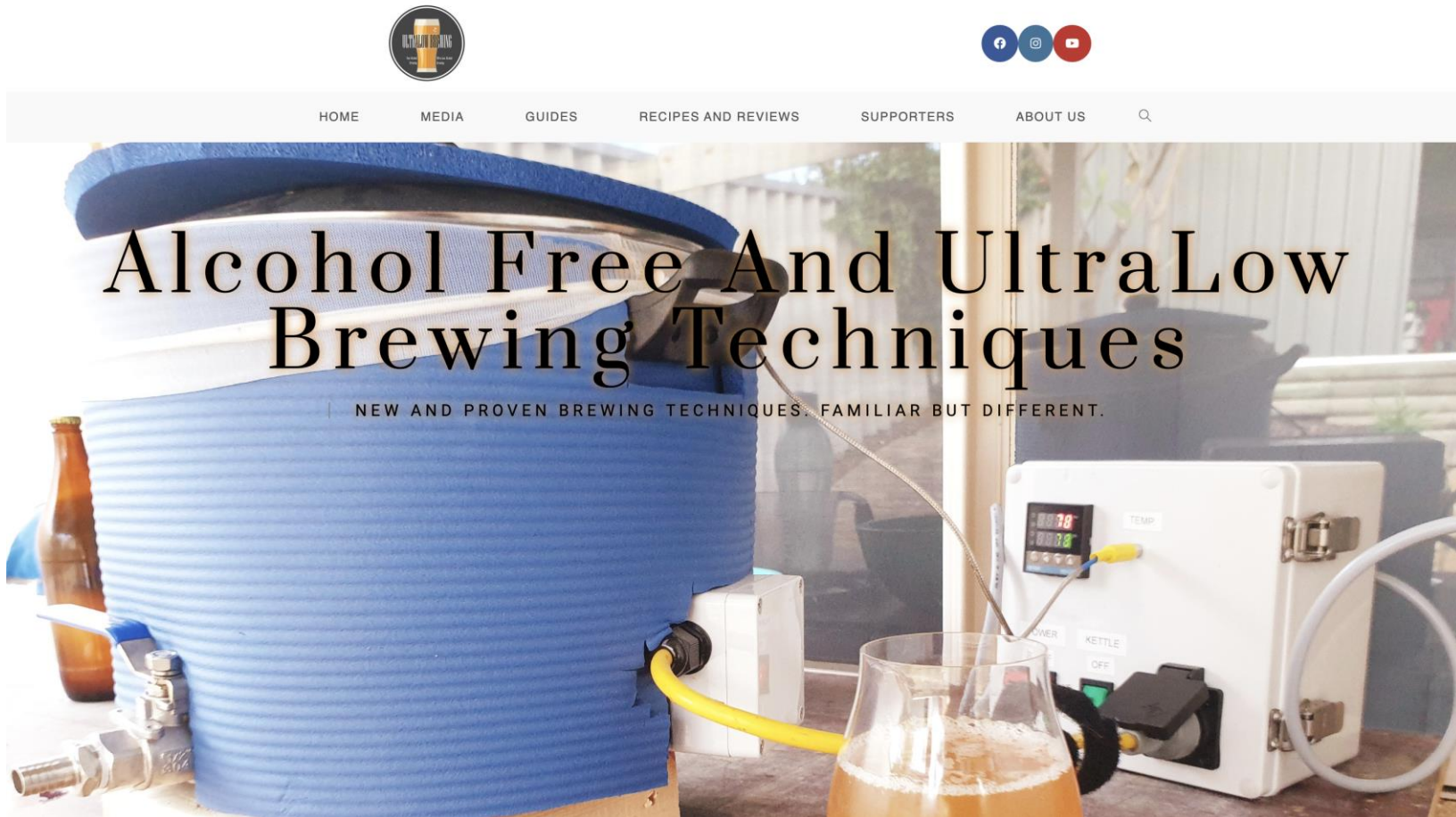


Homebrewing NA Beer – Boil-off Method

- Beer is heated at 173 degrees Fahrenheit where the alcohol can burn off and evaporate from the beer until it reaches the desired 0.5% ABV
- The problem with the boiling method is that the beer ends up with many undesirable flavors due to the heat



Brewing Tips: Avoiding Pitfalls of NA Beer



Brewing Tips: Avoiding Pitfalls of NA Beer



Wort Production

- Low Fermentability
- Low Gravity
- pH Adjustment

Fermentation

- Non conventional yeast
- Lower temperatures
- Low contact time

Stabilization

- Pasteurization
- Filtration
- Cold Chain

**NA IPA
Brew Day:
18 April
2023**



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NA IPA Brew Day

- Mash grain between 170-175 for 30 mins, efficiency is set to 45% instead of the normal 63%
- Quick boil for hop additions, 45 mins
- Fermentation will be quick, 3-4 days
- Account for additional carbonation that will be needed to finish
- Watch for contamination points

Alcohol By Volume Calculator:	
Gravity Unit:	☒ SG (1.xxx) ☐ Plato °P
Original Gravity (OG):	1.017
Final Gravity (FG):	1.014
Equation:	☒ Standard ☐ Alternate <i>(see below for more information)</i>
UPDATE	
Alcohol By Volume:	0.39%
Apparent Attenuation:	17%
Calories:	59.6 per 12oz bottle
Original Gravity:	4.33 °P, 1.017
Final Gravity:	3.57 °P, 1.014

Homebrewing NA Beer Biological Method

Malt

- (30 min mash)
- 4 # of Briess 2 row
- 1 # of Weyermann Munich
- 4 oz carapils
- 4 oz white wheat
- 3 oz flaked barley
- 3 oz flaked oats
- 3 oz crystal 60L

Hops

- Cascade 30 min boil
- Citra 15 min boil
- Cascade whirlpool 0 mins
- Citra whirlpool 0 mins
- Amarillo dry hop
- Cascade dry hop
- Citra dry hop
- Aiming for 30-35 IBU

Yeast

- Wlp 603 Torulaspora maltose negative strain ferment at 66-68



**Sensory
Attributes,
Common
Off Flavors**

Compound	Flavour/Odour	Detection threshold (µg/L) in AFB	
		Orthonasal	Retronasal
2-MP	Fruity, grainy, nutty, chocolate	4.32	0.86
2-MB	Fruity, sweet, almond, malt	23.4	8.99
3-MB	Malty, nutty, chocolate	0.61	0.44
Methianol	Boiled potato, metallic, wort	0.47	0.73



Brewing Tips: NA Beer

- Know Parameters: Our NA IPA started where other beers finish, 1.017 starting gravity, 1.014 finishing
- Creating the right malt base for a high-temp, fast mash
- Manage pH
- Yeast addition is different, and in a surprising way
- Set expectations on flavor expression of key ingredients



Tasting, Evaluation Notes – MJ's NA IPA

- Fermentation and finishing notes
- Tasting notes / key learnings – group tasting



Group Tasting & Impressions Exercise



When to Put NA Beer on Your Brew Schedule

- Certain months dedicated to highlighting NA options
- Inclusive to people that may not have consumed beer because of its alcohol content
- Health benefits associated with mindful drinking
- Nutritional benefits of NA beer are now acknowledged



NA Beer Returning to Its Roots as a Nourishing Beverage, with Lots of Upside

The AFNA category has upside and the skills of producing these types of beverages will increase in demand as the moderation trend continues to shift drinker preferences



THANK YOU!

Meagen Anderson | meagen@alcoholfreeaficionados.com



Related Resources

Find articles, recipes, recordings, and resources—including *Zymurgy* magazine—on [HomebrewersAssociation.org](https://homebrewersassociation.org).

- [Brewing Up a Non-Alcohol Beer](#)
- [Making Kombucha at Home](#)

