

HOPS & TRADITIONAL SPONTANEOUS ALES



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SPONTANEOUS & WILD ALES

WHO AM I?

Brewer & Blender

Black Project Spontaneous & Wild Ales

Denver, Colorado

Research and Development in Spontaneous Fermentation

Founded Feb. 2014 - Entering 5th Coolship Season this Fall

WHY?

ABOUT THE TERMS 'LAMBIC' and 'GUEUZE'

Lambic - beer made using specific ingredients and processes, spontaneously fermented in Pajottenland region of Belgium

Gueuze - blend of 3 seasons/years of lambic

Lambic isn't made outside of the Zenne River valley in Belgium

Beers made in America should not be called lambic or gueuze

THE PROCESS / INGREDIENTS

-50-65% Pilsner-style Malt and 35-50% Unmalted White Wheat

-90-100% Aged hops to 10-35 IBU

-Turbid Mash

-3+ hr boil

-Cooled via coolship, 8-16hrs

-100% spontaneous, no microbes added at any point

-Barrel-fermented and aged

AGED HOPS

Traditionally noble or noble-like varieties

Whole Leaf

Typically test well below 1% AA

Oxidized alpha- and beta-acids

- Oxidized alpha = humulinones = 64% as bitter in taste
- Oxidized beta = hulupones = 84% as bitter in taste
- Hulupones absorb much less strongly than AA in IBU testing with spectrophotometer

BITTERNESS

Cantillon Classic Gueuze - 30 IBU

Lindemans Cuvée Rene - 16 IBU

Girardin Gueuze 1882 - 35 IBU

Oud Beersel Oude Geuze - 22 IBU

Jester King Spon - 30 IBU

Black Project OXCART - 30 IBU

RECIPE DESIGN FOR AGED HOPS

Traditional and historic usage varies widely - 0.25 to 1.50 oz/gal of finished beer

First wort hop or at boil start (3-5hr boil)

Testing is critical to dialing in - either sensory or with spectrophotometry

Hops we are currently using we use between 0.30 and 0.70oz/gal.

These hops test at 0.3% AA

One would expect <5 IBU from 0.60oz/gal

Our beer at 0.60oz/gal tests at 39 IBU!

EFFECTS OF AGED HOPS

Required for characteristic “gueuze character” - small amounts of iso-valeric acid

IBUs limit microorganisms as you would expect - traditional spontaneous ale is a *Pediococcus* derived acidity, not *Lactobacillus*

IBUs fade over long aging periods in the barrels

Large amounts of aged hops aid in filtering trub from kettle

EXPERIMENTATION & PROCESS IDEAS - I

Varying percentages of un-aged hops in beer

Early 1800s - Potentially all relatively young / “unaged” hops

Late 1800s - $\frac{2}{3}$ Young and $\frac{1}{3}$ Aged

Early 1900s - $\frac{1}{3}$ Young and $\frac{2}{3}$ Aged

Mid 1900s to Present - 100% Aged

EXPERIMENTATION & PROCESS IDEAS - II

In-House Blendery Concept

Dry Hopping with Aged Hops

Aging Non-Traditional Hops

Using Non-Traditional Hop Products - Cryo & Bracht

Wet Hops / Dry Hopping with Wet Hops

Coolship “Whirlpool” Hops

Q & A

Sources / Resources

<http://www.horscategoriebrewing.com/> - Dave Janssen

<http://www.milkthefunk.com/wiki/>

Bitterness Intensity of Oxidized Hop Acids: Humulinones and Hulupones
Algazzali and Shellhammer, Oregon State Univ.

Special thanks to YCH for hop and beer analytical testing