



**Using Spirit Barrels  
Small Barrel Experiment  
and Blending Sour Ales in Wood**

# Barrel Program Beers

- Dragons Milk
  - Strong Stout 11% ABV
- Pilgrims Dole
  - Wheat Wine 12% ABV
- Oak Hatter
  - IPA 5.5% ABV
- Woodsman
  - Pale ale 4.5% ABV



# Dragon's Milk

- Dragon's Milk Production
  - 800bbls beer per month
  - Aged for 90 days in bourbon barrels
  - 1275ish oak barrel on 3 month rotation



# Pilgrim's Dole

- Pilgrim's Dole Production
  - 150bbls per year
  - Aged up to 10 months in spent bourbon barrel
  - 80 spent oak barrels



# Oak-aged Hatter

- Oak-aged Hatter Production
  - 300bbls per year
  - Aged 30 days in spent bourbon barrel
  - 160 in spent oak barrels



# Carhartt Woodsman

- Carhartt Woodsman Production
  - 650bbls first year production
  - Aged 60 days in spent oak barrels
  - 345 spent oak barrels





# What about new bourbon barrels?

- Receive truckloads of 200 bourbon barrels about every 3 weeks
- 53-gallon used oak barrels
- Barrels are from a few different distilleries
  - Heaven Hill
  - Woodford Reserve
  - Wild Turkey
  - Makers Mark
  - Jim Beam











# How much use do we get from one barrel?

- Dragons Milk
  - First and second time through will be used for Dragons Milk
  - 50/50 fresh bourbon oak, second used bourbon oak
- Third Use
  - Contribution to the flavor we are trying to achieve in a 90 day period has been depleted
  - Barrels are also used for Beer Barrel Bourbon



# So, what's the difference?

- Fresh Bourbon Barrel with 90-day age
  - Bourbon
  - Vanilla
  - Oak
  - Rounding of beer flavors
  - Chocolate
  - Dark fruit
  - Hot (Alcohol burn due to residual bourbon)



# Second time around

- Second use bourbon barrel with 90-day age
  - Stronger oak flavor
  - Roast/Coffee
  - Rounding of beer flavors
  - Alcohol burn is much less (than before barrel addition)
  - Lesser bourbon flavor but still present



# Spent Barrel

- Spent Barrel with 90-day age
  - Strong wood
  - Rounding of beer flavors
  - Drying



# When is a barrel a “spent barrel”?

- Spent oak barrel (spent barrel) is a barrel that is no longer used for Dragons Milk
- Contributing bourbon flavors are no longer present at our standard and will no longer be used in Dragons milk production
- We Determined this to be what would be its 3<sup>rd</sup> time around





# So why do we blend the barrels?

- Balance of flavor
- Too damn hot
- We like the blend
- Less labor taking barrels on and off racks
- Added benefit of more use from one barrel



# What is a spirit barrel going to do for your beer?

- Spirit and Oak flavor
- Could have a little alcohol boost
- Round out and meld your beer through micro oxidation
- Allow you to use yet another variable when crafting a great beer
- Vintage



# What variables change how the beer develops?

- Some of the main variables we find most important
  - Temperature
  - Surface area (size of oak barrel)
  - Time
  - Beer makeup
    - Malt/Hop intensity
    - ABV
    - Any other things you might add or already exist



# Temperature

- Low storage temperatures will slow the development of barreled beer.
  - Slower development = more control
- High temperatures will have higher rate of development in the same amount of time.
- Control of temperature will allow for a more consistent beer



# Size does matter

- As oak surface area to volume of beer increase so will its development
- The larger the barrel the longer the aging time required by the beer to extract wood characters
- Smaller barrels will age (seem aged) in a shorter period of time under constant conditions





# Question

- How exactly does the flavor of a fresh spirit Barrel change with temperature and time?
  - Will the small barrel produce the same taste in less time?
  - What about temperature?
  - Will they have extreme differences or will they be comparable?



# Experiment

- Objective
  - Compare and Contrast dragons milk when aging at different temperatures and different size barrels
- Experiment
  - 15 and 25 gallon spirit barrel 30 day age at 45F
  - 15 and 25 gallon spirit barrel 30 day age at 70F





# What We Did

- Filled both sets of 15 and 25 gallon barrels from New Holland Distillery with Dragons Milk
- Set A 15 & 25 gallon spirit barrel cold storage 45F
- Set B 15 & 25 gallon spirit barrel ambient temp 70-80F
- Laid them both down undisturbed for 30 days





# Taste Panel Results

- Numerical representation of intensity, coupled with tasting notes.
  - Aroma
    - Hoppy / Floral / Fragrant
    - Estery / Fruity
    - Sulfer / Yeast
    - Cereal / Roast / Warty
    - Oxidized
  - Taste
    - Bitter
    - Sour / Acidic
    - Sweet
    - Body



# 25 Gallon

## Aroma

	Cold	Warm
Hoppy / Floral / Fragrant	1.5	2
Esters / Fruity	1.5	2
Sulfur / Yeasty	1	1
Cereal / Roasted / Warty	3	2
Oxidized	2.5	1.5

## Taste

Bitter	2	1.5
Sour / Acidic	1	1
Sweet	2	2
Body	2.5	2.5



**Cold**

Pronounced Oak flavor

Cleaner and complex aroma

Vanilla

Chocolate

Smooth

**Warm**

Boozy

VDK

Medicinal

Good after flavor



# 15 Gallon

## Aroma

	Cold	Warm
Hoppy / Floral / Fragrant	1	1.5
Esters / Fruity	1	2
Sulfur / Yeasty	1	1
Cereal / Roasted / Warty	1	3
Oxidized	2	2

## Taste

Bitter	1.5	2
Sour / Acidic	1	1
Sweet	2	2
Body	2.5	2



**Cold**

Oak

Coffee

Smooth

Malty sweetness

**Warm**

Boozy, Hot

Chocolate

Plum, Sweet raisin

Slick texture



# Experiment Conclusions

- Temperature and size did have an effect on barrel aging of beer
  - The 25 gallon barrels seem closer in flavor than the 15 gallon
    - Probably due to the increased surface area
  - Warm aging seemed to age the beer much faster and aggressively giving more intense and variety of flavors
  - Cool aging seemed to give more refined characters that were soft on the palate also seemed to have a more favorable oak flavor
- 30 days in a 25 gallon barrels gave very similar flavor to a 90 day aged 53 gallon barrel





NEW HOLLAND  
~ BREWING ~

House  
of Punks



SOUR  
Ichabod

Blue  
Sunday

06

11

REMOVED



# Sour Beer Program

- Blue Sunday
  - American Wild Ale 6.5% ABV
- Incurrrible
  - White Sour Ale 5% ABV
- Incurrrible reserve
  - White Sour Ale with Fruit 5% ABV
    - Michigan grown blueberries and blackberries



# Sour beer requires pre-planning

- Idea
  - Sour
  - Funk
  - Complexity
- Micro Needs
  - What are you trying to grow
  - Recipe will provide optimal growth
  - Recipe will not hinder growth
  - Flavors existing will not clash with flavors desired
- Give yourself options if you are planning on blending
  - Strains and Micro types
  - Micro combinations
  - Styles and gravities



# The Blends

- Blue Sunday
  - Heavy blending from an array of sour barrels
- Incurrigible
  - Light blending from just a few sources



# Blue Sunday

- Blue Sunday Production
  - Barrels
    - Spent Bourbon
    - Wine
  - Foudres 30 bbls
    - Blue Sunday core recipe
    - Red
  - Beer we have in production
    - Mainstay
    - High Gravity
    - One off



# Going over the notes

- Taste the beers every few months
  - Flavor description
    - Lactic
    - Acetic
    - Presence of off flavors such as Diacetyl
    - Funk
  - Flavor changes
  - Is the beer on track to be finished?
    - Annual release





# Foudres, the base beer

## – Blue Sunday

- Foudre #6 (Bootsy Collins) WL Lambic
  - Apple
  - Pear
  - Earthy finish

## – Red Menace

- Foudre #4 (James Brown) Pediococcus
  - plum
  - Soft acidity
  - Funky aroma and after taste

## – Blue Sunday

- Foudre #5 (George Clinton) WL Roselaire
  - Cherry
  - Grape skin
  - Black berry



# Bourbon and Wine Barrels

- Beers in Cask
  - Blue Sunday
  - Brown – brown ale
  - Incurrigible
  - Poet – oatmeal stout
- Cask types
  - Spent Bourbon
  - Wine casks
- Age
  - Few barrels left at 10 yrs.



# Barrels to blend

- Blue sunday
  - Red Wine Barrel
    - Oak
    - Strong lactic acid presence
- Blue Sunday
  - Bourbon Barrel
    - Dark Cherry
- Brown
  - White Wine
    - Acetic
    - Apricot



<u>Foudre</u>	<u>#</u>	<u>Beer</u>	<u>Fill Date</u>	<u>Inoculation</u>
Chetka Khan	1	Incorrigible	5-31-13	WL Lacto del
Rick James	2	Incorrigible	5-31-13	Wycast lacto
Viktor Wooten	3	Incorrigible	5-31-13	Sour Barrels
George Clinton	4	Blue Sunday	7-5-13	Roselaire (7-12)
James Brown	5	Red menace	7-8-13	Pediococcus
"Bootsy" Collins	6	Blue Sunday	7-5-13	Lambic
<u>Stainless tank:</u>		Red Menace	7-8-13	pediococcus

### Barrels:

- 110 x Blue Sunday
- 35 x FSB
- 28 x Incorrigible
- 11 x MI Nightmare
- 8 x Rivertown
- 4 x Specialty

JANUARY END

# Creating the blend

- Start mixing on scaled version
  - Large volumes of base beer
    - Ratios of base beer
  - Fill in the holes with small barrels
    - Needs more funk
    - More lactic or acetic
    - Just a great barrel
  - Blend in some finished beer
    - Body
    - Malt flavor
    - Color
  - Be sure you have the volume to create finalized beer



# Trial

- Make 3-5 different blends
  - Create variety with the different choices
- Gather feedback
  - Most popular
  - Disliked
  - How they could be improved
- Make 2-3 more samples
  - Use feedback to create desired beer
- More feedback
- One last Trial of 2 beers may be required



# Finishing Touches

- Does it represent what we want
  - Color
  - ABV
  - Volume
  - Taste
- Make small final adjustments
- Carbonation level
- Finished beer



# Incorrigible

- Incorporrigible Production
  - Foudres 30 bbls
  - Beer we have in production
    - Limited by Color and ABV
      - Mainstay
      - High Gravity
      - One off





# Blending, same but restricted

- Light Color and Low ABV
  - Limited production beer for blends
  - Limited use of smaller cask beer
- Comes down to the blend of foudres and around 30 barrels
  - Getting a great blend while meeting volume demand
    - Quality comes first



# Foudres, the base beer

## – Incurrrible

- Foudre #1 (Chaka Khan) WL lacto
  - Light and dry
  - Pale straw color
  - Lactic acid, Tart
- Foudre #2 (Rick James) Wyeast Lacto
  - Crisp
  - Sharp tart
  - Juicy
- Foudre #3 (Victor Wooten) House Strain
  - Tart
  - Lingering After funk
  - A touch of Sock



# Blend Incurrigible

- We have good dependable Cultures
  - Blend foudres together
  - Addition of Barrels that fit profile
- Limited Trials
  - Lower complexity



# Home Barrel Aging Blending

- Spirits barrels can become sour barrels
- Use your spirit barrels until they are stripped of desired flavors
- Make a beer that is meant to sour
- Barrel some sours, put others in carboys
- Make some homebrews around the time when you are ready to blend your sour beer
- Scaled trials
- Have fun!



# Get yourself some barrels

- We are offering
  - 15, 25, 53 gallon
- Small distilleries
- Barrel cooperages





**Questions?**