BREWSHEET v3.4 (2014-12-14)

user input
calculated

Brew			
Name:	FIGment of Your Imagination		
Brew Date:	2018 August 26	Collected (gal):	5.50
Rack Date:		Racked (gal):	
Keg/Bottle Date:	2018 October 6	Kegged/Bottled (gal):	4.90
Estimated		**Actual**	
ABV (%):	10.7%	ABV (%):	11.1%
OG (SG):	1.100	OG (SG):	1.092
FG (SG):	1.018	FG (SG):	1.007
IBU:	27.3	IBU:	29.3
SRM:	36.7	SRM:	36.7
IBU/Gravity Ratio:	0.27	IBU/Gravity Ratio:	0.32

Grain	Pounds	Potential	SG Share	Color	% Bill
Pilsner (2-Row) Germany	15.00	1.037	0.071	2.0	72.29%
Munich Malt 10L	1.25	1.035	0.006	10.0	6.02%
Belgian aromatic malt	0.75	1.036	0.003	26.0	3.61%
Belgian Special "B"	0.75	1.030	0.003	220.0	3.61%
Belgian candi syrup d-180	1.00	1.032	**0.006**	180.0	4.82%
Belgian candi syrup d-90	2.00	1.032	**0.012**	90.0	9.64%

Hop	Type	Ounces	Boil Time	Alpha %	IBU	% Bill
Hallertauer (GR)	P	3.00	75	2.5%	15.7	54.55%
Hallertauer (GR)	P	2.50	45	2.5%	11.5	45.45%

Design Notes

Mash at 146F for 60 min then at 156F for 30 min; mash-out at 168F for 10 min.
Add candi syrup at 10 min left in boil.
Chop and caramelize 7# figs with some wort from the first runnings.
Add to the boil at 10 min left in boil.
Ferment at 64 for 24 to 48 hours; then let the yeast rise the temp to 78F until fermentation is done; rack to secondary for a month after fermentation is done.

Assuming 7# of figs yields ~0.004 SG:
Gravity points from fruit = weight of fruit (#) * % sugar in fruit / 100 * 45 / batch size (gal).
Figs have 7% sugar, so: gravity points = 7# * 0.07 * 45 / 5.5 = 4.01
(see https://byo.com/article/brewing-with-fruit-techniques/)
(see https://thepaleodiet.com/fruits-and-sugars/)

Using RO water; so at dough-in, add:
7.9 ml lactic acid (88%)
0.8 g CaSO4 (calcium sulfate/gypsum)
0.7 g CaCl2 (calcium chloride)
1.0 g MgSO4 (magnesium sulfate/epsom salt)
4.0 g Ca(OH)2 (calcium hydroxide/slaked lime)
0.6 g NaHCO3 (baking soda)
At boil, add:
0.4 g CaSO4 (calcium sulfate/gypsum)
0.4 g CaCl2 (calcium chloride)
0.5 g MgSO4 (magnesium sulfate/epsom salt)
2.2 g Ca(OH)2 (calcium hydroxide/slaked lime)
0.3 g NaHCO3 (baking soda)
Target is 5.4 mash pH, 96 ppm calcium, 4 ppm magnesium, 6 ppm sodium, 13 ppm chloride, 32 ppm sulfate

Batch Variables and Calculations	
Batch Size (gal):	5.50
Grain Temperature (F):	87
Total Grain Weight (lbs):	20.75
Mash	
Mash Time (min):	60
Desired Mash Temperature (F):	146
Strike Water (gal):	7.23
Strike Temperature (F):	162
Mash Ratio (qts/lb):	1.39
Grain Absorption (gal):	2.59
Mash Volume (gal):	8.89
Mash-out Temperature (F):	168
Estimated First Runnings (gal):	4.50
First Runnings (gal):	4.80
First Runnings Gravity (Brix):	18.25
First Runnings Gravity (SG):	1.071
Sparge	
Desired Sparge Temperature (F):	168
Sparge Water (gal):	4.02
Sparge Water Temperature (F):	172
Estimated Second Runnings (gal):	4.49
Second Runnings (gal):	3.82
Second Runnings Gravity (Brix):	9.00
Second Runnings Gravity (SG):	1.035
Estimated Preboil Volume (gal):	8.98
Estimated Preboil Gravity (Brix):	14.15
Preboil Volume (gal):	8.62
Preboil Gravity (Brix):	15.00
Preboil Gravity (SG):	1.058
Extraction Efficiency (%):	**67%**
Boil	
Boil Time (min):	105
Estimated Evaporation Loss (gal):	2.53
Hop Absorption (gal):	0.14
Volume Left in Kettle (gal):	0.00
Actual Evaporation Rate (gal/hr):	1.24
Actual Evaporation Loss (gal):	2.17
Original Gravity (Brix):	23.72
Batch Size Efficiency (%):	68%
Actual Efficiency (%):	68%
Fermentation	
Primary Fermentation (days):	2
Primary Fermentation Temperature (F):	64
Gravity After Primary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Secondary Fermentation (days):	28
Secondary Fermentation Temperature (F):	78
Gravity After Secondary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Tertiary Fermentation (days):	3
Tertiary Fermentation Temperature (F):	32
Final Gravity (SG):	1.007
Temperature of Reading (F):	42
Corrected SG:	1.007
Target Fermentation for Diacetyl Rest (%):	
Target Gravity for Diacetyl Rest (SG):	
Calories per Pint:	296
12 oz. Bottles Required:	50
Carbonation	
Bottling Temperature (F):	
Volumes of CO2:	2.15
Priming Sugar (oz):	
DME (oz):	
Forced Carbonation (lbs):	

System Variables	
Brewhouse Efficiency (%):	70%
Volume in Hoses (gal):	0.22
Volume in Wort Chiller (gal):	0.19
Volume in HERMS Coil (gal):	0.25
Mash/Lauter Tun Deadspace (gal):	0.14
Strike to Sparge Volume Ratio (%):	50%
Trub Loss (gal):	0.16
FWH IBU Factor (%):	10%
Strike Temperature Factor (F):	7
Sparge Temperature Factor (F):	4
Estimated Evaporation Rate (gal/hr):	1.45
Leaf Hop Absorption Ratio (qts/oz):	0.40
Pellet Hop Absorption Ratio (qts/ oz):	0.10
Cooling Losses (%):	4%
Hydrometer Correction (SG):	0.001

BJCP Style Guidelines	
Style:	Belgian Dark Strong Ale
Code:	18E
OG:	1.075-1.110
FG:	1.010-1.024
IBU:	20.0-30.0
SRM:	12.0-22.0
ABV:	8.0-12.0+%
CO2:	1.9-2.4

Yeast Strain	
Yeast Strain:	White Labs WLP545 (Belgian Strong Ale Ye
Type:	Belgian Strong Ale Yeast
Attenuation (%):	78-85%
Actual Attenuation (%):	92%
Fermentation Temp (F):	66-72F
Flocculation:	high

Required Amounts	
Cell Count (billions):	368
Vials (White Labs/Wyeast):	101.9
Dry Yeast (g):	18.4
Yeast Starter/Slurry	
Vials (White Labs/Wyeast):	3
Date Yeast Produced:	2018 April 1
Yeast Viability (%):	4%
Yeast Growth Rate:	33.97
Yeast Innoculation Rate (million/ml):	0.25
Starter Volume Required (ml);	42522
DME Required (oz):	138.20
Yeast slurry concentration (billion/ml):	2.5
Non-yeast Percentage (%):	20%
Yeast Slurry Required (ml):	-3346

User Variables	

Batch Scaling				
Desired OG:		Total Weight (lbs):		
Batch Size (gal):		Total Bill:		
Brewhouse Efficiency (%):				
Grain	**Pounds**	**Potential**	**Color**	**% Bill**

Poundage		
Goal (lbs):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
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Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Needed (lbs | oz.f_oz):		

Hydrometer Correction		
SG:	1.089	
Temperature (F):	80	
Corrected SG:	1.092	

Gravity Calculator			
Brix:	22.25		
Specific Gravity:	1.086		
Degrees Plato:	20.58		

Brix Ethanol Correction	
Original Brix:	
Current Brix:	
SG:	

Brewing Notes

8/26: mashed in at 153F (a little hot); let it get down to 146F (took ~25min); pH perhaps a tad high (~ 5.8); Increasing temp to 156F took ~5min
1.058 SG preboil; adding 0.018 for the candi syrup and 0.004 for the figs = 1.080
Estimating 0.015 during the boil and 0.002 during cooling = 1.097 (close!)
1.068 SG before adding candi syrup
1.081 SG after adding candi syrup
1.085 SG after adding 7# figs (~10min later)

Mesh bag w/ 5.5oz hops = ~0.25 gal volume rise
Adding candi syrup rose volume by ~0.35 gal
Adding figs rose volume by ~0.5 gal
Total volume rise (to deduct) = ~0.75 gal

Increased boil time to reach target 6.3 gal in the kettle

10/6: Kegged; nice aroma and flavor or dark fruit (plus, the figs come through a little).
10/19: a hit at ARToberfest; next time, make it darker and with no figs.