

BREWSHEET v2.0 (2010-06-17)

| Batch | | | |
|------------------|-----------------------------|------------------|-------|
| Brew Name: | Hakuna Matata Pale Ale v3.0 | | |
| Bottle Top Code: | Calories per Pint: | 184 | |
| Estimated OG: | 1.056 | Actual OG: | 1.055 |
| Estimated FG: | 1.013 | Actual FG: | 1.016 |
| Estimated IBU: | 39 | Actual IBU: | 39 |
| Estimated SRM: | 9 | Actual SRM: | 9 |
| Brew Date: | 09/12/10 | Collected (gal): | 11.15 |
| Rack Date: | 09/26/10 | Racked (gal): | |
| Bottle Date: | 09/26/10 | Bottled (gal): | 10.00 |

| BJCP Style Guidelines | |
|-----------------------|-------------------|
| Style: | American Pale Ale |
| Code: | 10A |
| OG: | 1.045-1.060 |
| FG: | 1.010-1.015 |
| IBU: | 30.0-45.0 |
| SRM: | 5.0-14.0 |
| ABV: | 4.5-6.0% |
| CO2: | 2.2-2.7 |

| Inventory | |
|---------------|--|
| Bottles: | |
| Gallons: | |
| Date Checked: | |

| Efficiency | |
|-----------------|-----|
| Brewhouse: | 73% |
| Batch Size: | 72% |
| Into Boiler: | 87% |
| Into Fermenter: | 73% |

| Yeast Strain | |
|-------------------------|------------------------------------|
| Yeast Strain: | White Labs WLP001 (California Ale) |
| Type: | California Ale |
| Attenuation (%): | 73-80% |
| Actual Attenuation (%): | 71% |
| Fermentation Temp (F): | 68-73F |
| Flocculation: | medium |

| Summary | |
|---|--|
| Hakuna Matata Pale Ale v3.0 | |
| ----- | |
| Batch Size: 11.00 gal (14.33 gal preboil) | |
| Estimated OG: 1.056 SG (actual: 1.055 SG) | |
| Estimated FG: 1.013 SG (actual: 1.016 SG) | |
| Estimated IBUs: 39 (Tinseth; actual: 39) | |
| Estimated Color: 9 SRM (actual: 9 SRM) | |
| Brewhouse Efficiency: 73% (actual: 72%) | |
| Boil Time: 90 minutes | |

| Grain | Pounds | Potential | SG Share | Color | % Bill |
|----------------------|--------|-----------|----------|-------|--------|
| Pale Malt (2-Row) US | 21.00 | 1.036 | 0.050 | 2.0 | 89.36% |
| Caramel/Crystal 60L | 1.50 | 1.034 | 0.003 | 60.0 | 6.38% |
| Victory Malt | 1.00 | 1.034 | 0.002 | 25.0 | 4.26% |

| Brewing | | | |
|-------------------------------|-------|-----------------------------------|-------|
| Batch Size (gal): | 11.00 | Estimated First Runnings (gal): | 8.64 |
| Total Grain Weight (lbs): | 23.50 | Desired Sparge Temperature (F): | 170 |
| Grain Temperature (F): | 81 | Sparge Water (gal): | 5.69 |
| Mash Ratio (qts/lb): | 1.30 | Sparge Water Temperature (F): | 186 |
| Mash/Lauter Deadspace (gal): | 0.25 | Estimated Preboil Volume (gal): | 14.33 |
| Total Water Needed (gal): | 17.52 | Boil Time (min): | 90 |
| Desired Mash Temperature (F): | 153 | Evaporation Rate (%): | 12% |
| Strike Water (gal): | 7.64 | Estimated Evaporation Loss (gal): | 2.58 |
| Strike Temperature (F): | 167 | Tub Loss (gal): | 0.75 |
| Grain Absorption (gal): | 2.94 | Volume Left in Kettle (gal): | 0.00 |
| Mash-out Temperature (F): | 151 | Actual Evaporation Rate (%): | 12% |
| Mash-out Water (gal): | 4.19 | Actual Evaporation Loss (gal): | 2.60 |

| Hop | Alpha % | Ounces | Boil Time | IBU | % Bill |
|-------------|---------|--------|-----------|------|--------|
| Magnum (GR) | 12.5% | 1.00 | 60 | 18.7 | 9.76% |
| Cluster | 5.0% | 2.00 | 60 | 14.9 | 19.51% |
| Cascade | 4.6% | 2.25 | 10 | 5.6 | 21.95% |
| Cascade | 4.6% | 5.00 | 0 | 0.0 | 48.78% |

| Gravity | | Collections | |
|-----------------------|-------|------------------------|-------|
| Potential OG: | 1.076 | First Runnings (gal): | 8.50 |
| OG: | 1.052 | SG of First Runnings: | 1.067 |
| OG Temperature (F): | 83 | SG Temperature (F): | 132 |
| Corrected OG: | 1.055 | Corrected SG: | 1.060 |
| SG at Racking: | | Second Runnings (gal): | 6.00 |
| SG Temperature (F): | | SG of Second Runnings: | 1.023 |
| Corrected SG: | | SG Temperature (F): | 146 |
| FG: | 1.016 | Corrected SG: | 1.040 |
| FG Temperature (F): | 60 | Estimated Preboil SG: | 1.064 |
| Corrected FG: | 1.016 | Preboil Volume (gal): | 14.50 |
| Potential ABV (%): | 7.3% | SG of Preboil Volume: | 1.037 |
| Actual ABV (%): | 5.1% | SG Temperature (F): | 133 |
| IBU to Gravity Ratio: | 0.71 | Corrected SG: | 1.050 |

| Diacetyl Rest | | Carbonation | |
|---------------------------------|-------|---------------------------|------|
| Target Fermentation Completion: | 75% | CO2 Volume: | 2.25 |
| Target SG for Diacetyl Rest: | 1.023 | Bottling Temperature (F): | 38 |
| | | Priming Sugar (oz): | 3.92 |
| | | DME (oz): | 5.49 |
| | | Forced Carbonation (lbs): | 8.6 |

Notes

Made two 1L starters with WLP001 from a friend's washed yeast.
 First runnings refrac = 19.3 plato (1.081) - very close!
 Forgot to take refrac reading for second runnings - doh!
 Preboil refrac = 12.2 plato (1.049) - still close.
 Collected refrac = 13.4 plato (1.055) - dead on!
 Didn't rack to secondary.
 09/22: moved fermenters to ambient temp (78F) when SGs were 1.017 and 1.019.
 09/26: kegged at 1.017 SG (A) for 70% attenuation and at 1.015 SG (B) for 72% attenuation.
 09/27: carbed and shook keg (A) at 23 PSI for 3 mins; waited 1 hour; purged, carbed at 8.6 PSI
 10/1: tasted this "young" at Antoberfest, great beer overall with good bitterness.

Nice maltiness and I detect a little fruity esters although it was fermented at 66F.
 I like the way this beer turned out, but I think I'd prefer to lower the 0 min hop addition and dry hop.

| Yeast Amounts | |
|------------------------------|-------|
| Cell Count (billions): | 428 |
| Vials (White Labs/Wyeast): | 3.6 |
| Dry Yeast (g): | 21 |
| Starter Volume (mL): | 4750 |
| DME Required (oz): | 16.63 |
| Vials Required (w/ Starter): | 1.0 |

ON BREW DAY

Heat 7.64 gallons of strike water to 167F
 Add grain and mash at 153F for 60 minutes
 Mash-out with 4.19 gallons at 210F, mix and hold for 10 minutes
 Vorlauf and collect first runnings (approx. 8.64 gallons)
 Add 5.69 gallons at 186F to lautur tun and sparge
 Vorlauf and collect second runnings (approx. 5.69 gallons)
 Boil for a total of 90 minutes with the following hop schedule:
 1 oz. Magnum (GR) @60 minute(s)
 2 oz. Cluster @60 minute(s)
 2.25 oz. Cascade @10 minute(s)
 5 oz. Cascade @0 minute(s)

| Grains: | |
|---------|-------------------------------|
| 21.00# | Pale Malt (2-Row) US (89.36%) |
| 1.50# | Caramel/Crystal 60L (6.38%) |
| 1.00# | Victory Malt (4.26%) |

| Hops: | |
|---------|-----------------------------|
| 1.00 oz | Magnum (GR) (12.5%) @60 min |
| 2.00 oz | Cluster (5.0%) @60 min |
| 2.25 oz | Cascade (4.6%) @10 min |
| 5.00 oz | Cascade (4.6%) @0 min |

| Extra Variables | |
|----------------------------------|-----|
| 12 oz. Bottles Required: | 102 |
| Primary Fermentation Temp. (F): | 66 |
| Secondary Fermentation Temp (F): | 66 |

Yeast:
 White Labs WLP001 (California Ale) (California Ale)

Mash/Sparge Schedule:
 Single Infusion, 153F; Batch Sparge
 Mash for 60 min at 153F w/ 7.64 gal of water at 167F
 Mashout w/ 4.19 gal of water at 210F; hold for 10 min
 Batch sparge w/ 5.69 gal of water at 186F; hold for 10 min

Fermentation Schedule: