

Volume 6, Issue 3/Summer-Fall 2007

Chris White discusses the cold side of brewing

By Chris White
President, White Labs

At the Craft Beer Conference in Austin, Texas, earlier this year, I gave a talk called "Hot vs. Cold." I discussed the differences between the hot and cold side of brewing, and made the case that the cold side (i.e. fermentation) is often the most neglected yet the most important side of brewing.

Each phase requires high skills and expert techniques to achieve optimal results. However, as important as the hot side of brewing is, many of the issues that come up on that side of the process can be corrected or alleviated through cold side manipulation. The cold side is where

Turn to pages 4-5 for more news on yeast and White Labs.

beer becomes beer. And this is why brewers should put more knowledge, efforts and resources into this phase.

This does not always happen in modern breweries, however. Frankly, the cold side is just not as "sexy." Breweries spend gobs of money on copper equipment for the hot side, in part because it shows well to customers but also because of tradition. And often, after these great initial expenditures, little money is left for the produc-

tion process and many corners are cut. The beer suffers tremendously, and in some cases, so do the businesses.

The hot side involves the combination of two very important ingredients, hops and malt, and these steps are very important. The cold side, on the other hand, involves one ingredient, yeast, but many key factors, including: yeast strain selection, yeast growth, oxygen content, esters, potential contamination, and yeast health. Mastery of all these cold side factors is critical to the success of your brewing process.

A detailed description of all these factors would take up an entire book, but for now we can talk about why
See "Cold" page 4

Crop update as of July 2007

By Ralph Olson
Hopunion, LLC

Most brewers are now aware of the hop shortages that are occurring throughout the industry. These shortages are happening for various reasons that are beyond a simple solution.

The acreage world-wide for hop growing has decreased in 1/2 from 10 years ago. Although the acreage has decreased, demand has continued to rise, especially for the high alpha hops, thus putting pressure on aroma hop acreages.

In Europe most hops aren't even being quoted for until the harvest is brought in, and requests are already being received for crop years 2009-

Turn to pages 6-7 for more news on hops and Hopunion CBS.

2012. However, Hopunion, LLC has been able to contract and secure the much demanded hops.

The past low rainfall in Europe was also causing problems; however, the rainfall is reaching its normal levels again. Another problem is the rising demand for hops from China. China at one time had been in the top 5 for hop produc-

See "Hops," page 6

An analysis of AC Andrew

By Cargill Malt

AC Andrew, otherwise known as "Agriculture Canada Andrew" was bred by R. S. Sadasivaiah of *Agriculture and Ag-Food Canada Lethbridge Research Centre*. AC Andrew belongs to the class of Western Canadian Wheat Varieties known as Soft White Spring (CWSWS) because it is planted in the spring time and harvested in the late summer/fall.

Soft refers to the texture of the wheat and under traditional circumstances would be destined to the milling industry to produce cookie, cracker, noodle and cake flour. This milling characteristic is largely due to the fact that its protein content is lower than other wheat varieties, therefore its starch content is proportionally higher, provided it is a normal crop

Turn to pages 2-3 for more news on malt and Cargill Malt.

year without drought. Most recently AC Andrew has been sought after for its ethanol production potential.

AC Andrew is one of 6 registered Western Canadian Soft White Spring varieties (CWSWS) along with, AC Meena, AC Nanda, AC Phil, AC Reed, and Bishaj. What sets AC Andrew apart is its better yield potential for the farmer and given normal growing conditions, will

See "AC Andrew," page 3

Style Matters: Options for making Golden or Blonde Ales

In each issue, CBQ spotlights a particular beer style and provides tips from an ingredient and fermentation perspective. In this issue, we look at Golden Ales.

Malt Notes: Of all the beer styles brewed in the US, perhaps none is as common as Golden, or Blonde, Ale. Simple, unassuming, and easily approachable, Golden Ales are the most popular beer at many breweries, and serve as a gateway beer for drink-

ers on their way to more robust beer styles. To a brewer they, like all the lighter styles, present unique challenges. The subtle flavors associated with this style allow any error in fermentation, sanitation, brewing technique, or raw materials, to stand out. On the other hand, when crafted well, the balanced elegance of this style can be very rewarding.

Because Golden Ale is a very malt prominent style, the choice of base malt is very important. Any of the base

malts Cargill currently malts or distributes would work well in a Golden Ale, but the different barley varieties used in the different malts as well as the kilning process will influence the final beer's flavors. As a starting point Cargill Two Row, a blend of Kendall and Metcalfe barleys, will provide a moderate malt flavor, pale color, and make readily quaffable Golden Ale. If a beer with more of an herbal, grassiness is desired we would sug-

See "Style Matters," page 6

Ask the Maltster: Tips on storing malt

Q. I have been having intermittent problems on my filter lately. Sometimes I can get an entire run completed on a single setup, but other times I have to break down and restart to complete the run. The finished beer clarity also varies more than I would like. I was wondering if the cause of my problems might be malt related? Any insights would be appreciated.

A. The answer is maybe. Malt can contribute to both throughput and clarity issues, but there are also many non-related malt factors that can have a similar impact. The true cause can be difficult to determine, but a little homework can probably confirm or deny malt as the problem.

We'll look at the throughput issue first. Throughput is usually limited by blinding the filter bed. When the surface of the bed is overwhelmed by filtrate materials (yeast, haze components, etc.) it is possible to bridge the porous surface of the bed and create an increasingly impermeable layer. Eventually increasing backpressure reduces throughput to the point where the filter bed has to be re-established or backwashed, depending upon the type of filter being used.

If the soluble protein of the malt is very high this can contribute to the amount of chill haze proteins in the beer.

If the beer is filtered at cold temperature, as it should be, these proteins will be in suspension and removed by the filter. Excessive chill haze could increase your back pressure as you are trying to remove more material. Your chance of blinding the bed is higher. The best way to combat this situation if you are using a DE filter is the increase the dose rate of DE in order to accommodate the higher load.

Another negative contributor could be malt derived beta-glucan in the beer. Beta glucan increases the viscosity of beer and wort. In the same way that BG can negatively influence runoff, it can also make filtration more difficult. Chances are this is not the issue if your runoffs are close to normal. The threshold for having a very difficult runoff is significantly lower than the threshold for having trouble on the filter. BG related filtration issues are more relevant in larger breweries where vast quantities of high gravity beer are filtered are very high flowrates in a single run.

While these two factors may influence filter throughput, the vast majority of filter throughput issues are yeast related. A variable yeast load coming onto the filter is almost always the cause of unpredictable throughput performance. If you have a microscope available you should be able

to establish a correlation if this indeed is the case. In any event, you should use cell counts of beer to be filtered as a basis for your filter powder dosage rate.

Protein issues can also be mitigated by judicious use of kettle finings. An appropriate dose of kettle finings will enhance cold break formation and remove a significant quantity of haze sensitive proteins which will in turn make your filter runs much easier.

As far as clarity is concerned chill haze (protein/polyphenol complexes) are usually the cause of variability. Since both of these compounds come from malt you could say that malt is the cause. A slight modification would be that the malt is the cause in cases where the chill haze component is excessive. Due to the nature of malt and beer there will always be chill haze. The purpose of the filter is to remove this component. Proper filtration techniques make this possible. While filter operation is beyond the scope of this answer, it is worth noting that filtering as close to freezing as possible and maintaining this temperature at all times through the filtration is absolutely critical. Allowing the beer to warm up at any time will resolubilize the protein and allow it to be reintroduced to your beer.

Again, good filtering practice can still result in clear beer with higher protein levels but at some point you have to determine what is acceptable. If you are babysitting every filter run and your using significantly more filter media and chillproofing aids there is a cost associated with this activity. If you can correlate this to a significant increase in the total and more specifically soluble protein in your malt, and you've ruled out other causal factors, it's time to give your maltster a call.

In summary, there are many things that can affect filter performance. Yeast load is probably the number one cause, but malt is also a contributor. Do some homework, read your malt analysis, and if you can make a positive correlation between a parameter and performance make a call to your maltster and see what they have to say. Regardless of whether it is a malt issue or not, the call is sure to be an educational experience.

Have questions about malt, barley or brewing? Get them answered by our staff of Maltsters/Brewers. Just visit our web site www.specialtymalts.com and the Ask the Maltster section. We will post questions in CBQ.

'La Chouffe Party' details

On May 29th 2007, "Saint Pub," in Baie St. Paul, Quebec played host to the "La Chouffe Party." Baie St. Paul is located 45 minutes past Quebec City on the north shore of the St. Lawrence River, in the region known as the Charlevoix. It is known for its beautiful rugged countryside and in the winter, "Le Massif" ski resort.

The "La Chouffe" brewery from the Ardennes region of Belgium with its brewmaster, Pierre Gobron, previous owner, Christian Baueraerts, and the Belgian writer Ben Vinken, were invited for a day of brewing at the Saint Pub.

Pierre was teamed up with Nicolas Marrant, the resident brewer and together they brewed a "Blanche" or Belgian Wit Beer.

This all started at 800 AM and throughout the day brewers, homebrewers, and industry folk arrived to watch (with beer in hand) the beer being brewed.

For dinner, Allain Tremblay, the resident chef, with sous-chef Pascal Gravel and

their dedicated entourage presented a authentic French, 5 course meal.

All the courses were matched with either one of the 6 in-house beers or beer from "La chouffe." The dessert was by far and away the "piece de Resistance" A real work of art incorporating whole malt and wort into various desert forms.

To break up the courses, Ben, the writer got up and spoke of the history of Blanche beer. One that has only started relatively recently. To keep the 50 or so guests amused everyone received a red "La Chouffe" elf hat which had to be worn during dinner.

This was all made possible by the passion shared by, Fred Tremblay and his wife Caroline Bandulet who organized this event. The evening finished with time at the pub's bar enjoying the in house Belgian beer.

For more info, see: www.microbrasserie.com.



Our next generation of Customer Service Reps continues to grow. We last introduced you to Westcoast CSR Kelly Bindl's son Adam. We now introduce you to Carter Krueger, son of CSR Brent Krueger. Congratulations Brent and Amy-Jo!

AC Andrew

From Page 1

yield lower protein levels. This is an ideal combination from a farmer and brewer perspective.

The farmers are more likely to grow a variety that yields well, knowing their return is higher/acre and for brewers, the lower protein can mean only one thing, higher extract and less time waiting for lautering to finish! AC Andrew was originally developed for the irrigated farms of South Western Alberta but has since been adopted by farmers doing dry land farming in the South Western Region as well. Andrew is a variety known as semi-dwarf, which means it isn't a tall plant and has the wonderful characteristic of being lodge resistant, doesn't fall over when the wind blows or rain comes down.

So as maltsters, we have a decision to make amongst varieties. There is only one way to do that and that is to bring in a shipment and do some small-scale trials. Malting and Brewing trials showed AC Andrew to be the preferred wheat for the desired beer character. This does not mean that other wheat varieties cannot be used, but



- Canada Prairie Spring Red (CPSR)
- Canada Prairie Spring White (CPSW)
- Canada Western Amber Durum (CWAD)
- Canada Western Extra Strong (CWES)
- Canada Western Hard White Spring (CWHWS)
- Canada Western Red Spring (CWRS)
- Canada Western Red Winter (CWRW)
- Canada Western Soft White Spring (CWSWS)



weaknesses begin to show after malting. For example, when some of the Hard Red Spring varieties are malted, they showed generally a propensity to higher wort/beer

colour due to the higher protein content. Higher protein and lower extract may not be what some brewers are looking for.

Some highlights of its brewing characteristics are (based on Congress wort analysis):

AC Andrew	
Extract (Fine)	84%
Protein	12% d.b.
Colour	2.50
Diastatic Power	130-150
Alpha Amylase	45-55
Kolbach	45-50
Viscosity	1.60-1.70
Friability	65-75
Beta-glucan	45-50

Some of the more unique things to note in the malting analytics are: the high diastatic power.

This is a good attribute considering that traditionally, we relied on the malted barley for its diastatic power to ensure proper starch conversion. If required, AC An-

drew can be utilized at a higher grist proportion. The viscosity of 1.6-1.70 is a very good number.

This is only 0.2 higher than the industry norm for malted barley, ensuring that difficulties with lautering malted wheat are minimized.

For wheat malt the proteins are the dominant influence on the flow characteristics as opposed to barley where beta glucan has the greater influence. AC Andrew shows very low B-glucan numbers.

Cargill's Rocky Mountain Wheat Malt should definitely be considered for producing an American wheat ale, Bavarian Weissbier or any beer where a proportion of wheat malt is required.

References:

Canadian Grain Commission:
www.grainscanada.gc.ca
 Secan technical Bulletin: www.secan.com
 Prairie Malt Ltd.: www.prairiemaltltd.com
 Cargill Specialty Malt: www.specialtymalts.com

The Mondiale del La Biere is a taste of Europe, literally

For the average North American Beer enthusiast, there are many festivals to choose from. In the case of the Mondiale, it's the closest feeling to being in Europe without the long flight.

The Mondiale is held at the Historic Windsor train station right beside where the Habs play their Hockey. This year's event drew a number of breweries, big and small, from the area as well as some of the more common international beer companies.

Also in attendance were cider, sausage, fudge and other artisanal type companies which allows you to break up the beer tasting. In addition to visiting the beer booths, one had the opportunity to sit in on talks on cooking with beer or listening to guest brewers.

From a beer perspective the Quebec

brewers really like their Belgian-style beers. The favoured beer for most breweries is a Witt beer (Blanche) with different interpretations. This is a great place to try this style.

Medium-sized Craft Brewers will usually have a standard Pilsner type or Pale Ale (blonde) with an amber of differing styles.



‘The Quebec brewers are not afraid to try new things. It is always a great surprise to see what they bring to the festival.’

This is certainly not hop country so the emphasis is on malt.

Most of the artisanal/craft brewers, with their passion toward Belgian styles are not afraid of the high octane beers with brewers trying out different interpretations of Trippels and Dubbels

The Mondiale is also a good place to

taste some non-traditional beers using other ingredients. The Quebec brewers are not afraid to try new things. It is always a great surprise to see what they bring to the festival.

For next year's event check out www.festivalmondialbiere.qc.ca

Fermentation trials taking place in the lab

It's officially summer and it is getting HOT in San Diego! We've been very busy over the past few months with several different projects, in addition to growing that wonderful yeast.

One of our main objectives has been on performing a variety of fermentation trials. Many of these focus on different yeast strains and how their fermentation characteristics differ from one another, but we are also working more on changing brewing conditions to discover how this really affects the yeast cells. A major factor in yeast performance is fermentation temperature, so we felt this was something we really needed to maintain in order to recreate normal brewing conditions. With the help of some colleagues, we designed a water bath for our lab-scale (1L) fermentations.

This water bath uses a small glycol chilling unit to circulate water at a set temperature through our holding chamber to regulate the temperature of our fermentation flasks.

Since temperature is such a major com-

ponent in fermentation, I ran several trials using our 20-gallon brewing system and temperature-controlled conical fermentors to see how changes in temperature can effect the flavor profile of the finished beer. In addition, I performed a second set of experiments where I altered the original gravity of the wort. For both of these trials, we were able to use our Gas Chromatograph-Head Space to measure the levels of flavor-active compounds in each beer and compare the results.

I focused on diacetyl, esters (iso-amyl acetate & ethyl acetate), and fusel alcohols (n-propanol & iso-amyl alcohol). What I

found was that both esters and fusels increased with increasing temperature, as well as with increasing OG. Diacetyl decreased with higher fermentation temperatures, while increasing the OG did not seem to have an effect on diacetyl levels. For more detailed information about these trials, please see my article in the May/June issue of Zymurgy Magazine (published by the American Homebrewers Association).

Also on the horizon for White Labs is the infamous Yeastman. More work is being done and progress is being made. You'll soon be seeing this bar-code tracking system producing your Certificate of Qual-

ity, giving you more detailed information about your particular yeast culture. In addition, the inventory tracking component will help us help you!

Once it is implemented on our website, you will be able to receive an instant response as to when your yeast culture can be available to ship to you! After all, it's all about the customer – look for this feature in the near future!

Postscript: Brett kits

Considering barrel-aging? Did you know that most barrels (new or old) contain some level of Brettanomyces? If you're not going for that farmhouse style ale, you can test your barrels!

We have available a simple to use Brettanomyces detection kit. It's as easy as 1- swab an area inside your barrel, 2 – spread the swab onto specially formulated Brett plates, and 3 – incubate for 3-5 days. Call 1-888-5-Yeast-5 for more information!

Neva Parker is the lab manager for White Labs. Write her at neva@whitelabs.com.

From the Lab

Neva Parker



Cold

From Page 1

the cold side is so important. We handle many brewery related questions. Brewers often believe that everything that happens after the cooking process is deemed to be caused by, rightly or wrongly, fermentation. If brewers do not realize that fermentation is the main element of brewing, they certainly understand it on a subconscious level, as we are the first people they turn to for answers as to what happened or might happen in the future with their beer.

It is an interesting occupation in many ways. In one respect, we are akin to others in the food industry, making an ingredient that is used in some other product with some other name. However, we also need to have the knowledge of someone in the high-tech industry. To answer the questions that arise daily requires years of knowledge and practical experience, particularly because this industry has such a wide variety of practitioners, from entry-level folks to those with years of experience.

Since beer begins and ends with the fermentation process, that's what I will concentrate on in the following.

As a brewer, are you a doctor or a coach? A doctor would seek to find the problem with the yeast and fix it. This cannot be done, however, with finicky single cell organisms that sometimes act as if they have a mind of their own. Or are you a coach, who when he or she finds a problem with a player replaces them with someone fresh and energetic? Yes, brewers are coaches. The best way to avoid fermentation trouble is to learn when you need to send in the second team (i.e. order a new batch of yeast or alter the process). Insisting on doing the same thing every time is not the right approach! You want to be open to new procedures and change your practices if

Chris White, right, takes questions from those attending his discussion about the cold side of brewing at the Craft Brewers Conference. Every seat was taken during the early morning presentation.

necessary, such as when confronting seasonal issues.

If the yeast side is so important, what can we do to make it better? We can look at them under a microscope, but the darn critters are all small circles. They don't talk to us.

Or do they? Yes they do, in a manner of speaking. We can measure their % attenua-

tion, and if we know the characteristics of the yeast, we should know this as well. We can track their rate to completing fermentation, which is essential. We can follow their flocculation. We can learn more through mutation plates.

Yes, indeed, yeast do speak to us in a way. One way they talk to us is through smell. Yes, smell. You must get your nose in there. To do so, get some of the yeast out of the tank, even if you are not reusing it. The amount of times you will want to smell the yeast vary depending on the strain and your equipment, i.e. your tanks. Get to



know your yeast!

Other factors of importance on the cold side:

- You must use consistent pitching rates. There are several options to consistently measure the pitching rate: by cell count, by weight, or by volume.

- Pay special attention to the yeast strain you select, as each has a distinct personality.

- Consider performing trial fermentations as an effective tool for controlling and predicting fermentations.

By learning to perfect the cold side, you will make more consistent and better tasting beer than ever before.

A closer look into our data from 'Big QC Day'

Earlier this year, we concluded our first Big QC Day, which involved testing multiple beers from at least 10 percent of craft breweries. As we chronicled in the last issue of the Quarterly, the tests revealed interesting, sometimes surprising and certainly unprecedented data about craft beer.

I will speak at greater length about these tests at beer gatherings around the country over the next few months. The purpose of this column is to pass along some aspects that caught my attention, not to provide a thorough overview of all test results. Comprehensive results are available at our Website, www.whitelabs.com. My comments in the past about these tests have focused on bacteria and contamination issues, but in this column I will tell you about the hops and bitterness data that we gathered. I looked into this data as part of a talk I gave at the recent Hops and Brew School in which I was a guest. (Please turn to page 7 for more information on the hop school).

The great majority of beers entered in the testing program were hoppy beers, such as IPAs, pale ales and Double IPAs. Although there is much talk about the hoppy nature of today's craft beers, the IBUs, or International Bittering Units, were lower than one might expect. While they ranged from as low as the teens to 99, in the case of one IPA, most were somewhere in the middle. I expected many samples to be over 100. What does this all mean? I think there are several explanations:

— These beers are becoming the signature styles not just for brewers on the West Coast, but also the Midwest and East.

— If these beers are not necessarily the best-selling



Letter from
the President

Chris White

beers at a particular brewery, they may be the favorite style for the brewer, who wants to learn as much as possible about them.

— The pale ales entered in our testing were generally lower in bitterness units than the American standard for the style, Sierra Nevada Pale Ale. This may run counter to the commonly held beliefs in the craft brewing world. Some people believe that the craft breweries are pushing the taste buds of Americans beyond this traditional pale ale, but our tests do not necessarily support this view.

Would it improve sales if breweries increased the hoppiness of their beers? This is an intriguing question, and one I am not sure I can adequately answer. On one hand you want to provide customers with the beers they are happy with, but on the other hand you want to encourage them to step up to more aggressive beers. If they become fans of your hoppy beers, they will probably enjoy and appreciate almost any beer that you make.

One intriguing aspect of our testing, at least in terms of hops, is that the hoppiest IPAs, appeared to come from the Northwest and California. IPAs entered from

Pale Ale

- Average IBUs of test group: 33
- Average IBUs per region:
West: 32 (26 entries) Midwest: 31 (33) East:
35.5 (23)
- GABF IBUs style guidelines: 30-42

India Pale Ales

- Average IBUs of test group: 56
- Average IBUs per region:
West: 61 (31) Midwest: 49 (12) East: 50.5 (13)
- GABF IBUs style guidelines: 40-70

the West Coast were 20% higher in IBUs than beers from the Midwest and East Coast.

I must add that breweries in the East and Midwest are making very hoppy beers, in such large numbers that many in the craft brewing industry would be surprised. As I mentioned earlier, I reviewed these numbers in greater detail at Hopunion's annual hop school in August, and I would be happy to discuss these results with brewers at future events.

Chris White is President of White Labs Inc. and is a chemistry and biochemistry lecturer at the University of California, San Diego. He has a Ph.D in biochemistry. Feel free to write him at cwhite@whitelabs.com about this column.

White Labs adds new GC test options

By Ryan Craig
White Labs Microbiologist

We have been using the White Labs GC (gas chromatograph machine) more and more recently, and now we are adding more esters and fusel alcohols to the testing options.

In addition to our Ethanol and VDK analyses, which some of you might have been introduced to during our big QC Day, we are now capable of analyzing Acetaldehyde, Ethyl Acetate, Isoamyl Alcohol, and a few other esters and fusel alcohols.

Some basic results from these new analyses can be seen in Neva Parker's recent Zymurgy article, which details how fermentation changes such as different temperatures can affect yeast fermentation specific flavors. Some of these new analyses might also join our Big QC Day line up of tests in the future.

These compounds are a few of the ones that are produced above the lower limit of our GC detector. They are some of the more flavor-active compounds, so they are important flavor-wise. Here is some more information about these compounds:

Acetaldehyde is basically a precursor of Ethanol, it has a green apple aroma and flavor. It is believed to be one of the causes of beers going stale and tasting like cardboard, and it is also believed to cause hangovers.

Ethyl Acetate is probably the biggest flavor compound that yeast produce, it can account for up to a third of all esters. At

lower levels it has a fruity aroma and taste, at higher levels its aroma and taste is like nail-polish remover.

Isoamyl Alcohol is a fusel alcohol that is produced around its flavor threshold.

When conducted together, these tests can paint an interesting picture of what flavors your yeast is adding to your beer. Neva's article dealt with minor things such as temperature changes, and different yeast strains, and she showed that minor changes can have a pretty significant impact on your beer's flavor; the blind taste test with these beers was really interesting when compared to the numbers.

Other than understanding what your yeast is adding to your beer, these tests are good to have as part of your QC program. If you are doing everything the same, you should be seeing the same numbers.

We will run these tests on our own yeast strains; this will give us a greater understanding of what these strains contribute to beer beyond what we learn from brewers by word of mouth. We also expect to conduct these tests for other laboratories without the knowledge or equipment that we possess.

Flavor is a pretty complicated thing, as anyone who is involved in brewing knows. These tests over time will help us understand flavor a little better.

Craig, a microbiologist for White Labs, spends part of his workday operating the GC machine.

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Details about Centennial, aka Super Cascade

By **Ralph Woodall**
Hopunion, LLC

Developed by the Hopunion USA breeding program, it was named after the 1989 Washington State Centennial Celebration. At one time it was to be destroyed for lack of interest by the world's major breweries.

Ralph Olson kept it growing (called CFJ-90 in those days) and the craft brewing world, including Sierra Nevada Brewing, took to it, allowing its survival. It now ranks among the top-selling craft brewing hops. Many older brewers can remember the days without Centennials, while much younger brewers cannot imagine such a time. Centennial is the first hop that can truly be called a Craft Brewing variety.

As a dual purpose hop, Centennial has a relatively high alpha content and a very high oil content providing it with the one – two punch brewers' love. The distinctive flavor and aroma has won over beer lovers everywhere. It can be used as a Cascade substitute and the alpha levels allow it to be price competitive as it has more bang for the buck. Acreage has been increasing in an attempt to keep up with demand, but shortages can still be expected from year to year until the balance between supply and demand is met. Contracting is recommended for this variety especially for brewers who use it for signature beers. The other alternative is Centennial-Type which is a blend of 70% Cascade and 30% Columbus. This can be

done at the brewery or you can purchase pre-blended Centennial-Type pellets through Hopunion, LLC. Again, this combination has been well received as a short term alternative.

Alpha Acids 9.5 – 11.5% w/w
Beta Acids 3.5 – 4.5% w/w
Co-Humulone 29 – 30% of alpha acids
Storage ability 60 – 65 % alpha acids remaining after 6 months storage at 20 degrees C
Total Oil 1.5 – 2.3 mls/100 grams
Myrcene 45 – 55% whole oil
Humulene 10 – 18% of whole oil
Caryophyllene 5 – 8% of whole oil
Farnesene <1% of whole oil

Aroma: Medium intensity with floral and citrus tones.

Possible substitutions: Cascade, Columbus, and possibly Chinook. A blend of 70% Cascade and 30% Columbus will give a similar profile.

Beer Styles: All US Ale styles, IPA, and Double IPA. Also good for dry hopping, this variety is the signature hop for many beers.

Centennial has now been in use for over twenty years and has gained its rightful place as one of the "Three C's". What is the magic of the "C" hops, no one knows, but think about it: Cascade, Cluster, Chinook, Columbus, Crystal, Centennial, along with UK Challenger, these all make up the "Seven C's".

Hops

From Page 1

tion acreage, though over time they dramatically reduced their acreage, and are now looking for hops themselves to meet demand in their own country. Acreage in the US has actually gone up a few thousand acres, but it is still not enough to meet the full demand. Across the US and world-wide acreage remains lost due to the loss of growers and to increases in property developments.

At this time, US crops look to be normal, although it

was a cold spring for them. There has been plenty of water, giving us the makings of an average crop for this year. There will still be varieties that will come up short this year as the acreage just isn't there to provide for the full demand. It is a good idea to lock in your hop needs now for the coming 2007 harvest.

You can give us a call at 1-800-952-4873 and our staff will be happy to assist you.

'It is a good idea to lock in
your hop needs now for the
coming 2007 harvest.'

Style Matters

From Page 1

gest Europils. Malted from Copeland barley, a Golden Ale brewed from this malt will be crisp with a strong continental pilsner note. On the other hand, if a deeper, more British pale malt flavor is desired, Cargill Special Pale would be our suggestion. Special Pale is Harrington barley kilned to a 3 - 4 L color, giving a fuller, richer flavor.

Another direction would be the use of European base malts. Two base malts come quickly to mind. Pauls Pale Ale, malted in the UK, will give an ale a full flavor with under tones of dried fruit and a hint of dryness. This pale malt is also a favorite in English style Pale Ales and ESBs. Our second suggestion would be Warminster Maris Otter. This one hundred year old barley variety, floor malted in the UK, produces a Golden Ale of excellent depth.

Many exceptional Golden Ales are brewed with base malts alone, but often a small amount of specialty malts are added. The use of specialty malts must be watched however, because dark malts, or an amber malt for that matter, will quickly darken the beer bringing it out of style. A low color caramel, like Dingemans Cara 8, can be added to increase body and head retention. If you would like more bread flavors, we would suggest Muesdoeffler Vienna malt. Finally a small addition of Gambrius Honey malt, or Dingemans Biscuit, will add nuances to both a Golden Ale's flavor and aroma.

— Cargill Malt

Hop Notes: The hop bitterness for this style should be low to medium with IBU levels of 10-24 depending on the bitterness preference of the region where the beer is being sold. The hop flavor and aroma should be low to medium and should have either a spicy or citrus note to enhance the drinking experience. The use of domestic or import hops with low to mid alpha acid level and good spicy or citrus notes are preferred. Some hop suggestions are for imports, Czech Saaz, Styrian Golding, GR Perle or GR Spalt, and for domestic hops such as Cascade, Sterling, Santaim, US Perle, Liberty or Crystal come to mind. A good dual hop can cover both the IBU's and the desired aroma.

Of beers called Blonde Ale, Summer Ales, and Mild Ale a couple of examples would be Red Hook Blonde, New Belgium Skinny Dip and Bridgeport Pintail, to mention a few. We at Hopunion do like our "hoppy" beers but we do realize there is a place for more subtlety hopped beers. We do have to have something to enjoy for the morning after or after mowing the lawn on a hot summer day. It seems there is more demand for these lighter styles of beers as the range of beer drinkers expand and more are incorporated under the craft brewing umbrella. As a matter of fact it is 97 in Yakima today so I think a Skinny Dip sounds really good about now. LOL ... You can see more hop variety information on our website at; www.Hopunion.com.

— Hopunion LLC

Yeast and Fermentation Notes: Many breweries making a Golden Ale use their house yeast because they are probably making a lot of it, as this style is often one of the favorites of customers. It a great source of yeast. You can continually harvest yeast from this beer to be used in others because it is generally low gravity and, as I mentioned earlier, you are making a lot of it.

You want to ferment this beer to dry to make it more drinkable. I would suggest mashing a little lower to create more fermentable sugars for the yeast. Consider using adjuncts because they will be very fermentable for the yeast. You may want to ferment at cooler temperatures, as this style usually de-emphasizes yeast flavor.

Consider making a Helles style, if you do not want to use your house yeast. A yeast choice for this style is the WLP080 Cream Ale Yeast Blend. Another example of a good golden ale is a kolsh; we are seeing a lot of that in Australia. It is exotic enough for the beer aficionado and approachable enough for the new people.

As for the style in general, I encourage all breweries to make something along the lines of a golden ale. You want a beer that everyone who walks into your place of business can enjoy. If new customers come in and choose golden ale, take heart that they are drinking your beer with your yeast made with your equipment. If they like it, they will move on to other styles that may be more interested both for the customer to drink and for you to create.

— Chris White, White Labs

Get ready for the 2007 Alpha King Challenge

By Jessica Dickinson

The 2007 Alpha King challenge is dead ahead, folks.

Ed Bennet from Boundary Bay, winner of the 2006 Alpha King challenge, is ready to defend his Imperial IPA. The judging will be held once again at the Falling Rock Tap House in Denver, CO, during the GABF on Friday, October 12th from 1 – 3 p.m.

To request an entry form, please call Hopunion, LLC at 1-800-952-4873 or email nadia.urvina@hopunion.com.

Requirements:

- All beer must be available for purchase.
- No Barley Wines
- Beer is to be judged based on overall quality and balance of flavor. Not just on the IBUs of the beer. Suggested minimum



nadia.urvina@hopunion.com

·Send one six pack of beer or three 22 oz bottles and a completed copy of your

of 60 IBUs.

Instructions:

·To submit your entry form, please fax it to 1-800-952-4874 or email it to

entry form to David Edgar at Mountain West Brewery Supply. (NO KEGS/GROWLERS)

·Package your entry appropriately for shipping (no newspaper please). Note: Shipments are only being received on these three dates: Thursday, Oct. 4th, Friday, Oct. 5th, and Monday Oct. 8th.

Please note that late entries will not be guaranteed to be entered into the contest.

Hop School features two days of classes, hop tours

By Hopunion LLC

The 2007 Hops and Brew School took place at Yakima, Washington, during the Hop Harvest in late August.

The school featured two full days of classes with topics such as “Hops: What They Are, What They Do, and Using Whole Hops, Pellets, Oils and Extracts” and “The History of Hops.”

Also on hand were award-winning brewers from around the U.S. speaking on Hop Usage, Recipe Formulation and Brewing Methods.

Chris White, of White Labs, discussed the IBUs data that came from the first large scale testing of craft beer,

called “Big QC Day.”

Each class included a ranch tour in which brewers were able to see the hop fields, and witness hop picking, drying and baling.

In addition there were tours of HOPUNION LLC where visitors saw firsthand the warehousing, pelletizing, and receiving of the hops.

The event featured two full days of hops, hoppy beers and brewers who love hops from all over the U.S.! (Even beers below 60 IBUs were served.)

For information on future events, please call Hopunion at 1-800-952-4873 or e-mail Laura at laura.lusk@hopunion.com.



Hops and Brew School Photos from 2007

Above, Erika McKay of Astoria Brewing Co. was Hop Queen for the Hops and Brew School 2007. At left, Jay Brooks, the founder of the Brookston Beer Bulletin, does the John “More Hops” Maier hop drop into the 2007 crop of Willametts at the Hop & Brew School.

Photos courtesy of Hopunion LLC





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Attention brewer

Craft Beer Quarterly

The Back Page

Summer trends and new strains from White Labs

Hard to believe that summer is almost gone! Despite being very busy (based on the volume of calls every day), we are still seeing the production of many specialty summer beers. While we typically see an increase in Wits and Hefeweizen for the summer we are also seeing more Belgian Singles, lighter summer ales (like kolsch) and even quite a few crisp pilsner lagers.

We are also seeing change in house strains so that brewers can give their beers a unique flavor. We see you experimenting with different English and American ale strains such as WLP013 London Ale, WLP023 Burton Ale, WLP041 Pacific Ale and WLP008 East Coast Ale. Call us today if you would like to talk about any specialty strain or beer development.

For those of you who may also produce wine or distilled products, we do carry a full line of yeast for those beverages. Visit www.whitelabs.com for more information.

The following are notes on new products:

— **Sulfide Tubes** - Take control of off-flavors in your beer and wine with “sulfur sticks,” a hydrogen sulfide detection tube.

The tubes can easily detect all possible sources and factors that may cause overproduction of H₂S. The tubes are easy to use. Insert the tube into a pre-bored silicon rubber stopper. The tube is pre-calibrated with a standard H₂S gas. Let the wort (or must) ferment then read the amount of H₂S produced directly from the scale imprinted on the tube.

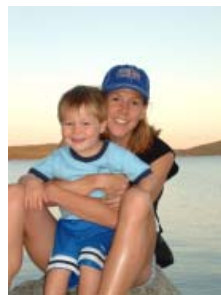
Multiple fermentation experiments can be conducted in your bench space or incubator. The tube responds to varied amounts of H₂S in a linear, uniform and proportionate manner.

The tubes are sold in packs of 10: TK3498-10; Sulfide Detection Tubes, Fermentation Monitoring (99-005) - \$90; and TK3499-10: Sulfide Detection Tube, Finished Beer & Wine (99-001) - \$65.

To acquire these tubes, please contact us at 1-888-5-

Trends in the Industry

JoAnne Carilli-Stevenson, sales and marketing manager, White Labs Inc.



Yeast-5 or write us at info@whitelabs.com.

— **New strains**

WLP862 Cry Havoc

This signature strain, from Charlie Papazian, has the ability to ferment at both ale and lager temperatures allowing the brewer to produce diverse beer styles. The recipes in both Papazian's books, *The Complete Joy of Homebrewing* and *The Homebrewers Companion*, were originally developed and brewed with this yeast. Papazian had “Cry Havoc” in his yeast stable since 1983.

When fermented at ale temperatures, the yeast produces fruity esters reminiscent of berries and apples. Hop character comes through well with hop accented beers. Diacetyl production will be very low when proper fermentation techniques are used.

When fermented at lager temperatures, esters are low in high gravity beers and negligible in other beers. Pleasant baked bread-like yeast aroma is often perceived in malt accented lagers. Slightly extended fermentation times may be experienced compared to other lagers. Some fermentation circumstances may produce sulfur aroma compounds, but these will usually dissipate with time. Good yeast for bottle conditioning.

For Ales:

Attenuation: 66-70

Flocculation: M-L

Optimum Fermentation Temperature: 68-74°F

Optimum Cellaring Temperature: 50-55°F

+ Alt beers can be cellared at lagering temperatures

tures

For Lagers:

Attenuation: 66-70

Flocculation: L

Optimum Fermentation Temperature: 55-58°F

Optimum Lagering Temperature: 32-37°F

New Yeast Blends

WLP080 Cream Ale Yeast Blend This is a blend of ale and lager yeast strains. The strains work together to create a clean, crisp, light American lager style ale. A pleasing estery aroma may be perceived from the ale yeast contribution. Hop flavors and bitterness are slightly subdued. Slight sulfur will be produced during fermentation, from the lager yeast.

Attenuation: 75-80%

Flocculation: Medium

Optimum Fermentation Temperature: 65-70°F

Alcohol Tolerance: Medium High

WLP568 Belgian Style Saison Ale Yeast Blend This blend melds Belgian style ale and saison strains. The strains work in harmony to create complex, fruity aromas and flavors. The blend of yeast strains encourages complete fermentation in a timely manner. Phenolic, spicy, earthy, and clove like flavors are also created.

Attenuation: 70-80%

Flocculation: Medium

Optimum Fermentation Temperature: 70-80°F

Alcohol Tolerance: Medium

— **Munchkin update:** Happy Birthday to the Munchkin! Hard to believe HE is 4? Maybe some of you will remember what I looked like? Anyway, here is what we both look like today in the above photo.