



The Cellar

The Official Newsletter of the
Colonial Ale Smiths & Keggers
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CASK CRUSHES THE COMPETITION!

By Norman W. Schaeffler

CASK walked into the 2005 Dominion Cup with a club record of 18 entries and walked out with 10 ribbons and the Cup! That's right for the second year running, CASK Vice President Steven Davis captured the "Best of Show" Cup. Steven took a 1st place with his Strong Scotch Ale called "*Sinful Scotty*", which went on to win "Best in Show." He also took a 1st place with his Saison called "*Steve's Summer Saison*." Brian Hershey took a 1st place with his American IPA called "*Nectar of the Gods*," Dave Bridges took a 2nd place with his "*Utopia Cream Ale*," Harrison Gibb took a 2nd with his 80/- Scottish Ale, took a 2nd with his "*Moka La*" Coffee-Milk-Stout, took a 3rd with his "*Bogberry Wheat*" cranberry fruit beer, took a 3rd with his "*Wicked Brown*" American brown ale and took 3rd with his "*Pisch Posch Bosch*" Straight Lambic, and Norm Schaeffler took a 2nd with his "*Mildly Fuggled*" Mild.

The competition itself was great time. Each table was staffed at least by a set of BJCP Judges and a professional brewer from one of the area's breweries. There were brewers from Starr Hill, St George, Hops, Richbrau, and Legends present and it brought a different perspective to the judging. CASK members, Brian Hershey, Steven Davis, Harrison Gibbs, and

Norm Schaeffler were there as judges and Susan Hershey and Craig Mayotte were there as stewards. A tasty lunch was provided, along with some complementary Legend's brews, and the award ceremony provided a great opportunity to celebrate the successes of the day.

Meanwhile in Ohio, three CASK members made sure that the CASK banner will be held high in Baltimore for the AHA National Competition, by qualifying in the first round. Harrison Gibbs took 1st in Fruit Beers with his "*Bogberry Wheat*." Brian Hershey took 1st in New Entrants with his American IPA called "*Nectar of the Gods*." Steven Davis took 2nd in Light Hybrid with his Kölsch called "*Missing Kolm*." These three members sent a total of 15 beers to the first round and should be congratulated for making it to the Nationals! ■

April Meeting Round-up

By Norman W. Schaeffler

CASK took its monthly meeting on the road in April, holding the meeting at the St. George Brewing Company in Hampton. Brewmaster Andy Rathmann graciously opened up his brewery and tasting room for us to sample his line of beers including his seasonals, a Vienna Lager and a Munich Helles. The meeting featured a great presentation on hops by Don Welsh and a "themed" raffle where a variety of whole leaf hops, a St. George's t-shirt and pint glasses were raffled off to the assembled members. Andy also had a surprise for us, a whole pallet of homebrew supplies in search of a home were raffled off so that everyone was a winner and took home a prize. A great time was had by all. ■

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The Cellarmaster

The Ancient Art of Brewing in the Internet Age

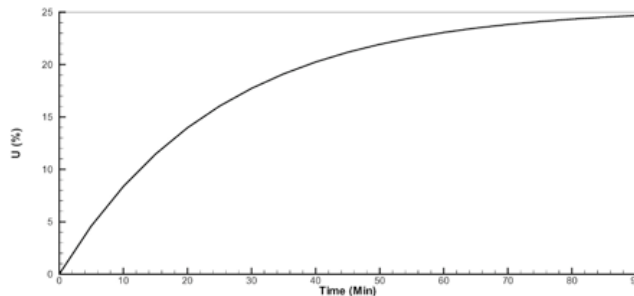
By Norman W. Schaeffler

So you won some hops from the raffle at last month's meeting that you have never used before. Whatcha gonna do with them? Want to use them in your favorite recipe in place of the hops that you usually use? Not a problem. All you have to do is to figure out how much of them to use and when to add them to your boiling wort, so that the bitterness that comes from the new hops will match the bitterness of the hops that were originally in the recipe. How was it that Don said to compute the IBU's, or international bittering units, in his presentation last month? What was that equation again? You should have taken notes! Then you remember, you can use the on-line beer recipe generator web site, the "Beer Recipator," that was discussed in last month's Cellarmaster. It can handle the bitterness calculations for you in a snap. The only downside is that there is only room for four hop additions on the Recipator hop section. That is fine for a traditional two hop addition recipe. But what if you want more, what if you want to three varieties of hops for bittering and four hop varieties for finishing? What if you want to try to make a beer that is "continuously" hopped, al la Dogfish Head 60 Minute IPA? Then you need that equation after all. But perhaps you can harness the power of the equation into something that does not require a bunch of hand calculations, something like a spreadsheet. First, a little background on how our friend the hop goes about bittering our beers.

When you buy a bag of hops at your local friendly homebrew store, there are two important pieces of data on the bag. First the name of the hop variety and second the percentage of alpha acid that the hops in the bag contains. The values for percentage of alpha acid that you see in a recipe are the values that are typical for that hop. For example, East Kent Goldings (EKG) is usually listed as 5%AA or five percent alpha acid. This is what a typical EKG hop will have. What is listed on the hop bag itself is the actual percentage of alpha acid for the hops in that bag. Each hop harvest is tested for %AA when it is processed and the exact amount can vary. It would not be unreasonable for the bag of EKG that you just purchase to have 4.2%AA or 5.8%AA. That number is the total percentage of alpha acid present in the hops, but we cannot make use of all of that alpha acid to bitter our beer. Alpha acids



themselves are not even soluble in water, which introduces a problem when we want to use them as an ingredient in beer. Luckily, there are chemical reactions that take place in the boiling wort that will allow the acid to be dissolved. These reactions, collectively called isomerization, convert the alpha acid to iso-alpha acid, which is soluble in water. The success of the reaction depends on the vigor for the boil, the specific gravity of the wort during the boil and the amount of time that the hops are boiled. There is also a small effect due to if the hop is in whole leaf form or a pellet. The amount of alpha acid that we are actually able to convert, compared to how much there was originally, determines the efficiency of the chemical reaction. This is called the hop utilization. The maximum hop utilization is usually on the order of 25%, corresponding to a 90 minute boil. The hop utilization decreases with decreasing boil time, down to 0% utilization for zero minute boiling. This is why hops added after flame-out contribute immensely to the flavor and aroma, but contribute nothing to the bitterness. The variation of the hop utilization as the amount of time varies can be seen in the figure below. Finding the correct hop utilization factor is the key to computing the correct bitterness contribution for a given hop addition.



Hop Utilization as a function of boil time

There are a couple of different techniques used to find the hop utilization. Each is based on measured data where a sample of hops were boiled for a known period of time and the resulting bitterness was then measured. Then formulas were generated from the data using a process called curve fitting. This allows the hop utilization factor to be calculated directly. The curve fit of Tinseth is one used by the Recipator and the one I will discuss here. You need to know the specific gravity of your boil and the Recipator can calculate this for you. Also, the amount of hops, their %AA and the length of time that you will be boiling them are required. Once you have these, you can calculate the hop utilization factor, U, with the following formulas.

$$U = f(G) \times f(t)$$

$$f(G) = 1.65 \times 0.000125^{(G_B-1)}$$

$$f(t) = \frac{1 - e^{-0.04t}}{4.15}$$

where G_B is the specific gravity of the boil and t is the time the hops are boiled in minutes.

Once you have the hop utilization factor, you are ready to compute the bitterness contribution.

$$IBU = \frac{74.89 \ W \ AA \ U}{V}$$

where W is the weight of the hops in ounces, AA is the percent alpha acid as a percentage, for example 5.2 for 5.2% AA , and V is the boil volume in gallons. The factor 74.89 takes care of all the unit conversions.

You would calculate the IBU's for each of the hop additions and then total them all to find the total for the recipe. All of these calculations cry out to be implemented in a spreadsheet, which I have done. If you interested in getting a copy, drop me a line.

Till next time, Cheers! ■

A Mini-Mash of News Items

By Norman W. Schaeffler

-BIG Brew 2005: CASK, along with homebrew clubs across the nation, held the BIG Brew on May 7, 2005, with Brian Hershey organizing the event. 12 members came out to the brewery, brewed a total of 20 gallons of beer, enjoyed the day, the beer, and the great food!

-Want to be a Pro Brewer for the Day? St. George's brewer, Andy Rathmann, has offered to let any club members that are interested to come down to the brewery and assist him in brewing a batch of beer. After all, who would pass up free labor! So if you want to see a commercial brew being made from grain to fermenter, let Norm Schaeffler know. We are shooting for a day in June and it will be a weekday.

- CASK Mailing List: The CASK Mailing list is up and running being hosted by HomeBrewDigest. You can subscribe here:

<http://hbd.org/mailman/listinfo/cask>

Once you are subscribed, you can talk to the whole club by sending mail to a single e-mail address, cask@hbd.org. You can also talk to individual members by using the member directory. The new

mailing list should improve communication within the club, over the next few months we will be moving all of the club mailings to the list.

Homegrown Hops

By Harrison Gibbs

Last month's meeting, Don gave us a presentation on the endless variety of hops. One style of hop he failed to mention is the homegrown hop. Distinguished as a separate style because most home hop growers do not have access to the lab equipment needed to determine alpha acid content (a measure of bitterness), authors advice the home growers to stick to aroma and finishing hops. However, they get that keen satisfaction of putting their gardening efforts into every brew.

First, hops are grown from rhizomes and not seeds. Rhizomes (root cuttings) can only be purchased in the spring. Hops are typically available from late-March through late-April. You can acquire them later in the year from a friend but their survivability is reduced, as they use springtime to grow their roots. When selecting hops it is important to note that European hops grown in North America don't impart the same flavor and aroma profile to the beer as they would if they were grown in their native regions in Europe. Like French wines, hops are affected by Terroir, the uniqueness attributable to the land and micro-climate of a place. This seems to be especially true of varieties like Hallertauer and Saaz. Hops with the same genetics but grown in a different environment yield a different beer. As a result I choose a brewer may get more consistent flavors using American varieties, such as Willamette, Mt. Hood and Cascade.

Most sources say you can plant hop rhizomes as soon as the frost leaves the ground. Around here, that is usually well before the rhizomes are even available. Hops do very well even in the northern states, from New York to Washington. In the south, they are more susceptible to drought or the opposite mildew from too much moisture. Warm sunny days and cool nights are the best. If you live where it is humid make sure that the area is well drained and that air can flow freely about the leaves and vines.

Hops are climbers. They will twine about anything within reach and climb skyward. Because of their vertical inclination, they do not do not train well horizontally. Many people want to know if they can run them along a fence or over a trellis on their patio. If they can't grow upward, they will bunch up and not really thrive.

While you can build a hops trellis, send up string for the vines to climb. The hop vines really didn't like

climbing the trellis. They can easily climb 20-25 feet. Commercial hops farms construct professional hop trellises from telephone polls, aviation cable and twine, every home situation is different. They run a wire between the poles and then run the twine to the wire. It looks like fields of clotheslines. In the past, I have made trellis from long PVC pipe and a t fitting at the top through which I run my twine. I usually, just run the twine to an eyelet attached to the eaves. I like to be able to lower the hops and harvest and return the vines to their vertical state, as more flowers come in. Hops need to grip what they climb. Therefore rough twine is better than wire or cables, which are too slippery.

Hops need food and water, that means: Miracle Grow, Miracle Grow, Miracle Grow. They also need a lot of water. When the plant is really in the peak of its growth stage, even in the first year, the bine can add 6 inches in a single day. Each day they make one wrap around their trellis or rope following the sun from east to west.

Hops are subject to a whole host of pests: hop aphids, leaf-hoppers, and powder mildew. The best thing to do to control pests is to keep the bines well ventilated to avoid mildew. Trim away any lower leaves to increase air circulation. The aphids may be treated with ladybugs. Watch out for chemical control since hops are a "food" source to be consumed in beer.

At harvesting time, the hops will have lots of hops bracts, or flowers, which looks like soft green "pine cones." The bracts should be plentiful at harvest! There seem to be two general rules of thumb seem to loosely indicate that hops are ready for harvesting: the hop bracts become papery and the lupulin glands turn bright yellow. Left on the vine too long, hop bracts will naturally turn brown as the summer finishes. I found that when some of the hops just start to turn brown at the tips of their bracts, and a very small fraction have some brown spots, this is the time to harvest.

Watch your hop plants. When just a couple of the bracts (say a dozen) have a bracteole (leaf) tips just turning brown, pick about a third of the hops. Then, 5 to 7 days later go back and do the same. Though don't wait until the hops turn brown before you pick them. Use the bracteole tip color more as a guide than the 5 to 7 day rule.

Also wear a long sleeve shirt to harvest. Hop vines are very scratchy. A few minutes among the leaves and vines and the novice harvester will have itchy puffy arms.

You should get three or four harvesting sessions. By picking in sessions as a beginner, you'll gain two advantages. First, you'll pick hops as they ripen to their fullest. Second, you'll get a chance to see hops

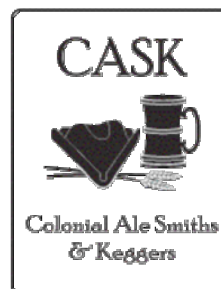
as they ripen. Leave a few hops on the vine. Watch them as they ripen and then go bad. Use this knowledge and experience to learn better when your hops have matured.

To use your homegrown hops you need to dry them. A Hop drying screen can be made from an unused window screen and placed the hops on it to dry. It is best to do this in a wind free area as they will blow away. You can also place a second screen on top to stop this from happening. Don't leave them in the sun, and don't let them get rained on. A good place is a hot August/September attic. It should take a day or two. But it could take over a week, depending on the heat and humidity. The key to knowing when hops are dried is how they break apart when split. Hold the top of a hop bract between the thumb and forefinger of one hand and the bottom of the hop bract between the thumb and forefinger of the other hand, then flex the bract in a motion similar to what you might do if you were trying to break a pencil in half. The inner part of the bract, the "strig," should break - not bend - when the hop is flexed with. If the hops don't break apart, they're not ready.

Another way hops can be judged dry is by weight. Some books claim that the final weight of you're hops should be about one tenth of their initial weight. Others say less.

Store Hops in an airtight jar or bag. I double bag mine and toss them in the freezer. But make sure they are DRY! I have used my home-grown hops on several batches. In some cases, I have noticed hay-like tones evolving from the brew kettle after pitching my home-grown hops. The first time this happened I was very concerned, but any off aromas seem to ultimately boil off. By the time I drank these beers all was fine. With good results, I have also dry-hopped home-grown hops.

As winter approaches, cut the bine down to an inch or so above the ground. If you cut your bines just after you harvest (and there's nothing wrong with doing this), we found that the bine will sprout new shoots. Mulch the area with about six inches of straw or mulch. They don't really freeze around here. ■



Identifying John Barley

By Harrison Gibbs

Two-row barley has a lower enzyme content, less protein, more starch, and a thinner husk than six-row barley. Of the first two of these characteristics, the protein content of two-row barley depends greatly on the barley strain, and enzyme content depends very much on the strain and degree of kilning. American two-row barley has greater enzyme potential than most European two-row barley. The protein content of U.S. two-row barley is comparable to that of continental Europe, while barley grown in the U.K. is generally lower in protein. In comparison to six-row barley, two-row has a higher starch content – the principal contributor to extract. The thinner husk associated with two-row barley makes for mellower (less astringent) beers due to lower levels of polyphenols.

Six-row barley has a higher enzyme content, more protein, less starch, and a thicker husk than two-row barley. The higher level of diastatic enzymes makes six-row barley desirable for conversion of adjunct starches (those that lack enzymes) during mashing. On the down side, the higher protein content can result in greater break material (hot and cold), as well as possibly increased problems with haze in the finished beer. The husk is high in polyphenols (tannins) that results not only haze, but also imparts an astringent taste. This astringency is a common feature of the

Classic Pre-Prohibition Pils and usually requires softening from adjuncts such as corn.

The number of rows of kernels makes for easy identification of two- and six-row varieties. In six-row varieties, two-thirds of the kernels are twisted in appearance because of insufficient space for symmetrical development. Since they must overlap, they twist as they grow. In two-row barley there are no lateral kernels; all kernels are straight and symmetrical. The kernels of two-row barley are broader than the central kernels of six-row barley and do not taper as sharply.



The CASK Calendar Of Club Events and Competitions

Plan your brewing year now and hit as many club-only and other competitions as possible.

2005 Monthly Beer Styles

May	Mai Bocks
June	Saisons
July	Summer Party!!] Belgin and French Ales
August	European Amber Lager
September	TBD
October	Baltic Porter
November	TBD
December	Free for all

June 11, 2005, DEA 2005, Greenville, NC: Homebrew competition, open to all BJCP ale and lager styles, as well as to meads. Qualifying event for Carolina Brewer of the Year, and Carolina Mead Maker of the Year. More info available at www.beertown.org Fee: \$6 , **Entry Deadline: 5/1/2005 - 6/6/2005**

June 11, 2005, TRASH XV, Pittsburgh, Pa: The Three Rivers Alliance of Serious Homebrewers (TRASH) invites you to enter at our annual homebrew, cider and mead competition. Visit <http://trashhomebrewers.org/competition.htm> for more info.

June 16-18, 2005: National Homebrewers Conference, Baltimore, Maryland: Homebrewers gather to visit old friends, meet new people and drink homebrew made by homebrew clubs across the United States. The final judging for the National Competition is this weekend as well. AHA Members receive registration discounts. This is one great party, and we want CASK to be there!

July, 2005: American Beer Month: America has a beer tradition that goes back to the earliest days of American history. Help celebrate it.

July 16, 2005: CASK SUMMER PARTY!: The club had a good turnout last year. Even if you have not been able to make the Thursday evening meetings, this is one of those weekend family-oriented events

that you should plan on attending. CASK will hold a great raffle and judge for the IRON BREWER COMPETITION.

August 2005: Belgian and French Ale Club-Only Competition: Category 16* Competition August 21, 2005: Hosted by Bob Kauffman and Hop Barley and the Alers of Boulder, CO. Entries due August 16, 2005.

August 6, 2005: National Mead Day: The American Homebrewers Association (AHA) Mead Day is a national event to help increase camaraderie among homebrewers and meadmakers and introduce or reintroduce the meadmaking hobby to people. Each year on the first Saturday in August, homebrewers around the nation are encouraged to invite non-brewing and brewing friends and family to celebrate by making mead.

Ways to Celebrate:

- Invite non-brewing and brewing/meadmaking friends to help make mead.
- Brew the Official Mead Day Recipe
- Bring out meadmaking literature for your friends to read Compleat Meadmaker and other meadmaking books
- Drink mead, pair your mead with food and HAVE FUN

September/October 2005: European Amber Lager Club-Only Competition: Category 3* Hosted by Jack Kephart and the Society of Akron Area Zymurgists (SAAZ) of Akron, OH.

September 29-October 1, 2005 Great American Beer Festival: Last year, the three-day event brought a record number of beer connoisseurs from around the world to Denver, Colo. (a city dubbed "the Napa Valley of beer" by many of the world's beer experts) to sample 1,454 different American beers. The roster of beers was the biggest collection of American beers ever presented in one location. It took 2,439 volunteers and 24,390 hours to put this festival on. "The Great American Beer Festival is the world's best beer festival by far," says famed international beer writer Michael Jackson. "No other one comes close."

November 2005: Teach a Friend to Brew Day

November/December 2005: Baltic Porter Club-Only Competition: Category 12C* Hosted by Brian Lanius

and the Ruffian Brewers of Suffern, NY. Entries due October 21, 2005. Judging will be held November 5, 2005.

CASK
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