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BY TERI FAHRENDORF

Over my 23-year career in the brewing industry—as a brewmaster for 19 years, as The Road Brewer (gypsy brewing blogger), as a retail beer clerk, on the brewery supply side, and as president of the Pink Boots Society—brewers and brewery owners have sought my advice. As a beer professional supportive of education, I have done my best to answer with “How To” articles. One question that has popped up a lot lately is, “How do I predict my future hop needs in order to forward contract?”

Due to the stunning shortage of U.S. aroma hops this year (2011), which will also affect breweries in 2012 (2011 crop), this topic is timelier than ever. If you are reading this article prior to December 31, 2011, consider this your opportunity to adjust your 2012 hop contracts now if needed. Please note that throughout this article, I refer to calendar year, not crop year!

Until brewers’ skills at forward hop contracting closely match what they actually use, hop farmers will continue to play “catch up” in trying to match what they grow with what we as brewers want. Matching brewers’ hop needs to farmers’ hop crops will likely occur once all breweries are forward-contracting their hops at least two years out, due to crop growth rates. That means forward-contracting your hops is a necessity, if we as an industry ever hope to have hop supply meet hop demand.

If we cannot learn to forward-contract our hop needs, we will intimately learn the meaning of

HOW TO ESTIMATE FOR YOUR Forward Hop Contracts

the word “volatility.” If you are not protected with hop contracts, market volatility could affect you and your brewery with massive and sharp spikes (up and down) of both price and supply. Note the current supply crashes (with potential price spikes) for the most popular trademarked hops (such as Amarillo, Simcoe, and Citra), and price crashes (and supply gluts) for hops suddenly falling out of favor, like 2009-crop Willamette. Hop contracting protects your price and your supply, which is especially important if your brewery is growing. It also protects the hop farmers, who suffer from volatility as much as we do.

In this article, I will show you a method that is as accurate as I can make it. You could always just ballpark it; many brewers guess their future hop usages. However, I believe accuracy is important, as it could prevent the kind of overbuying we saw in 2008 and 2009.

GETTING STARTED

First of all, what is a hop contract? It is a legal document where two promises are made: a brewery promises to take possession of, and pay for, specified volumes and types of hops during a calendar year (buy), and a supplier has promised to deliver those hops (sell). Generally, all hop contracts are known as Forward Hop Contracts. This means the hops will be bought and sold during a future calendar year. There are very few Current Year Hop Contracts written, and if written, could have restrictions. For example, depending on vendor, if you sign a hop contract on December 31 for the following calendar year, you may

have a minimum total contract requirement of 88 pounds (mix-and-match, 11-pound minimum of each variety of hop), at a forward contract price. However, if you sign that same contract the very next day, January 1, you may have a decidedly higher price per pound, because overnight it became a current year hop contract. Plus, your minimums may have gone from 88 pounds per contract, to 440 pounds per hop variety. Some vendors may not allow current-year hop contracts at all, or may stop offering them without notice at any point during the current year. To avoid these issues, be sure to place and sign your hop contracts prior to December 31, to avoid snafus that may slow down the process.

What a hop contract is not: It is not a verbal agreement, nor a written request. If your vendor has told you "no problem, we'll still have hops for you then," it is not a hop contract, and you are not protected against shortages or price spikes. If you have a hop contract, make sure your copy has your vendor's signature on it, and keep a copy in your safe.

As a contracting brewery, you will need to think hard about your hop contracts twice a year:

once prior to rhizome planting, and once prior to harvest. However, this year, I ask you to think about your hops right now, prior to December 31, in order to jump-start your hop contracting program.

IT'S IN THE BOOKS

We'll start by assessing your past and current actual hop usage. With those we can extrapolate estimated future hop usage. First, we need an accurate accounting of actual type and quantity of hops you used in the last full year of brewing, in this case 2010. If you take monthly hop inventory, and you track incoming shipments of hops, this job is a lot easier. If you are a young or future brewery, extrapolate what you can.

Total 2010 usage of each hop stocked =
2010 Beginning of Year Inventory of each hop stocked
Plus all 2010 incoming shipments of each hop stocked
Minus 2010 End of Year Inventory of each hop stocked

If you don't take year-end inventories, and if your recipes change a lot, and you have a lot of one-off beers, this exercise will encourage you to begin recording inventories! If not, you'll have to go through your recipe logs one-by-one, write down exactly how much of each hop you used, and add up all the totals for the year. Good luck!

Once you have accurate numbers for 2010, we'll work on 2011. Since you are probably reading this in November or December 2011, you should have numbers for three-fourths of 2011, through third-quarter or September 30. As above, using your monthly inventory, calculate what you actually used:

Three-fourths of 2011 usage of each hop stocked=
2011 Beginning of Year Inventory of each hop stocked
Plus incoming shipments of each hop stocked through September 30
Minus September 30 End-Month Inventory of each hop stocked

Take the above numbers for each hop, and multiply by 1.3. That will get you very close to the total of what you will use in 2011.

Now compare the above two full-year numbers. To calculate the percentage of growth for each hop stocked, you have to do the calculation for each hop! Some of your beers (and thus their hops) may have grown in popularity at different rates. For each hop:

*...forward-contracting
your hops is a necessity,
if we as an industry ever
hope to have hop supply
meet hop demand.*



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Percentage of growth for each hop variety stocked=

2011 hop usage

Divided by 2010 hop usage

Minus 1

For example, if you used 110 pounds of Simcoe in 2011 and you used 100 pounds of Simcoe in 2010, your calculation would be: $((110 \div 100) - 1) = .10$ or 10 percent. Other hops *will* vary, and you need to be able to write an accurate contract and not over- or underestimate your hop needs.

Therefore, do this exercise for each hop. You will end up with three columns at this point, as follows:

Names of all hops used (alphabetically top-to-bottom of column works well)

2010 Total year usage of each hop

Year-over-year increase (or decrease) of each hop as a percentage

Your spreadsheet will look something like this:

Hop Name	2010 Actual	2011 increase %	Potential 2012 Contract
Amarillo	1,500 lbs	+ 7.6%	1,614
Simcoe	1,000 lbs	+ 10%	1,100

Now comes the subjective part. If you believe that your rate of year-over-year percent increase will continue into 2012, then go with that number. If not, adjust the number. This is especially important if you made, or are planning to make, recipe changes. Perhaps you have just doubled the amount of Simcoe you use for dry-hopping your IPA, and your customers love it, and you'll keep it that way. Any hop changes you made in 2011 (compared to 2010) should have shown up as a severe change in the percentage of growth; however if you feel the percent shown does not accurately reflect those changes, adjust the percent.

Your percentage growth for each hop will not likely match the Brewers Association's annual craft beer volume increase of 11 percent for 2010, or 14 percent for the first half of 2011. In fact, so many craft brewers are tossing more hops in their beers, the increase in annual craft brewery usage of certain hops is far and away beyond the annual production rate numbers. Your *EOY (End of Year) 2011 Estimated* hop usage is calculated by multiplying *2010 Actual* by *Corrected % Growth* for 2011. This will reflect recent increases in hop usage, so may not equal your actual 2011 EOY usage. So now your spreadsheet will look like:

Hop Name	2010 Actual	2011 increase %	Corrected % Growth	EOY 2011 Estimated	Potential 2012 Contract
Amarillo	1,500 lbs	+ 7.6%	+ 6%	1,590 lbs	Same
Simcoe	1,000 lbs	+ 10%	+ 12%	1,120 lbs	Same

With any luck, you are already contracted for 2012 hops at nearly the numbers you calculated for *EOY 2011 Estimated*. If you analyze your 2012 hop contract(s), and find you are not contracted anywhere near this *EOY 2011 Estimated* number, now is a good time to recalculate your 2012 needs (see below), and cover what you are missing with an additional 2012 hop contract. If you are reading this article in January or later, you may want to try to write a Current Year Hop Contract, or quickly buy enough spot hops to cover your 2012 needs!

The next step is also subjective. If you are growing at a steady pace, you could reliably use the same percentage for 2012 growth. However, an astute brewer is aware of raw material trends, and the trend for malt prices is up. Hops prices, I'm not so sure of, but considering they are very reasonably priced at this point, I assume they could go up. One reason to contract is to lock in current hop prices.

So, based on price trends, if you had to pass on a price increase to your customers, how would that affect your sales? Perhaps you think your growth in each hop could drop a tiny bit because of that. If so, your spreadsheet could look like this:

Hop Name	2010 Actual	2011 increase %	Corrected % Growth	EOY 2011 Estimated	Est. 2012 % Growth
Amarillo	1,500 lbs	+ 7.6%	+ 6%	1,590 lbs	+ 5%
Simcoe	1,000 lbs	+ 10%	+ 12%	1,120 lbs	+ 10%

Estimated 2012 % Growth is shown as dropping in value because this established brewpub is not growing at the BA industry average, and anticipates a decrease in sales growth due to an upcoming increase in pint prices.

Now you just do the math. Please note in the below: *2012 Hop Needs* are calculated by multiplying *EOY 2011 Estimated* x *Estimated 2012 Growth*.

Then you need to convert your estimated *2012 Hop Needs* to a number divisible by 11- or 44-pound boxes, depending on which you prefer. In this example I rounded up to get the *2012 Contract* number, which is divisible by 44. When doing your own calculations, you will want to

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contract for 100 percent of your 2012 hop needs now, prior to January 1.

Hop Name	2010 Actual	EOY 2011 Estimated	Est. 2012 Growth	2012 Hop Needs	100% 2012 Contract
Amarillo	1,500 lbs	1,590 lbs	+ 5%	1,670	<u>1,672</u>
Simcoe	1,000 lbs	1,120 lbs	+ 10%	1,232	<u>1,232</u>

PREPARING FOR THE UNKNOWN

OK, now you know your *2012 Hop Needs* and what you want for your *2012 Contract* quantities for each of your hops. What do you do next?

You know you need to tell the farmers what types and quantities of hops you need, and you do that through contracting, but what if you change a recipe? And what happens beyond next year (2012)? How do you write hop contracts for that kind of unknown? By following these basic guidelines: contract 100 percent of current (or upcoming) year, 75 percent of the next year, 50 percent of the year beyond that, and 25 percent for the year beyond that. Then you look at your contracts twice per year: January and July (begin-

ning of Q1, and beginning of Q3). And you do that every year. Now let's walk through the exercise of choosing contract amounts for your 2012 through 2014 Forward Hop Quotes.

In the above exercise, did you decide you need more hops to augment your 2012 hop contracts? If so, start a new spreadsheet and mark down what you will need for current year to get you to 100 percent of hop needs. Be sure your numbers are divisible by either 11 or 44, depending on what size box you prefer. Round up if you expect growth.

For this exercise, we'll use *2012 Hop Needs*, and pop in 75 percent for 2013, and 50 percent for 2014, rounding up to the nearest 11- or 44-pound box.

If you are looking at this again in January (and I hope you will each January), you then have actual EOY hop usage numbers, and you only have to factor in your actual percentage growth or decline of each hop's usage as shown above. If your July estimates were not on target, this is your chance to adjust those contracts before the hop farmers have completed rhizome

planting! This is important, because it takes a few years for hops to reach full harvest maturity. Developing new hop fields takes a lot of time and money. In a crop year like 2011, with a cold, wet summer, the "baby" hops produce nothing their first year. It takes time to grow the hop starts in the hot house to field planting size, and hop farmers need to put in their rhizome/baby hop orders in advance.

So therefore, even if you do this exercise in autumn, and secure 100 percent of your 2012 hop needs via forward contract, please look at your EOY numbers in January and do it again, so that the hop farmers have a running chance to get the hops we all need into the ground in time to make a difference!

Please note the highlighted contract amounts below have all been rounded up to the nearest 44-pound box.

Hop Name	2012 Hop Needs	Current 2012 Contracts	2012 Augment Contract	75% for 2013 Contract	50% for 2014 Contract
Amarillo	1,670	1,540	<u>132</u>	<u>1,276</u>	<u>836</u>
Simcoe	1,232	1,012	<u>220</u>	<u>924</u>	<u>616</u>

If you are past this initial exercise, and you are looking at this in July 2012 (and I hope you will look at it each July), recalculate your current year needs in order to "top up" with mid-year contracts. You can do the same exercise as above, and calculate your partial-year growth rate January-July 2011 vs. January-July 2012. Top up 2012 with a current year hop contract (if you can get one) or augment with spot hops to get you through the end of the current year. Then adjust your future year contracts as follows: In July, 2013 contracted hops should be augmented with additional contracts to 100 percent, and 2014 contracts should jump to 75 percent, and you should add a 2015 contract at 50 percent of current usage.

What if your brewery is definitely on a fast growth track? Will this schedule of contracting 100/75/50/25 percent of your hop needs be enough?

Nearly every brewery plans to grow fast, but some are more likely to actually do so. Positive indicators of potential growth can be directly attributed to high levels of: previous brewery or business experience, marketing skill, beer industry distribution contacts, large size of *current* brewing system, and start-up capital and access to additional capital.

If you know you are seriously on the fast track, then in January, contracting 75 percent of estimated 2012 year needs for 2013, 50 percent for year after that, and 25 percent for year after that won't possibly be enough hops. In that case, contract for 100 percent of your current

QUIZ: How Hop Contract Savvy Are You?

THINK YOU'VE GOT IT DOWN?

From the examples in the article, what are these sample numbers?

- (a) 1,672
- (b) 132
- (c) 1,276
- (d) 836

ANSWERS:

- (a) 1,672 pounds of Amarillo hops to be contracted now (Nov/Dec) for 100 percent of calendar year 2012 needs, where no previous 2012 contract had been written, rounded up to the nearest 44-pound box.
- (b) 132 pounds of Amarillo hops to be contracted now (Nov/Dec) for calendar year 2012, to augment an existing contract, rounded up to the nearest 44-pound box.
- (c) 1,276 pounds of Amarillo hops to be contracted between now and the end of January for 75 percent of projected 2013 needs (based on actual 2011 numbers), rounded to the nearest 44-pound box.
- (d) 836 pounds of Amarillo hops to be contracted between now and the end of January for 50 percent of projected 2014 needs, rounded to the nearest 44-pound box.

year hop usage for each Forward Hop Contract, out as many years as your vendor will let you contract. Just remember, if you are only wishful thinking, you'll be on the hook for all those hops, and you'll be keeping good hops out of the hands of other worthy brewers (and everybody will hate you for being a hop hog, including your banker). Then be sure to revisit your current hop usage, and adjust your Forward Hop Contracts as usual, each January and July.

Beware one of the indicators above—size of *current* brewing system is listed, not *future* brewing system. This is an important point. Many breweries got into trouble in 2007-2008 when they contracted hops for breweries that weren't built yet. When those building projects fell through, those brewers were obligated to take their contracted hops. Some of them are still trying to use up those old hops. Yet in 2007-2008, many worthy breweries went without hops because of those potential-only breweries' hop contracts! Please be realistic about your growth and expansion plans. Don't be a Hop Hog.

As I write this, 2012 calendar year Ahtanum, Amarillo, Centennial, Citra, Simcoe, and Sorachi Ace are completely contracted out. Doing this work twice each year could save you a big headache. By contracting 100 percent of your current/next year's needs each July, you should stay ahead of the curve. However, stay on top of current trends! Become good friends with your suppliers. If you hear in April that one of the above trademarked hops is contracted out, assume the rest will follow and book your July contracts a bit early. Until we are all contracting at least two years out, American hop farmers are playing "catch up." This may be the case for the next two years.

PLANNING AHEAD

So now you are ready to write your hop contracts for 2012-2014, and you know next July is when you'll bump them up to the next 25 percent increased contract level, and when you'll add a 2015 contract. And you'll revisit this article in January to make sure you've got it all correct before the hop farmers plant their new hops.

To summarize, in July 2012 you should be contracted for current year and three years out as follows:

- 100 percent of current year (2012) and next year's (2013) hop needs
- 75 percent of 2014 hop needs (based on adjusted 2011 actual/estimated 2012 hop usage)
- 50 percent of 2015 hop needs
- 25 percent of 2016 hop needs (if your vendor lets you write contracts beyond current and 3 forward years)

* All rounded off to the nearest 11- or 44-pound box.

In conclusion, you now have the tools to accurately predict your current and future hop needs. If you are not in the habit of taking year-end and month-end hop inventory, I hope you will begin the practice. Predicting your own growth and future hop requirements needn't be something you have to sweat when a hop crisis is upon you. If you follow the step-by-step examples above, you'll take most of the guesswork out, sidestep future hop crises, and have confidence in the forward hop contracts you'll be signing.

Teri Fahrendorf is president of the Pink Boots Society, a nonprofit association for women beer professionals to network and advance their careers through education. She is co-founder of Barley's Angels, the consumer education and scholarship-fundraising arm of PBS. Teri was featured in the recently released documentary, "The Love of Beer," www.theloveofbeermovie.com, and makes her home in Portland, Ore. with her husband and fellow brewmaster, Jon Graber. To read her previously published beer and brewing articles, visit www.terifahrendorf.com. ■



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